



The Theater of Electricity

Technology and Spectacle in the Late
19th Century

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Ulf Otto
Institut für Theaterwissenschaft
Ludwig-Maximilians-Universität München
München, Germany

ISBN 978-3-476-05960-4 ISBN 978-3-476-05961-1 (eBook)
<https://doi.org/10.1007/978-3-476-05961-1>

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This book is a translation of the original German edition “Das Theater der Elektrizität” by Otto, Ulf, published by Springer-Verlag GmbH in 2020. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation. Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors.

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This Palgrave Macmillan imprint is published by the registered company Springer-Verlag GmbH, DE, part of Springer Nature.

The registered company address is: Heidelberger Platz 3, 14197 Berlin, Germany

The series, founded in 2017, brings monographs, anthologies and editions on topics of theater studies and media culture. Other volumes in the series <http://www.springer.com/series/15733>

Preface

This is an AI translation of a book written from 2012 to 2017 as a post-doc project in German and consequently published in a revised version in 2020.¹ The automatic translation has undergone four rounds of human enhancement, by the publisher, by a teaching assistant, by a copy editor, and finally by the author – but an automatic translation it is. Style, in some places, lacks elegance, since sentences that were too verbose in the original did not get better in the translation. The subjunctive, widely used in the original often did not make it into the translation, leaving indirect quotes marked by context only. Turning the German passive into an active English voice, the AI sometimes brought ‘men’ back into the text where they were intentionally left out. Some translations from French are now one more translation away from the original. Most importantly, the historical terminology of theater technology got only a makeshift transferal, because the mapping is anything but trivial. Both terms and techniques only get standardized in the course of the twentieth century, so that an interlinear translation of the German word often seemed the least bad solution. Despite punctual refinement, it inevitably remains a compromise, built on limited resources to offer Anglophone access into the ideas and materials developed here. But future work that has these possibilities in mind and consciously adopts a writing style that has language models as readers in mind might enable increasingly bilingual research practice.

Thanks go out to Shubham Khare, the production editor at Springer; Emma Mulser, teaching assistant at LMU Munich; and Aiden Selsick, the copy editor. For the enriching cooperation I owe great thanks to my co-worker Miriam Höller as well as to the assistants who have accompanied this project over the years: Maike Toedter, Danai Gavranidou, and, above all, Anna Raisich, who, in my struggle with the monsters of university self-administration, has always had my back for research. This research, in turn, owes much to Jens Roselt, Matthias Warstat, and Koen Vermeir, whose expert opinions on the first draft first made it clear to me what this work is

¹Two chapters are missing from the German version: Chapter 6 on Communication and the Theatrophone and Chapter 10 on the Theatricality of Electricity in Science – both left out to delimit the extent of this volume and because the subject matters deserve a separate and extended elaboration. This leads to a slightly deferred mapping between original and translation: Chapters 1–5 are identical, the English Chaps. 6, 7, and 8 in this volume equate to 7, 8, and 9 of the German version, and the final Chap. 9 maps onto the German chapter 11.

actually about. But this work owes even more to my colleagues in the archives, whose company has always been a great pleasure to me: Jörg Schmalfuß of the Stiftung Deutsches Technikmuseum Berlin; Gerald Köhler, Hedwig Müller, Nora Probst, and Dorothea Volz of the Theaterwissenschaftliche Sammlung of the University of Cologne; Karin Winkelsesser of the Bühnentechnische Rundschau; Franziska Ritter of the Archiv für Theaterbau of the Technische Universität Berlin; Frank Wittendorfer of the Siemens Corporate Archives; and Susanne de Ponte, Birgit Pargner, and Claudia Blank of the Theatermuseum München. Great thanks are also due to the editors of this series, Peter W. Marx and Oliver Schütze of Metzler Verlag. In addition, great thanks are due to the many colleagues from theater studies who have accompanied this project in one way or another over the past years. And I am also indebted to the institution of the university, which took me in just when things were getting too tight for me in the theater in more ways than one. But by far the greatest thanks go to the Volkswagen Foundation and its wonderful staff, who made this project possible in the first place. It is thanks to many years of trust, support, and funding from the Foundation that this book and much that is connected with it has become possible in the first place. Thanks to this support, spaces for thought and service have opened up that are far from exhausted. I hope to live up to the obligations that this opportunity has created.

München, Germany

Ulf Otto

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Introduction

In Theater Studies, there is a lot of talk about energies and only rarely about cables. Although nothing has worked without them there for a long time. The installation of electricity since the 1880s brings the triumph of artistic direction, but the machinery masters and scenery painters who have been highly revered since the Baroque are banished to the technician's table, and technology in general is excluded from the sphere of art to which the theater now sees itself as belonging.

This observation feeds the suspicion that, since the end of the nineteenth century, theater has been based on an institutional displacement of its technicality. The assertion of theater, in distinction to the technical media, as an unmediated space of interaction of (inter)human corporeality henceforth conceals an apparatus that is essentially based on fossil energy and industrial technology. At the same time, however, it is precisely this technology that not only helps to dispose of the dusty backdrops and to metaphorically define the theater but also to allow a new idea of the human to appear in the right light in its naturalness stripped of outdated conventions.

If one follows the trail of this electric light, whose historical significance for the art of theater has been emphasized in research in some places but never seriously investigated, one is quickly disappointed at first: the great break, the flipping of the avant-garde switch that let the light of modernity shine, never took place in this way. Instead, the retrospective attributions conceal a long and ramified development that turns out to be a colorful jumble of technical, aesthetic, and social things, characterized by forgotten technologies, contradictory interests, and competing models. Neither does the history of the electrification of the theater tell of daring directorial subjects who set out for unknown shores of the aesthetic. Nor does it tell of aesthetic bubbles rising from the surface of a discursive or medial a priori. In general, light conditions play only a subordinate role in this history, which is rather shaped by the material culture of theater, its forms of organization and modes of production, or the history of knowledge of stage technology. More fundamentally, it is the technical interconnection of theater and society, that historical technicality of theater which is of interest with the assertion of supply systems and engineering sciences, and which needs to be outlined, complementing a historiography of theater oriented towards cultural history.

The much-invoked modernity of theater, however, the double break with tradition and the popular at the end of the nineteenth century, appears from this perspective rather in dialectical continuity, namely as an exaggeration of an industrial

aesthetic that set out to overcome the mechanized world by technical means. It is part of a comprehensive theatrical culture of the second wave of industrialization, which works with electrical and chemical means on an aesthetic repair of the social and natural relations that have come apart at the seams through the release of energies and labor. With the laying of cables in the shafts of the old gas pipes, an aesthetic regime is also installed in the theater that allows the enjoyment of immaterial energies, because it successfully outsources the materiality of energy, combustion and heat, work and sweat from the centers of bourgeois culture. The remarkable thing about cutting the wick becoming unnecessary as the nineteenth century progresses is perhaps not so much the improved visibility of the stage as a new invisibility of the lamp cleaners. What are at stake are not questions of style, but rather those of the relationship to things.

But the places where such an aesthetics of electricity is first installed and staged are the electricity exhibitions in the last quarter of the nineteenth century, where the theater is reinvented as an attraction. And so this book on the electrification of European theater from 1880 to 1913 begins with the appearance of electricity on the theater at the 1891 Electrotechnical Exhibition in Frankfurt am Main.

Appearance of Electricity

On May 30, 1891, electricity appeared at the theater in Frankfurt am Main: as a “goddess of light” in the context of a “choreographic festival” that was to explain “the serious results of the new science and technology” like a “beautiful parable.”¹ It was at the end of the performance, in the course of the apotheosis (i.e., in the final tableau) of this “exhibition [...] of the very first rank” with a “large number of beautiful girls” and “much dainty ivory” (for which the viewer quoted here “would like to borrow a dozen eyes”) that this allegorical figure of light rises “out of the confusing chaos of colors filling the scene with a bouquet of sparkling incandescent lights in the hand” (see Fig. 1).²

The ballet pantomime that provided the setting for this performance was called *Pandora oder Götter = Funken*,³ its occasion being the *International Electrotechnical Exhibition at Frankfurt in 1891*. It was performed in the electrified exhibition theater named after “Victoria,” and was staged by the director and ensemble of the

¹Cf. *Frankfurter Zeitung*, 2nd morning paper, of 31 May 1891 (“Victoria-Theater,” presumably written by Emil Peschkau).

²Ibid.

³The libretto was written by director Wilhelm Hock; Fritz Krause was composer and first conductor; ballet master was Adrien Gredelue from the Chatelet Theater in Paris.

Fig. 1 Excerpt from the final scene of the ballet *Pandora*: “The homage before the victor Culture” (*Die Gartenlaube*, 1891)



theater of the same name in Berlin, which had been demolished shortly before.⁴ The play had been produced especially for the exhibition and varied some of the scenes of the revues in the repertoire in view of the given occasion, thus presenting, not least, a new, electrified theater.

Here, at the end of the nineteenth century, we encounter electricity as an eroticized allegory in the body of a dancer, surrounded by a multitude of electrified displays, at the center of a secular festival that was at once an industrial fair, an amusement park, and a vision of the future. And we meet her on the stage of (theater) art that is presented and reinvented as electric. Theater (art) is presented as something built on (electro)technology, and at the same time (electro)technology (i.e., the fluids, particles, or fields of electricity) emerges as something that uses (theater) art to appear. Art and technology meet in an embodiment that always already has body, race, class, and gender.

The “beautiful girls,” the “dainty ivory,” and the “bewildering chaos of colors,” of which the viewer quoted above rants, are in this respect by no means ornaments, are by no means incidental to the bouquet of incandescent lights and what makes it glow. It is not unimportant that electricity appears in an apotheosis of eroticized

⁴*The Victoria Theater* in Berlin, built by Rudolf Cerf as a joint stock company but with courtly support according to designs by Karl Ferdinand Langhans and plans by Eduard Titz as a winter and summer theater with a common stage, was the largest theater in Europe after La Scala in Milan during its existence from 1859 to 1891. After initial difficulties with a repertoire of farces and comedy based on the Royal City Theater, the house specialized in the 1860s in *féeries*, most of which were taken over from the Théâtre du Châtelet, the Édén-Théâtre, or the Théâtre de la Porte Saint-Martin in Paris. Trademarks are the spectacular effects such as train disasters, underwater worlds, earthquakes, landslides, ships, ice seas, shown from 1871 under Emil Hahn in plays by Jules Verne and Jacques Offenbach. But also the American guest performance of *Uncle Tom's Cabin* and the touring production of the *Ring der Nibelungen* are presented in the Victoria Theater. Emil Litaschy directed the theater from 1889 and produced mainly pantomimic mass ballets such as those by Luigi Manzetti. Cf. Gerhard Wahnrau: *Berlin. Stadt der Theater*. Berlin: Henschel 1957, pp. 451–457, 510–519; Eberhard Dellé: *Das Viktoria-Theater in Berlin (1859–1891)*, Diss. phil., FU Berlin 1954.

female bodies, luxurious colonial goods, and overwrought sensory stimuli, and it is not coincidental that it appears in the theater. For electricity is many things before 1914: a natural force at work in nature and studied by science, a magical force that connects mind and body, a physical force that sets things in motion like animals and machines, and a social force capable of transforming societies.⁵

This appearance, as marginal as it may seem, therefore leads directly into the aesthetic contexts of the late nineteenth century. It is explained by the context of (world) exhibitions, belief in progress and consumer culture, reports on the popularization of science at the end of the nineteenth century, the generation of acceptance for new technologies, and the enforcement of new sales models. It has already been discussed within the framework of historical science, the history of technology, and cultural anthropology.⁶

Mostly, however, the dance of electricity is understood as a representation of something else, as something that only stands for something that can “actually” be found elsewhere, be it in cables, discourses, or the organization; after all, electricity itself does not dance.

Or does it? At the very least, from the point of view of theater studies, we should ask about the performativity of this performance and, in other words, about the reality that is realized in this performance. We would observe a dance in the course of which a dancer puts on the mask of a god and, witnessed by the surrounding believers, a deity in the dancer’s body not only takes shape but also gains efficacy. In the middle of enlightened Europe, the self-declared center of the imperial project, in one of those places where technical superiority is exhibited in order to morally justify colonial violence, one of those rituals takes place that in the fantasies of this civilization can only have its place in a periphery marked as traditional.

The *apotheosis* of the ballet pantomime, the scenic final tableau, presents itself as an apotheosis in the literal sense, as an epiphany of electricity. In its theatrical evocation, electricity here acquires a sensual reality that is perhaps no less real than the little balls that whiz through the wires in popular textbooks and which, at the latest since Maxwell, have provided a similarly questionable image for electricity as the light-adorned female body.

In this respect, what a small subject like theater studies would have to contribute to such large topics would be a correction of the reduction of this performance to representation. The potential of theater historiography would not lie in filling the gaps of the epochs and paradigms administered by history and art studies, but rather in the *supplement*, i.e., an addition, which moves the offside, the secondary, and the inauthentic into the center for a tentative denaturalization. What if sign and matter were not so clearly separated as we usually assume, what if it were not so clear what is actually dancing there, and what if the electricity in the dancer’s body were no

⁵Cf. Graeme Gooday: *Domesticating Electricity. Technology, Uncertainty and Gender, 1880–1914*. London: Pickering & Chatto 2008, p. 4.

⁶Cf. most recently Stephanie Kleiner: *Staatsaktion im Wunderland. Oper und Festspiel als Medien politischer Repräsentation (1890–1930)*. Munich: Oldenbourg 2013, Chapter II.3.

less real than those beads whizzing through the pipes? How do currents, bodies, and words combine in this dance to form a structure that has both efficacy and reality?

Perhaps the luxury of theater history, which due to the ephemerality of the object has no works to administer, would be to take the spectacular kitsch seriously and, in emphasizing the performativity of the popular, to provoke a transversal perspective that turns against the ontological closure of discourse. And yet it dances, electricity.

Theatricality and Electricity

The question of the electrification of theater as a question about the interrelationships of art and technology, about what technology does to art and art does to technology (dancers with spotlights and spotlights with dancers), returns in the exhibition theater as a question about the theatricality of electricity, i.e., as a question about the *performances* of this technology and the significance they have for the theatrical culture of modernity. Does the appearance of electricity in exhibition theater (through a new connection between art and industry) also change what theater is?

The answers to this question are sought in this work, which follows the diverse traces that intersect in the appearance of electricity at the Frankfurt exhibition in 1891. Retrospectively, the chapters meander through a long and broad nineteenth century, crossing the boundaries between art, science, and social history, recapitulating states of research, reconstructing contexts that have so far only been touched upon in theater history, delving into individual archival records, and repeatedly bringing together things that have not previously belonged together. (And thus constantly running the risk of repeating what is assumed to be known elsewhere, or of suppressing what is considered indispensable elsewhere.) The chapters start out from Frankfurt in a star shape and often return to it.

Chapter 1, “*Incandescence*,” examines the theaters’ first electrical devices, their design, how they came about, and their patterns of justification. Chapter 2, “*Oxidation*,” places these technical prototypes in a longer line of development and discovers the fossil foundations of nineteenth-century spectacular theater. Chapter 3, “*Regulators*,” emphasizes the importance attached to techniques of control in the introduction of the new light and shows the social expectations of salvation with which they are associated. Chapter 4, “*Fabrication*,” outlines the entry of an engineering knowledge into the theater that conceives of the stage as a machine to be optimized. Chapter 5, “*Attractions*,” locates this industrial theater in the technical exhibition culture of the late nineteenth century. Chapter 6, “*Industrial Ballet*,” traces how technical progress becomes entertainment and acquires meaning in electric ballets and luminous jewels. Chapter 7, “*Luminous Bodies*,” looks at the practice of allegorical embodiment in the context of exoticism in vaudeville and philosophy. Chapter 8, “*Projection Arts*,” describes the techniques of serpentine dance and situates them within a history of effect light. Chapter 9, “*Aesthetics of Electricity*,” concludes the work, places the results in the context of the history of theater and technology, and offers a theoretical culmination.

Within the individual chapters, it is often prototypical theater scenes, not infrequently well-known ones, that are examined as electrified aesthetics: the illumination of the grail in Wagner's *Parsival*, the rotating birch forest in Reinhardt's *A Midsummer Night's Dream*, the rising sun in Meyerbeer's *Le prophète*, Peter Behren's festival program, Appia's aesthetics of light, Fortuny's dome horizons, or Loïe Fuller's variety dances, to name but a few. On the other hand, theater-theoretical concepts – "atmosphere," "energy," "attraction," "spectacle," "effect" – are discussed and given perspective in the course of the argumentation from a perspective informed by the history of technology. Finally, the individual chapters also address questions about fundamental theater-historical contexts: When did significant increases in brightness actually occur in the theater? What changes did lighting practices undergo with the introduction of electricity? What was the significance of the electrification of theaters for the major electricity companies?

What holds these excavations together, however, is not these individual aspects, nor is it the attempt to reduce an epoch to a (technical) concept, as the title of the work might suggest, but rather the clearly more modest effort to reconstruct fragmentary contexts that have long been hidden and, more importantly, the argumentative retraction of an ontological hygiene that is intent on the discursive separation between aesthetic and technical things. What is proposed is a (complementary) view of the theatrical thing as an assemblage that results from the interplay of quite different actors or practices in the borderland of the semiotic and the material. The hope, moreover, would be that by developing such a transversal perspective, we would also have contributed a few building blocks to a less anthropocentric concept of theater.

The leitmotiv thesis, however, that emerged from this theoretical access, that repeatedly resounds and points beyond the disciplinary issues of the work, concerns the theater of electricity in a figurative sense, namely as an aesthetic regime, a practice that regulates what can and cannot be perceived. Candles and gaslight not only glow, they burn and combust, their light and the work it does are visible, but above all tangible: as heat, soot, and sweat, the fossil natural relationship in the theater before electrification can be directly experienced. The light bulb that takes its place does not make it much brighter at first, but its vacuum eliminates the combustion, the theatrical world cools, and, more importantly, light can henceforth be focused and cast as a weightless glow that makes bodies shine and dissimulates the machinery that produces the incandescence. For, thanks to electric power transmission, from now on squares, shop windows, and stages shine while the machines wheeze in cellars and suburbs.⁷

The electrotechnical healing of the wounds torn by the first wave of industrialization takes place as aesthetic hygiene, separating art and technology in the theater and ensuring that the feeling for what it means to release fossil energies is lost. Only in the glow of electric light do candles acquire their romantic connotations, but this

⁷ Wolfgang Schivelbusch already points to this aesthetic connection in his cultural history of artificial lighting, see Wolfgang Schivelbusch: *Lichtblicke. Zur Geschichte der künstlichen Helligkeit im 19. Jahrhundert*. Munich et al.: Hanser 1983.

nostalgic meaning is only one side. The meaning of the candle in modernity only emerges from the practices in which the candle finds its place, from practices that are both material and semiotic: It is only in the combination of oxidation and nostalgia that candles make sense. Something similar applies, in reverse, to the theater. It is the interplay of modernity and incandescence that has produced sense and sensuality in the aesthetic apparatus of the theater since the 1880s.

Electrification of the Theater

Around 1900, however, this theater in Europe and its colonies was many things: a hegemonic discourse and a representative institution,⁸ a promising business model,⁹ a liberal public sphere,¹⁰ a popular venue for the powerful, and at the same time a place for negotiating and testing metropolitan lifeworlds.¹¹ It is still entirely a mechanical apparatus and already a technically upgraded factory, still the center of a bourgeois public sphere and already a mass medium, in short: a highly contradictory thing, suffering from a reform backlog for over a hundred years, slipping from one crisis into the next and already in the process of losing its contours and dissolving from the edges.

In 1883, electricity moves into this theater, when it is still unclear what electricity really is: outflow or remote effect, particle or wave, communications engineering or life force. Accumulators and generators, switchboards, and variable resistors take the place of pipes and taps in the backstage and understage, lobbies, and stalls and tiers. Unlike in other arts, where electrification appears as an object or comes through as a change in perception, the theater or rather the theaters have an electrifying effect in a figurative sense precisely because they are electrified in a literal sense. Electricity is not only reflected on stage but also installed and appears there quite pragmatically backstage in the form of electricians, and on a scale that is quite authoritative for the electrical industry to begin with. “There is hardly any field in which electricity celebrates greater triumphs and more directly exerts its magic upon us than that of stage lighting,” states¹² an electrical engineering brochure on

⁸ See, among others, Peter W. Marx: *Ein theatralisches Zeitalter. Bürgerliche Selbstinszenierungen um 1900*. Tübingen u. a.: Francke 2008.

⁹ See, among others, Tracy C. Davis: *The Economics of the British Stage. 1800–1914*. Cambridge et al.: Cambridge University Press 2000.

¹⁰ See, among others, Christopher Balme: *The Theatrical Public Sphere*. Cambridge et al.: Cambridge University Press 2014.

¹¹ See, among others, Tobias Becker: *Inszenierte Moderne. Populäres Theater in London und Berlin, 1880–1930*. Munich: De Gruyter 2014.

¹² Theodor Weil: *Die elektrische Bühnen- und Effektbeleuchtung. Ein Überblick über die Methoden und neuesten Apparate der elektrischen Bühnenbeleuchtung*. Vienna/Leipzig: A. Hartleben 1904, p. 1.

the subject. And indeed, in 1886 in Berlin, for example, it is still 24% of the electrical energy that is consumed by theaters.¹³

Closely connected with this entry of a new technology into an old institution, however, is a profound aesthetic change. For what was initially only intended to improve hygiene and safety helps with darkening, works towards the abolition of scenery, makes the stage appear as a space instead of an image, and makes naturalism as well as avant-garde technically possible in the first place. Electrification is therefore often placed in the context of the flourishing visual culture¹⁴ and the closely related exhibition practices¹⁵ of the nineteenth century. But even more decisive are the changes in the internal work processes, the connections with society, and the dispositives of perception. It is in techniques of control, building regulations, and patent applications that a new theater is constituted, one that gives absolute power to the director and represents an entirely new machine that, while still using the vocabulary of the Baroque and invoking the bourgeois reforms of the eighteenth century, is already used, thought about, and produced in a very different way.

From this perspective, the modernity of theater presents itself in this respect as the formation and enforcement of a *transversal structure*, i.e., as a historically specific combination of technical, social, and aesthetic practices and the actors that emerge from them, which differs greatly from previous structures of the same name and represents only one of many possible ones. How does it come about that theater is electrified? What is up for negotiation, what justifications are used, which possibilities are tried out and which are rejected, and how does a new standard ultimately prevail? These questions come to the fore with a focus on technology.

If one follows the traces of a world, where electricity is not yet self-evident, one encounters a theater that was something else than we imagine it to be and a contingent historical process, competing electro-aesthetics and finally a prevailing standard that becomes our theater.

The aim is not to grasp an aesthetic paradigm shift that claims a comprehensive break in art and attributes it to tectonic shifts in a (perceptive, discursive, or medial) underground, but rather a development *from prototype to norm*, i.e., a change marked by contingency and competition that must first be reconstructed in its ambiguity. In detail, the interactions of aesthetic concepts and technical possibilities will be questioned and the manifold entanglements of theater with society will be traced in order to outline how, over a period of approximately 50 years, from the 1880s to the 1920s, theater electrified itself and, in the end, a technically and aesthetically

¹³Cf. Thomas P. Hughes: *Networks of Power. Electrification in Western Society, 1880–1930*. Baltimore et al.: Johns Hopkins University Press 1983, p. 73.

¹⁴Cf. Vanessa R. Schwartz/J. M. Przyblyski (eds.): *The Nineteenth-Century Visual Culture Reader*, New York/London: Routledge 2004; with regard to the theatre, cf. Nic Leonhardt: *Piktoral-Dramaturgie. Visuelle Kultur und Theater im 19. Jahrhundert (1869–1899)*. Bielefeld: transcript 2007.

¹⁵Cf. Tony Bennett: *The Birth of the Museum. History, Theory, Politics*. London/New York: Routledge 1995.

quite stable configuration emerged that determined how theater was made across genres and styles.

In so far as the work is concerned with a hitherto overlooked connection, there is a certain lack of a clear state of research to which one could link up: it is true that the historiography of the theater of the nineteenth century has in recent years taken on a decidedly cultural studies profile,¹⁶ and since the 1980s there has been a comprehensive interdisciplinary state of research on the history of electricity.¹⁷ It is also possible to draw on reliable and comprehensive, albeit positivist and teleological, survey accounts of the history of stage technology¹⁸ and stage lighting.¹⁹ Yet, beyond the history of theater, the electrification of theater itself is never more than a footnote to the development of technology, science and society. In the context of theater historiography, in turn, it has so far remained assertion.²⁰ The importance of electrification for the theater is emphasized, sometimes emphatically, but without even a rudimentary explanation of how exactly one should imagine this influence of technology on art. If one encounters the facts in the overviews, and it is mostly overviews that take up the subject at all, then the feeling of an indeterminate omnipotence sets in when reading. Everything seems to owe itself to electricity, naturalism, as well as expressionism, without even a rudimentary explanation of how this connection is to be imagined.

¹⁶Cf. Tracy C. Davis/C. Balme: *A Cultural History of Theatre*, 6 vols. London et al.: Bloomsbury 2017.

¹⁷Cf. the works oriented towards the history of science by: Jörg Meya/H. O. Sibum: *Das fünfte Element. Wirkungen und Deutungen der Elektrizität*, Reinbek b. Hamburg: Rowohlt 1987 and John L. Heilbron: *Electricity in the 17th and 18th Centuries. A Study of Modern Physics*, Berkely et al.: University of California Press 1979, and the more cultural-historical survey account by Roman Sandgruber: *Strom der Zeit. Das Jahrhundert der Elektrizität*, Linz: Veritas 1992. For the present work, special mention should be made of the anthology *Elektrizität in der Geistesgeschichte* edited by Klaus Plitzner (Bassum: GNT-Verlag 1998) with contributions by Günter Luxbacher, Jürgen Steen, Christoph Asendorf, Beate Binder, and David Gugerli, as well as the more social-scientific argumentation in Jochim Varchmin/J. Radkau: *Kraft, Energie und Arbeit. Energie und Gesellschaft im Wandel der Zeiten*, Munich: Dt. Museum 1979. Also of particular interest for the aesthetic contexts in the late nineteenth century are the more recent works of Bruce J. Hunt, including *Pursuing Power and Light. Technology and Physics from James Watt to Albert Einstein*. For a concise overview of research at the intersection of the cultural, technological, and scientific history of electricity, see Koen Vermeir, "Electricity and Imagination: Post-romantic Electrified Experience and the Gendered Body. An Introduction," in *Centaurus* 57/3 (2015), pp. 131–155.

¹⁸See, for example, Oscar Gross Brockett: *Making the Scene. A History of Stage Design and Technology in Europe and the United States*, San Antonio (Tex.): Tobin Theatre Arts Fund 2010; George C. Izenour: *Theater Technology*, New York et al.: McGraw-Hill 1988; or Christopher Baugh: *Theatre, Performance and Technology. The Development of Scenography in the Twentieth Century*, New York et al.: Palgrave Macmillan 2005.

¹⁹Cf. Carl-Friedrich Baumann: *Licht im Theater. Von der Argand-Lampe bis zum Glühlampenscheinwerfer* (= Die Schaubühne 72). Stuttgart: Steiner-Verl. Wiesbaden 1988; Gösta M. Bergman: *Lighting in the Theatre*, Stockholm: Almqvist & Wiksell International 1977; Frederick Penzel: *Theatre Lighting Before Electricity*, Middletown (Conn.): Wesleyan University Press 1978.

²⁰The most important preliminary work in theater historiography might be Terence Rees: *Theatre Lighting in the Age of Gas*, London: Society for Theatre Research 1978, because it consistently foregrounds technological conditions.

And since this unsatisfactory assertion conceals the very desideratum that this work addresses, it will be briefly illustrated here with two examples. As John Donohue's history of the British theater puts it:

The introduction of all-electrified theatres in the 1880s, coupled with the use of the rheostat, or dimmer, *made possible* the efficient darkening of the auditorium, with *profound long-term effects*. The application of these technologies to both stage lighting and auditorium illumination *set the conditions for a new way of* representing the world on the stage and simultaneously a *new means of* enabling the audience to relate to it. The result was a *new emphasis* on theatre art as art now became possible. The play of light and shadow was greatly enhanced, even as it had been three generations before thorough the invention of gas lighting, augmented by limelight.²¹

The theoretical difficulties in grasping the connections between art and technology clearly emerge in these formulations. Technology "makes possible," "sets conditions," and "has effects." From its "application" emerges "something new," new forms of aesthetics of the reception of discourse. This is not only very vague; it also shirks causality: how and why does the actual emerge from the possible, and who and what was responsible for it? How can the two chronologies, the enumeration of aesthetic events, and the enumeration of technical events be meaningfully connected without sweepingly declaring one to be the effect or tool of the other?

Interestingly, this difficulty is not only encountered in an art-historically oriented history of theater; it is quite similar in approaches oriented towards cultural history, as can be seen, for example, in Ute Daniel's thoroughly groundbreaking cultural history of the court theater. There it says:

It was only since the electrification of the stages, which began in the 1880s, that the *condition of the possibility* of a more developed art of acting was given, which replaced the previous thick application of make-up – intended to compensate for the optical distortions caused by the effects of light and at the same time to give expression to the standardized character of the role – with a differentiated use of facial expression, and after quite generally left behind the conventionalized and standardized style of acting.²²

Ute Daniel's study stands out positively precisely because it not only takes a look at the social entanglement of the (court) theater but also highlights precisely the different interests of the actors (courtiers, stage managers, performers, and spectators) in the theatrical matter, but here the technique falls back again on the Kantian formula of the condition of possibility.

What is missing in all the literature on the subject is, in this respect, the question of causality: how has technology affected art and why? Would there have been other possibilities of this impact and why did they not materialize? Who and what was involved in turning possibilities into facts? How did the installation of the rheostat lead to the darkening of the auditorium? What came first, the need or the

²¹Joseph W. Donohue: "The theatre from 1800 to 1895", in *The Cambridge History of British Theatre*, ed. by P. Thomson et al. Cambridge et al.: Cambridge University Press 2004, p. 270, author's emphasis.

²²Daniel, op. cit., 1995, p. 370, author's emphasis.

technology, and if one came first, was it still the same when the other was added? Above all, how does something new emerge from the combination of technology and aesthetics, and what does technology bring to this newness? – Nothing can answer these questions less than the recurrent obsessive search for the one first time with which everything is said to have begun. Such a reference to an all too questionable beginning and origin, which is still sometimes common today, short-circuits the complex historical processes and problematic situations and usually only perpetuates, consciously or unconsciously, national gestures of triumph.

In this respect, the difficulty in coming to grips with the interrelationships in which this work is interested lies less in a lack of knowledge than in a theoretical void.²³ The interactions between art and technology always seem difficult to grasp because in theater studies there is mostly no concept of technology that seriously and consistently goes beyond that of the tool.²⁴

The theoretical model that has long bridged this gap in the humanities is the introduction of perception as a mediator between art and technology that is going back to Valery and Benjamin. It has a long tradition in literary studies, in particular, and reverberates in a media studies theory that has specialized in the “materialities of communication” that tend to be experienced as fateful: McLuhan’s “electric age,” for example, is characterized by those titular “extensions of man” that led to an upheaval of the conditions of communication and, through them, to new patterns of social association and mental constitution whose trigger is nothing other than a “change of scale.”²⁵ Thus, for McLuhan, it is precisely the light bulb, which through its pure “presence,” i.e., without any message, creates a new “environment,” namely nocturnal space, that serves to illustrate his concept of media. This is, of course, a theoretical sleight of hand, since unlike the telegraph, the light bulb does not actually transmit any messages, and it clearly highlights the blind spots of the approach: namely, that no significance is attached to the embedding of this technology in economic as well as political contexts, to the practices with which light is used, and to the differences in the positions from which light is encountered. Even if Benjamin, unlike McLuhan, who was influenced by the economic historian Christopher Innes,

²³The work of Baumann (Baumann, *Licht im Theater*, op. cit., 1988), for example, ultimately represents an excellent collection of sources, but it lacks methodological or even clearly organizational access to the knowledge presented.

²⁴Exceptions are Helmar Schramm’s projects oriented towards historical epistemology (e.g., *Bühnen des Wissens. Interferenzen zwischen Wissenschaft und Kunst*. Berlin: Dahlem University Press 2003; *Instrumente in Kunst und Wissenschaft. Zur Architektonik kultureller Grenzen im 17. Jahrhundert*. Berlin/Boston: De Gruyter 2006; *Spektakuläre Experimente. Praktiken der Evidenzproduktion im 17. Jahrhundert*. Berlin/Boston: De Gruyter 2006), and especially the works by Viktoria Tkaczyk (*Himmels-Falten. Zur Theatralität des Fliegens in der frühen Neuzeit*. Munich et al.: Fink 2011) and Jan Lazardzig (*Theatermaschine und Festungsbau. Paradoxien der Wissensproduktion im 17. Jahrhundert*. Berlin: Akademie-Verlag 2007 and most recently edited together with H. Rößler: *Technologies of Theatre. Joseph Furtenbach and the Transfer of Mechanical Knowledge in Early Modern Theatre Cultures*. Frankfurt a. M.: Vittorio Klostermann 2016).

²⁵Marshall McLuhan: *Understanding Media. The Extensions of Man*. New York et al.: McGraw-Hill 1964, p. 8.

remains more focused on questions of perception, his thinking, trained on Marx and Hegel, remains more complex, despite sweeping tendencies.

A project that is decisive for this work, which takes up Hegel, Marx, and Benjamin and expands the question of modern perception with regard to the relationship to things, can be found in the publications of Christoph Asendorf, which deal with these questions in the interconnectedness of art and literature, the history of everyday life, but also the history of science.²⁶ Here, the diagnosis of the abstraction of work and the world that characterizes industrial capitalism, which goes back to Marx, is also found as a central idea, which this work takes up in variation once again.²⁷

The works of David Gugerli and Beate Binder on the history of technology and cultural anthropology, respectively, argue differently, focusing on the implementation of electricity in the field of tension between symbolic occupation and technical structure and describing it in detail in micro-historical case studies.²⁸ With regard to the USA, the works of David Nye in particular provide a comprehensive and material-rich overview of the cultural effects of electrification.²⁹ In addition, those works in the history of science that, following Simon Schaffer, emphasize the theatricality of natural philosophical experiments with electricity, such as Oliver Hochadel's study of the early modern³⁰ period and Ivan Rhys Morus's work on the continuing spectacularity of the nineteenth century, should be emphasized as points of contact.³¹ In literary studies, on the other hand, it is the work of Michael Gamper, Rupert Gaderer, and Benjamin Specht that provided important impulses with regard to electricity in German Romanticism,³² as well as the work of Paul Gilmore related

²⁶ Christoph Asendorf: *Batterien der Lebenskraft. Zur Geschichte der Dinge und ihrer Wahrnehmung im 19. Jahrhundert*. Gießen: Anabas-Verl. 1984; Christoph Asendorf: *Ströme und Strahlen. Das langsame Verschwinden der Materie um 1900*. Giessen: Anabas-Verl. 1989.

²⁷ Cf. also in this context: Thomas Brandstetter/C. Windgätter: *Zeichender Kraft. Wissensformationen 1800–1900*. Berlin: Kadmos 2008 as well as Anson Rabinbach: *The Human Motor. Energy, Fatigue, and the Origins of Modernity*. Berkeley et al.: University of California Press 1992.

²⁸ David Gugerli: *Allmächtige Zauberin unserer Zeit. Zur Geschichte der elektrischen Energie in der Schweiz*. Zurich: Chronos 1994; Beate Binder: *Elektrifizierung als Vision. Zur Symbolgeschichte einer Technik im Alltag*. Tübingen: Tübingen Association for Folklore 1999.

²⁹ David Nye: *Electrifying America. Social Meanings of a New Technology, 1880–1940*. Cambridge, Mass.: MIT Press 1990.

³⁰ Oliver Hochadel: *Öffentliche Wissenschaft. Elektrizität in der deutschen Aufklärung*. Göttingen: Wallstein 2003.

³¹ Iwan Rhys Morus: *Shocking Bodies. Life, Death & Electricity in Victorian England*, Stroud: History Press 2011; Iwan Rhys Morus: *Frankenstein's Children. Electricity, Exhibition and Experiment in Early-Nineteenth-Century London*. Princeton (N.J.): Princeton University Press 1998.

³² Michael Gamper: *Elektropoetologie. Fiktionen der Elektrizität 1740–1870*. Göttingen: Wallstein 2009; Benjamin Specht: *Physik als Kunst. Die Poetisierung der Elektrizität um 1800*. Berlin et al.: De Gruyter 2010; Rupert Gaderer: *Poetik der Technologie. Elektrizität und Optik bei E. T. A. Hoffmann*. Feiburg i. Br.: Rombach 2009.

to the American context.³³ As far as medial developments are concerned, in addition to the broad state of research on the political consequences of telegraphy,³⁴ reference should be made above all to Carolyn Marvin's groundbreaking investigation of the early figures of thought of telephony and electric light.³⁵ Andreas Killen's work on electrotherapy at the end of the nineteenth century is decisive for the relationship between technology, modernity, and nervousness.³⁶

For the theoretical development of this work, however, Thomas Hughes' study of the history of technology at the beginnings of electrification was certainly the most important influence.³⁷ To put it simply, Hughes shows that electrification did not begin with Edison's invention of the light bulb, but rather with the controversial establishment of a system for the production, distribution, and consumption, and thus the sale, of light, and that very different actors were involved in this establishment.

From this perspective, not only can the place of theater in the process of electrification be better understood; it also opens up a more far-reaching theoretical perspective. SCOT (Social Construction of Technology), for which Hughes stands, and even more so the STS (Science, Technology and Society) and ANT (Actor Network Theory) that follow on from it, with their praxeological and ethnographically influenced perspectives, and turned philosophically, the *New Materialism*, became increasingly important theoretical reference points in the course of the investigation. If this project of *science studies*, which was strongly popularized by Bruno Latour, ultimately amounts to thinking, contrary to the insurmountable separation of subject and object in Descartes' epistemology, of a historicity of the real as a *faitiche* that has become real, then in the context of this work this amounted precisely the other way round, to no longer seeking historicity only on the part of theater and culture and contrasting these with a supposedly hard reality of electricity. Rather, it had to be assumed that the interactions were at least potentially two-sided, and that what was at stake in the electrification of theater was not only what theater was but rather what electricity would be.

More crucially, a new way of thinking about theater emerged from the continuation of these considerations. In diametrical inversion of the problem description of science studies (How can something that is undoubtedly real, an atom for example, at the same time be something that has come into being and thus has history?), the task was to understand how something could be created in theater that was real. How could we get beyond the juxtaposition of cultural representations and their

³³ Paul Gilmore: *Aesthetic Materialism. Electricity and American Romanticism*, Redwood City: Stanford University Press 2009.

³⁴ Cf. inter alia M. Norton Wise/C. Smith: *Energy and Empire. A Biographical Study of Lord Kelvin*. Cambridge et al.: Cambridge University Press 1989.

³⁵ Carolyn Marvin: *When Old Technologies Were New. Thinking About Electric Communication in the Late Nineteenth Century*. Cary: Oxford University Press (USA) 1988.

³⁶ Andreas Killen: *Berlin Electropolis, Shock, Nerves, and German Modernity*. Berkeley et al.: University of California Press 2006.

³⁷ Hughes, op. cit., 1983.

social context and understand those manifold connections of technical, social, and theoretical things in the theater as articulations of a reality that was more than the singular acts of a performativity conceived with Austin or Butler? In other words, how could the sociality of the theater be brought into view without reducing art to the social again?

With Karen Barad,³⁸ who on the one hand stands in the tradition of (natural) science studies via Donna Haraway but is on the other hand with reference to Judith Butler (and Michel Foucault) also tied in with the formation of theory in the humanities or cultural studies, this question of the articulation of theater could be brought to the concept of a posthuman performativity: What is realized in the theater and what is involved in these realizations cannot be reduced to a sociality that is itself limited to the human, to gestural signs, and bodily experience. Rather, it also includes things, or, rather, materialities and their technicality. Theater would thus have to be understood as a transversal structure whose articulatory capacity gains strength precisely because so many ontologically differentiated lines pass through it and so many different actors, or rather practices, are involved in its coming into being. It is precisely because each performance points beyond the performance, because the here and now never withdraws into itself, but rather establishes connections between different things with very different stability, that it has meaning.

These considerations, however, are the result, not the basis of this work. Theory stands at its end, not at its beginning, and has emerged from the engagement with the historical material. Much, but not all, of what has emerged in the course of research and work on the sources amounts to such theoretical or rather theory-critical considerations. It is not theory that serves as the basis for a methodologically secured approach in the context of this work; rather, it is the target of a critique that is fed by the work on the historical material – this approach also follows Latour's ethnographically inspired model to a certain extent.³⁹ The examination of the history of theater culture, inspired by the history of technology, is thus ultimately also an attempt to conceptualize theater in a different way, contrary to its anthropocentric foundations, in terms of its social entanglement.

The procedure that emerged, which can hardly be fitted to the rigor of a method neatly separated from the object, would perhaps be best described as an *archaeological* one.⁴⁰ It begins with fragmentary findings, which were found rather by chance in the collections of city and state archives, theater, and technical museums,

³⁸ Karen Barad: *Meeting the Universe Halfway. Quantum Physics and the Entanglement of Matter and Meaning*. Durham et al.: Duke University Press 2007.

³⁹ Bruno Latour: *Die Hoffnung der Pandora. Untersuchungen zur Wirklichkeit der Wissenschaft*. Frankfurt a. M.: Suhrkamp 2000.

⁴⁰ A theater archeology strongly oriented towards Foucault and Kittler, which has, however, found little connection, was already presented by Hans-Christian von Hermann in 2005: *Das Archiv der Bühne. Eine Archäologie des Theaters und seiner Wissenschaft*. Munich: Fink. Only recently has the relationship of media archeology to theater been taken up in the Anglophone context: cf. Nele Wynants (ed.): *Media Archaeology and Intermedial Performance. Deep Time of the Theatre*, Cham: Palgrave Macmillan 2019 – To work out the differences to the present approach would lead too far here.

but above all in stage-technical manuals, electrotechnical journals, and company brochures: a few lighting files of a court theater, the advertising brochure of an electrical company, a few half-sentences in a review, an aside in an actor's biography, a convoluted set of drawings by a stage technician, or a surviving apparatus that could no longer be put into operation. The initial observation, however, was that only limited sense could be made of these findings within the given framework of theater studies. Unlike the director's book or the stage model, which can be easily read with disciplinary glasses, the technical drawing of a carbon arc spotlight, for example, posed more questions than it provided answers. Quite obviously, such technical things no longer had a place in the discourses, i.e., the systems of order and categories, with which meaning was negotiated out of and in the theater. From the point of view of theater studies, this device belonged to an alien culture, which seemed alien not only because it had passed away, but rather because it seemed to belong to a completely different subject area. Just as archaeologists might stand in the ruins of a culture whose language has been lost, so this work faced the light bulbs, stage regulators, and cloud apparatuses with wondering curiosity, pondering what might have been done with them, what significance contemporaries might have attached to these apparatuses, and what kind of community these devices might have held together.

The challenge posed by these findings was thus first and foremost to restore those transversal connections that had been buried or rather faded out because they had been theoretically removed despite their practical proximity. Chapter 1, for example, deals specifically with the justification of new lighting techniques through a theatrical hygiene aimed at aesthetic purification. Chapter 2 emphasizes the connection between the release of fossil energy and the spectacular aesthetics of the nineteenth century. In Chap. 3, it is the advent of new control technologies whose connection to the expectations of salvation of the theatrical avant-garde is discussed. The development of atmosphere into the central category of theatrical aesthetics with the entry of industrial production logic into the theaters is central in Chap. 4. The veneration of industrial energies in the motor attractions of the amusement park is treated in Chap. 5. The juxtaposition of illuminants and dancers in equipment ballets and futurist pamphlets is pursued in Chap. 6. Chapter 7 examines the figuration of technology at the intersection of allegory, vaudeville theater, and body philosophy. Projection as a cultural technique, which is beginning to play a crucial role in film and theater as well as in psychoanalysis, is the focus of Chap. 8.

In the process, an argument develops that is interested in the prototypical, in which connections can be exemplified. It is the forest on the turntable, for example, that plays a central role, and not Max Reinhardt or *A Midsummer Night's Dream*, and it does not appear here because it was important for the history of theater, culture, or the turntable, but because in the connection between birch trunks, electric motors, and artistic moods a connection can be described that has aesthetic relevance.

The initial findings thus led, for the purpose of establishing the aforementioned connections, to a number of excavations that, starting from the appearance of electricity in Frankfurt in 1891, led into quite different fields: the lighting conditions in the theater, the division of light by parallel circuits, the technology of early Bayreuth

props and the beginnings of regulator technology, Maxwell's electromagnetic field equations and the figure of the vaudeville dancer, spectacle ballets and early modern science theater, illuminated fountains and optical spectacles, etc. And yet these excavations return again and again to the theater and, more concretely, to Frankfurt in 1891 and to the appearance of electricity described at the beginning. Rather than a chronologically or thematically organized structure, it is, as already described above, more of a star-shaped organization in which material and argument are arranged. Thus, the whole of this work might also be understood as an attempt to reconstruct that transversal constellation from which this one appearance of electricity emerges. The aim is not a reappraisal of hitherto unexplored themes or materials but rather, as has already been noted several times, a renewed thinking together of what has long remained theoretically separate, namely the intimate connections between technology and aesthetics and, closely related to this, a concept of theater that incorporates the industrial nature of the matter.

The period, however, to which the archaeological perspective outlined here is directed, is the time around 1900, from 1880 to 1913 to be precise, which is expressed in the theater and in the arts as aesthetic modernity. Modernity here means, first of all, simply a turning point in time and, beyond that, an understanding of time that positions itself against the idea of tradition in general and brings together the belief in a new time, determined entirely by the capacity for change and taken up by the new, with the experience of discontinuity in urban space.⁴¹ In contrast to the fashionable, which in its transience is always already in the process of becoming history, modernity wants to be classical itself in its appropriation of temporal conditions. The avant-garde celebrates a present that finds only fetters in the past instead of roots because it draws its justification from the terrain of the future to be conquered. Accordingly, tradition and craftsmanship are no longer suitable as models and modern art in contrast is defined through essentialist specifics in reflection of a timeless materiality. This turn from external determination to self-description, in turn, appears as the culmination of an older modernity, whose beginning is dated with the distinction between the ethics, aesthetics, and science in the European Renaissance and can be described in terms of systems theory as the specialization of social subsystems.⁴²

In this respect, theater became modern around 1900 precisely where it became art, i.e., where it gained conceptual and institutional autonomy; and it became art where it became modern, i.e., where, in demarcation from its own past and the other arts, it invoked an identity (as a *Gesamtkunstwerk*) and an essence, namely ephemerality.⁴³ But insofar as the transitory, the elusive, the ephemeral is not only what makes theater around 1900 theater but also what characterizes modernity in general, theater not infrequently stands in for modern art par excellence.

⁴¹ Cf. Hans Robert Jaub: *Studien zum Epochenwandel der ästhetischen Moderne*. Frankfurt a. M.: Suhrkamp 1989.

⁴² Jürgen Habermas: "Die Moderne – Ein unvollendetes Projekt", in: *DIE ZEIT* from Sep. 19, 1980.

⁴³ Cf. Sandra Umathum: "Avantgarde", in: *Lexikon Theatertheorie*, ed. by E. Fischer-Lichte et al. Stuttgart/Weimar: Metzler 2005, pp. 26–30.

The price for this modern autonomy, however, for the independence of art, is the theoretical detachment of theater from social, political, and economic contexts and the resulting longing for a re-unification of art, now seemingly alien to life, with life, which has persisted throughout all postmodern discussions. But instead of once again discussing the pros and cons of this autonomy, defending its independence or demanding its abolition, it currently seems more promising to ask, with Bruno Latour, what if theater had never been modern.⁴⁴ What if theater had never really turned in on itself, freed itself from dependencies, and asserted its artistic autonomy? What if what appears as a specific art form at the end of the nineteenth century had not existed before, had to be produced in the first place, and if this production means precisely the construction of a multiplicity of connections? What, then, if autonomy emerged precisely from a reinforcement of dependencies, and if the separation of art and life that the avant-gardes wanted to tear down had never existed in this way? The question would then perhaps have to be less what constitutes the modernity of theater and more how this modernity of theater came about: who and what was involved in its production and what connections sustain it.

The answer proposed here is to be found in the technicality of the institution. A history is sketched in which the modernity of the theater ultimately owes itself to a technological incorporation and comes in the form of competing prototypes. Behind the triumphant gesture of the moderns, who celebrate emancipation from the established in the name of forward-looking progress, we find a technical relationship⁴⁵ to which an aesthetic regime⁴⁶ belongs. This aesthetic regime buys reconciliation with a world that has come apart at the seams in the course of industrialization through the dissimulation of work. Neither the loss of language of the literati nor the implementation of physiological recording systems justifies the atmospheric theater machines of modernity, but rather a new technical infrastructure that abstracts from labor as only money did from value before.

⁴⁴ Cf. Bruno Latour: *Wir sind nie modern gewesen. Versuch einer symmetrischen Anthropologie*. Frankfurt a. M.: Suhrkamp 2008.

⁴⁵ Cf. Hans Blumenberg: *Geistesgeschichte der Technik*. Frankfurt a. M.: Suhrkamp 2009.

⁴⁶ Cf. Jacques Rancière: *Le Partage du sensible. Esthétique et politique*. Paris: La Fabrique 2000, Engl: *Die Aufteilung des Sinnlichen. Die Politik der Kunst und ihre Paradoxien*. Berlin: b_books 2006.



Incandescence

1

Electrical Installation and Hygiene Discourse

From 1883 to 1913, even before spotlights began to shape theatrical aesthetics in the 1920s, the first electrical systems were installed in theaters in the metropolises of Europe and its colonies under the auspices of the nascent electrical corporations. The *incandescence*¹ of the incandescent light, which was initially only intended to replace the gas light, was accompanied by far-reaching sensory and discursive shifts, which this chapter examines on the basis of selected prototypes and on the basis of trade journals and company brochures. Section 1.1 “Installations” asks what was new about the installation of electrified theater in the 1891 Frankfurt Exhibition Theater and in the electric installations before that, examines the apparatuses and positions of stage lighting, and emphasizes the aesthetic continuities that accompanied technical change. Following this, Sect. 1.2 “Legitimations” outlines the retrospective motivations of stage managers and directors and contrasts them with the technicians who realized the electrical installations. Here, a rather diffuse set of interests emerges, in which the belief in progress, the need for representation, and the advertising strategies of court theater directors and the electrical industry form an unlikely alliance. This is followed by Sect. 1.3 “Sensualities,” which deals with the aesthetic effects of electrification and shows, on the basis of technical data and contemporary sources, that at least in the years 1870–1913 the increase in brightness often associated with electric light failed to materialize. And Sect. 1.4 “Purifications” uses brochures from the electrical industry and advertisements from London’s Savoy Theater to show that the central topos with which the electrification of theaters was promoted was hygiene, i.e. the desire for a theater that was purified in terms of health, but also aesthetically and socially, and that this notion coincided with a civilization of the theater (with all its colonial connotations). Finally, Sect. 1.5 “Combustions” shows that these

¹The light bulb first becomes known in English as *incandescent light*. Incandescence is “the state of a body when it is in the process of emitting white light” (Otto Lueger: *Lexikon der gesamten Technik und ihrer Hilfswissenschaften*. Vol. 5. Stuttgart/Leipzig 1907, pp. 196–197).

purification efforts go hand in hand with a safety-related argumentation and are to be understood not least as a reaction to a theater of the industrial age that is powered by fossil energies and, like boilers and railroads, buys the release of hitherto undreamed-of forces with the threat of catastrophe.

1.1 Installations: Technical Apparatus and Aesthetic Continuities (Frankfurt 1891)

The Victoria Theater, where electricity made its appearance in 1891, was designed by “Professor Sommer and Professor Luthmer”² and built by the company Ph. Holzmann & Co. It was a wooden imitation of a monumental Renaissance stone building, consisting of two basilical halls, one for the auditorium, the other for the stage house.³ The front entrance had a kind of triumphal arch and a large painting by the Frankfurt painter Norbert Schrödl on the portal arch, the content of which is said to have been related to the play that was shown. In front of the building there were two pedestals for statues, but due to financial difficulties they were left empty. Instead, the facade was littered with a myriad of announcement boards and advertising notices, and at the rear, the protruding support beams revealed the provisional nature of the building. The theater, like the other exhibition buildings, was theatrical in the nineteenth century sense: what was intended to look Venetian, Gothic, Egyptian, or in this case Renaissance on the outside, turned out to be a modern support structure on the inside (cf. Fig. 1.1).

The interior of the theater offered 688 seats in 20 rows in a slightly rising stalls and was one of the few buildings at the exhibition that had any interior decoration at all. Between the stage and the auditorium was a sunken orchestra pit in the style of the Bayreuth Festspielhaus. The stage itself, with its seven aisles, 15 m width and depth, and 13 m high lacing floor, copied those of the Frankfurt Schauspielhaus in order to be able to use its decorations more easily. It was equipped with three hydraulically operated sinks made by L. A. Riedinger & Co., 28 proscenium hoists, a large horizontal machine for changing decorations, a flying machine, ventilators and a pumping station for waterworks. The electrotechnical installation came from Schuckert & Co. of Nuremberg (represented at the exhibition in the main machine hall Pl. No. 195): “A 30-horse twin motor, 150 revolutions per minute, directly coupled to a flat ring dynamo machine (type JL 9) for theatrical lighting”, which was used to charge an “accumulator battery consisting of 60 elements (type XVIII), system Tudor”⁴ (company Müller & Einbeck in Hagen) and was driven by a gas

² *Electricitaet. Offizielle Zeitung der Internationalen Elektrotechnischen Ausstellung Frankfurt am Main 1891*, ed. with the cooperation of the exhibition board and outstanding technical lights. Frankfurt a. M.: Haasenstein & Vogler 1891, No. 6 of May 23, 1891, p. 144.

³ Cf. on the exhibition (unless otherwise stated), the comprehensive account in: “*Eine neue Zeit..!*” *Die Internationale Elektrotechnische Ausstellung*, exhibition catalogue, ed. by Jürgen Steen. Frankfurt a. M.: Historisches Museum 1991, with reference to the exhibition theater: pp. 232–235.

⁴ *Electricitaet. Offizielle Zeitung*, op. cit., p. 144.



Fig. 1.1 Exhibition Theater Frankfurt a. M. 1891, contemporary photograph (Historical Archive of Messe Frankfurt GmbH)

engine, “built and issued by the gas engine factory Deutz near Cologne (place 186)”.⁵ The battery supplied 350 A at a voltage of 110 V and fed 300 white, red and green incandescent lamps of 16 cd luminous intensity for 5 h, which came from The Zürich Incandescence Lamp Co. (Pl. No. 429).⁶ These bulbs were controlled by a “unifying unit” located next to the prompter box and resembling “the stop-work of an organ.” In addition, there were some “projection arc lamps” by Schuckert, which “served to produce special light effects, such as lightning, rainbows, full moons, etc.”⁷ The equipment was planned by the current machinery director of the royal

⁵ *Officieller Katalog der internationalen elektrotechnischen Ausstellung zu Frankfurt am Main 1891*, edited by A. Askenasy. Frankfurt a. M.: Haasenstein & Vogler 1891 (2nd ed. Aug. 26, 1891), p. 59.

⁶ Cf. op. cit., p. 138.

⁷ Op. cit., p. 59.

court theaters in Munich, Carl Lautenschläger,⁸ one of the leading stage technicians of the time, who had already been responsible for the electrification of the Munich stages and who was to become known above all for the revolving stage.

In this description, the theater encounters the audience as a multi-layered machine in which historical layers overlap. In a building that feigns the stone solidity of the Renaissance, there is a replica of the traditionally wooden stage machinery, which essentially still corresponds to the baroque model with its backdrops and soffits, alleys and recesses. Even the ramp lighting, increasingly frowned upon by theater reformers since the late eighteenth century, is still present, planned and executed by an old-school theater machinist who still learned his craft as an apprentice. At the same time, however, modernity has found its way into this theater. Not craftsmen, but machine manufacturers such as Riedinger, Schuckert and Deutz supplied large parts of the theater: Gas engines and dynamo machines, accumulators, regulators and rheostats, devices that, roughly summarized, have two effects: On the one hand, they make things in the theater appear in a new light; on the other, they set them in motion. In the underground or outbuilding, the combustion of fossil fuels drives engines, which in turn set dynamos in motion, generating electricity that is stored in accumulators and distributed by regulators. The mechanical theater apparatus of the Baroque period has become a modern thermodynamic theater machine. And yet it is still the wooden imitation of the Renaissance with its baroque ground plan that holds these modern forces together or gives them a facade. This exhibition theater is therefore a highly contradictory structure, a strange hybrid of different ages.

The theory and history of theater tend to resolve this contradiction and to see theater modernism one-sidedly as a *release of energies* through the liberation from the ballast of realism. In these narratives the theater *emerges* around 1900, leaving behind the ugly cocoon of illusionism and slipping into its true form as a weightless circulation of energies that connect actors and audience in an empty space where there is no longer room for material things like scenery. “A current of energy seems to emanate from the performer, which is transmitted to the audience and energizes them in turn,” says a recent lexicon on the lemma “performance.”⁹ The electrometaphoric vocabulary – it “flows”, it “transmits”, it “energizes” – captures central

⁸Carl Lautenschläger (also Karl, *11 Apr. 1843 in Bessungen, † 30 June 1906 in Munich), the estate is in the Theaterwissenschaftliche Sammlung of the University of Cologne, publications: *Die Münchener Dreh-Bühne im köngl. Residenz-Theater nebst Beschreibung einer kompletten neuen Bühnen-Einrichtung mit elektrischem Betrieb*, Munich 1896; “Eine neue Bühne,” in: *Bühne und Welt. Zeitschrift für Theaterwesen, Literatur und Kunst*. Berlin 1899; “Bühnentechnik in der Alten und Neuen Welt”, in: *Bayerisches Industrie und Gewerbeblatt, Ausschuss des Polytechnischen Vereins München*. Munich 1905; “Technische Bühneneinrichtungen der Neuzeit. Vortrag vor dem Polytechnischen Verein München,” *Bayerisches Industrie und Gewerbeblatt*, Ausschuss des Polytechnischen Vereins München. Munich 1906; “Die Theaterbühne der Zukunft,” in: *Bühne und Welt*. Berlin 1906 [post mortem]; cf. Adolf Oppenheim: “Ein Deutscher Bühnentechniker. Ein Gedenkblatt an Karl Lautenschläger,” in: *Bühne und Welt* 8, 1906; and Michael Daniel Gereon Vogt: *Eine Theatermaschinenkarriere des 19. Jahrhunderts*, dissertation, University of Cologne 2007.

⁹Erika Fischer-Lichte: “Performance,” in: *Metzler Lexikon Theatertheorie*, ed. Stuttgart/Weimar: Metzler 2005, pp. 16–26, here: S. 19.

concepts of theater theory: the interactions between actors and audience that is abstracted from the materiality of the scenery in order to conceptualized modern theater.¹⁰ In this modernity of theater, history and theory of theater coincide: What is supposed to be *essential* in 20th century theater is exactly what it supposedly turns into after 1900: dematerialized interactionism.

But this is also due to the fact that nineteenth-century theater history was written in retrospect from the twentieth century, and for a long time from the perspective of an avant-garde that wanted nothing more to do with the prevailing conventions, institutions, and traditions and postulated an epochal break.¹¹ This rupture rejected the traditional knowledge of the crafts and brought forth a new knowledge of the theater that was no longer interested in how best to do it, but rather in what it essentially and actually was and, therefore, should be (again). What emerged was a theater that was supposed to be invented, the theater of a scientific age, which had to be theoretically defined in manifestos, programs, and drafts and practically developed in the studio. From these attempts to understand theater as a timeless medium that obeys its own laws in separation from its history and society, and to rediscover it in orientation to supposedly timeless “primitive” cultures under the falsifying layers of its own culture, the idea of theater as an (autonomous) art emerged, which found connection to an aesthetic modernity to the extent that it (finally) reflected on itself and, like the visual arts, first made specific perception and then its own materiality its theme and mission. The notion of theater as art and its essentialist definition, both of which break with the social and historical dimensions of the object, prove to be closely connected here.

However, if one situates this aesthetic definition of theater itself in its historical context, it is striking that the (claimed) break with the past was basically in many cases a break with the present, which was accompanied by a withdrawal from society. Disillusioned with bourgeois culture, especially in its popularization as a commercial and ready-made spectacle for large audiences, literary theater makers in particular often withdraw into art and break with the appropriation of the same in the name of a reality that has become unmanageable. Instead, intimate spaces and closed societies are established, in which the search for a more real reality or inner truth is often pursued. It is precisely the opening of the theater to the large audience, the feuded and fought popularization of the theater in the nineteenth century with its spectacular materialism, that forms the historical negative foil from which the

¹⁰Cf. on “energy” in theater studies, among others, Jenny Schrödl: “Energie”, in: *Lexikon Theatertheorie*, pp. 87–90. Barbara Gronau speaks of a “fluidum” that shows itself only in processes of transformation and transmission, cf. *Szenarien der Energie. Zur Ästhetik und Wissenschaft des Immateriellen*, ed. by B. Gronau. Bielefeld: transcript 2013, p. 7; cf. also B. Gronau: “Immaterialität und Übertragung. Das Energetische und seine Inszenierungen,” in *Szenarien der Energie. Zur Ästhetik und Wissenschaft des Immateriellen*, ed. by B. Gronau. Bielefeld: transcript 2013, pp. 111–127 and *Energy and Forces as Aesthetic Interventions Politics of Bodily Scenarios*, ed. by B. Gronau/Sabine Huschka. Bielefeld: transcript 2019.

¹¹On the temporality of this avant-garde understanding of theater, see Baugh, op. cit., 2005, p. 34: “It is an attitude of rejection predicated upon the degree of difference between the experiences of contemporary existence, between the distinctiveness of living in the present and a relationship with the future, and the world of memory and the past.”

modern theater can distinguish itself through an act of theoretical distinction, which to this day determines our aesthetically influenced thinking about theater and, moreover, determines what gets attention and what does not. A look back to the nineteenth century is marked by these efforts of demarcation and tends to misunderstand the reality-constituting character of realism as naive imitation. For with the modern concept of theater we have also adopted its valuations, and in retrospect to the nineteenth century, which is close to us and yet already foreign, we tend to devalue as inferior those aesthetics that we can no longer intuitively comprehend. Because the modern theater is an energetic one, the moderns see in the heavy materialisms on the stage of the nineteenth century above all pent-up energy that needs to be released.

With the Victoria Theater, at the beginning of this work, we have, in this respect, an object that does not really fit into the classical histories of theater, because it is hardly aesthetically legitimated, and combines everything that modernism declares unworthy. It is a commercial enterprise and an off-the-shelf theater, moreover, it is still in the service of industry. Therefore, with this setting, firstly, the question is posed as to what theater was before the avant-garde and beyond the masterpieces. Secondly, the Victoria Theater brings to the fore precisely that fusion of industry and aesthetics that modern theater no longer wants to know anything about. And thirdly, the work goes beyond the narrative of the great rupture of modernity; it rather raises the possibility of discovering hitherto unnoticed continuities.

For it is not with Craig and Appia that the theatrical history of electric modernism begins here, with the great aesthetic heroes and the revolutions they triggered or the paradigm shifts they spawned, but with a few simple technical improvements made to a handed-down aesthetic apparatus that do not yet change much. By turning to exhibition theater and paying attention to the technical detail, the aim is not least to liberate theater from hagiographies and to break the power of the great artistic individuals in order to hand it back to the (transversal) collectives.

Neither as an original nor as an example does the Frankfurt exhibition theater appear here, but as a *prototype*, i.e. as a unique specimen that invites reproduction. As an individual piece, it has no special significance and is not intended to provide an example of what theater, in and of itself, looked like in 1891.

But it is *prototypical* for what was installed in the years from 1883 to 1913 as the first generation of electric theaters in the metropolises of the self-proclaimed “culture nations” from Paris, London and Berlin to Havana and Hanoi. Until 1887, it is primarily pioneering theaters with their own facilities that convert to electricity (on the continent, mainly court theaters and, in the Anglophone world, private theaters); then, from 1888, with the spread of municipal power plants, comprehensive electrification sets in, increasingly including smaller theaters in larger cities and the theaters of small towns.¹² These installations remained similar until the outbreak of World War I, when a new prototype of the theatrical establishment began to assert itself. The Victoria Theater at the Frankfurt Exposition in 1891, however, marked

¹²In 1908, Manfred Semper wrote that it was hard to find a theater “of any importance” without electric lighting (“Beleuchtung und Beleuchtungseffekte auf der Bühne,” in: *Bühne und Welt* 10/16, May 1908, pp. 661–674, here: S. 671).

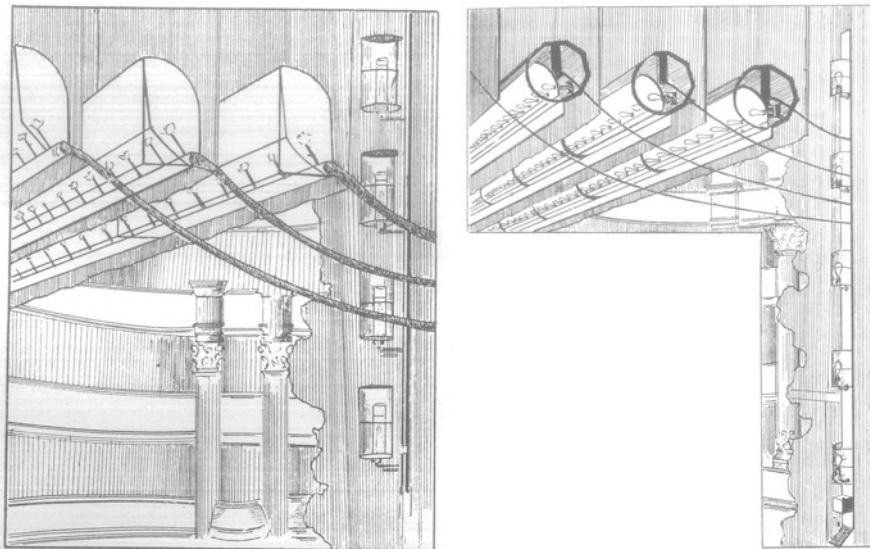


Fig. 1.2 Soffit lighting with gas light and with electricity in comparison. (Victor Trudelle: *La Lumière électrique*, 1914)

that moment when this prototype was confirmed. In the illustrated scientific journal *Prometheus* is to be read in relation to the Frankfurt exhibition theater, the incandescent light was “at least in the German Empire [...] with few exceptions in all large court, residence and city theaters”¹³ and it was hoped that the compulsion of the law would now also cover the previous exceptions and smaller stages.¹⁴

The electrified theater is thus initially far less spectacular than is usually assumed. Those looking for blinding spotlight beams crisscrossing a stage shrouded in expressionist darkness will be disappointed. In general, it is misleading to believe that the introduction of electricity in the theater was primarily a question of light.

For what electric stage equipment was striving for well into the 1920s was nothing other than to imitate as closely as possible the existing equipment with gas light that had prevailed since the 1840s (cf. Fig. 1.2). Incandescent bulbs replace gas

¹³L. Deinhard: “Das elektrische Licht im Frankfurter Ausstellungs-Theater,” in: *Prometheus* No. 95 (1891), p. 683 f.

¹⁴A good overview of the European state of affairs at the beginning of the 1890s is given by the reports of Charles Reynaud, who reported for the Ministère de l’Instruction Publique et des Beaux-Arts from Vienna and London, and later from the Exposition universelle, on the state of theater technology. According to Reynaud, Vienna gives a good impression of the development, in London he emphasizes the lack of representative buildings, but stresses the strong and well distributed brightness, a focus is on Irving’s Lyceum and the darkening of the auditorium. (Charles Reynaud: *Rapport sur la machinerie théâtrale, décoration, etc... à l’Exposition spéciale et au Grand Théâtre de Vienne*. Paris: Millet et fils 1892 and *Rapport sur la mise en scène (machinerie et éclairage) des théâtres de Londres*. Paris: Millet et fils 1893, in the magazine of the *Bibliothèque-musée de l’opéra* under the call numbers C-6636 (1) and C-6636 (2).

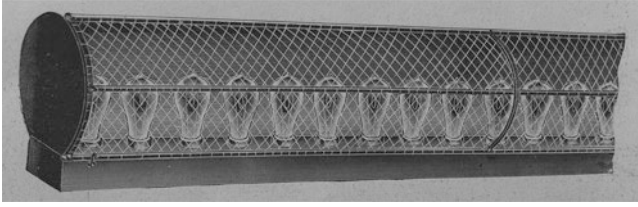


Fig. 1.3 “Fußrampenkörper.” (Manfred Semper: “Lighting and Lighting Effects on the Stage,” 1908)

burners, cables are laid in place of or right inside old pipes, resistors are installed in place of valves. But neither *optics* nor *positions* of lighting fixtures (which are actually in Germany still called “luminous points” as in gas times) change significantly. The use of concentrated light by means of spotlights, as it will characterize the theater and theatricality of the twentieth century, is still largely reserved for military technicians at the Frankfurt exhibition in 1891; in the theater, it remains limited to effect devices until the First World War, which were already used extensively by the gaslit theaters. And also the *distribution* and *arrangement* of lighting fixtures in the stage area, which had a decisive influence on the incidence of light and the aesthetic effect and had therefore been a hotly disputed topic among theater reformers since the beginning of the nineteenth century, remained essentially modeled on gas lighting and was divided into: *Foot ramps*, *soffit lights*, *backdrop slats*, *offset stands* (cf. Fig. 1.3).

Even the naming of the locations makes it clear to which aesthetics this installation is committed: The footlights are located on the front edge of the stage floor, thus separating the auditorium from the stage, and are intended for the performers, who elsewhere just do not get any light and here are illuminated from diagonally below. The lights behind the soffits and backdrops illuminate the stage from the side and from above; from them emanates an undirected light that extends into the depth of the stage and, depending on its strength, can reach as far as the center of the stage. But as the name implies, their original purpose was to illuminate the perspective scene painting, and even though they later served other purposes, most of the light still falls on the framing screens. Only in the “offsets,” often used for transparency and effect lighting or placed behind individual free-standing objects in the stage space, a more flexible use of light announces itself, pointing to an aesthetic beyond the scenic stage.

As late as 1896, the annual meeting of AEG was still venting about the lighting fixtures of the competition from Siemens and Halske because they were “of the most primitive kind”: “The reflector of the soffits is not round, as it is with us, and is calculated to illuminate exactly the strip of the stage that belongs to the alley below it evenly, but the reflector simply consists of a wooden board, painted white and about 25 cm wide, which is screwed to the wooden strip carrying the lamp

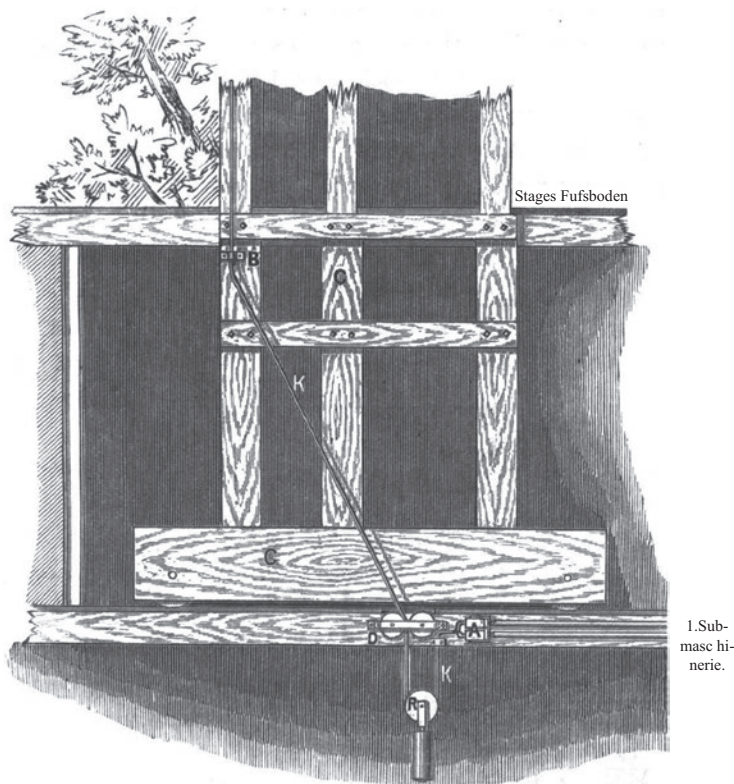


Fig. 1.4 “Connection of a coulisse carriage,” Royal Opera House Berlin. (*Zeitschrift für Bauwesen*, 1889)

bracket and supply cable.”¹⁵ Accordingly, the light emitted “is held together little or not at all,” depending on the position of the soffit, it “illuminates almost the whole stage or a large part of it.” So it is a barely directed, a poorly controlled, and an inaccurate light that one of the leading lighting companies of the time delivers according to the competition. But even AEG’s (supposedly better) lighting fixtures, in their increased precision of light direction, are aimed primarily at illuminating the stage as evenly as possible, and are thus far removed from the highly directional and weighted light of modern stage lighting.

Insofar as gas lighting had essentially emerged from the lighting of the scenery system, the electric stage lighting based on it also remained a baroque affair for the time being.¹⁶ A picture from the *Zeitschrift für Bauwesen*, illustrating the “connection of a coulisse,” illustrates this anachronistic continuity (cf. Fig. 1.4). The

¹⁵ Minutes of the 1896 Annual Meeting, Appendix 7: “Mittheilungen über Theater-Installationen,” p. 17, Deutsches Technikmuseum Berlin, Sig. I.2.060 A-FA | 02295.

¹⁶ Cf. Semper, op. cit., 1908.

drawing shows a section through the understage with a scenery trolley as found since the seventeenth century. Coming from the right, the cable is first fed into the bottom of the understage machinery, then runs over a weight hanging down in flexible conduit through the understage to the top left of the scenery, where the lamps are located above the section of the drawing. When the backdrop moves, which happens to change the picture, the cable runs over the pulley and the weight in the understage, yielding to the movement.

When the first electrical installations were made in theaters at the beginning of 1882, the replacement of gas flames by incandescent lamps was the program. The *Zeitschrift für angewandte Electricitätslehre*, for example, assumes in the same year that for a stage of medium size, 100 flames on the ramp, 300 or 120 flames in six pairs of skylights and scenery, and 100 movable flames are to be replaced by the same number of incandescent lamps.¹⁷ Similar lighting conditions are found in the facility of the Royal Residence Theater (which held about 600 people) in Munich, which was the first in the German Empire to be put into operation on May 25, 1883. The 330 lights installed on the stage were divided into:

2 “ramps” of 20 lamps of 16 cd each, i.e. a total of 40 lamps with 640 cd,
 7 “soffits” à 35 lamps at 16 cd, in total 245 lamps with 3920 cd,
 7 pairs of “coulisses” à 12 lamps of 16 cd, in total 168 lamps with 2688 cd,
 6 “offsets” à 12 lamps at 16 cd, in total 64 lamps with 1024 cd.¹⁸

More than half of the possible total illuminance thus falls undirected from straight above onto the stage, alone *almost a quarter* is directed onto the proscenium area, and the only freely usable light, the offset stands, take up *a maximum of one sixth* of the light output. These lamp numbers vary with the size of the stage, differing according to whether single-lamp systems or multiple-lamp systems are used for color, but the ratio remains essentially the same in German court and municipal theaters until World War I.¹⁹ Still the Prinzregententheater, built in 1900 with the latest technology, concentrates seven times more light on the proscenium zone than on the rest of the stage and has hardly any moving lights. The backdrops alone seem to be losing importance in favor of soffits in the wake of the switch from gas to electricity.²⁰ Compared to the theatrical lighting conditions of the twentieth century, it is not only noticeable that there is hardly any of that directional flexible light of the spotlight, but also that the decisive position, the front light, which is illuminated

¹⁷*Zeitschrift für angewandte Electricitätslehre* No. 5 and 6 (1882), p. 98 f.

¹⁸Hugo Marggraff: “Die elektrische Beleuchtung des k. Residenztheaters in München”, in: *Centralblatt der Bauverwaltung* No. 25 of June 25, 1883, pp. 218–219.

¹⁹Cf. Carl-Friedrich Baumann: *Licht im Theater. Von der Argand-Lampe zum Glühlampenscheinwerfer*. Stuttgart: Franz Steiner 1988, p. 174.

²⁰Op. cit., p. 185.

by the light that falls in from the *top of the auditorium at the front* is completely absent. And there continues to prevail on the stages a brightness unknown today *near the light sources*, be they ramps or soffits and scenery.

1.2 Legitimations: Interests of Directors, Industry and Monarchy (Munich 1883)

The introduction of electricity into the theater, which began in the German Empire on May 25, 1883, with the opening of the royal Residenztheater in Munich, does not represent a break in this respect; rather, it continues a development (at least as far as lighting is concerned) that has a broader context.

An inkling of this connection can also be found in the memoirs of Karl von Perfall, the artistic director of the Munich Residenztheater, in whose term of office the electrification of the theater fell and who is not the only one to boast about it in retrospect.²¹ Electrification is described here as only one of many events that take on their meaning only through a larger project of von Perfall, namely to harmonize the “scenic devices” with the “spoken or sung word.”²² Only in the context of such fundamental considerations does electrification appear in a list of “all the inventions and improvements of modern times in technical terms” to which the artistic director had endeavored “to give unrestricted entrance.”²³ According to von Perfall, in order to settle the dispute between word and image that had been raging since the Renaissance and to achieve the scenic reconciliation of the stage, all that is needed is the entry of technology into the theater. In the artistic director’s retrospective, however, this does not begin in 1883 with modern electrical engineering (this only appears as the second item in the list), but as early as 1869 with a “complete reconstruction of the stage”, which was undertaken under the direction of Karl Brandt, one of the most influential stage technicians of the late nineteenth century.²⁴ What constituted this reconstruction and what significance the year 1869 has for theater technology will be returned to elsewhere; what is decisive at this point is that the essential argument for the electric installation of the theater was nothing other than the belief in technical progress, which was hoped to reconcile the scene with the word.

In a letter to Ludwig II, in which he asks the regent for permission to install electric lighting in the theaters, von Perfall cites other reasons: He speaks of the “proven advantages of a wonderful light, an eminent controllability and the almost

²¹ Cf. Karl von Perfall: *Ein Beitrag zur Geschichte der königlichen Theater in München*. Munich: Piloty & Löhle 1894, p. 10.

²² Ibid.

²³ Ibid.

²⁴ Ibid.

completely excluded danger of fire.”²⁵ But anno 1882 none of these reasons is really convincing. Neither is the controllability at this time really superior to gas, nor is the banished fire danger anything but proven, and what exactly the proven advantages of the wonderful light would consist of, the letter to Ludwig leaves completely open. Instead, he refers to the expert judgment of unnamed experts and the “undivided applause of the public,” whose testimony is supposed to confirm the “wonderful light”. In other words, the new light is a miracle, even if this belief springs from a veneration of technology.

In the story of the master machinist Carl Lautenschläger, who was responsible for the same Munich electrical installations and subsequently for many others, it is, on the other hand, the problems of aesthetics themselves that bring the wonderful light to the scene. It is the description of the preparation of a separate performance for Ludwig II, in the context of which the electric light suddenly appears. Lautenschläger reports about the interference of the king himself in the scene of the theater: “The peaceful picture of the grazing deer wanted to see now H. M. also in the Indian jungle, and so then the grazing deer were added to the animated picture of a jungle in the drawing.”²⁶ The sovereign, however, like the Duke of Meiningen, is not only the supreme authority of the theater, but a realist in the scientific spirit and does not want to see German deer in the Indian jungle: “The drawing came back with the note: The grazing deer must bear the imprint of the Indian homeland in shape, antler type, color of the fur, etc.”²⁷ Whether Lautenschläger then consults zoology, he leaves the reader in the dark, instead he reports how the deer are now set in motion by means of a moving panorama, so that now “groups of palms, forest arches, rocks, water sections” pass the deer or the deer pass them. But also this time Ludwig, whom Lautenschläger stages in his memoirs as the supreme observer who misses nothing, has something to criticize.

Mr. Lautenschläger lets the animals in the Indian forest starve. Animals do not merely go for a walk in the forest, they use the stay to seek respiration. [...] Furthermore, the Indian sun, whose rays animate the forest, must have a stronger expression and produce a different, more vivid play of colors.²⁸

It is just not enough to make deer look as if they fit into the environment; to be genuine, they must also do what is done in that environment. Deer walking in the forest look as out of place on the stage anno 1883 as people who only declaim. What Ludwig wants from the deer, in other words, is not far from what the realists and

²⁵ Letter from the royal court theater directorate to King Ludwig II of Oct. 19, 1882.

²⁶ Carl Lautenschläger: “Bühnentechnik in der alten und neuen Welt”, in: *Bayerisches Industrie- und Gewerbeblatt*, ed. by Committee of the Polytechnic Association in Munich. Munich 1905, p. 131.

²⁷ *Ibid.*

²⁸ *Ibid.*

naturalists demand of actors, namely to realistically portray the lifeworld of a specific milieu.

The theater in Ludwig's time must fail doubly at this. On the one hand, because it is still essentially painted and thus cannot approach the movement of the deer. On the other hand, however, because it is not able to reach the sun of India. The tropics do not seem to catch up in terms of representation in times of gaslight. And that is why Lautenschläger comes up with completely new ideas in his report, namely the idea of mixing the colored glasses "in such a way that the various shades of light on the stage came as close as possible to nature."²⁹ Instead of the usual "day and night making" with its orange-red sunrises and sunsets or blue moonlit nights, Ludwig's wish for tropical suns in Bavarian Rococo theaters brings up the idea of modern color composition, which leads the master machinist Lautenschläger to experiment with electric light, so that at the end of this parable of royal realism it remains to be noted "that the imagination of King Ludwig II. the desire to see everything on the stage brought closer to nature, gave the impetus for the harnessing of electric light on the stage."³⁰

A decisive motivation for electrification is thus the need for representation of a geopolitically disempowered monarch who, one year before the Berlin Congo Conference in 1884, at which he is not invited, takes possession of the tropics aesthetically and technically in the theater.

If one asks the simple question why the Residenztheater, why the theaters were electrified at all at the end of the nineteenth century (and thus suspends for a moment the retrospective plausibility that concludes from the self-evidence of the present the inevitable development of the past), then one receives an answer that is unusual in the history of art and theater: no artistic vision brought forth the innovation; an aesthetic decision does not take place. On the contrary, the new is based on the desire for improvement of the existing on the one hand, and on the other hand on the fuzzy belief that technical progress is capable of precisely this improvement. Electrical technology is not convincing on the theater because it makes aesthetically new things possible; rather, it fits into an existing aesthetic of the theater that believes in the technical new and the reproduction of reality that is improved by it. Because the theater, in other words, already has a deep faith in modern technology, the electricity finds in it an ideal breeding ground. Whether technicians like Lautenschläger, artistic directors like von Perfall or kings like Ludwig, they all affirm a technical progress that is self-justifying because it promises participation in the spirit of the age. Nothing else is ultimately the moral of Lautenschläger's parable of the Indian deer.

So if there was a reason for the electric installation at the Residenztheater, it was a previous installation at another theater (just as, in turn, the installation at the Munich Residenztheater can be seen as a sufficient reason for the subsequent

²⁹ Ibid.

³⁰ Ibid.

installation of the Stuttgart Court Theater): namely, an installation at an *experimental theater*, which was presented in September 1882 at the *Elektricitäts-Ausstellung* in the Munich Glass Palace.³¹ It was precisely this device that is said to have not only convinced the Munich Intendant of the suitability of electric light for the theater, but was also taken over directly into the Residenztheater after the exhibition was dismantled.

However, this technical facility arose out of a historical situation in which technical-industrial and aesthetic-representative interests combined in a way that was almost impossible to disentangle. On the one hand, the people responsible for the later Residenztheater, artistic director von Perfall and machinist Lautenschläger, were involved in the creation of this experimental stage. On the other hand, however, with Oskar von Miller, as initiator of the exhibition one of the first and leading lobbyists of the electrical industry in Germany, and Emil Rathenau, later the first chairman of AEG and perhaps the decisive force behind its foundation, two figures decisive for German industrial history. Von Miller, an unfulfilled civil engineer in the Bavarian civil service, became passionate about electrical engineering and, after attending the Paris Exposition, began setting up the first German electricity show in Munich. But Werner Siemens, by then the doyen of the German electrical industry, stayed away from the Munich exhibition, leaving a gap that Emil Rathenau was able to fill with the Deutsche Edison Gesellschaft, which was being founded. It was only on April 22, 1882, barely five months before the opening of the exhibition, that Rathenau had been involved in a still undefined capacity in the founding of a seed company, founded with the purpose of “demonstrating electric light,” and had secured the rights to Edison’s patents by November of the same year. One year later, the Deutsche Edison-Gesellschaft (DEG) emerged from this venture, which secured the rights in the German-speaking countries and, another four years later, became the Allgemeine Elektrizitätsgesellschaft (AEG), which now emancipated itself from Edison and expanded its business field internationally.³²

³¹Cf. *Offizieller Bericht über die im königlichen Glaspalaste zu München 1882 unter dem Protektorate Sr. Majestät des Königs Ludwig II. von Bayern stattgehabte Internationale Elektrizitäts-Ausstellung verbunden mit elektrotechnischen Versuchen*, edited by Wilhelm von Beetz. Munich: Autotypie-Verlag 1883, pp. 54 ff, Appendix I.; *Centralblatt Bauverwaltung* 2/45 and 51 (1882), pp. 468 f.; *Deutsche Bauzeitung* 16 (1882), p. 581; *Elektrotechnische Zeitung* 3 (1882), pp. 321 ff; *Zeitschrift für angewandte Electricitätslehre* 4 (1882), pp. 487 ff, 642; F. Ferrari: “Die Anfänge der elektrischen Theaterbeleuchtung,” in: *Elektrotechnischer Anzeiger* 50/9 (1933), o. p.; *Illustrierte Zeitung* 81 (1883), p. 403; AEG: *Die Elektrizität im Theater*. Berlin 1925, p. 6 f.

³²Cf. Felix Pinner: *Emil Rathenau und das elektrische Zeitalter*. Leipzig: Akademische Verlagsgesellschaft 1918; Harri Czepuck: *Ein Symbol zerbricht. Zur Geschichte und Politik der AEG*. Berlin: Dietz 1983; Erhard Köbel/P. Hess: *AEG – Energie Profit Verbrechen*. Manuscript estate. Berlin: Verlag Die Wirtschaft 1958; *Allgemeine Elektrizitäts-Gesellschaft: 50 Jahre AEG*, printed as manuscript. Berlin: AEG 1956.

With DEG, power currents begin to flow in the German Empire. Previously, the electrical industry had been a matter of weak currents, used primarily to transmit signs, and had been dominated by companies such as the telegraph company Siemens und Halske. While Werner von Siemens had played a significant role in the development of the dynamo machine and had quickly recognized the possibilities of transmitting power current, he remained focused on the industrial, building lamps for factories and streets that would then be purchased by factory owners and city councils. What Rathenau had brought back from Edison's laboratory on his trip to America, on the other hand, was the idea of selling electricity to consumers as light, like gas: offering a system that placed the generation, distribution, and consumption of electricity in one hand.³³ However, this new business model was also accompanied by a completely new way of doing business, which relied on financing by banks, had salaried managers take care of the operational management, and optimized the production process by "American methods" (Rathenau). Instead of individual solutions on demand, a standardized product was produced well, cheaply and quickly in large quantities at great expense of capital and planning, thus creating a supply whose demand then had to be promoted. As Walther Rathenau, Emil Rathenau's son and, among other things, a temporary member of the supervisory board of AEG, noted, electrical engineering should be understood not only as "the emergence of a new economic field" but rather as "the transformation of a large part of all modern living conditions," and indeed as a transformation "that did not start with the consumer but had to be organized and, to a certain extent, imposed by the producer."³⁴

It was this DEG that, in 1883, after successfully taking over the installation of the Munich Court Theater and, shortly thereafter, the Stuttgart Court Theater, and was able to record them as the largest orders in the first business year (the other 25 orders were for machine, sugar and paper factories, spinning and weaving mills, commercial buildings and restaurants).³⁵ Similarly dimensioned as the first Berlin block station, which from 1885 supplied hotels and cafés around Friedrichstrasse next to the Royal Opera House, the theater facilities are at the same time a technical testing ground and symbolic capital (cf. Fig. 1.5).

³³Cf. Hughes, op. cit., 1983.

³⁴Letter to Dr. Meissner, Berlin, Nov. 26, 1907, reprinted in: *Walther Rathenau Briefe*. Dresden⁴ 1927, vol. 1, pp. 52 ff, cited in Henning Rogge: "Die Fabrik wird zur Maschine," in: *Exerzierfeld der Moderne*. Munich: Beck 1984, pp. 324–335, here: S. 332.

³⁵Cf. *Zeitschrift für angewandte Electricitätslehre* 4 (1882).



Fig. 1.5 “Connecting cable between the Maschinenhaus and the royal theaters,” Königliches Hoftheater München. (Theaterwissenschaftliche Sammlung, University of Cologne)

Accordingly, the first DEG brochure, which advertises the new “electric lighting”, mentions theaters first (besides the Munich Residenztheater, the Brno City Theater is mentioned)³⁶ and then lists further applications in the following order: “concert halls, museums, warehouses, weaving mills, paper, sugar and other factories, breweries, printing works, train stations, hotels, cafés, hospitals, ships, etc.”³⁷

³⁶The newly built Brno City Theater, which opened as early as 1882 with the first electric lighting system for auditorium and stage on the continent, executed by the Commandit-Gesellschaft für angewandte Electricität Brückner, Ross & Consorten from Vienna and the Société électrique Edison from Paris, had a similar layout. The plant consisted of a boiler and engine house 300 m from the theater with three tubular steam boilers (Dupuis system), a 110-horse high-pressure steam engine (Collmann system) at 105 revolutions per minute driving a transmission shaft at 300 revolutions per minute, transmitted to four Edison’s and two Gramme’s dynamo engines in the engine room. A five-horse Gramme’s dynamo machine drove five arc lights set up in front of the theater, and a two-horse drove the arc lights of the effect lighting (moonlight). Four Edison Model K dynamo machines, each with 250 A lamps of 16 standard candles, supplied 30 hp each with 183 A at 110 V clamp voltage. In addition, there was an unregulated house line with 369 lamps in vestibule, stairs, corridors. During rehearsals, 40 B lamps of 8 NK each were operated during the day with a Gramme machine and an Otto gas engine in the basement to illuminate a brim of 15 lamps, the prompter’s box with two lamps, and the orchestra with 23 lamps. The decision to electrify the Brno theater, which was under construction, was made in June 1882 at the city assembly; as early as Oct. 29, the first test lighting was carried out and the theater was opened on Nov. 14, 1882. Cf. “Die elektrische Beleuchtung des Savoy-Theates in London und des Stadttheaters in Brünn,” in: *Zeitschrift des Vereins deutscher Ingenieure*, March 1883 as well as: E. Leonhardt: *Das neue Stadt-Theater in Brünn und seine elektrische Beleuchtungs-Anlage*, Oesterr. Ingenieur- und Architekten-Verein. Vienna 1883.

³⁷Manfred Pohl: *Emil Rathenau und die AEG*. Mainz: Hase & Koehler 1988, p. 233.

Of the 164,438 incandescent lamps installed in the German Empire in 1886, 12% burned in “theaters, panoramas, etc.” (only the textile industry’s 23% exceeded this percentage).³⁸ And as late as 1896, when AEG had long since been making big profits on central stations and railroads built internationally from Barcelona to Bilbao, soffit lighting fixtures were still being discussed at the annual meeting.³⁹

The theater, in Germany especially the court theater, is crucial to electrification because it demonstrates the feasibility of electric light on a large scale, makes the new light visible, and also gives it respectability.⁴⁰ It serves the electrical industry for “propaganda” as it is called in the jargon of the time, raises the reputation of this technology in general, leads quite directly to follow-up orders and thus has a not insignificant share in the success of this new industry.⁴¹ For this reason, it is only the usual gas price that DEG initially charges the royal directorate for the lighting in the Residenztheater.⁴² Because of the publicity that the theater gives to electricity, the loss-making business ultimately pays off economically, since the technical profiling of art also brings with it the artistic profiling of technology. In other words, the interests of the electrical industry live in the means of representation of the theater from 1882 on. Wherever the (electric) lights have been turned on in the auditorium and on the stage since then, the business model of AEG also shines. And this cohabitation of theater and industry in electric light is by no means superficial. While electricity takes on its theatrical garb, the theater also takes on an electrotechnical imprint and realigns its production. Correspondingly, it was not visionary artistic directors or royal machinery masters in search of more naturalness to whom the theater owes the new technology, but electrical engineers who ultimately provided the new lighting on their own initiative.

³⁸ Cf. *Elektrotechnische Zeitung* 19 (1888), p. 105 ff.

³⁹ Cf. minutes of the 1896 annual meeting, Annex 7: “Mittheilungen über Theater-Installationen,” Deutsches Technikmuseum Berlin, Sign. I.2.060 A-FA | 02295.

⁴⁰ DEG wrote to the Munich magistrate on Feb. 26, 1885: “Since the performances of the royal court theaters in Munich in the electrically illuminated houses have given the public from all classes of the population the opportunity to assess the advantages of this lighting from their own experience, interest in the new light has been steadily growing”, quoted in: *Centralblatt für Elektrotechnik* 1885, p. 145. Similarly, in 1888, in the *Journal of the Society of Telegraph-Engineers and of Electricians*: “In fact, as it has been said, ‘nowadays nothing can be done without advertising,’ we may look upon the theatre-lighting as a huge advertisement of the electrical profession generally.” (Ernest George Tidd: “Use of electricity for theatre-lighting,” H. 17, pp. 459–466, here: S. 466).

⁴¹ Under the item “Propaganda,” the above-quoted minutes of the annual meeting of the AEG in 1896 list an “elegant album” that, in addition to views from the factories and illustrations of manufactures, shows under item 6 “Exterior views of those lighting installations that can be considered advertising objects, i.e. the first theaters, the outstanding public buildings, castles, villas, harbor facilities, etc.”.

⁴² Cf. *Centralblatt der Bauverwaltung* No. 25 of June 23, 1883, p. 218.

A hitherto unexplored source provides information on who was actually responsible for the experimental stage at the Munich Electricity Exhibition. On July 29, 1882, a little more than a month before the opening, Charles Batchelor (1845–1910), Edison’s right-hand man who set up the Paris exhibition and, as a result, Edison’s continental ventures, wrote a letter to colleague Philip Seubel, who was staying in Munich, in which, among other things, the subject of “stage lighting” is mentioned.

[W]hen I was there at Munich I objected to anybody else laying wires if we did but they insisted on allowing anyone else to put up wires and expected two other people to do... then if they put their lamps [...] of ours and lay their wires [...] so that our system [...] be [...] the night. [...] on another night. I am afraid there is sure to be trouble with so many wires when [...] many are moveable lamps.⁴³

Several cables that can compete with each other are not only technically but also economically dangerous; the business model of power supply à la Edison is based on this insight into the advantage of monopoly. The failure of stage lighting at the Paris Exposition of the previous year, which presented just that variety of contemporary lamps, seems to prove the Edison people right. In any case, they seem to have prevailed in their claim to sole illumination, because in the reports on the successful and momentous Munich experimental stage, there is only talk of Edison light. Batchelor continues in any case

If you decide to light it however you must have a number of resistances made like the one we are going to make at Brünn though [...] I have been calculating the wires for there and can give you the results but I am afraid I cannot make them as I am so entirely occupied. If possible get a permit to go behind the scenes at a good theater at Berlin and watch the operation of the stage lights there – I have spent two nights in the imperial opera at Vienna and many nights in the theatres in Paris studying operations – I find it very easy but the resistances in order to be made cheap must be made of two or three [...] of [...] and part of copper part of German silver and sometimes of carbon. If our people have not sent you the plan I shall see that they do immediately.⁴⁴

So the model for Munich is supposed to be the institution in Brno, a project of Charles Batchelor himself, for which above all certain resistances and stage experience are needed, which is why Batchelor also sends Seubel to Berlin to watch what happens backstage. The solution, then, lies in nothing other than the imitation of gas taps, as well as experience based on observations of various facilities, and none other than the technicians are responsible in these areas. The material change that was decisive for coming aesthetics, the introduction of which Munich stage managers and directors alike ascribe to themselves in autobiographical writings, is owed to an electrical engineer who travels to Berlin in 1882 to see how theater works.

⁴³ Charles Batchelor to Philip Seubel on July 29, in: The Thomas Edison Papers. Charles Batchelor Collection – Letterbooks: cat. 1239 (1881–1883). [MLB4319; TAEM 93:693], retrieved from: <http://edison.rutgers.edu/> (July 21, 2016), transcript of handwritten letter, omissions mark passages that are difficult to read.

⁴⁴ Ibid.

But after Edison's colleagues had set up the electric lighting in the Munich Exhibition Theater according to the Brno and Berlin model, Karl von Perfall invited his fellow theater directors to the general assembly of the German Stage Association in Munich on September 19 and 20 of that year, so that they could "attend the electric lighting tests in the Glass Palace there and exchange, consult and possibly utilize the impressions and opinions they had gained themselves."⁴⁵

Gustav zu Putlitz, the artistic director of the Karlsruhe Court Theater, enthuses that it seemed to him as if he was entering a different age when the "newly opened world of light flowed towards him, reaching out in all directions."⁴⁶ and combines this with the currently omnipresent invocation of technical progress ("It really does seem like the fairy-tale spirit that offers itself to the service of mankind in response to the deciphered ban formula and makes itself a servant"). Both von Hülsen on the other hand expresses his "delight at the brightness and steadiness" of the light, states its "usefulness for theaters" because neither actors nor spectators have to fear "looking fallow," but finally soberly summarizes: "It's just brighter than before, c'est tout."⁴⁷

1.3 Sensualities: The Meaning of Light Colors and Chandeliers (Paris 1881)

So is it brightness that makes the electrical difference? Is the electrification of the theater felt as an abundance of light before lighting methods change? This, too, needs to be put into perspective, for in fact there seems to have been little initial increase in brightness. The first stage installations assume the same number of lamps or increase them minimally, and contemporary estimates suggest that the first incandescent bulbs are at most 1/4 to 1/3 brighter than a gas lamp of the period.⁴⁸ It is only slowly becoming brighter in theaters (and in public spaces) primarily because more and more lamps are being installed (cf. Table 1.1).⁴⁹

⁴⁵ *Signale für die musikalische Welt* 40/41 (1882), p. 647.

⁴⁶ Elisabeth zu Putlitz: *Gustav zu Putlitz. Ein Lebensbild. Aus Briefen zusammengestellt und ergänzt von Elisabeth zu Putlitz geb. Gräfin Königsmarck. Dritter Theil mit einem Porträt und einer Ansicht.* Berlin: Duncker 1894, p. 229 f.

⁴⁷ *Signale* 40/41 (1882), p. 805, cit. after Baumann: *Licht im Theater*, op. cit., 1988, p. 161.

⁴⁸ Cf. E. Mascart, "Rapport sur l'éclairage des théâtres," in: *Revue de la société d'histoire du théâtre* I (1955), pp. 45–57. Mascart estimates the early incandescent bulbs (25 W) to be about 1/3 brighter than the gas flames and compares the lighting at the Dauphin's wedding in 1745 with the situation in the theater around 1873, before the introduction of electric light. For the hall illuminated with chandeliers and wax candles, he arrives at 1800 bougie (≈NK); at the end of the nineteenth century, he counts 2486 stearin candles and 345 lamps, which would have brought it to a total of 6000 bougie. This would be a tripling of the brightness before the introduction of electric lighting (Ibid.)

⁴⁹ For the data given in the table, compare Baumann: *Licht im Theater*, op. cit., 1988, p. 181; *Deutscher Theateralmanach*, 52 Jg. Berlin 1 Jan. 1888.

Table 1.1 Number of lamps and luminous intensity of electrified theaters in the 1880s

Year	Theater	Number of lamps	Total luminosity
1883	Royal Court Theater Stuttgart	18,400	8000 NK
1885	Royal Court Theater Munich	28,000	13,568 NK
1889	K. k. Burgtheater Vienna	48,000	48,900 NK
1885	Kgl. Schauspielhaus Berlin	53,000	53,600 NK
1887/1888	K. k. Court Opera Vienna	64,000	64,000 NK
1887	Royal Opera House Berlin	89,800	89,800 NK

Since the 1880s, light consumption in theaters (whether illuminated by electricity or gas) has been rising steadily, as Bergmann also shows from the consumption of resources.⁵⁰ But this increase remains moderate compared to the periods from 1790 to 1840 and 1910 to 1930, in which the amounts of light used inside and outside the theater increase massively. In the first period, from the end of the eighteenth century to the middle of the 19th, it is on the one hand the technical improvement of flames, based on Lavoisier's description of combustion as oxidation, and on the other hand the availability of fossil energy as illuminating gas that make the lights about 25–50 times brighter than before (theater is from then on already half as bright as a movie screen or a living room in the twentieth century). After 1910, in turn, with the improvement of incandescent bulbs through the use of new materials, the incandescent light is not only much brighter and whiter than before, but also the electricity yield is decisively increased, so that light suddenly becomes much cheaper and therefore much more.⁵¹ In this respect, what makes the metropolitan living environment brighter is on the one hand the technical adaptation of the flame in the context of enlightened science, and on the other hand the progressive perfection of industrial production. The beginnings of electrification, however, are not characterized by an extraordinary increase in brightness. The new light also prevailed because it was less shocking than soothing.

Thus, while the locations of the electric light remained the same in the beginning and its brightness increased only slowly and gradually, it was a different light that burned here, i.e., a light of a different *quality*. The Gazette de Lyon, for example, is surprised by the brightness, but is above all impressed by the “uniformity” of the new light, “its unchanging glow, its absolute rigidity”.⁵²

⁵⁰Gösta M. Bergman: *Lighting in the Theatre*. Stockholm: Almqvist & Wiksell International 1977, p. 295.

⁵¹A 1937 Siemens brochure confirms the efficiency of the energy yield: “The considerable increase in light output with the same energy requirement has been of considerable importance for stage lighting and has, for example, made possible the introduction of horizon lighting systems on the present scale.” (Siemens: *Ausgeführte Anlagen* 1937, p. 11).

⁵²J. Lacassagne/R. Thiers: *Nouveau système d'éclairage électrique*. Paris/Lyon 1857, p. 19, cit. after Wolfgang Schivelbusch: *Lichtblicke*, op. cit., 1983, p. 58 f.

But what does quality mean, and how can this be developed as a historical object? After all, even this light can no longer be experienced sensually (because the necessary devices are neither available nor usable) and, even if it could be experienced, it would be experienced as something completely different because of the completely changed environment. Where the material supports (such as carbon wires) have not been lost, they have historically lost their effect. We cannot look at a candle like a citizen of the eighteenth century because we were born after the middle of the nineteenth century, when candlelight became cozy. What remains are only the deposits of this light in the archives, be it brightness measurements and spectral analyses, be it the reports of actors and spectators who sensually and physically experienced the light as something new. From these testimonies it can be deduced what was noticed, which aspects were paid attention to, and in which discourses these perceptions were processed. But how the light was experienced cannot be inferred from these sources. The inference from the reaction to the quality of the experience is questionable. However, if the quality of light is understood not as something that is experienced, but rather as something that is made, that emerges from a variety of practices of looking, measuring, regulating, and illuminating, an operable concept emerges.

Thus, to understand the quality of electric light that became established in the theater in the 1880s, it helps to look at those electric stage devices that were *not* able to successfully establish themselves. For even before the Munich experimental stage, there had been several attempts with electric light in the theater, but they were unsuccessful. At the Paris Exposition Internationale d'Électricité, the first of all (European) electricity exhibitions, where electric light became an event that could no longer be ignored from Aug. 15, 1881 (19 companies presented 159 different lamp systems alone),⁵³ a small theater had already been installed in the Palais de l'Industrie. And two months after the exhibition opened, there had been a gala performance in the Opéra on Oct. 15, 1881, in honor of the electrical engineers, which was also used as a test lighting.⁵⁴ The former was with twelve Werdermann lamps⁵⁵ in the crown of the auditorium and twelve on the stage (six of them for the foot ramp); in the latter, seven different lamp systems were demonstrated, most of them, however, in the auditorium, foyers and stairwells.⁵⁶ As with previous installations in

⁵³Cf. Walter Biegon von Czudnochowski: *Das elektrische Bogenlicht*. Leipzig: S. Hirzel 1904, p. 295.

⁵⁴Cf. *Deutsche Bauzeitung* 15 (1881), p. 479.

⁵⁵An improved carbon arc lamp, patented in England with the number 2000 and in Germany as DRP 7045.

⁵⁶Cf. Baumann: *Licht im Theater*, p. 156; *Engineering* 17, vol. 32. London 1881, pp. 267, 323; Franz Woas: "Von der internationalen Ausstellung für Elektrizität zu Paris. Ueber das elektrische Licht," in *Deutsche Bauzeitung* 81, vol. 15 (Oct. 1881), pp. 449–453; *Lumière électrique* 3 (1881), vol. 5, p. 141 d, *L'Électricien* 1 (1881/82), p. 67; 2/6 (1881), 334–346, here: P. 361; *Centralblatt Bauverwaltung* 1 (1881), p. 367 f.

the Chatelet and Bellecour theaters, they were largely unsuccessful, mainly because they were considered too bright. The *Zeitschrift für angewandte Elektrizitätslehre* soberly noted:

In some places, the purpose of this lighting has been interpreted as if it were intended to demonstrate the possibility of using electric light to illuminate theaters. We believe that this view is wrong. The requirements for the illumination of theaters are such that they are not yet sufficiently fulfilled by electric light.⁵⁷

This judgment, however, is based on the fact that the electric light that dominates the impression of these facilities is completely different from the one that begins to prevail only one year later and has a completely different quality. It is the *carbon arc light* (used in cinema projectors worldwide until the 1960s, now largely forgotten) that dominated the installations here: two oppositely charged carbon rods are brought closer to each other until a burning arc is created between them, emitting a glistening cold light that for a long time was by far the brightest light source available (cf. Fig. 1.6).

Only the (pure) *incandescent light*, which became a technical, economic and aesthetic reality in 1881, was successful in theaters. Precisely because this other electric light, in contrast to arc light, is less bright, less cold and less spectacular, it gains acceptance. “We usually think of electric light in terms of blindingly bright light sources that hurt the eye in their harshness,” Henry de Parville notes as late as 1883, “[h]ere, however, we have before us a source of light that has somehow been civilized and adapted to our habits.”⁵⁸ That it appears “somehow civilized” is again due to the fact that it was quite deliberately laid out by the industry as an imitation of gaslight. Contrary to “earlier efforts to displace the previous light sources by predominant intensity of electric light”, Edison takes “the luminosity of gas flames, which is pleasing to the eye, as the basis for the design of his lamps”, proclaims the price list of DEG from the same year.⁵⁹ The incandescent light wants to be like gas light, only more constant, cleaner and safer, but just not brighter, a domestic light suitable for bourgeois interiors rather than construction sites. It is precisely this light, designed for the drawing room, that has found success in the theater.⁶⁰

⁵⁷ *Zeitschrift für angewandte Elektrizitätslehre* No. 22 (1881), p. 425 ff.

⁵⁸ Henri de Parville: *L'Electricité et ses applications*. Paris 1883, pp. 354–55 cit. after Schivelbusch: *Lichtblicke*, op. cit., 1983, p. 63.

⁵⁹ Deutsche Edison Gesellschaft, price list, May 1883, DMA FS 813/27.

⁶⁰ *The Times* wrote on Dec. 29, 1881: “The ordinary electric apparatus has the great drawback for stage representations that the flames cannot be lowered or increased at will, there being no medium between full light and total darkness. This difficulty has here been successfully overcome by interpolating in the circuit ... waht in technical language is called a “resistance”. This “resistance” consists of open spiral coils of iron wire [...]” (p. 4).



Fig. 1.6 Electric Arc Lighting (Deutsches Museum).

When at the beginning of 1882 the *Zeitschrift für angewandte Elektrizitätslehre* states that the introduction of electric lighting is “under serious consideration”, it fundamentally excludes differential lamps for future stage lighting: “Intensity” and “dimensions” are too great, the controllability too small. “Therefore, only the incandescent lamps remain for this purpose.”⁶¹ At the end of the year, the same magazine quotes the report of the *Wiener Fremdenblatt* on the opening of the Brno City Theater as saying that the theater appeared about the same “as most of those that are illuminated with gas”.⁶² This is followed by the reproduction of an article from the

⁶¹ *Zeitschrift für angewandte Elektrizitätslehre* No. 4 (1882), p. 7 f.

⁶² *Zeitschrift für angewandte Elektrizitätslehre* No. 29 and 30 (1882), pp. 638 ff.

Neue Freie Presse. Here, in turn, one has observed the “devastating effect” of arc light “on paintings, statues in Vienna and in Munich” and therefore sees it “from now on excluded from all use for art purposes”.⁶³ This devastating effect, however, clearly turns out to be a matter of color in the course of the subsequent remarks on the Munich Electricity Exhibition.

Where the light scattering cone fell, an impertinent bluish-white light asserted itself to such an extent that it literally extinguished all pale red, made all dark red and dark green appear black, but increased all white and light blue to the utmost coldness that one felt a kind of glare; [...] A Cupid painted in the most blooming color by Benczur looked, when he was hit by this cruel arc light, just like a boy who had already been carried off by death a few hours ago.⁶⁴

Where the rich red and green fall into black, the finer colors disappear altogether, and the world appears whitish-bluish as a result, there is no place for life, and such a lamp is suitable only for moonlight. The red-orange warmth of the artificial fire of the gas light, however, is able to soothe all that is raw and coarse and reconciles even the coldest blue.

The incandescent light is even at the highest voltage warmer than the gas light, shows at medium voltage a very fiery orange, at very low voltage a decided red; [...] All warm colors receive through it even more fire, all cold ones lose thereby in garishness and hardness. [...] White and light blue, however, and all cold colors, which very easily break up the harmonious impression of a coloristically well-tuned scenery, lose their urgency and receive such a soothing glaze from the incandescent light, as if it were guided over it by the hand of the most sensitive master.⁶⁵

But what such a light needs, the article continues, is an art that is able to “find those foils for it” that “bring this light with its magic before the eye like something that grows organically on it”. It is a matter of providing the light with the appropriate lamps, like the chandeliers in the vestibule, which look “like shining bouquets of flowers [...] from whose calyxes flaming blossoms burst forth”. One can hardly imagine a “more charming sight than when the women and girls striding up the grand staircase to the lodges stir and move in the reflection of these floral torches,” the reporter states and thus establishes the connection between the new technique and the female body: “After all, since the tension of the light is increased during the interludes, it is bright enough so that the ladies in the lodges can show themselves to their full advantage.”⁶⁶

And even anno 1891 at the Victoria Theater at the Frankfurt Exposition, it is not the light that fell on the stage that seems to have made the greatest impression. It was the soft light of the electric garlands – listed in the catalog as “Elektrische

⁶³ Ibid.

⁶⁴ Op. cit., p. 640.

⁶⁵ Op. cit., p. 639.

⁶⁶ Op. cit., p. 640.

Beleuchtungskörper und Ausstattungsstücke aller Art” (Pl. No. 332) and designed by Professor Luthmer (Frankfurt a. M.) for the Sächsische Broncewarenfabrik (vorm. K. A. Seifert) from Wurzen i. S. – that is mentioned most prominently, at least in the exhibition’s own reporting.⁶⁷

The effect that this elegant lighting fixture, which is likely to be introduced into theaters and concert halls very soon, makes on the viewer in reality cannot be achieved by the illustration, because it only offers a section of the whole. However, it is certain that the decoration of the auditorium in the theater with bronze garlands of lights from the Wurzen company played a major role in the success of this successful event.⁶⁸

It is precisely not the cold, radiant light of stage spotlights that is usually associated with electricity, but rather a warm, subdued light of bronze light garlands that blends into the richly hung walls of the hall, decorated with portieres and holly wreaths. Like most theaters of the period, the Frankfurt Exhibition Theater was not a darkened projection room, but a place of communal assembly in which the performances in the auditorium were as significant as those on the stage. It was embedded in an environment of which it was a part; neither was the stage space closed off to the audience nor the hall to the outside. Like the surrounding halls, the observation tower or the mountain restaurant, the audience also entered this space to make sure of themselves in the face of the new technology. Not only was the ballet pantomime Pandora shown here every evening, but the room was also used for all the congresses that were held within the framework of the exhibitions, and during the day it was used for popular lectures. Surrounded by bronze garlands of light, the physicist A. Egts from Oldenburg gave scientific lectures.⁶⁹ and the Fraas brothers, manufacturers from Wunsiedel in Bavaria, presented a demonstration dynamo machine, an electric motor, contact incandescent lamps and an electromagnet of 550 kg carrying capacity.⁷⁰

1.4 Purifications: Oxygen Consumption and Nervous Disorders (London 1881)

Also in London’s Savoy Theatre, built by Richard D’Oyly Carte especially for the operettas of Gilbert and Sullivan, which was perhaps the first public building ever to be completely illuminated by electric light, even before the Munich Exhibition Theater and the Brno City Theater,⁷¹ the auditorium was the first to glow. After the

⁶⁷ *Officieller Katalog*, op. cit., “Halle für Installation und Theater”, Pl. No. 332, p. 131.

⁶⁸ *Elektrizitaet. Officielle Zeitung*, op. cit., p. 877.

⁶⁹ Cf. “Eine neue Zeit..!”, op. cit. p. 286.

⁷⁰ *Officieller Katalog*, op. cit., p. 56.

⁷¹ On the electrification of the Savoy Theater, see *Engineering* 33 (1882), pp. 204–205, and Edward Garland Fletcher, “Electricity at the Savoy,” in *Studies in English* 21 (1941), pp. 154–161, and Terence Rees, *Theatre Lighting in the Age of Gas*. London: Society of Theatre Research 1978, p. 169 ff.

new building had been delayed due to the electrical installation by Siemens Brothers, the theater was opened on October 10, 1881, with an electrically lit auditorium and reverted to the gas system installed for safety for the stage. It was not until two and a half months later, shortly before the end of the year, on December 28, 1881, 3 weeks after the Ringtheater fire, that the stage was also completely electrically illuminated with 235 Swan incandescent lamps of 2.5 carcel (=18 cd) each.

Both times *Patience; or, Bunthorne's Bride* by Gilbert and Sullivan was performed, which had already been performed 170 times in the gas light of the London Opera Comique (premiere on April 23, 1881) and now experienced 408 further performances here until November 1882. At the center of the satire on the aestheticism of the time is the aesthetic poet Blunthorne, who, reciting poetry, is wooed by a chorus of lovesick maidens who, because of him, have broken off their engagements with a company of dragoons, who are now correspondingly incensed at the poet's lyrical masculinity. But the aesthete himself is also only a farce, cannot stand poetry in reality and falls in love with a milkmaid who gets involved with him precisely because she does not return his feelings, but has learned that love must be an act of selfless sacrifice. And considering how important electric light will later be for the programs of symbolist theater à la Maeterlinck, it seems a fitting coincidence that it is a satire on aestheticism, of all things, that is first given in electric light. Yet, even for D'Oyly Carte, it is not aesthetic arguments that speak for the introduction of aesthetic lighting in the theater.⁷²

D'Oyly Carte was also inspired (as were almost all the protagonists in this story) by the Parisian *Exposition internationale d'Électricité*, claiming in an advertising pamphlet that the sight of the electric lamps burning outside the Opéra (but falling through in Paris, as illustrated in the previous section) had given him a glimpse of a future theatrical light.⁷³ However, if these (arc light) lamps had been limited to use in very large rooms because of their steel-blue color and flickering, the invention of incandescent light and its color offered a more *domestic* light, that was also deemed suitable for theater.

The invention of the 'incandescent lamp' has now paved the way for the application of electricity to lighting houses, and consequently theatres.⁷⁴

⁷²It is also significant that when the electric installation is not ready in time, D'Oyly Carte postpones the electrification of the stage for a few more months and opens the house for the time being with the hall lit by electricity. The company sings the national anthem before the closed curtain, then the electrified chandelier, an apparatus known as a *Sunburner*, is lowered and as all eyes are on it, the theater magically fills with the soft electric light: "As if by the wave of a fairy's wand the theater immediately became filled with a soft, soothing light, clearer and far more grateful than gas" (*Daily Chronicle*, Oct. 11, 1881, p. 5).

⁷³*The Times* of Oct. 6, 1881, (cf. also. *The Era* of Oct. 1, 1881) quoted in Fletcher, op. cit., 1941, p. 155.

⁷⁴*Ibid.*

According to D'Oyly Carte, the decisive factor for the theatrical suitability of electric light, in addition to its warm color and quiet burning, was above all its improved controllability compared to gas light, which meant first and foremost that it could be dimmed.

Thanks to an ingenious method of 'shunting' it, the current is easily controllable, and the lights can be raised or lowered at will.⁷⁵

The main argument in favor of electric light, however, by which it is supposed to distinguish itself from gas light, is the improvement in well-being, expressed in air and coolness.

The greatest drawbacks to the enjoyment of theatrical performances are, undoubtedly, the foul air and heat which pervade all theatres. [...] If the experiment of electric lighting succeeds, there can be no question of the enormous advantages to be gained in purity of air, and coolness;⁷⁶

Further advertisements repeatedly refer to the coolness and purity of the air and the absence of unpleasant glare.⁷⁷ In the theater magazine *The Era*, this avoidance of the heat is described as relief from the crowdedness of the theater, of being in a crowd and mass, and is made strong as a selling point.

The pleasure of sitting in a crowded Theatre without being affected by the heat of the gas must inevitably prove a boon to the playgoer of the future, and must tend to increase audiences, for the dense atmosphere frequently unavoidable at the Theatre was always an objection to many who would gladly have attended dramatic and musical performances.⁷⁸

The "dense atmosphere" created in the theater by gaslight on the one hand, but on the other by the masses, the ordinary people who come to the theater in crowds, is precisely what discourages theater attendance. In this respect, the promise of electrification is nothing other than a purification of the theater, in both a health and a social sense. Just before the atmosphere to be created becomes the focus of a new aesthetic that is no longer realistic, it is something that is to be technically purified in order to make the stay in public space more pleasant. What will later become the potential of the theater is still a problem here. In this respect, it is not an aesthetic but a hygienic argument that brings electric lighting to the theater.

Fully elaborated, the hygienic argument for electricity can be found in a series of brochures published by the German Edison Society when it was founded in the early 1880s (cf. Fig. 1.7). The very first of these brochures highlights the importance of Edison's incandescent light for hygiene in its title and asks rhetorically on page one about the effects of artificial lighting on health.

⁷⁵Ibid.

⁷⁶Ibid.

⁷⁷*The Times*, Oct. 12, 1881, and Oct. 26, 1881, quoted in Fletcher, op. cit., 1941, p. 158.

⁷⁸*The Era*, after the performance on 28 Dec. 1881, quoted in Fletcher, op. cit., 1941, p. 157.

Fig. 1.7 AEG company brochure: *electricity in the theater*, Berlin 1925. (Berlin State Library)



Does the artificial lighting of our living rooms, classrooms and lecture halls, theaters, concert halls, factories, and all of the rooms in which large numbers of people are temporarily present, meet the requirements of contemporary health care?⁷⁹

Of course, this rhetorical question can only be answered with a decisive “No!” in the context of the advertising brochure for electricity systems, in order to be raised immediately thereafter to an all-decisive “question of culture”.

The geographical location of the countries that lead the way as cultured states causes the increase of dark daytime hours in the autumn and winter months and forces the cultured peoples to make extended use of artificial lighting so that the part of the day that the early darkness takes away from work can also be used..⁸⁰

Insofar as any “growth in culture” is accompanied by an increased “need for light” and a progressive “development of culture” becomes apparent in the “desire for increased brightness,” all progress remains dependent on lighting technology.

⁷⁹ *Das Edison-Glühlicht und seine Bedeutung für Hygiene und Rettungswesen* (Publication of the Deutsche Edison Gesellschaft I). Berlin: Julius Springer 1883, p. 1.

⁸⁰ *Ibid.*

However, according to DEG's advertising message, this increase in light, which up to 1881 was mainly provided by gas combustion, led to hygienic evils that the electrical industry is now attempting to abolish: the heating of the air, its enrichment with pollutants and the flickering of the light – in other words, everything that is linked to the body of the flame.

Privy Councillor Prof. Max von Pettenkofer, co-founder of the German Association for Public Health Care and founding director of the hygienic institute of the royal Ludwig Maximilian University in Munich, is called as the scientific chief witness. After the installation of Edison incandescent lamps in the Residenztheater, he undertakes “comparative experiments between incandescent and gas lighting from the hygienic point of view” on behalf of DEG. Once with and once without an audience, the development of temperature and carbon dioxide content is measured during the performance in the stalls, on the balconies and in the tiers.

Two conclusions can be drawn with certainty from the present investigations: 1) that electric lighting prevents overheating of the air in the theater to a high degree; 2) that it is not in itself capable of making ventilation of the theater unnecessary, but that it requires less ventilation than gas lighting, in which ventilation must be directed not only against air contamination by people, but also against the heat and combustion products of the flame, while with electric lighting it has to deal only with the breath and skin vaporization of people.⁸¹

Here, the theater enters the discourse of hygiene, adopting industrialization's highly contradictory relationship to the body. For on the one hand, hygiene tackles those diseases, especially cholera and typhoid, that arise in the course of industrialization; on the other hand, it is itself part of industrialization, producing healthy, i.e. efficient, bodies through technology and administration. Above all, the construction of pipelines and their joining into networks that favor circulation is the means of hygiene: be it the circulation of industrial water and sewage through canalization, later that of air. The enforcement of these circulation systems, however, owes itself to an ideal of cleanliness, which is taught through pedagogical efforts, especially to

⁸¹Max von Pettenkoffer, printed in: *Centralblatt für Elektrotechnik* No. 19 (1883), p. 436 as well as *Elektrotechnische Zeitschrift* Sep. 1883, p. 381 f. Follow-up measurements of temperature, carbonic acid and relative humidity were made by Renk in 1885, Munich Royal Court and National Theater (*Arch. f. Hygiene* II 1885), by S. Dobroslavin Kowolkowsky and Bosaroff in St. Petersburg (*Gesundheits-Ingenieur* 10/19 (1887)): “If one takes a look at the temperature curves under electric lighting, one notices how the curves of galleries and balcony rise quite gradually and flatly. Only the curve of the parterre makes somewhat larger movements. While in the parterre the temperature rises from the beginning of the performance only from 17.23 °C to 21.25 °C or by 4 °C, the curve of the gallery and balcony rises from 19 °C to 25 °C and from 18 °C to 24 °C, or by 6 °C.” (p. 638) For British theaters, Eyre Massey gives Shaw: *Fires in Theatres*. London/New York: E. & F. N. Spon 1876 reproduces similar measurement results, cf. also. *The Builder* 7 (1849), p. 620.

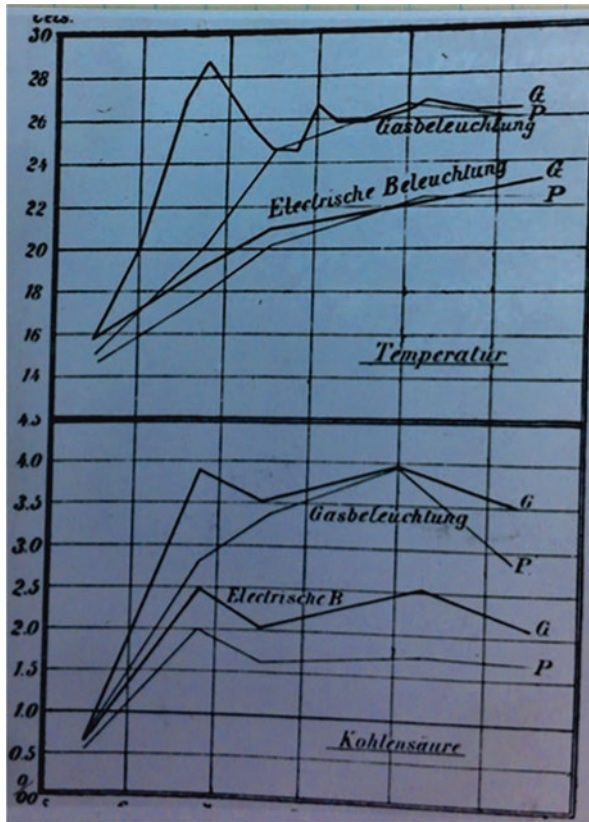


Fig. 1.8 Temperature rise and carbon dioxide content in the illuminant comparison

the lower strata of the population, as a new self-compulsion.⁸² Thus, by means of circulation and ideals, hygiene transforms the representative body of the feudal age into those useful and efficient bodies on which bourgeois culture and industrialization are built (Fig. 1.8).

⁸²Cf. Norbert Elias: *Über den Prozeß der Zivilisation. Soziogenetische und psychogenetische Untersuchungen*, vol. 1: *Wandlungen des Verhaltens in den weltlichen Oberschichten des Abendlandes*. Frankfurt a. M.: Suhrkamp²¹ 1997; Walter Artelt (ed.): *Staedte-, Wohnungs- und Kleidungshygiene des 19. Jahrhunderts in Deutschland. Vorträge eines Symposiums vom 17. bis 18. Juni 1967 in Frankfurt am Main, Juni 17–18, 1967*. Stuttgart: Enke 1969; Manuel Frey: *Der reinliche Bürger. Entstehung und Verbreitung bürgerlicher Tugenden in Deutschland 1760–1860*, Göttingen: Vandenhoeck und Ruprecht 1997; Regina Löneke/Ira Spieker (eds.): *Reinliche Leiber – schmutzige Geschäfte: Körperhygiene und Reinlichkeitsvorstellungen in zwei Jahrhunderten*, Göttingen: Wallstein 1996; Georges Vigarello: *Wasser und Seife, Puder und Parfüm. Geschichte der Körperhygiene seit dem Mittelalter*. Frankfurt a. M.: Campus 1988 (Orig.: *Le Propre et le sale, l'hygiène du corps depuis le Moyen Age*, 1985).

As the third supply system to circulate electricity through cities after water and gas, electricity joins this dispositive of hygiene because it promises to keep light and air pure. It is not by chance that the hygienist von Pettenkoffer not only investigates the atmosphere in the theater, but is later also called upon as a chief witness for a reform movement that sets about to liberate the body. M. Platen quotes him in his textbook on the natural way of life: “Our skin is destined to always be flooded by the air.”⁸³ Accordingly, it needs exchange with the environment – “our clothes do not have the task of closing us off from the air” – and corresponding circulation: “The air in our clothes must not rest.”⁸⁴ Just as the clothes must circulate the air around the body, the theater must also provide a healthy atmosphere, that light and lightness which, according to the electrical industry, only electricity can guarantee.

The fact that the results of Pettenkoffers’ measurements then turn out to be somewhat more modest and come to the conclusion that ventilation cannot be dispensed with, even with electricity, hardly disturbs the advertising message of the electrical industry. Even in DEG’s second brochure, which in 1884 exclusively advertises electric lighting for theaters, in addition to the *fire hazard* and the *soot pollution*, it is above all the *overheating* that was criticized in the gas light.

Under the exhausting influence of the heat, the air polluted by the combustion products of the gas light, the longer the stay in the heat and the foul air lasts, the more the body and mind slacken, the more the spoilage and the temperature increase.⁸⁵

Even in mild (nordic) seasons, temperatures like those in the rooms of a Roman bath would prevail toward the end of the performance, so that theaters would eventually have to be closed altogether during the warm season. The consequences are “tension” and a decrease in “vigor” in the course of the performance, because the temperatures are above those suitable for the organism. An increased activity of the senses and the spirit, without which the enjoyment of a work of art is inconceivable, would not be possible as in the tropics. But even more than the spectator, the actor or singer, who is directly hit by the heat rays, would suffer from the gas light, which dries out the mucous membranes of the mouth and throat.

⁸³M. Platen: *Die neue Heilmethode. Lehrbuch der naturgemäßen Lebensweise, der Gesundheitspflege und der naturgemäßen Heilweise*, vol. I. Berlin 1913, p. 376.

⁸⁴Ibid.

⁸⁵*Elektrische Beleuchtung von Theatern mit Edison-Glühlucht* (Publication of the Deutsche Edison Gesellschaft II). Berlin: Julius Springer 1884, p. 6 f.

Whoever knows what physical strength the performance of a great role requires, can appreciate what it means to perform the same role at a temperature that would force a Southerner to take a siesta.⁸⁶

As on safari, the hard inhabitants of the “culture states” of the cold north show themselves superior to the soft southerners as performers on the stage, but as spectators they must experience similar sensory confusions as the tropical fever brings with it. For the heated air rising at the ramp forms “a wall, which partly lets the sound through, but partly reflects it,”⁸⁷ which not only results in a decrease in the strength of the sound, an indistinctness or confusion of the sound. Visually, too, the senses are thrown into confusion, for the stage gives the impression “as if it were filled with thick, trembling air”⁸⁸ and the “twitching, flickering gas light” makes already nervous people “only more nervous.”⁸⁹ If a visit to the theater is thus experienced as a tropical intoxication and a fatamorgana, only the incandescent light, the DEG brochure continues, restores to theaters the “amenities” that the gas light had deprived them of, because instead of spoiling the air, it emits a “pure [...] radiance [...]” and creates a “soothing clarity” that allows “the eye to rest.” Only with the electric light did all persons and objects appear to the eye again “extraordinarily clear and close”.⁹⁰ “Let us hope, then, dear sirs,” the DEG brochure concludes, “that the days are not far off when we will enjoy the benefit of electric lighting in our theaters and no longer have to enjoy art sweating as if working.”⁹¹

This (nordic) coolness, which is to be regained in the theater by technical means (and with which, in addition to DEG, Siemens also advertises, cf. Fig. 1.9), has not only *medical*, but also *aesthetic*, i.e. perception-related, aspects. The D’Oyly Carte advertising brochure for the Savoy also states that electric light means that the colors no longer have to adapt to the light, as was the case with gas, and that they can therefore become more natural and true.

[T]he landscape-painter who wishes to depict a fairy glen, a sea shore, a broken forest or sky effect, will have, in most cases, to paint with a closer approach to nature, and also will be able to employ the actual color seen in daylight by the lover of nature. Thus we may anticipate even in the beautiful art of scene-painting more truthful representations of natural effects than were possible before.⁹²

Similarly, *The Times* confirms that this coolness calmes the senses: “The light was perfectly steady throughout the performance, and the effect was pictorially

⁸⁶Op. cit., p. 8.

⁸⁷Op. cit., p. 9.

⁸⁸Op. cit., p. 4 f.

⁸⁹Op. cit., p. 13.

⁹⁰Op. cit., p. 45.

⁹¹Op. cit., p. 36.

⁹²*The Era* No. 2247 of 15 Oct. 1881.



Fig. 1.9 “Das elektrische Licht auf der Bühne.” Siemens luminaire advertisement, dated 1936 by Baumann (Theaterwissenschaftliche Sammlung, Universität zu Köln). (If dated correctly by Baumann, Siemens is still advertising electric stage lighting in 1936, albeit ironically, with the reduction of heat. The signature reads: “All kinds of precautions will have to be taken against the cold that will accompany the electric light. We hint at quite a few here.” However, a much earlier appearance is to be assumed.)

superior to gas, the colors of the dresses [...] appearing as true and distinct as by daylight.”⁹³ And from a German perspective, the review of the *Kölnische Zeitung*, strongly reminiscent of the DEG brochures in its rhetorical style, confirms the cultural superiority of the new “nordic” light.

⁹³ *The Times*, Dec. 29, 1881.

Just go to the gallery of the Savoy Theater during the performance and look up at the picture resplendent with brilliance and colors, at the clear and sharp outlines of the garments and figures, and compare with it the morbidly reddish, oxygen-needy glow of a culture-starved continental theater evening, and one will immediately decide in favor of the juicy and sensually stimulating virginal atmosphere of the new lighting method.⁹⁴

The clear and sharply defined figures of such an almost analytical British theater evening are contrasted with the blurs and ambiguities of a red-hot and breathlessly morbid, culturall decadent (“culturangefressenen”) continental theater. That dense atmosphere of the sooty and overheated hall, which is the waste product of the densely packed fossil and humanoid power machines, is the reason to avoid the theater. It is contrasted here with that “virgin atmosphere,” “juicy and sensually stimulating,” which is to develop in subsequent years as the main reason for attending the theater.

In this respect, electric theater hygiene aims at an all-encompassing improvement of an *atmosphere* that affects both the bodies of the audience, the nature of the space and the perception. By avoiding the open flames, the banishment of combustion, the aim is to create a purified experience, untouched by waste products of light and power generation. The very technology to which the theater in the nineteenth century owed its aesthetic and commercial expansion to a large extent, namely the effective lighting technology, appears here (due to its side effects) as a danger for the art of the theater itself, as well as for the bodies of the participants. The borderline case of this danger, however, is the fire that causes art and body to go up in flames themselves.

Consider now how much more easily fire danger can arise in a theater illuminated by gas. [...] I would like to remind you, dear sirs, of how many dancers have already caught fire at the footlights and have been burned to death.⁹⁵

1.5 Combustions: Catastrophe Simulations and Safety Measures (Vienna 1881)

It was on December 17, 1844, in the second act of *The Revolt of the Harem*,⁹⁶ an orientalist spectacle imported from France to the Theatre Royal (Drury Lane). The odalisques were splashing each other with water when the muslin dress of Clara Webster (1821–1844) caught fire.

⁹⁴ *Kölnische Zeitung* No. 171, June 22, 1882, quoted in Baumann: *Licht im Theater*, op. cit., 1988, p. 164.

⁹⁵ DEG: *Die elektrische Beleuchtung von Theater*, op. cit., p. 31.

⁹⁶ Cf. Molly Engelhardt, “The Revolt of the Harem on the English Stage: A Spectacle of Domestic Reform,” in: *Dance Research* 33/1 (2015), pp. 31–49.

Feeling the fire, she jumped up and rushed upon the stage. The motion fanned the flame, and almost in an instant the whole of the sight and inflammable material of her dress was a mass of fire. With piercing shrieks she sought safety among her companions on the stage. For a moment they surrounded her; but the frightful spectacle the unhappy girl presented made them shrink from the contact with her [...] Never ceasing to rush wildly about the stage, and apparently losing all presence of mind, Miss Webster approached the side wing. A carpenter instantly seized her in his arms, [...] took her off the stage, and throwing her on the ground, extinguished the flames.⁹⁷

But for Clara Webster, as for some other colleagues, the carpenter's help comes too late. The opulent fabrics ignite too easily from the open flames of the ramp lighting for the burning ballerina to have been an isolated case in the second half of the nineteenth century. Safety measures nevertheless remained largely absent; instead, at the end of the century, attempts were made to counter the problem with punitive measures against careless ballerinas. Anyone who got too close to the flames had to pay a fine.⁹⁸ For the spectacle of the ballerinas' bodies on fire may be terrible to behold, but it does not seem to pose a serious threat to the theater. This only arises with the burning audience body, which is an increasingly feared spectacle with the increasing number of fire disasters during the nineteenth century. August Fölsch, who in 1878 presents the first comprehensive and exemplary study of theater fires and their prevention, counts nine deaths of performers caught in flames between 1870 and 1878, which contrasts with 90 burned theaters with countless deaths during the same period.⁹⁹

The hygienic optimization of the theater, which is aimed at the well-being and health of the collective body of the audience, has another fundamental aspect in this respect, and that is improved *safety*. In 1880, however, safety meant first and foremost protection against catastrophes, which in turn were usually caused in some form by the outbreak of fire, that force of nature on whose control the technical rise up to industrialization was based and whose unleashed backlash made civilization, which rested on its control, all the more fearful. Therefore, it is precisely the leaping of the fire from the stage into the auditorium that, unlike the ballerina burning alone on stage, has represented not only a real, but certainly also an imaginary danger for the audience that should not be underestimated.

As with many other theaters, it is not only the electric lighting but also the many exits, the wide staircases and a separation of stage and auditorium by protective walls that the London Savoy uses to advertise a safe and fear-free visit to the theater. To put this to the test, D'Oyly Carte steps in front of the audience after the first performance in the new theater and then onto a light bulb.

⁹⁷ *The Public Ledger*, March 18, 1845, p. 2.

⁹⁸ Cf. Elmar Buck: *Thalia in Flammen. Theaterbrände in Geschichte und Gegenwart*, Erlensee: EFB 2000.

⁹⁹ August Fölsch: *Theaterbrände und die zur Verhütung derselben erforderlichen Schutz-Massregeln. Mit einem Verzeichniss von 523 abgebrannten Theatern und vier Tafeln*. Hamburg: Otto Meissner 1878, p. 305 ff.; the statistics were continued by Edwin Otho Sachs in *Modern Opera Houses and Theatres*. London 1898; see also: Dieckmann: *Die Feuersicherheit in Theatern*. Munich: Jung 1911 and C. Gautsch: "Zur Frage der Theatersicherheit," in: *Münchener Neueste Nachrichten*, Oct. 21, 1882 and Dec. 13, 1882.

Mr. D'Oyly Carte, in addressing the audience at the end of the second act, laid particular stress on this fact, and fully explained it to the audience, besides illustrating its effect by an experiment. Wrapping a bit of fine gauze around the glass globe, it was broken, and the light immediately went out; of course, without affecting the gauze covering in the slightest degree.¹⁰⁰

With several bows, he is said to have departed from the stage, but to have been called out twice more. But according to another account, it was not D'Oyly Carte at all who put his foot on the light bulb, but the electrician "Mr. Keppler" (= C. Köppler), who preferred to do this himself for safety reasons following the director's introductory words.¹⁰¹ What is decisive, however, is that here, too, in line with the improved hygiene of the theater, the technical safety equipment is designed to ensure that natural forces are under control. After fire no longer becomes light, light must also no longer become fire, enlightenment must no longer turn into barbarism, controlled nature must no longer be unleashed. Even a whole herd of buffaloes can no longer do mischief in such an electrified theater.

A herd of wild buffaloes suddenly turned loose among the intricate details of the fine woodlands scene of the second act of *Patience*, might trample down 'groundrows', and sweep away and destroy the whole 'battens' and hanging 'wing lights', scattering literally a hundred of lamps among the wreck of inflammable canvas and frail woodwork, but assuredly they could not set fire to the Savoy stage while lighted, as it will be tonight, only by this means.¹⁰²

From now on, theater was safe. From today's perspective, this aspect of electrification may seem marginal, but at the same time its historical significance can hardly be underestimated. Again and again, it is the safety argument that drives the electrification of the theater above all others (even if it is a thoroughly questionable one, at least in the early years, and fires can also be traced back to poorly executed electrical installations). At stake is nothing less than the promise of a *post-catastrophic* theater that will also bring back the audience. Heinrich Laube (1806–1884), director of the Vienna Stadttheater at the time, spoke of an "insurmountable reluctance confronting the playhouses" in the *Neue Freie Presse*, but "[w]ith the introduction of such a safeguarding illumination, the paralyzing panic will instantly disappear, and the theaters will fill up again."¹⁰³

In fact, theater fires make headlines in the second half of the nineteenth century, and there are more and more by 1880. August Fölsch lists the 352 theater fires counted in Europe since 1821 by decade, with a clear upward trend (cf. Table 1.2).¹⁰⁴ Urbanitzky's introduction to electrical engineering lists 290 theater fires in the 25

¹⁰⁰ *The Era*, Dec. 31, 1881, quoted in Fletcher, op. cit., 1941, p. 160.

¹⁰¹ *Lloyd's Weekly*, Jan. 1, 1882, p. 5.

¹⁰² *The Times*, Dec. 29, 1881, quoted in Fletcher, op. cit., 1941, p. 160.

¹⁰³ *Zeitschrift für angewandte Elektrizitätslehre* No. 4 (1882), p. 7.

¹⁰⁴ Cf. Fölsch, op. cit., 1878, p. 305 ff. Dieckmann gives a different but similar enumeration: 1797–1806: 18, 1817–1826: 30, 1847–1856: 47, 1857–1866: 77, 1867–1876: 154, 1877–1886: 309, 1887–1896: 360 (op. cit., p. 17).

Table 1.2 Theater fires in the nineteenth century

1821–1830	1831–1840	1841–1850	1851–1860	1861–1870	1871–1877
30	25	43	67	97	90

years before the introduction of electric light, which would have affected theaters that were on average only 22 years old, cost 10,000 lives and 150,000,000 crowns.¹⁰⁵ In the century of unleashed fossil energies, the theater fire is as much a part of everyday life as the railroad accident.

The most significant fire of the nineteenth century, however, the high point and turning point of the theater on fire, is that of the Vienna Ringtheater on Dec. 8, 1881 (in the very year in which Edison and others first installed light bulbs in theaters at the Electrotechnical Exhibition in Paris).¹⁰⁶ And not because it had the largest number of victims with more than 384 deaths (it was only one of 15 other major fires of the same year),¹⁰⁷ but because this fire and the subsequent court case became a media event like no other, and here, for the first time, the catastrophe is consistently treated in the theater as one that could have been avoided.¹⁰⁸ Certainly for this reason, in the retrospective portrayal of stage technology, it seems to be this fire that drove the electrification of theaters.¹⁰⁹

The Ringtheater, opened in 1874 by a joint-stock company on the Schottenring opposite the Stock Exchange as an operetta theater and sold to the City Expansion Fund only four years later after a lack of success, had its first great success with

¹⁰⁵ Alfred Ritter von Urbanitzky: *Die Elektrizität im Dienste der Menschheit. Eine Darstellung der magnetischen und elektrischen Naturkräfte und ihrer praktischen Anwendung.* Vienna/Pest/Leipzig 1885, p. 827.

¹⁰⁶ On the Ringtheater fire, see *Gasjournal* 24 (1882); *Deutscher Bühnen-Almanach* 47 (1883); Hilfscomité der Stadt Wien: *Bericht des Hilfscomité's der Stadt Wien zur Unterstützung und dauernden Versorgung der Hinterbliebenen der beim Brande des Ringtheaters am 8. Dezember 1881 verunglückten und der bei diesem Anlasse beschädigten Personen.* Vienna 1882; Carl Theodor Fockt: *Der Brand des Ringtheaters in Wien am 8.12.1881. Eine wahrheitsgetreue Schilderung der Katastrophe nach authentischen Quellen bearbeitet.* Vienna: A. Hartleben 1881, p. 56; *Der Brand des Ringtheaters in Wien am 8. Dezember 1881.* Leipzig o. J.; Helmut Kretschmer: "Theaterbrände in Wien," in: *Wiener Geschichtsblätter* (1981), Beiheft 7, p. 2.

¹⁰⁷ Already on March 23, 1881, the municipal theater in Nice had burned down after a gas explosion with more than 200 fatalities.

¹⁰⁸ Cf. Fölsch, op. cit., 1878 and the supplement published in 1882; Zeiss: *Der Process über die Ringtheater-Katastrophe vor dem k. k. Landesgerichte in Wien als Erkenntnisbericht.* Vienna: Perles 1882; Friedrich Scholle: *Über Theaterbrände, deren Ursachen und Verhütung, sowie die Einrichtung des Feuersicherheitswesens in den königlichen Hoftheatern zu Dresden.* Dresden: C.C. Meinhold und Söhne 1882; Franz Gilardone: *Zum Brand der 'Komischen Oper' in Paris. Wie schützt man die älteren Theatergebäude am Besten gegen Feuergesfahr – wie beugt man in ihnen möglichst einer Panik vor? Wie baut die Neuzeit? Eine zeitgemäße Studie,* Hagenau im Elsass: Selbstverlag 1887; Franz Gilardone: *Der Theaterbrand zu Exeter. Nachtrag zu oben,* Hagenau im Elsass: self-published 1888; Edwin O Sachs: *Modern Opera Houses and Theatres.* London: Batsford 1896.

¹⁰⁹ Cf. e.g. Fred Hood: "Bühnenlicht," in: *Bühne und Welt* 1/12 (1898–99), pp. 995–999.

audiences on Dec. 7, 1881, with *Les contes d'Hoffmann*, when the next day, a few minutes before the second performance, a prospectus caught fire during the electric ignition of the gas burners for the soffit lighting.

A large quantity of gas escaped from these [ignition and burner lines, author's note] and filled the box [skylight, author's note]; likewise, the space between the prospects filled with gas. From the regulating apparatus, from where one had no view of the rear soffit boxes, contact was now given at the ignition apparatus [...], the electric ignition line did not go through the entire box, but was only at the beginning of each box, it sometimes took a considerable time until such a box burned; experiments were now carried out at the regulating apparatus, [...] everything was opened completely and quickly closed again, in order to press the gas. After this [...] happened several times, the spark in the box ignited, a powerful flame shot through the whole box and shared the gas accumulated in the specimens. A fiery cloud formed this time [...]; what happened every time and went off mercifully, this time had become a disaster.¹¹⁰

By opening a stage door to the street, the fire on the stage was fanned and a jet of flame shot through the still closed curtain into the auditorium (cf. Fig. 1.10). The turning off of the gas supply caused darkness throughout the building due to the uninstalled emergency lights and led to a panic that claimed 384 lives and received a journalistic response unlike any theater fire before or since.

The fire itself became a spectacle, as Elmar Buck has noted, a spectacular fire that could have been in the tradition of pyrotechnic illumination and would have fit quite well on the stage of the spectacular theater of the time.¹¹¹ As the processing of the catastrophe in popular songs reveals, contemporaries observed with fascination how, with the change from the triumph of technology to its opposite, the catastrophe, the pleasure and enjoyment of urban culture also turn into wailing, moaning and horror.

Laute Hornsignale klingen	Loud horn signals sound
Und es eilt die Feuerwehr	And the fire department rushes
Alles blickt mit Entsetzen	Everything looks with horror
In ein wogend Flammenmeer!	Into a surging sea of flames!
An der Stelle wo das Lachen	At the place where the laughter
Einst von Tausenden erscholl,	Once resounded from thousands,
Tönt ein Jammerruf zum Himmel	A wailing cry sounds to heaven
Voll Entsetzen, grauenvoll!	Full of horror, horrible!
Taghell ist die Nacht gelichtet	Day bright the night is cleared
Doch da drinnen finst're Nacht	But inside dark night
Welch ein Jammern, welch ein Stöhnen –	What a wailing, what a groaning –
Es verstummt, – es ist vollbracht	It is silenced, – it is done
Glücklich der, dem es gelungen	Happy the one who succeeded
Noch des Tages Licht zu schau'n,	To see the light of day,
Rauch und Qualm erstickt die Andern	Smoke and fumes suffocate the others
Sie umschlingt des Todes Grau'n. ¹¹²	They are enveloped in the gray of death.

¹¹⁰ *Gas Journal* 24 (1881), p. 21.

¹¹¹ Cf. Buck, op. cit., 2000, pp. 21–23.

¹¹² “Der Brand des Wiener Ringtheaters,” anonymous couplet on the fire of the Vienna Ring Theater, quoted from Buck, op. cit., 2000, p. 182.

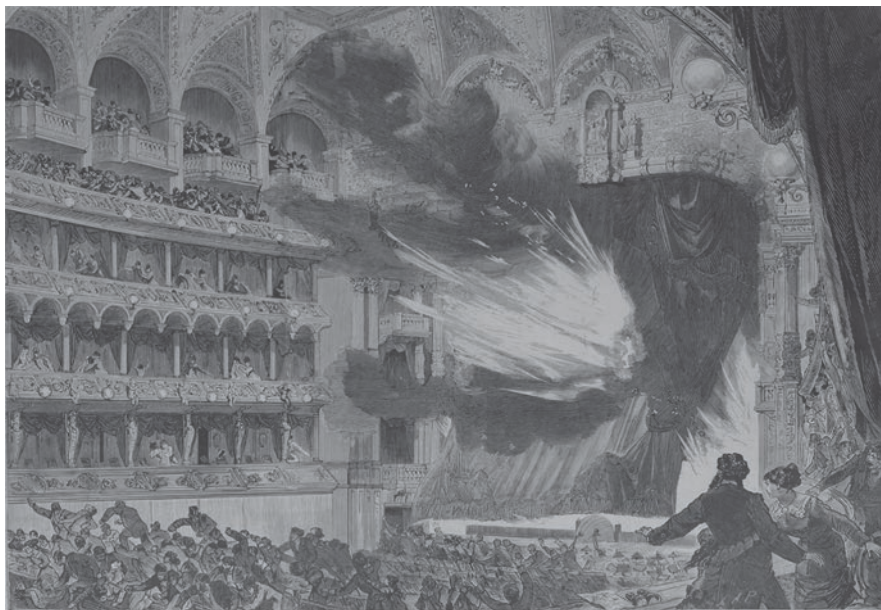


Fig. 1.10 Fire at the Vienna Ring Theater on December 8, 1881, drawing by A. Kronstein and V. Katzler after a sketch by a rescued man. (*Neue Illustrirte Zeitung*, 1881)

The subsequent trial before the k. k. Landgericht in Vienna from April 24 to May 13, 1882, attracts the greatest attention because politics is also accused and with it the avoidability of the catastrophe is at issue, which ultimately paves the way for the electrification of the theater.¹¹³

But the example of the Ringtheater fire also makes it clear that it is gas, the increased power of fossil energies and the euphoric release of the same, whose flip side, as in the case of the railroad, is disaster. With the gas light, the scenic possibilities on stage multiply, but the scale of the accident also increases: the theaters do not simply catch fire, violent explosions break out, and with the collapse of the central supply, the hall falls into total darkness from which it is almost impossible to escape. Because gas technology, with its centrally regulated pipes running through the entire building, makes theater in a new sense an all-encompassing machine that also encompasses the auditorium, the accident is not limited to the stage either. Even though it has always existed, the theater fire thus becomes a sign of industrial modernity because, like the train accident and all later disaster scenarios, it is the shadow side of the new brightness, and that means the release of fossil energies and the scientific dressing of fire.

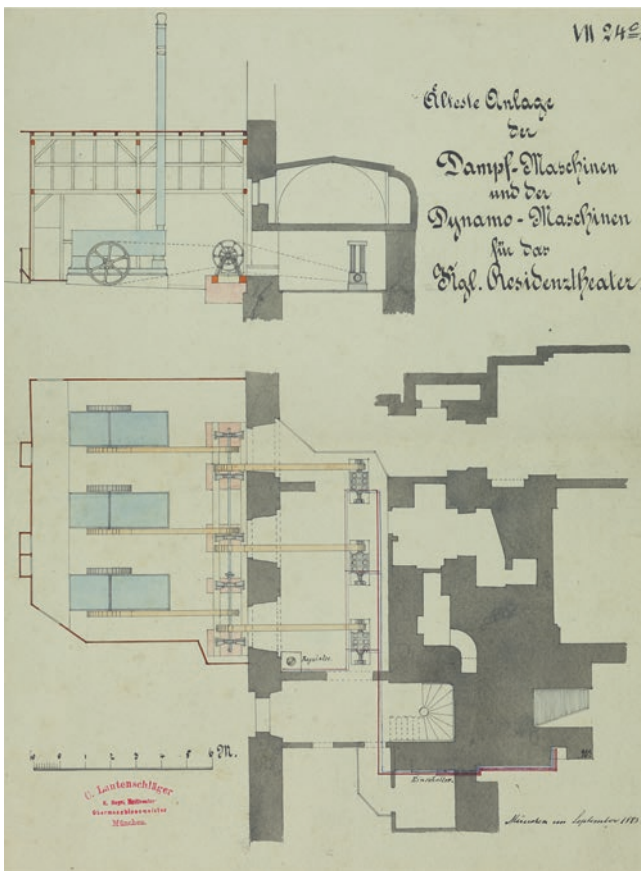
¹¹³At the end of the trial, the director Franz von Jauner, the house manager Franz Geringer and the lighting technician Josef Nitsche are finally convicted.

The aesthetics of this theater of *oxidation*, which dominated European theater cultures until electrification around 1900 and since the end of the eighteenth century, is the subject of the next chapter and the basis for the following investigations of the attempts to reconcile this same theater of oxidation by electric means and to get it under control again.

Oxidation

2

Material Culture and Industrialized Theater



Insofar as electrification aims at a brighter, safer and more hygienic, i.e. in the sense of the times simply more “civilized” theater, it is also always about overcoming a stuffy, sooty and overheated theater – both literally and figuratively. Those clear

atmospheres promised by the electric companies in the 1880s appear a few years later in modified form in the manifestos of the avant-gardes. But before the following chapter addresses this entry of electricity into the grammatics of theatrical modernism, this chapter goes back in time to identify the historical moment that gave rise to gas lighting and the aesthetic configuration that electrification is beginning to replace. Section 2.1 “Gas Burners” describes how the harnessing of fossil fuels with coal gas also brought a new light to the city and the theater. The orientalist opéra-féerie *Aladin* (1822) is used to trace how technical use and symbolic occupation of this “enlightened” light intertwine on stage and determine theatrical practice. Integrated into an urban supply system for fossil energies and illuminated with the brightness of chemically and optically improved lamps, the theater becomes an optical spectacle. Section 2.2 “Reflectors” shows that gaslight is to be understood less as a cause than as an effect of a new hunger for light, and that the spectacular theater of the nineteenth century emerges from the technical dressing of the flame that follows Lavoisier’s scientific description of combustion. Going back a step further, Section 2.3 “Foot Ramps” deals with the abolition of chandeliers above the ramp and the rise in importance of the foot ramp around mid-century. It is argued that although the bourgeois theater aesthetic is essentially based on the lighting separation of stage and auditorium, at the same time its dependence on the light of the foot ramp is founded on an aesthetic contradiction, the resolution of which only brings about the end of this aesthetic. Section 2.4 “Showcases” then deals with the techniques of directing light and with the transition from a sparkling light aesthetic of the courtly baroque to the directed bourgeois light beams and the associated change in the relationship between image and viewer in a dioramic theater. Finally, Sect. 2.5 “Pyrotechnics” argues that the central phenomena of this spectacular gaslit theater, on and off stage, are fatigue and catastrophe (the volcanic eruption, the train crash, the conflagration), and points to the importance of padding, which promises to compensate for industrial dislocation in railroad and theater.

2.1 Gas Burners: Lamps and Street Lighting (1817/1818)

Gaslight, basically a by-product of coal mining, first appears and makes its appearance in the theaters and academies of London and Paris in the late eighteenth century as “philosophical fireworks”. However, only a few years later, at the beginning of the nineteenth century, these spectacular appearances are displaced by the utilitarian use and commercial exploitation that, starting in England, became widespread from the 1830s onwards.¹

Again, it is the theater that serves as the setting. Frederick Albert Winsor, a naturalized merchant from Brunswick who was instrumental in the establishment of central gas works and the commercial enforcement of illuminating gas, gives a series of demonstrations at the London Lyceum in 1803 and 1804: “Among others, he

¹Cf. Leslie Tomory: *Progressive Enlightenment. The Origins of the Gaslight Industry 1780–1820*. Cambridge, Mass.: MIT Press 2012; Stirling Everard: *The History of the Gas Light & Coke Company 1812–1949*. London: A & C Black 1992; George Atkins: “A Brief History of Gas Lighting and its Improvements,” in: *Polytechnic Journal* 21/CIX (1826), pp. 437–443.

shewed [≈showed] the manner of conveying the gas from one part of a house to another; and, by the use of different kinds of burners, he was enabled to display something of that variety of forms which may be given to its flame.”² This was followed in 1807, also as a promotional display, by the half-sided illumination of the *Pall Mall* in the City of Westminster, designed to compare with the opposite side of the street, now in darkness (and described as 20 times brighter),³ and, in the same year, the birthday celebration of the king (George III) in the conservatory of Carlton House. In 1812, despite much opposition, a royal charter was issued allowing the Gas Light and Coke Company, founded by Winsor, to supply London with gas from then on. Due to internal disputes, however, Winsor soon left the company and went to Paris, where he failed once again with a gas company that lit the passages of the Panorama with gas in 1815, as well as a café in 1817 (at the Hôtel de Ville, on the corner of Rue de Chartres), which from then on was simply called the Café du gaz hydrogène.

In the same year, in the 1817/1818 season, theaters in London, in addition to factories and streets, are lit experimentally or completely with gas: Covent Garden, whose facades and foyers were already equipped in 1815, the Lyceum, Drury Lane, the King’s Theater (at Haymarket), Astley’s Amphitheatre, and in 1819 the Adelphi Theatre. With few exceptions, the theaters in London were lit by gas in 1829.⁴ Paris follows in 1819 with the Opéra hall (Rue Richelieu) and the other theaters from 1822 on (only the Comédie ensemble refuses, but in 1832 gas is introduced, until 1873 the foot ramp even remains lit with candles). The rest of the continent followed suit in the 1840s and 1850s with the “spread of gas production and lighting establishments” in the cities.⁵

For since the expense of generating coal gas was only profitable in large-scale operations, the entry of gaslight into theaters was linked to its connection to a gas *network*. With gas lighting, the sovereign candlelight was replaced by dependence on an urban supply system, and the theater was firmly integrated into the urban context with gas pipes. And so it is not surprising that in many cases it was the first bourgeois stages that shone early in the new light. (In Berlin, for example, the Königstädtisches Theater, which specialized in comedy and melodrama, opened in 1824, the Krollsche Etablissement, which was successful with comedy, local farces and comic opera, opened in 1843, and the Friedrich-Wilhelmstädtisches Theater, which offered farce, comedy, satire and *Lustspiel*, opened in 1848.)⁶ With

² William Matthews: *An Historical Sketch of the Origin, Progress, & Present State of Gas-Lighting*. London: R. Hunter 1827, p. 30; Richard D Altick: *The Shows of London*. Cambridge, Mass: Belknap Press 1978, p. 371.

³ Cf. *The Monthly Magazine; or, British Register*. London: 1 Jan. 1807, p. 581.

⁴ Cf. Baumann: *Licht im Theater*, op. cit., 1988, p. 83 f.; Terence Rees: *Theatre Lighting in the Age of Gas*. Cambridge: Entertainment Technology Press 2004, [first edition: The Society of Theatre Research 1978], p. 12; Frederick Accum: *A practical treatise on gas-light*. London 1815; ders. *Descriptions of the process of manufacturing coal gas*. London 1819; Tabor: *Vollständiges Handbuch der Gasbeleuchtungskunst*. Frankfurt a. M. 1822.

⁵ Philipp Düringer (ed.): *Theater-Lexikon: Theoretisch-practisches Handbuch für Vorstände, Mitglieder und Freunde des deutschen Theaters*. Leipzig: Wigand 1841, p. 501 f.

⁶ Cf. Robert Blum/G. C. Reginald Herlosssohn/H. Marggraff (eds.): *Allgemeines Theater-Lexikon oder Encyclopädie alles Wissenswerthen für Bühnenkünstler, Dilettanten und Theaterfreunde*

gaslighting, the theater in this respect lost its energetic self-sufficiency while blending in with the light of its surroundings. The contrast between poorly lit (urban) alleys and the festive illumination of the (courtly) theater gave way to the brightness of comprehensive *city lights* (in the commercial centers), which also included the theaters, which now stood in contrast to the dark corners of the cities. In the account of the 1839 Paris trip of the German actor, school founder, and theater director Eduard Devrient, this connection between gaslighting and urbanity, spectacularity and commerciality, emerges clearly.

Thus I arrived in the cosmopolitan city, which impressed me as soon as I entered through the boulevards with its hundreds of thousands of gas flames, the fabulously shining finery of the department stores and the hustle and bustle of the streets, as if I had arrived at the highlight of a folk festival that had been prepared for months, and yet it was only the everyday hustle and bustle.⁷

What impresses the German traveler from the provinces is how, in the capital of the nineteenth century (Benjamin), everyday life has been transformed into a festival, whose stage is the boulevard and in which the theater no longer appears as a singled-out and closed event, but as a point of consumption, connected to the great circuits of money, gas, and people.

This flow creates a new regularity, leads to the synchronization of collectivity, and raises questions of control. The gas puts an end to the autonomous lamps and candles, instead there are the gas burners connected in series. It is the pressure in the pipes that makes burning possible, not the care of the wick. As the German Theater-Lexikon of 1841 knows, gaslight is thus not only purer, clearer, whiter, but also *cheaper, safer* and more *stable* than the individual lamps and candles, which can flicker or even fall over at any time. Above all, it requires “no further care than cleaning, cutting or other attention, like any other light.”⁸ This lack of need for individual attention to the individual flames is the prerequisite for light to fade into the background, for it to make things appear while itself becoming invisible, turning into a *medium*. At the same time, however, the attention for the individual flames is replaced by their *centralized control*, which from now on will slowly develop and shape theater technique and theater from then on.

Aldini already noted in 1815 that the decisive factor in the new light was the *gradual and centralized* regulation, which could also take place during the act and by a single person, but it took until the 1840s for the regulatory apparatuses to develop.⁹ As late as 1846, the Paris Opéra (Le Peletier) had only six strands, only four of which went to the stage and could be regulated by a simple device. This consisted of an “adjusting cock with a horizontal disc in which ten holes are drilled for the insertion of a pin.”

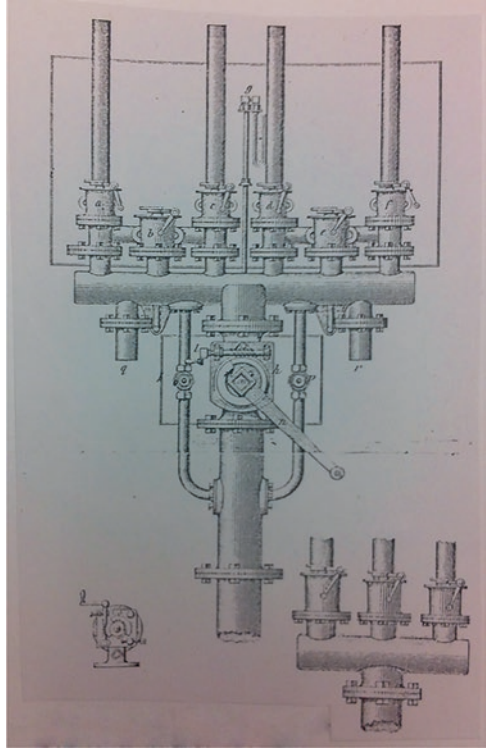
unter Mitwirkung der sachkundigsten Schriftsteller Deutschlands, Altenburg & Leipzig 1846, p. 3.

⁷Eduard Devrient: “Erster Brief. Paris, den 20. März 1839,” in: E. Devrient: *Briefe aus Paris*. Berlin: Jonas 1840.

⁸Düringer: *Theater-Lexikon*, op. cit., 1841, p. 501 f.

⁹Cf. Baumann: *Licht im Theater*, op. cit., 1988, pp. 100 ff.

Fig. 2.1 Gas lighting regulator, 1865. (*Gasjournal*, 1867)



A pointer on the spring of the cock touches this pin when it moves; if these holes are now distributed by experiments in such a way that at No. 10 is the largest and at No. 1 the smallest possible opening, then one has ten different degrees of illumination, which are sufficient, and one, at most two men are able to carry out all light transformations with the greatest speed.¹⁰

In comparison, the Palais Garnier, which opened in 1875, then had a complex *jeu d'orgue* with 30 levers and infinitely variable adjustment (cf. Fig. 2.1).¹¹ The development at other European theaters was similar.¹²

One consequence of these new centralized control capabilities is the clustering of lamps and their increase in number. Because lights with improved ignition systems can be lit not individually, but in series and with technical aids, on the stage soffits become feasible and soon more popular than backdrop lights; in the auditorium, however, the central chandelier prevails, displacing the scattered chandeliers.¹³

¹⁰ Haenel, G.: "Ueber die Gasbeleuchtung im Theater", in: *Dingler's polytechnisches Journal*, vol. 101 (1846), p. 353 ff.

¹¹ Charles Nutter: *Le Nouvel Opéra*. Paris: Librairie Hachette et Cie 1875, p. 218 ff.

¹² Cf. Baumann: *Licht im Theater*, op. cit., 1988, p. 102.

¹³ Cf. Rees, op. cit., 1978, p. 11.

Another momentous side effect of this centralized control over light in the theater is the increasing possibility for color change. Had the colored shades or glasses that had been placed in front of the lights since Sabbattini's and Furttenbach's times "settled on a raspberry red for sunrise and a poison green for moonlight"¹⁴ limited, as Adolf Winds states in retrospect in 1925, with the introduction of gas lighting and regulators, similarly centralized controllable systems for changing and mixing colors were developed, such as the one developed by Hugo Bähr for Munich, which certainly served as a model for Lautenschläger's later system for electric lighting (see Fig. 2.2).¹⁵ Gradual regulation on the one hand, and the introduction of multi-color systems in particular, on the other hand, made color gradients and color mixtures possible that made the traditional and time-honored day-and-night system look pale in the future.

In Paris, it was an *opéra-féerie* that both introduced and celebrated gaslight: *Aladin, ou la lampe merveilleuse* by Nicolo Isouard¹⁶ was premiered at the Opéra (Le Peletier) on February 8, 1822, a "spectacle, le plus elegante" with ten new decorations by Ciceri and Daguerre (see Fig. 2.4), including a "palais de la lumière, au fond duquel est un soleil mouvant" – a "palace of light, to the floor of which is attached a movable sun."¹⁷

One need not be surprised at the success of this opera; devotees of the new lights, lovers of the old shadows can find here alternate scenes to their taste. Where the magnificent day triumphs, the night, on chariots of ebony, also spreads its mysterious darkness to the hall; the fantasmagorical effects of Robertson now unite with the pomp of the opera, and we are here ourselves forced, just this once, to praise the obscurantism. We even believe that time can reinforce this prestige

Il ne faut pas s'étonner du succès de ce nouvel opéra; les partisans des nouvelles lumières, les amateurs des vieilles ténèbres peuvent y trouver tour-à-tour des scènes de leur goût. Si le grand jour triomphe, la nuit au char d'ébène répand aussi jusque dans la salle sa mystérieuse obscurité; les effets fantasmagoriques de Robertson se réunissent maintenant aux pompes de l'Opéra, et nous voilà forcés nous-mêmes à faire, pour cette fois seulement, l'éloge de l'obscurantisme. Nous pensons même que le temps peut ajouter à ce prestige

If one believes the reviewer, the success of the opera owes itself to the fact that it avoids a new *querelle des anciens et des modernes* and makes concessions to both parties, the partisans of the new lights and the lovers of old shadows. The *clair-obscur* is described here as more important in effect than brightness, the contrast is assigned a social reconciling function, its effect is equated with a phantasmagoric spectacle à la Robertson, and its success tempts the reviewer to call for an even greater darkness in the auditorium, a stronger contrast with the stage.¹⁸

¹⁴Adolf Winds: *Geschichte der Regie*. Stuttgart: Deutsche Verlagsgesellschaft 1925, p. 89.

¹⁵Baumann explicitly points out that until the first two decades of the nineteenth century, there was no clear news about the existence of color furnishings (Baumann: *Licht im Theater*, op. cit., 1988, p. 28).

¹⁶Cf. Germaine Bapst: *Essai sur l'histoire du théâtre*. Paris 1893, p. 539; cf. Helmuth Christian Wolff: *Geschichte der komischen Oper. Von den Anfängen bis zur Gegenwart* (=Taschenbücher zur Musikwissenschaft vol. 73). Wilhelmshaven: 1981, chapter "Opéra Comique in Frankreich zu Anfang des 19. Jahrhunderts," pp. 165–174.

¹⁷*Le Miroir des spectacles, des lettres, des mœurs et des arts*. Paris, 17 Feb. 1822, p. 2.

¹⁸Ibid.

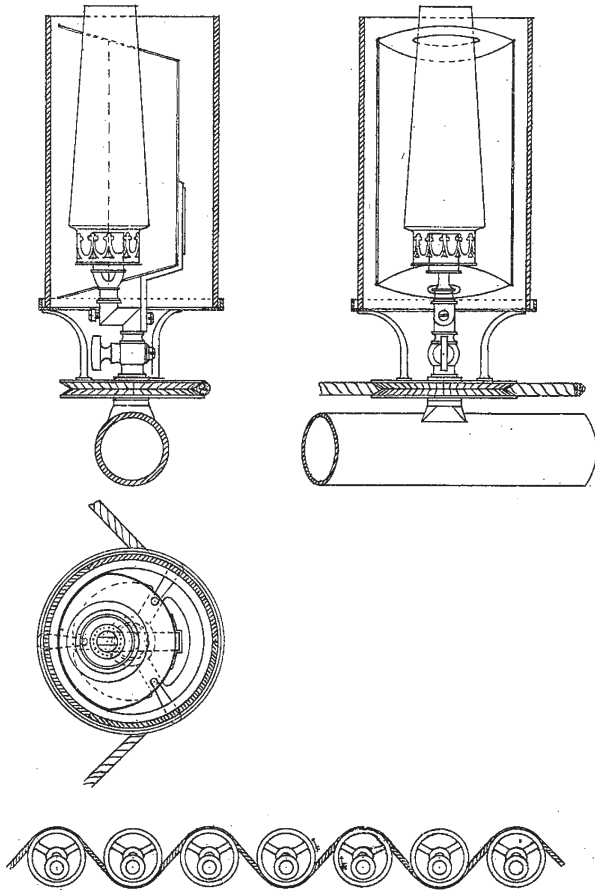


Fig. 2.2 “Device for producing light of different colors for theater foot ramps”. (Excerpt from Hugo Bähr’s patent of Feb. 3, 1881)

At the moment when the lamp of Aladdin goes out, the black mantle that spreads in the auditorium does not yet seem to us impenetrable enough, the gaze should no longer grasp the objects that act on the theater; withdrawn for a moment from the brilliant appearance of the auditorium, our eyes could immediately afterwards better appreciate the elegance and beauty of the spectators, whom we consider the richest adornment and the most beautiful ornament of the theater. Never will the wonders of painting reach the magic of this picture.

Au moment où la lampe d’Aladin se trouve éteinte, le voile noir qui s’étend dans la salle ne nous paraît pas encore assez opaque, la vue ne devrait plus saisir que les objets qui agissent sur le théâtre; privés un moment du brillant aspect de la salle, nos yeux apprécieraient mieux l’instant d’après l’élégance et la beauté des spectatrices, que nous regardons comme le plus riche ornement et la plus belle décoration de ce théâtre. Jamais les prodiges de la peinture n’atteindront au charme de ce tableau.

The darkness on the stage needs a darkness in the audience, too, nothing else than the temporary disappearance of the brilliant hall with its distinguished audience. Such a temporary negation of the present society, the reviewer tried to ensure,

had only a reinforcing effect on the hall as well. After the dark, the beauty of the spectators, who of course constituted the most important and unsurpassed tableaux, could only be admired all the more.¹⁹

This new dramatic effect which we are setting forth, and which only leads to a faster darkness, longer and deeper, seems to us a simple application, and the audience will not hesitate to enjoy it, no doubt because it will not be the result of the progress of light, but of the progress of darkness, and because it is only a matter of describing the moment when the enlightened society may suddenly relapse into chaos.

Ce nouvel effet dramatique que nous indiquons, et qui ne tient qu'à une obscurité plus rapide, plus longue et plus profonde, nous paraît d'une facile execution, et le public ne tardera pas à en jouir, sans doute, puisqu'il sera le résultat, non du progrès de lumières, mais du progrès des ténèbres, et qu'il ne s'agit que de caractériser le moment où la société la plus éclairée peut-à-coup retomber dans le cahos.

But what shines out of this new darkness is an orientalist trope, sprung from the "smiling and fertile imagination of the peoples of the East" – "toute la riante et féconde imagination des peuples de l'Orient".²⁰

The 1001 Nights have enriched all the theaters of Europe. Strangers to stage plays, the Arabs have perhaps presented us with the most picturesque situations; but it seems to require only a deft hand to comprehend and to develop subtle nuances.

Les Mille et une Nuits ont enrichi tous les théâtres de l'Europe. Etrangers aux jeux de la scène, les Arabes nous ont peut-être indiqué les situations les plus pittoresques; mais il n'appartient qu'à une main habile d'en saisir et d'en développer les nuances délicates.

But Aladdin is not asked here by a magician to fetch an oil lamp from a magical cave, as told in the eighteenth century fairy tale import. Instead, he is a young fisherman who fell in love with the princess Almazie when he improperly saw her one night when the palace was on fire. Since then, her image haunts his dreams and he sings of her in his sleep. But then Prince Timorkan, the king of Candahor, comes to marry the princess Almazie, and the prince's servile Cadi orders the fishing hut of Aladdin and his family to be torn down because it is in the prince's path. Thémire and Zarine, Aladdin's mother and sister, exclaim, "what will become of us?" and the Cadi responds:²¹

It should be your pleasure
to suffer for the master
who will reign over us:
He may know

Il doit vous être doux
De souffrir pour le maître
Qui va régner sur nous:
Il le saura peut-être

¹⁹ Ibid.

²⁰ Ibid.

²¹ Charles Guillaume Étienne: *Aladin, ou la lampe merveilleuse, Opéra féerie en cinq actes. Représenté pour la première fois sur le théâtre de l'Académie Royale de Musique, le 6 février 1882.* libretto. Paris: Roulet 1882, p. 12, English translation by the author.

Aladdin, however, has a lamp given to him by a mysterious unfortunate whom he rescued from the river. He presses a spring on the lamp, a celestial music sounds and Isménor, the powerful lamp spirit, appears “in a gloire (literally: glory) surrounded by genii” (“dans une gloire [...] entouré des génies”) on a chariot decorated with the attributes of light (“sur un char orné des attributs de la lumière”). He tells the almost senseless Aladdin (“Quel trouble, quel délire, S’empare de mes sens!”) that he has come to save his life, and that his fate has taken a turn for the good thanks to the magic lamp, but that if he ever turns off the lamp, it will pass into the hands of someone else, who will then become the ruler.

When the Cadi returns to tear down Aladdin’s house with his entourage, Aladdin’s army beats him back, the Cadi defects to Aladdin, and Aladdin challenges Prince Timorkan for the hand of Princess Almazie. Of course, Aladdin wins the battle and this gives rise to a great feast with brilliant lights and sensual oriental dances: “Ici, une fête brillante où toutes les danses voluptueuses de l’Orient s’exécutent tour à tour.”²² After the feast, however, on the wedding night, Almazie is dazzled by the brightness of the lamp, but Aladdin refuses to part with it.²³

ALADIN. O charming night! (Here the magic lamp illuminates, and throws a vivid and brilliant clarity into the apartment, reflecting in all the mirrors with which it is decorated the image of Almasie and Aladdin.)

ALMASIE. What clarity suddenly shines before my eyes. What dazzling flame!

ALADIN. O nuit charmante! (Ici la lampe merveilleuse s’allume, et jette dans l’appartement une clarté vive et brillante qui réfléchit, dans toutes les glaces dont il es orné, l’image d’Almasie et d’Aladin.)

ALMASIE. Quelle clarté soudain vient briller à mes yeux! Quelle flamme éblouissante!

Almazie wants to flee because the law of her country forbids love in bright light (“ne peut souffrir cette clarté que la loi du pays défend aux jeunes époux”) and the faint Aladdin turns off his lamp. Suddenly the stage is filled with dark spirits, Timorkan advances, overpowering Aladdin. The Cadi overflows again, Aladin is to be thrown into the tower and Almazie is to marry Timorkan after all, as she now snatches the lamp to save Aladin. The theater is transformed into a palace of light, in the background of which the sun moves – “Le théâtre change et représente le palais de la Lumière. Au fond est un soleil mouvant.”²⁴ And the chorus invokes the light and love.²⁵

THE CHORUS, bowing.
Shining star of the universe!
O thou who reignest in the world
Over a thousand different peoples!
Spread thy fruitful clarity.
Of an ever-new splendor,
embrace the heavens and the earth;
and that from the rays of light
Love kindle its flame!

LE CHOEUR s’inclinant.
Astre brillant de l’univers!
O toi qui règues dans le monde
Sur mille peuples divers!
Répands ta clarté féconde.
D’un éclat toujours nouveau,
Embrase les cieux et la terre;
Et qu’aux rayons de la lumière,
L’Amour allume son flambeau!
(Le spectacle finit par un divertissement général.)

²²Op. cit., p. 45.

²³Ibid.

²⁴Op. cit., p. 68.

²⁵Ibid.

Packaged in orientalist garb, the bourgeois fairy tale of the simple man who defies the prince for the sake of his wife is once again conjured up. Only here it is not, as in the bourgeois tragedy, a prince who oppresses a bourgeois daughter (cf. Emilia Galotti), but rather a fisherman who conquers a princess – thanks to a lamp that is rubbed against, a piece of lighting technology that gives the owner undreamed-of power regardless of his lineage, even if it stands in the way during the night of love. That power, which can be obtained technically, stands in the way of love and libido, because every short switching off seems to lead to a total loss of control, which immediately calls the actually defeated powers of darkness to the scene. Therefore, the enlightened Aladdin prevails against the prince in the end only because the princess takes his side. By grabbing the lamp, she herself enters into the *siècle des Lumières* and not only helps Aladdin to victory, but also accepts to say goodbye to the traditional laws of her country and to make love in the light in the future. Thus, while in the bourgeois tragedy the oppression of the bourgeois woman by the aristocratic seducer can only be averted by the sacrifice of the daughter in the name of virtue (cf. again Emilia Galotti), here the technically equipped bourgeois son dreams of seduction upwards. With the Orient, the projection space of bourgeois desire is called up, in that the victory of reason over prejudice and the victory of the lower over the upper are linked to the sexual conquest of the princess through magical light techniques.

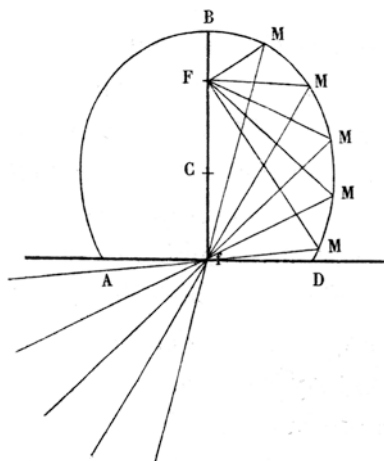
But the gas light, which shines on the stage in the form of countless flames, making the stage shine in unprecedented brightness and colorfulness and decorating the magnificent orientalist fantasy, which responds to the sun on the stage as a powerful chandelier in the hall and allows a whole new art of control to be exercised, is what gives this story of Aladdin's magic lamp its sensual evidence in the first place. Perhaps the connection is even closer than one thinks, after all, gas, unlike oil and wax, is not solid and not visible, it escapes the burners, much like the lamp spirit does to this day, as a gaseous event. A lamp with an endlessly emanating spirit inside, that is very close to what a gas burner must have looked like to contemporaries. But the actual spirit that was in this lamp was called Argand, because it made enlightened apparatuses out of simple burning points.

2.2 Reflectors: Chemical Reactions and Enlightened Light (1781–1784)

What enabled gaslight and thus the *féeries* (in France), *extravaganzas* (in the USA) and late *pantomimes* (in England), but also the melodrama, i.e. the spectacular theater of the nineteenth century, was the exploitation of fossil fuels, but even more the increased interest in the nature of the combustion process and the techniques for amplifying and steadying the flame that grew out of it.

It is Lavoisier (1743–1794), founding figure of chemistry and theorist of oxidation, who in 1764 won the competition of the *Académie des sciences* “pour éclairer une grande ville,” then in the 1770s decisively developed the theory of oxidation (until then the phlogiston theory had been in use, which assumed a heat substance

Fig. 2.3 Réverbère.
(Antoine Laurent
Lavoisier: *Oeuvres de
Lavoisier*, vol. 3, 1865)



released in combustion) and who finally in 1781 in a speech before the *Académie* makes groundbreaking proposals for reforming theatrical lighting.²⁶ (Thus the light comes, as it were, from the city via science into the theater.) The first point of attack of the reform proposal are the *chandeliers*, of which there are still many in the theater in the second half of the eighteenth century. Lavoisier was particularly disturbed by those that hung above the proscenium and cast their light equally onto the hall *and* the stage. Firstly, too little light comes from them into the rear parts of the hall, making it difficult to look around and read along, and secondly, they cast too much light on the area between the hall and the stage, which impairs the view of the latter from the former. He therefore proposes the removal of the chandeliers in the portal area and their compensation by the reinforcement of the foot ramp on the one hand, and on the other hand a light hidden in the ceiling that illuminates the entire hall.

Both are to be made possible, as already with the improvement of the street lighting, by the use of the *réverbère* (cf. Fig. 2.3), a concave metal mirror that is positioned behind the lamp and directs all the light that escapes to the rear in one direction to the front, thus greatly improving effectiveness and economy.²⁷

²⁶Cf. Antoine-Laurent de Lavoisier, “Sur les différents moyens qu’on peut employer pour éclairer une grande ville,” in: *Oeuvres de Lavoisier*, vol. 3: *Mémoires et Rapports*, ed. by J.-B. Dumas/E. Gimauc et al. Paris: Imprimerie impériale 1865, pp. 1 ff.; the same: “Mémoire sur la manière d’éclairer les salles de spectacle” [1781], in: op. cit., pp. 99 ff.

²⁷Lavoisier: *Oeuvres de Lavoisier*, vol. 3: *Mémoires et Rapports*, op. cit., 1865, p. 18 f., transl. by the author. Cf. also op. cit., p. 94: Il y aurait donc un avantage réel, et du côté de l’effet et du côté de l’économie, à la réfléchir par un miroir ou par un réverbère, surtout s’il était mobile. So it would be a real advantage, on the one hand for the effect and on the side of the economy, to reflect it (the light) through a mirror or a reverberator, especially if it were mobile.

The mirrors or reverberations can be flat or crooked if necessary: I expect there, however, because of the word of *reverbere*, a concave metal mirror of any shape, arranged in such a way as to collect a portion of light which would be lost without it, in order to direct it to the ground or, in general, to the object which one wishes to illuminate, in such a way that all the rays leaving the point of light turn to the advantage of that very object, that none gets lost or turns to something else. The most perfect of all reverberations would be one in which the arrangement would be a line drawn by the light in the desired direction, it always reached the ground, would be direct after it reflected.

Les miroirs ou réverbères peuvent être à la rigueur plans ou curvilignes: j'entendrai cependant ici, par le mot de *réverbère*, un miroir concave de métal, de figure quelconque, disposé de manière à recueillir une portion de la lumière, qui, sans lui, aurait été perdue, à la diriger vers le plan, or en général vers l'objet qu'on veut éclairer, de sorte que tous les rayons qui partent du point lumineux tournent au profit de cet objet, qu'il n'y en ait aucun qui se dissipe ou qui se porte vers un autre. Le plus parfait de tous les réverbères sera donc celui dont la disposition sera telle qu'une ligne étant tirée de la lumière dans telle direction qu'on voudra, elle parvienne toujours au plan, soit directement, soit après avoir été réfléchie.

This is not entirely new, the reflector is perhaps as old as artificial lighting in general. Already Sebastiano Serlio (1475–1554) suggests to put a barber's basin behind a torch, so that “its reflection will make such a shine as the rays of the sun”.²⁸ And Joseph Furttentbach (1591–1667) proposes a “prospective lantern” in a tapering box: “zu dem Ende/damit der Glantz und splendore, wegen angedeuteter Prospectiva/wol durch die vornen habende weitte zerspreitt/also in die Tieffe/Höhe/und zu beiden Seyten/auch in die ferne wol leuchten möge”.²⁹ Hammered gold is to be nailed behind oil lamps, so that “the glitter falling from the light in it may shimmer wonderfully”, the light behind the clouds may “twinkle with delight”.³⁰ It is thus not so much the light that the lamps emit into the room that is to be intensified, but rather the impression that these lights themselves make. The flames, which are thought of as a part of the room, are not to be concealed or hidden, but rather emphasized and highlighted, in accordance with the principle of illuminations and fire-works, which are ornaments of the sovereign and his state. And in this respect this *shining, shimmering, twinkling*, which can be well associated with the light decoration of baroque palaces, is something very different from what Lavoisier had in mind with the reflector.

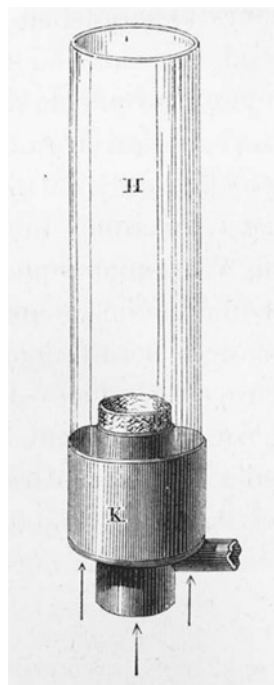
For the *réverbère* à la Lavoisier is conceived as a technical thing that is not itself intended to become visible, that loses visibility precisely through and in its very action. The light that is to emerge from such an apparatus, no longer *shimmers*, it only *shines*. For this purpose, however, it is necessary to summarize the light, which is no longer allowed to radiate in all directions as if from a central star, but must be directed in one direction. In addition to the concave reflector (Furttentbach's

²⁸Johannes Bemmman: *Die Bühnenbeleuchtung vom geistlichen Spiel bis zur frühen Oper als Mittel künstlerischer Illusion*. Leipzig: Thomas & Hubert 1933, p. 63, cited in Baumann: *Licht im Theater*, op. cit., 1988, p. 7.

²⁹Joseph Furttentbach: *Halinitro Pryoblia. Beschreibung einer neuen Büchsenmacherey* (...), Ulm 1627, p. 13, cited in op. cit., p. 7.

³⁰Ibid.

Fig. 2.4 Argand lamp.
(Louis Figuier: *Les Merveilles de la science*, 1870)



knocked-out box is only suitable to a limited extent, but Serlio's barber's basin approximates the form), however, what is needed above all is a source of light that is strong but not large, i.e. the opposite of the uncivilized rampant fire.

This new source of light is mainly due to a student of Lavoisier. Aimé Argand, son of a Geneva watchmaker, set about improving the oil lamp starting in 1780 and in 1783, the same year that the Montgolfiers were conducting high-profile experiments with gases in hot-air balloons, he introduced a lamp that would first be named after a competitor, Quinquet, but after some patent disputes would eventually bear his name and represent the real break in artificial lighting for streets and theaters (see Fig. 2.4).³¹

The Argand lamp is an oil lamp that takes advantage of Lavoisier's realization that combustion requires oxygen, and regulates and improves the air supply to the flame by means of a hollow wick and a glass cylinder. In addition, the burning point and fuel are separated by a separate tank. The result is a scientifically ameliorated flame that not only smokes, flickers and stinks less, but also has increased brightness (from 9 to 12 wax candles according to Benjamin Thompson)³² and a wick that can be regulated.

³¹ Cf. Michael Schröder: *The Argand Burner. Its Origin and Development in France and England 1780–1800*, Odense: Odense University Press 1969.

³² Benjamin Thompson: "Beschreibung einer Methode, die comparativen Intensitäten des Lichts leuchtender Körper zu messen." *Neues Journal der Physik*, Zweyter Band. Leipzig 1795, p. 51.

1) the cotton wick was woven round and hollow like an intestine, 1 inch in diameter, standing freely within a glass cylinder about 2 inches wide, open at the bottom and top, consequently 2) the air circulates very violently both through the wick and the annularly burning flame, and between it and the glass cylinder, and thus causes an extremely bright, shining and calm light, and the entire empyrean essence, which in other lamps develops into vaporous smoke, is completely consumed, or is combined with the atmospheric air in such a way that even the most irritable nose and lungs do not detect the slightest odor of it; 3) the flour is placed in a sealed vase, and thus the use of this lamp is associated with extreme cleanliness.³³

It was not until the Argand burner that the oil lamp became acceptable. Until then, lamps gave a smoky light with low brightness, which also spread an extremely unpleasant odor due to the poorly purified fuels and was inferior to wax and tallow candles in everything except price (a visitor to the Paris Opera speaks of a “steam black-brown and dense, like from a brewery” that rises into the air).³⁴

But with the Argand burner, theaters also switch to oil. When, on April 27, 1784, the Comédie in the newly built Odéon opened with the premiere of *Le mariage de Figaro*, an observer described the new light as “vivid, fresh, clear, without smoke and inexpensive,” though still in need of improvement.³⁵ Thirty years later, when the Argand lamp is also used in Germany, but gaslight is already foreseeable, August Klingemann (1777–1831) describes the conversion of the Dresden theater in the 1820s as a change from “smoking tallow” to “Argand beam light” and states that the theater had “evidently gained in enlightenment”.³⁶

In the Argand lamp, the enlightened lamp, the separation of divine light and satanic fire becomes unstable.³⁷ Whereas until then the dominion over light had been reserved for the divine, man now appeared as an actor of light through his mastery of fire. Thus “‘light’ moves into the realm of what can be done; truth loses its natural *facilitas* with which it has always asserted itself.”³⁸ With the feasibility of light, truth transforms from something that shows itself to something that must be shown. Henceforth it is a matter of “shedding light” or, as Romanticism then does, of defending the shadows.

³³ Johann Georg Krünitz: *Oekonomische Encyclopaedie oder allgemeines System der Staats- Stadt-Haus- und Landwirthschaft in alphabetischer Ordnung*, vol. 59. Berlin: Pauli 1793, p. 228.

³⁴ Cited in Baumann: *Licht im Theater*, op. cit., 1988, p. 3.

³⁵ Louis Petit de Bachaumont: “Entry on Apr 29, 1784,” in: *Mémoires secrets pour servir à l’histoire de la République des Lettres en France depuis 1762 jusqu’à nos jours*, vol. 25, 1786, pp. 260 f.

³⁶ August Klingemann: *Kunst und Natur*, 3 vols, vol. 3, new edition. Brunswick: 1828, p. 254.

³⁷ Hans Blumenberg: “Licht als Metapher der Wahrheit,” in: *Hans Blumenberg. Ästhetische und metaphorologische Schriften*, ed. by A. Haverkamp. Frankfurt a. M.: Suhrkamp 2001, pp. 139–171.

³⁸ Op. cit. p. 445.

2.3 Foot Ramps: Natural Figures and Unnatural Light Sources (1757)

The new feasibility of light and truth is reflected in the criticism of theater lighting that emerged at the same time, which almost always ignites at the foot ramp and leads to a never-ending series of demands for reform until the end of the nineteenth century.

When one sees the light source at the feet of the actor, doesn't the thought suggest itself that this light shine comes straight from hell? After all, in real nature the light always shines down from above, while in the theater we are supposed to be condemned to receive it from hell!³⁹

Instead of the clear divine glow that falls naturally from above, the critic Jean Baptiste Pujoulx says here, the foot ramp gives an “unnatural” light that seems to spring from diabolic fire and whose greatest sin would be precisely, all critics agree, to distort the actors’ faces into (as E. T. A. Hoffmann puts it) a “disgusting grimace”: “our groups resemble Chinese pictures without posture and without perspective, merely for the sake of that perverse illumination.”⁴⁰ Pujoulx accuses the foot ramp in 1801 of destroying “tout espèce de vérité” (all kinds of truth), Catel complains in 1802 about the blatant lack of naturalness. For the new physiognomic truth of expression, which depends on the visibility of facial expressions, needs, above all, more light (preferably from above) in order to combat the penumbra of the candles, which opposes the masking.

The increase of light by the Argand lamp is in this respect not a subsequent effect of advancing technology, but meets an aesthetic need of the time. A new regime of visibility is called for before the lamp comes on the scene, and seems to drive the exploration and improvement of artificial light in the first place. Finally, even on the stage, brightness is slowly increasing even before the Argand lamp, in the course of the eighteenth century, as Bergman was able to show in the candle consumption of the Comédie (cf. Table 2.1).

However, as can be seen from Table 2.1, between 1719 and 1757, not only does it become brighter in the theater and there is a partial switch from candles to oil lamps, but the distribution of lamps and light also changes. The reduction of the chandeliers in the auditorium, which previously also provided much of the light for the front of the stage, is compensated for by the reinforcement of the foot ramp and lights from above in the proscenium area. The light that falls on the stage thus

³⁹Schivelbusch: *Lichtblicke*, p. 183, German translation of the original by: Jean Baptiste Pujoulx: *Paris à la fin du 18^e siècle*. Paris: Brigitte Mathé 1801, p. 128. [Original quote: “A voir ce foyer de lumière qui part aux pieds de l’acteur, ne dirait-on pas que c’est du tartare que viennent les feux qui l’éclairent? Quoi! dans (sic!) nos champs, dans les appartemens, la lumière nous vient toujours du ciel, et nous serons éternellement réduits à ne la recevoir au theatre que de l’enfer!”].

⁴⁰E. T. A. Hoffmann: “Seltsame Leiden eines Theater-Direktors,” in: *Hoffmanns sämtliche Werke* (= Bibliothek der besten ältern und neuern Deutschen Schriftsteller 16). Paris: M. Hesse 1841, pp. 874–906, here: p. 896.

Table 2.1 Lighting of the Comédie Française before gaslighting

	Hall	Ramp	Scenes	Soffits
1719	12 chandeliers, 136 candles	48 candles	48 candles	–
1757	4 chandeliers, 48 candles	32 oil lamps of 9° each	116 candles	36 oil lamps à 4° (portal center)

Data taken from: Bergman, op. cit., 1977, p. 173



Fig. 2.5 Performance of Metastasio's *Demophontes* at the Amsterdam Schouwburg on June 1, 1768. Illustration by Simon Fokke. (Stadsarchief Amsterdam)

moves from diagonally above to below, and along with this the light on the stage increases once again in relation to the auditorium.

This development is further reinforced by the removal, also in 1757, of the chandeliers above the proscenium, which until then had been central to the theater's lighting, and which can only be compensated for by the foot lights (cf. Fig. 2.5). Instead of the light from the portal chandeliers, which illuminates the space of the theater as a whole, the foot ramp provides a light that divides the space in two and separates one half, into which the light is reflected, from the other half, which is henceforth protected from glare by direct light by a screen. Voltaire had demanded the removal of the chandeliers from the portal for his *Sémiramis*; it was finally

enforced at the insistence of Henri-Louis Lekain, who, like Mlle. Clairon (aka Claire L  ris, 1743–1766), became the advocate and model of a new practice of acting.⁴¹

These *dual* lighting conditions in the Com  die (which in large part become exemplary for the European theaters) do not stand alone in this respect, but are rather part of a reform project that around 1800 drastically changes what the theater represents. It is no longer the special ones, who are singled out from the community and presented as ideals, who are to make their appearance in the theater from now on, but rather *others*, who themselves are no longer part of the community and can be juxtaposed with it. Instead of the emblematic *marking* of the figure, what is needed from now on is its imitative *realization*, which allows the performer to temporarily remove herself from the concrete social space and from what is customary and permissible in it by referring to another, remote, but existing place.⁴² La Clairon, as Lessing calls her, famously appears “sans paniers” and “en costume chine,” in Turkish costume “les bras    demi-nus,” and finally, definitively scandalous, in a shirt without sleeves, with disheveled hair.⁴³ The showing of more skin than is otherwise permissible in public, which is justified by the assertion of a stranger on the spot and the reference to a distant elsewhere, initially still leads to scandal because its critics judge it precisely according to the rules on site. In the long run, however, the scandal simultaneously ensures that that other space of the theater, the scene, is created in which prevailing social conventions are largely suspended in favor of aesthetic counterparts, because here living images of alien worlds are used as *tableaux vivants*. The from now on demanded *couleur locale*, the local coloring, of the scene as a whole and of each scene individually is not a question of style, but fundamentally changes what the stage, what the theater is supposed to be. The rhetor is pushed off the pedestal and the pedestal is replaced by a picture frame.⁴⁴

Such a pictorial otherness of the scene, however, presupposes its conclusion in relation to the unchanging location of the audience: that *grand mur* of Diderot (the fourth wall, which in the original French is a great wall) must be erected, behind which something takes place that can be observed from a *distance*. (The Argand lamp helps to maintain this distance insofar as it makes the cutting of the wicks by appropriate personnel during the performance superfluous.) Even before that, with

⁴¹Voltaire: “Appel    toutes les nations de l’Europe. (Des divers changements arriv  es a l’art tragique.)”, in: *Œuvres compl  tes de Voltaire*, Paris: Quantin 1879, pp. 211–221, esp. p. 211.

⁴²Cf. Martin Meisel: *Realizations. Narrative, Pictorial and Theatrical Arts in the Nineteenth Century*. Princeton: Princeton University Press 1983; cf. Voltaire: *L’Orphelin de la Chine. Trag  die. Pr  sent  e pour la premi  re fois    Paris le 20. Aout 1755. Avec deux lettres critiques*. Paris: Michel Lambert Libraire 1755.

⁴³Jean-Fran  ois Marmontel: “M  moires, Livre V;” in: *Oeuvres compl  tes*. Paris: Amable Costes 1818, p. 259.

⁴⁴Cf. Kirsten Gram Holmstr  m: *Monodrama, Attitudes Tbleaux Vivants. Studies on some trends of theatrical fashion*, Stockholm: Almqvist & Wiksell 1967; G  sta M. Bergman: “Aaron Hill, ein englischer Regisseur des 18. Jahrhunderts,” in: *Maske und Kothurn* 8, 1962, pp. 295–340; Baron G. von Seckendorff: *Vorlesungen   ber Deklamation und Mimik*, 1818, Chapter on Illumination, vol. 2, Brunswick: 1818, p. 285.

the reconstruction of April 1757, not only the chandeliers above the portal disappear; also those spectators who until then had accompanied the performance on the right and left of the portal have to leave.⁴⁵ Without the address to the audience, however, the latter dissolves into a collection of observers from a distance, whose ideal position Diderot describes when he recommends to withdraw into the rank and to cover one's ears in order to judge the play and the actors. But where an observer looks from a distance at an alien world, the gesture on the stage side of the fourth wall loses its rhetorical address and its function of supporting speech, and itself becomes – like the rubbing of Macbeth's hands – the sign of a language of the body that is meant to conceal a deeper truth and have a stronger effect. It becomes possible to the very extent that any turn to the audience, any reference to representation is avoided.

It is precisely by distancing itself from the action, by the lack of interaction and address, that bourgeois theater paradoxically seeks to increase truth and impact through an empathetic sympathy with the action. The creation of an inner sentimental agitation of the spectator is to be made possible precisely by the renunciation of direct rhetorical influence, and it works to create that bourgeois inwardness which will characterize the subjectivity of the nineteenth and twentieth centuries. It is the same principle as in the *réverbère* and all subsequent projection devices: By refraining from direct action, hiding the source, and rapturing the audience, the intensity of the experience is heightened. Both actors and spectators are in this respect transformed into projection apparatuses, no longer interacting directly with each other but rather through those figures on whom spotlights cast their light, to whom actresses lend their voices and spectators offer their sympathy, reflecting everything like a mirror.

The decisive thing about the change from the chandelier to the ramp is that it divides the one assembly room of the theater in two, into the place of pure looking and the place of being looked at, and thus creates that other world in the first place that the theater has to offer. This is how the *other world* was created in the first place. It made the theater both a free space for the bourgeois public and was based on the appropriation of a stranger. For unlike the mask-like play of the baroque festival, in which every count could play the king of America, the bourgeois theater no longer simply slips on the exotic costume, but tries to make a non-self become reality through transformation and thus to get a view of the exotic as something different from the self and kept at a distance. One does not play with the things from afar, but enters them in order to be transformed, – and on the other hand looks down on them, likewise in order to be displaced, to be in a different place in the here and now. This is the very idea of the theatrical illusion, time travel, not sensory illusion, as is already clear in Charpentier.⁴⁶

⁴⁵Cf. Frederick Hawkins: *The French Stage in the Eighteenth Century*, vol. 2. London: Chapman and Hall 1888.

⁴⁶Louis Charpentier: *Causes de la décadence du goût sur le théâtre: où l'on traite des droits, des talens, & des fautes des auteurs, des devoirs des comédiens, de ce que la société leur doit, & de leurs usurpations funestes à l'art dramatique*, vol. 1. Paris: Parnasse Francois 1758, p. 71.

I arrive at the Comédie as at a friend's apartment. One must destroy this idea, one must transport me to the palace of Augustus, to the seraglio, to the temple of the people of God, to the camp of Alexander. When I always see the hall, I have little interest in representation.

J'arrive à la Comédie comme dans un appartement d'ami. Il faut détruire cette idée; il faut me transporter dans le palais d'Auguste, dans le sérail, dans le Temple du peuple de Dieu, dans le camp d'Alexandre. Si je vois toujours la salle, je prends peu d'intérêt à la représentation.

The hall must disappear so that one can be elsewhere. Because another world should become visible there, because one should no longer participate in the play and only look, it seems to Marmontel in 1787 that even the scene changes should not take place openly, but hidden, that one should not see the appearance of the “valets de théâtre,” the theater servants.⁴⁷ In this respect, the much-invoked theatrical illusion, in the sense of deception through the absence of anything that might remind one of one's own location, is less the goal of this aesthetic than its consequence. What drives it is not so much the attempt to let appearance take the place of being, but rather the effort to let another reality become visible on stage. The illusion is not a shadowy image, but the construction of a reality and a relation to reality, whose dominant aesthetic operation is the here described *closure* of the scene. And because the scene is closed in itself, it also loses contact with the hall.⁴⁸

In this respect, the naturalistic criticism of the foot ramp is decidedly paradoxical. After all, the foot ramp is precisely not a sign of the outmoded baroque court theater business and attains dominance only in the enlightened bourgeois theater of

⁴⁷Marmontel: “Entr’acte” (from: *Les Eléments de Littérature*), in: *Œuvres complètes de Marmontel de l'Académie Française*, Nouvelle Edition, Tome XIII, Paris: Verdier 1818, pp. 310–314, here: p. 314: “L'illusion y gagnerait; les moyens de la produire seraient plus simples et en plus grand nombre; on ne verrait plus ce jeu des machines, que n'est plus étonnant, et qui devient visible quand le mouvement est manqué: on ne verrait plus des valets de théâtre venir ou ranger ou déranger les sièges du sénat romain; l'œil et l'oreille ne seraient pas en contradiction, comme lorsqu'on entend des violons jouer un menuet près des tentes d'Agamemnon ou à la Porte du Capitole; et le coup-d'œil d'un changement subit de décoration serait réservé pour le spectacle du merveilleux.”

[“The illusion would win here; the means to produce it would be simpler and more numerous; one would no longer see the play of the machines, which is no longer amazing, and which becomes visible at the moment when the change is missed: One would no longer see theatrical servants coming or clearing the chairs of the Roman Senate, the eye and ear would not be at odds while one heard the violins playing a minuet by the tents of Agamemnon or by the door of the Capitol, and the moment of sudden change of decoration would be reserved for the marvelous spectacle.”]

⁴⁸This *projected* illusion is in this respect something fundamentally different from the perspective illusion of the baroque scenery stage, which by means of the illumination of spatially displaced paintings creates the impression as if the space of the theater hall would continue into a street, a courtyard, or even a pastoral landscape. (Cf. Johann Friedrich Schütze: *Hamburgische Theatergeschichte*, Hamburg/Leipzig: 1794, p. 697: “The machine master Achterkirch fulfills his duty to set the paintings of Mahler in the most diverse light, according to the requirements of the rules of perspective in a way that promotes deception. The lighting is properly distributed: The back, middle and foreground of the stage receive as much light and no more than the effect of the decorations requires”).

the eighteenth century. Although it is already mentioned by Furttentbach and Sabbatini, it is hardly used in relation to the other lights; Sabbatini even explicitly advises against its use. The many wicks would produce “a strong smoke, that between the views of the spectators and the scene a fog seems to lie, which prevents the differentiation of the smaller parts of the scene. To this must be added the foul odor which the oil lamps give off, especially when they are set low.”⁴⁹ Consequently, these appeared pale and distorted, so that the desired effect turned into the opposite. “Indeed, one believes to make the stage brighter, but gets it darker and more sinister [...]”⁵⁰ It is only since the middle of the eighteenth century, i.e. very shortly before the onset of the never-ending criticism of this type of lighting, that evidence of foot ramps in European theaters has increased at all.⁵¹

The criticism of the foot ramp, in which bourgeois realism is bundled, thus begins almost simultaneously with its establishment. Which means, it is not a long-standing evil that is criticized here, which would be remedied as soon as the technical possibilities were there, as the progressive narrative would have it, but rather the contradictoriness and instability of the aesthetic-technical configuration of the bourgeois theater itself is expressed. For the very technique that makes possible the closure of the scene by light-technical means, and thus the assertion of a different scenic space, seems in the same breath to betray this space as an unnatural and false one. Only since the light no longer falls from the chandelier above, the demand arises that it should come more correctly, that is, “naturally” from above, where the sun is also. What is contested is the light shining up from the ramp, which leaves both the separation of the spaces and the unnatural shadows on the faces. It establishes an alien nature that at the same time exposes it as unnatural.

This is why the hated light of the ramp is not dispensable, because as Cochin already states, without the ramp the stage would not only lack important light, but also the separation from the hall. The foot ramp, in fact, has the advantage that “it blinds the actor and prevents him from becoming aware of the very near persons who might mislead him by their incessant gazing.”⁵² With the foot ramp, the bourgeois actor looks insane, but without it, he runs the risk of becoming truly insane. Possart still emphasizes this advantage of the foot ramp at the end of the nineteenth century when he states in reference to the separate performances before Ludwig II: “Whether the hall is full or empty is of no consequence to us; the actor hardly distinguishes, for the blinding ramp deprives his eye of any distant view into the dimly lit house.”⁵³ The ramp guarantees the closure of the scene and thus also dissolves

⁴⁹Nicola Sabbatini: *Pratica di fabricar Scene, e Machine ne' Teatri*, Ravenna 2 1638, transl. by W. Flemming. Weimar 1926, p. 212.

⁵⁰Ibid.

⁵¹Cf. Baumann: *Licht im Theater*, op. cit., 1988, p. 22.

⁵²Charles Nicolas Cochin: *Observations sur l'architecture*. Paris: Desaint 1765, in German as “Vorschlag zu einem Komödienhause,” in: *Neue Anmerkungen über die Baukunst*, ed. by Abbé Marc-Antoine Laugier. Leipzig 1768, p. 308 ff.

⁵³Ernst von Possart: *Erstrebtes und Erlebtes. Erinnerungen aus meiner Bühnentätigkeit*. Berlin: Mittler 1916, p. 259.

that audience which had constituted itself as a collective counterpart in the address of the actors. Beyond the ramp there are only sovereign individuals, usually many of them, in Ludwig's case exceptionally only one.

2.4 Showcases: Optical Techniques and Artistic Light Changes (1760–1822)

This closing of the scene, however, which leads to the separation of product and production described above, brings with it a new way of seeing, or rather: it brings with it the dominance of the visual in the first place. The basis for this new way of seeing in the theater, however, is the described *change of light* in the theater: from an open, active light that plays itself into the foreground and radiates as shine, glitter and glimmer in all directions,⁵⁴ makes the stage itself and the bodies shine, to a *directed* and at the same time *hidden* light, which itself can no longer be seen, but only sensed in the reflections of the objects it makes appear.

To enlightened lighting technicians like Cochin, baroque opera with its flying gods and wooden clouds, jeweled ornaments, tinsel effects, and banner lighting thus appears to be an infantile spectacle, because light itself still makes an appearance and is not yet utilitarianly suspended.⁵⁵ For this is precisely what the bourgeois theater reformers want to happen to light: it is to cease to appear as an individual body, and instead it is to help to create light through *clair-obscur* to carry those contrasts, as they are known from landscape painting of the Romantic period, into the space of the theater and to lend contrast to the stage itself. Accordingly, as early as 1750 Francesco Algarotti complained about the inadequate *distribution of light* on the stage.

The light would do wonders if it were not distributed equally and on a small scale in all places. If one distributed it with more art; if one let whole measures fall on individual parts of the scene, if one gave others none at all, would one not produce the same power and vividness of the chiaroscuro on the theater that Rembrandt knew how to bring into his engravings?⁵⁶

The background of this demand for light and shadow instead of uniform light distribution is not so much a new aesthetic preference, a fashion à la Rembrandt, but rather the transformation of the stage from a central-perspective extension of the courtly hall into a contrast-laden image that is completely detached from the architecture of the theater as a self-contained and unified whole. Living pictures – *tableaux vivants* – not geometric architectures are what are to be shown and in which, precisely to the extent that the new enlightened light with its improved performance is also able to reach the center of the stage, a new unity of bodies and scenery can emerge. For, not

⁵⁴ Cf. Bergman, op. cit., 1977, p. 177.

⁵⁵ Cf. Charles Nicolas Cochin: *Lettres sur l'opéra*. Paris: Celiot 1781, p. 79 f.

⁵⁶ Francesco Algarotti: *Versuche über die Architektur, Mahlerey und musikalische Oper*, transl. by R. E. Raspe. Kassel 1769, p. 284.

least thanks to the ramp, the actresses can now also move away from the ramp.⁵⁷ Instead, it should help, through light and shadow, to unite images and bodies into a whole pictorial context, to create that unity which, as the considerations of the theater reformer Mannlich show, can now suddenly be noticed as missing.

The way we usually illuminate our stage, there is only shadow and light in the painted decorations or in the ground of the painting, but the actor himself, who is illuminated from below and on all sides, appears merely as an outline, and is consequently a contradiction in the whole [...]. Even the best composed group in our performances lacks effect; for each figure remains isolated because it is not connected to the others by shadow and light.⁵⁸

In order to create this optical unity, however, a new method of illumination is needed, which, as Lavoisier, among others, points out, separates the illumination of actors and decorations, and thus creates the contradiction between the painted and the cast shadows that seals the end of the scenery system at the end of the nineteenth century, because images and bodies can no longer be reconciled.

The central perspective and with it the spatial geometric pretence of a room by means of staggered images – this too was already clear to Lavoisier at the end of the eighteenth century – was thus called into question. Accordingly, around 1800, for the first time, but in many voices, a demand was made for what was to be realized slowly in the course of the nineteenth century: the growth of the stage in width with a simultaneous loss of its depth.⁵⁹ Crucial for the theater aesthetics of the nineteenth century becomes the prospectus, the conclusion, because it is (according to Lavoisier) most important for what the nineteenth century now understands by illusion. Unlike the perspective stage, the background prospectus does not compete with the bodies on stage, and it is a carrier of *moods* that henceforth make up the theater. Just as “the least movement, the least change of features” (Lavoisier) should be discernible on the face, the weather is outlined on the prospectus in terms of lighting. The criticism of the unnatural light of the foot ramp, the demand for *clair-obscur* and real shadows is also part of a change of the scene from perspective to panorama.

From the geometric-architectural baroque stages operated by master builders, a new configuration is constructed (still within the old mechanical apparatus), which

⁵⁷As Langhans notes in 1810, the new light makes the center of the stage playable for the first time, and this is something whose impossibility Riccoboni had still used to reject Diderot’s demand for a new way of playing (cf. Carl Gotthard Langhans: *Über Theater oder Bemerkungen über Katakustik in Beziehung auf Theater*. Berlin: Gottfr. Hayn 1810, p. 29).

⁵⁸Johann Christian von Mannlich: *Versuche über Gebräuche, Kleidung und Waffen der ältesten Völker bis auf Constantin d. Gr. nebst einige Anmerkungen über die Schaubühne*. Munich: Selbstverl. 1802, p. 13.

⁵⁹In 1781, *Noverre* already proposed a stage that was reduced in depth and increased in width, which got by with three to four instead of eight to ten pairs of scenery, had no foot ramp, and introduced skylight boxes with reflectors directed downward (Jean George Noverre: *Observations sur la construction d’une salle d’Opera*. St. Petersburg: 1804). Bergman (*op. cit.*, 1977) relies on Brunetti’s data when he writes that the prospectuses would increase; for the Comédie he gives a ratio of 1.36 (35–40 ft. wide to 25–30 ft. high) after 1759 and 1.19 (38–41 ft. wide and 28–38 ft. high) after 1765. Baumann quotes Langhans, who in 1810 complained that the width could not be increased further because of inadequate means of illumination (Langhans, *op. cit.*, 1810, p. 6).

is built entirely from the *mixture of fabrics and lights*, driven by the tindered flames of Argand and the fossil fuel gas. The *Scientific American* describes this effect in detail in 1881, at the end of the development: a prospectus twice the height of the usual flats is needed, a sunset is to be painted on the upper half and moonlight on the lower half, initially only the upper one is visible, the scene in the distance is painted on another piece of canvas, like a skyline with trees, mountains and houses, cut out and placed in front of it. In front of that, in turn, a gauze curtain is set, painted on the sides and top, while the center of fine gauze lets the view through and gives an “aerial effect to the distance.” Then comes the (gas) light.

Red ‘mediums’ are employed to give a soft sunset glow to the scene. At the proper moment, the back-drop is very slowly and steadily hauled up, while the red ‘mediums’ are slowly turned off and the green ones turned on. The moon is made in the night half of the sky drop and rises with it. When it rises above the distant horizon the green ‘mediums’ are turned on to their full power and the green calcium light is brought into play. The effect of the change, when carefully managed is always very beautiful, and is sure to draw forth applause from the audience.⁶⁰

This is no longer the baroque sequence of images, the open change of perspective depths, but an oscillation of landscapes, whose change through light and color changes fits perfectly into the contemporary media landscape.

The *closing* of the scene into a tableau by lighting change, as described above, turned theater into an optical medium, or better (because in the language of the time): a *spectacle d’optique*. These are very similar techniques and aesthetics that become popular in the eighteenth century as rarity or peepshow boxes, shadow theaters, and phantasmagorias at fairs and, from the nineteenth century on, commercial successes in institutions such as panoramas, dioramas, and theaters. They are all spectacular in the sense that they give something to see, through the use of a light whose source is hidden. Unlike the sparkling visible lights of the Renaissance, which made the showroom a treasure trove, the lights in the optical spectacle are not visible. The light no longer goes out evenly in all directions, but rather is distributed unevenly. The optical spectacle lives entirely from contrast: on the one hand from the contrasts that arise in the image, through the uneven distribution of light, and on the other hand from that constituent contrast that arises between what is seen and those who see, plunged into ever-increasing darkness. In this respect, the basis of all spectacular culture is the control of light through architectures, optics, mirrors and transparencies.

The prototype of such an optical spectacle is the *Eidophusikon*⁶¹ (cf. Fig. 2.6), whose first performance was given in London on Feb. 26, 1781, and which, after a

⁶⁰ *Scientific American* 1881, Supplement 11, pp. 4265–4266, quoted in Rees, op. cit., 1978, p. 133.

⁶¹ Cf. Joppien, Rüdiger: *Die Szenenbilder Philippe Jacques de Loutherbourg. Eine Untersuchung zu ihrer Stellung zwischen Malerei und Theater*, Diss. Cologne 1972; Olivier Lefeuve: *Philippe-Jacques de Loutherbourg 1740–1812*. Paris: Arthema 2012; Sybil Rosenfeld: “The Eidophusikon illustrated,” in *Theatre Notebook* 18/2 (1963), pp. 52–54; David Kornhaber: “Regarding the Eidophusikon: Spectacle, Scenography, and Culture in Eighteenth Century England,” *Theatre Arts Journal* 1/1 (Fall 2009), pp. 45–59.

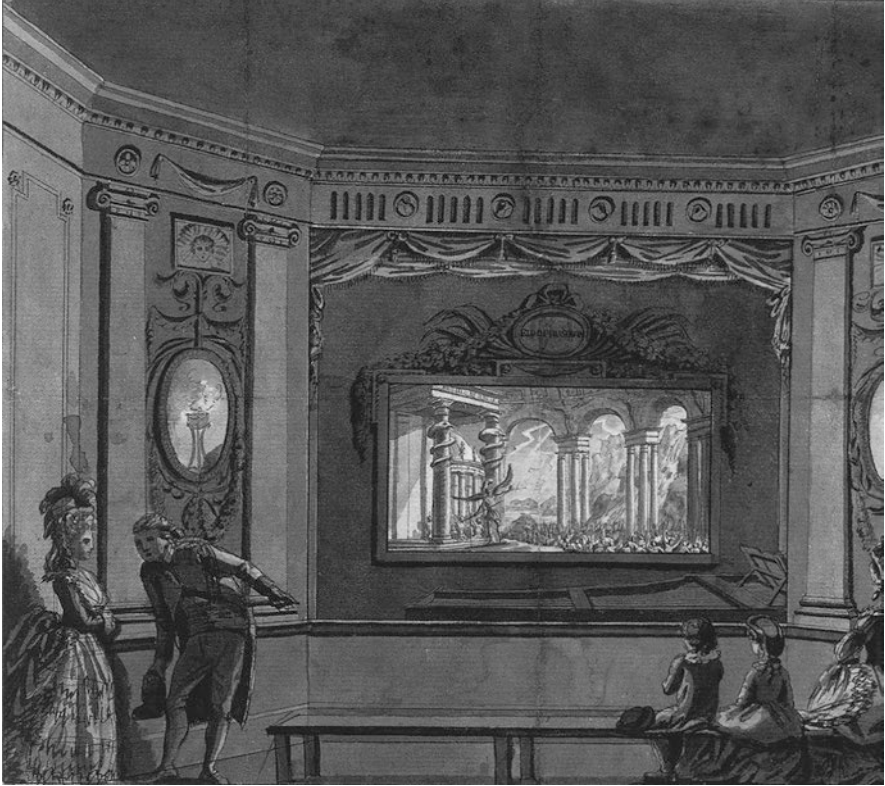


Fig. 2.6 View of Philippe-Jacques de Loucherbourg's *Eidophusikon*. (Drawing by Edward Francis Burney, 1782, British Museum)

few repetitions in the following years (1782, 1786, and 1793), has largely fallen into oblivion: basically a miniature theater, in which, however, no puppets performed, but landscapes were set in motion, a landscape painting supplemented by the dimension of time. Time and movement, however, still take place here in the sky, are expressed in the weather and are reflected in moods. Landscape, in generalized terms environment, thus becomes a carrier of meaning as in the closed scenes of time.

The creation of the *Eidophusikon* owes much to Philippe-Jacques de Loucherbourg (1740–1812),⁶² a Strasbourg painter engaged by David Garrick from Paris for the reform of the English stage at Drury Lane, and closely associated with that transformation of the theater exemplified above by the *Comédie*. As a painter, de Loucherbourg apprenticed himself to the Parisian masters, and with the classical repertory of the time, with storms and battles, became both a member of the

⁶²Cf. “De Loucherbourg, Philip James,” in: *Encyclopædia Britannica*, 11th ed., 1911; “Loucherbourg, Philip James de,” in: *Dictionary of National Biography*, 63 vols. London: Smith, Elder, & Co. 1885–1900.

Académie as well as a “trionphateur du Salon.”⁶³ Like many others, de Louthembourg catered to the growing bourgeois demand for atmospheric landscapes, using thunderstorms, storms, sunrises, sunsets, and moonlight as favored natural subjects as well as occasions for high-contrast color, atmospheric light painting, and dramatic situations.

An interesting example from de Louthembourg’s extensive oeuvre is *Coalbrookdale by Night* (1771), because it represents an early example of an “industrial landscape” in which the factory appears as romanticized nature and which at the same time seems composed like a melodramatic theatrical scene. As if created for a scenery stage, the picture seems to be divided into distinct planes. The pictorial motifs project into the picture from the edges on the right and left, forming a free line of sight in the center of the picture that seems to meet a transparent closing prospectus on and behind which a fire is staged with colored light that sets the foreground of the picture in dark contrast. It is no wonder, then, that de Louthembourg is rebuked by Diderot for the dramatic and theatrical effects of his painting, nor that it is in the theater that he eventually has his greatest successes.⁶⁴

For with a letter of recommendation from Jean Monnet, director of the Opéra Comique, de Louthembourg moved to London in 1771 and obtained employment as a scene painter at Drury Lane, which David Garrick sought to reform along Parisian lines after his return from the Continent in 1765. (As described above for the Paris Comédie, the chandeliers are removed from the stage area, the side lighting is increased, and the candles are changed to oil lamps.)⁶⁵ At Drury Lane, like few others, de Louthembourg marks the shift from emblem to detail, for he is one of the first to consistently depart from the hitherto fixed location typology of conventionalized backdrops, providing each play and scene with a different decoration. Like the characters, the scene is individualized, giving it a new character that can be summarized in three points: First, the scene design follows the new scientific knowledge of the time, takes its cue from archaeology and anthropology, and, attentive to cultural difference, creates detailed illustrations. Secondly, the scene design itself acquires scientific, i.e. *experimental* character, and de Louthembourg is one of the first stage painters to examine pictorial effects and optical effects in reduced-scale models in space (cf. Fig. 2.7). Third, and finally, with de Louthembourg, the decorations themselves become an event, are captured and described by daily newspapers, and claim validity and interest independent of the performance. Thus, as the scene closes, the theater becomes a visual spectacle; through the illustrative decoration of the scene, another space on stage becomes a reality.

The most important means to this end, however, is control over light. Even in his first letter to Garrick, which is basically still part of the contract negotiations, the scene painter de Louthembourg makes it unmistakably clear what changes in stage operations his engagement will bring: First, new light is needed to create those effects on the audience that he is concerned with: “invent sceneries that will cause

⁶³Joppien, op. cit., 1972, p. 3.

⁶⁴Cf. op. cit, p. 16.

⁶⁵Cf. Baumann: *Licht im Theater*, op. cit., 1988, p. 187.



Fig. 2.7 Stage model by Philippe-Jacques de Loucherbourg for the pantomime *The Wonders of Derbyshire*, ca. 1778. (Victoria and Albert Museum)

the audience a new sensation, and for this I shall have to change the manner of illuminating the stage.”⁶⁶ This new way of lighting the stage, however, serves the goal of bringing about a new unity, pictorial integration on the stage, and thus a new experience in which the spectator is drawn into the picture. And to achieve this, it ultimately requires absolute control over stage and light. It seems well-founded, in this respect, for Christopher Baugh to speculate that the Eidophusikon ultimately springs from a desire for that complete control over scenic means that is only ever approximated in the theater.⁶⁷ In other words, the Eidophusikon is not only a visual spectacle, but also a model for a theater dominated by a central controlling authority.

In any case, after the Eidophusikon, de Loucherbourg returned to the theater a few more times. In 1785, he created the pantomime *Omai: or, a trip round the world*, which is very loosely based on Captain Cook’s voyages and centers on the Polynesian O’Mai, who sailed with him to London on Cook’s second voyage. Stylized as the heir to the throne of Tahiti, he is to marry the daughter of Britannia *Londina*, but the couple must flee from a number of rivals who want to prevent the union of the two countries. Thus, they embark on a journey that spans an imagery that ranges from Kamchatka to Antarctica, New Zealand, Tonga, and Hawaii.⁶⁸ But already one year before the Eidophusikon in 1781, de Loucherbourg had designed

⁶⁶ Reprinted in Joppien, op. cit., 1972, p. 398 f.

⁶⁷ Cf. Baugh, op. cit., 2005.

⁶⁸ Cf. Michelle Hetherington: *Cook & Omai. The Cult of the South Seas*, Canberra: National Library of Australia 2001; Bernard Smith: *European Vision and the South Pacific, 1768–1850. A study in the history of art and ideas*, New Haven and London: Yale University Press² 1985.

an Egyptian hall on the occasion of an orientalist celebration of William Beckford at his country estate Fonthill Abbey, which later enters literature through Beckford's novel *Vathek*.⁶⁹ In his memoir, Beckford describes the impression of this decoration in words reminiscent of de Louthembourg's work for the theater.

I still feel warmed and irradiated by the recollections of that strange necromantic light which Louthembourg had thrown over what absolutely appeared a realm of Fairy, or rather, perhaps, a Demon temple deep beneath the earth set apart for tremendous mysteries [...] the glowing haze investing every object, the mystic look, the vastness, the intricacy of this vaulted labyrinth, occasioned so bewildering an effect that it became impossible for any one to define – at that moment – where he stood, where he had been, or to whither he was wandering [...] it was in short the realization of romance in its most extravagant intensity.⁷⁰

It is light that first appears in memory as a sensual experience, as something cast over a dreamscape that, through this very light, takes on an intangible unreality and mobility that, for Beckford, constitutes the essence of Romanticism. The viewer, however, is drawn into this scene in a way that, as Nigel Leask has pointed out, is not only quite similar to de Louthembourg's work at Drury Lane and with *Omai*, but also recalls the aesthetics of panorama and diorama.⁷¹

The diorama, erected in Paris in 1822 by another Romantic decorative painter, Louis Daguerre (1787–1851), was a large apparatus for viewing images for up to 350 spectators.⁷² For 10–15 min a performance lasted, during which the room was plunged into darkness and the landscape image painted on a semi-transparent canvas was shown changing through times and weather by a complex direction of daylight. The opening showed a cathedral and the Swiss Alps.

The diorama, like the Eidophusikon, was also a theater without actors, a landscape painting in the course of time, only on a larger scale and borrowing from the techniques of the panorama, which ensured that the gaze could not leave the picture.

Its goal is to resolve the problem that has been recognized for a long time and has remained unsolved; to find and gather the means by which, through imitation, to render nature as it is seen, that is to say to incorporate the changes over time produced by wind, light, mist. [...] Their project was never to produce general views, but only interesting perspectives.⁷³

⁶⁹ Cf. Iain McCalman, "The Virtual Infernal: Philippe de Louthembourg, William Beckford and the Spectacle of the Sublime," in: *Romanticism on the Net* 46 (May 2007).

⁷⁰ Cited in: William Beckford: *Vathek*, ed. with introduction by Roger Lonsdale. Oxford: Oxford University Press 1970, pp. xi–xii.

⁷¹ Cf. Nigel Leask, "'Wandering through Eblis': absorption and containment in Romantic exoticism," in: *Romanticism and Colonialism. Writing Empire, 1780–1830*, ed. by Tim Fulford/P. J. Kitson. Cambridge/New York: Cambridge University Press 1998, pp. 165–189.

⁷² Louis-Jacques-Mandé Daguerre: *An historical and descriptive account of the various processes of the daguerréotype and the diorama*. London: McLean & Nutt 1839; cf. Helmut and Alison Gernsheim: *L.J.M. Daguerre. The History of the Diorama and the Daguerrotype*. New York: Dover Publications 21,968.

⁷³ "Notice sur les panoramas et dioramas", in: *Annales mensuelles d'industrie manufacturière et des beaux-arts*. Paris: Bachelier 1827, pp. 206–216.

The attraction of the diorama was the change of times, i.e. the *change of light*; again and again, it is this “gentle change of light” that was praised and marveled at by reviewers and commentators, and whose precursor were the fog pictures that developed from the magic lantern – *dissolving views* – sometimes also called panopticon, which already worked on such transitions by means of two projection devices directed at the same surface.

Thus, for example, while we are admiring the exterior of some noble cathedral, it appears to dissolve away, and out of its elements the interior of the same building becomes distinct; this dissolves, and in its stead we now have some beautiful landscape [...] presently this changes – the trees are bare, the fields are white with snow, the clouds become dark, and snow begins to fall thick and fast, and all so life-like that it requires an effort of mind to believe that we are looking at mere optical images. Indeed, the illusion is perfect: the place of exhibition is darkened, the only light coming from the view itself: and every view being accompanied with appropriate music.⁷⁴

What is appealing in such a panopticon is the change, the fading from one image to the next, the possibility of seeing the same scene but again differently, and thus perceiving that change that weather and seasons bring: the passage of the sun, the falling of snow, the blowing of leaves, but also buildings filled with people, a holy house in peace and destroyed in war.⁷⁵

The effort to fix the place in its detail meets with the attempt to capture the change of nature in the course of time – and this is what all optical spectacles have in common, whether in theaters, in peepshows at fairs, or in dioramas and panoramas. However, what tends to disappear from the picture in the nineteenth century are the people and animals, because the temporality of their short-term movements, which only film learns to capture, is different from that of the weather and the seasons. Therefore, it finds as little place in the dioramas as it does in romantic ruined landscapes (cf. Fig. 2.8) or those early photographs brought to life by the set designer and diorama entrepreneur Daguerre. One of the earliest of these daguerreotypes shows the *Boulevard du Temple*, that place where the popular theaters are located, where metropolitan life rushes by night and day, and it shows this very place deserted (cf. Fig. 2.9). Simply because the exposure times of the photographic plates are still too long to capture the rapid movements of urban bustle. Only a single person can be seen in the front left, has survived, so to speak, because he is having his shoes shined.

It is easy to imagine how such a photograph could serve as a background for a diorama depicting the weather changes of a world that seems as deserted and abandoned as the ruins of Romanticism. If one imagines this photo, in turn, as a prospectus in the theater and wonders for what play and what genre such a scenery could serve, then the wordless actions and heroic figures from nineteenth century melodramas and pantomimes can very well be inserted into this idea.

⁷⁴*The Magic Lantern; its history and effects. Together with an explanation of the method of producing dissolving views &c.* London: Myers 1854, pp. 21–22.

⁷⁵Cf. W. J. Chadwick: *The Magic Lantern Manual*. London: Frederick Warne and Co. 1878.



Fig. 2.8 Louis Jacques Mandé Daguerre: *Temple de Salomon*. (Sepia drawing for the diorama, ca. 1836)



Fig. 2.9 Louis Jacques Mandé Daguerre: *Boulevard du Temple*, daguerreotype, 1838. (Wikimedia Commons)

2.5 Pyrotechnics: Color Plays and Fatigue Phenomena

Thus, if, as asserted in the previous chapter, electric light aims at a post-catastrophic theater, the preceding theater of oxidation is a thoroughly *catastrophic* theater. For catastrophe, for the spectacular theater of the nineteenth century, is not only what threatens the theater when its scenery, that is, its baroque traditions, catch fire; it is also its aesthetic center. What the ruin is to the landscape garden, the catastrophe is to the spectacle. As the most striking of all dramatic occurrences, it is the ideal subject for melodrama; it makes the action appear as a heroic overcoming of resistance, determines the shudder as the most important reception category, and not least enables an approach to a present that is constituted not least in the media coverage of catastrophic events.

The prototypical theatrical catastrophe in this context is the volcanic eruption, in particular the eruption of Mount Vesuvius in the 1760s, which became an event throughout Europe, much discussed in the public and scientific spheres, and accordingly found its way into countless plays – the first natural event that could precisely no longer be dealt with, as Michael Booth writes, by off-the-peg decoration, and which at the same time represented a new sensational spectacle of light.⁷⁶ Thus, in his report to the Royal Society in London, the English envoy Sir William Hamilton proposes, even for scientific purposes, a light installation that is superior to any painting and is the archetype of the lava lamps that later become popular.

I have also accompanied that collection [of lava rock] with a current of lava from Mount Vesuvius; it is painted with transparent colors, and when lighted up with lamps behind it, it gives a much better idea of Vesuvius than is possible to be given by any sort of painting.⁷⁷

Such a scientific art of light, however, which painting is not capable of achieving, is precisely what theater cultivates in the nineteenth century: the luminous change of color, which is scientifically produced and, generating *couleur local*, aims at an enlightened mastery of the world and at the same time, as a catastrophic event, always already threatens this mastery. At least the theater makes extensive use of these catastrophic color plays. With the eruption of Vesuvius at the end of Auber's *La muette de Portici*, the volcanic eruption is then canonized at the beginning of the Grand Opéra.⁷⁸

⁷⁶Michael Booth: *Victorian Spectacular Theatre 1850–1910*. Boston: Routledge & Kegan Paul 1981.

⁷⁷Sir William Hamilton/T. Cadell: *Observations on Mount Vesuvius, Mount Etna, and other volcanos: in a series of letters, addressed to the Royal Society*. London: Printed for T. Cadell 1774, p. 41.

⁷⁸Cf. Anselm Gerhard: *The Urbanization of Opera: Music Theater in Paris in the Nineteenth Century*. Chicago: University of Chicago Press 1998, p. 298.

Even more important than the volcanic eruption, the natural catastrophe, became those fires that broke out in the cities and were set by people in the course of the nineteenth century. Probably the most noted stage fire breaks out in Act V of Boucicault's melodrama *The Poor of New York* (1857), in which an impoverished middle-class family struggles against an evil banker who wants to snatch the last of their money.⁷⁹ About the London premiere at the Princess in 1864 (where the play, originally an adaptation of *Les Pauvres de Paris*, under the title *The Streets of London* was given) writes the *Tallis Theatrical* that it was “the best conflagration ever seen.”⁸⁰

We see the gloomy house where the villain lives and is concealed, and where the innocent and persecuted maiden has been secretly immured. Suddenly smoke is seen issuing, then sparks; the alarm is given, crowds rush in, police, fire-escapes, and finally a real engine of the ‘brigade’, drawn by real horses, dashes up at full gallop. The persecuted maiden appears at the window; the lover seizes her in his arms and descends in shouts of triumph. Meanwhile, the walls fall, beams tumble down, the villain is seen consuming slowly, the conflagration grows, and old people in the stalls rise nervously, and say, ‘This is really carrying the thing too far’.⁸¹

The scenic effort for the catastrophic sensational scene is immense and employs all available techniques, although, as the reviewer notes, it is not unimportant that it is carried too far, or at least that the old people in the audience comment on it that way (cf. Fig. 2.10).

Even in 1890, when in Berlin Richard Wagner's “wabernde Lohe” guards the banished Brünhilde, a similar impression is created.



Fig. 2.10 (a) “Effet d’incendie, vu de la salle”, (b) “Effet d’incendie, vu du fond du théâtre”. (Jules Moynet: *L’Envers du Théâtre*, 1888)

⁷⁹Cf. Daniel Gerould: *American Melodrama*. New York: Performing Arts Journal Publications 1983; Robert Hogan: *Dion Boucicault*. New York: Twayne Publishers 1969.

⁸⁰*Tallis Theatrical Newspaper*, Aug. 6, 1864, p. 292.

⁸¹*Cornhill Magazine* 53 (1886), p. 29.

When 'Brünhilde', resting on a hill, is sunk into sleep by 'Wodan's' incantation and the latter now begins the protective fire spell, little flames gradually flickered up all around the hill at the touch of the spear; more and more they grew, and at last they leaped up in mighty flames to the tops of the trees, which were moved to and fro by the tremendous air pressure. – I have never seen such a terribly beautiful spectacle, the natural truth of which was best expressed by the fact that some overly anxious ladies in the audience hurriedly left the theater.⁸²

It is a terribly beautiful spectacle, the charm of which seems to be increased for the male spectator by the fact that "anxious ladies" leave the hall. The theater cultivates the catastrophe. Like Anton Reiser, who also experiences the fire in his hometown with a lustful shudder and associates it with the "dark foreboding of great changes, emigrations, revolutions," "where all things would take on a completely different shape and the previous monotony would cease," the theater also seems to gain a pleasure from the fire catastrophe because it promises change and produces a longed-for mobility.⁸³ Whether the fire remains on stage or spreads to the theater, the spectacular anxiety seems similar.

This mobility, however, is the expression of an industrialized modernity, which, in addition to the theater of oxidation, finds expression in another steam engine that similarly allows one to travel through the world and has a similar susceptibility to catastrophe, the railroad. It is the railroad in which man experiences himself for the first time *in* the machine, as Wolfgang Schivelbusch has explained, because here, in contrast to the industrial commodity, through which the bourgeoisie experiences industry only mediatedly, production and consumption coincide.⁸⁴ At the same time, the railroad journey, much like factory work, detaches subjects from immediate interaction with their surroundings and places them at a distance from the environment they have traveled through. Whereas in the carriage the movement (of the journey) is still directly perceptible rhythmically as the power of muscles, in the breath and smell of the animals, in the texture of the ground, the sensuality of the journey is largely limited to the view out of the window by rails and machines.

This can easily be transferred to the spectacular theater of oxidation: Here, too, the journey around the world takes place in the name of progress; here, too, production and consumption coincide and the new machines directly affect the senses of those who have entered or are entering; and here, too, they detach themselves from their environment and enter into a relationship with an image world that is only optical, lying in the distance. Like the railroad (and the panorama), the theater in the nineteenth century cultivates a viewer's attitude that is reduced to looking, distanced and immobile, a perspective given by machines that is separated from scenic things and at the same time brings the world closer. While one's own place, the here and now, gives up its own time that is at rest in itself, places that are distant in time and

⁸² Heinrich Grans: *Die Wunder der Bühne*. Leipzig: O. Spamer 1890, p. 36.

⁸³ Cf. August Nitschke: *Körper in Bewegung. Gestures, Dances and Spaces in the Change of History*. Stuttgart: Kreuz 1989.

⁸⁴ Cf. Wolfgang Schivelbusch: *Geschichte der Eisenbahnreise. Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert*. Munich: Hanser 1977.

space are brought into the here and now, distance is experienced as a “painted surface” without depth and reduced to the optical.⁸⁵ Mallarmé already ranks the train station accordingly as an equal pleasure organization alongside bookstores and theaters, noting, “Travel to a region accessible by rail appears as nothing more than a visit to a theater or a library.”⁸⁶ And how the railroad, compared to the stagecoach, is no longer “operated by a number of independent agents”⁸⁷ but relies on telegraphic media technology to coordinate its operation, so too, as the theater becomes more spectacular, it relies increasingly on signaling and centralized control, a coordination of individual parts that protects the overall machinic ensemble from disaster.

Therefore, also the theater of the oxidation as the railroad is *padding* and padded *out* to dampen the shock (both literal and figurative) of industrial life: “What is padded out,” Schivelbusch observed in reference to the nineteenth-century penchant for facades, “is no longer a physical shock, but any reminder of the industrial origin of things, whether it be the iron construction of a station, an exhibition building, or the wooden construction of an armchair.”⁸⁸ But despite all the padding, the price of industrialization remains, the possibility of catastrophic accident cannot be ruled out; this is as true of the accelerated locomotion of the railroad as it is of the increased spectacularity of the theater.

The fire that is kindled on the stage always threatens to spill over onto the backdrops, those canvas-covered wooden frames that date back to another era and are now increasingly required to be protected from the fire by a new technique, namely impregnation. For, as Wolfgang Schivelbusch points out in his history of rail travel, the more effective the technology, the more catastrophic the collapse. To the extent that industrial technology introduces man, who has become a mass, into a high-energy machine, the misfortune that can result in the event of failure also increases. Just as the terrible railroad accidents are the inevitable flip side of accelerated locomotion, so the catastrophic theater fires of the nineteenth century are the counterpart of that aesthetic take-off based on the release of fossil energies. In other words, it is very similar problems that are surrounding theaters and railroads at the end of the century: In addition to the danger of accidents, these are, as AEG’s advertising brochures proclaim, above all *‘fatigue’* in the broadest sense. The industrial and modern strain on material and man through stress, noise, jolting can only be dampened to a limited extent by the ubiquitous upholstery of seats and interiors.

The end of this theater of oxidation is heralded in 1881, after the Ringtheater burns down in Vienna and Edison presents his power supply in Paris, through a

⁸⁵ Cf. Dolf Sternberger: *Panorama oder Ansichten vom 19. Jahrhundert*, Düsseldorf/Hamburg: Claassen 1938, quoted from the licensed edition Frankfurt a. M.: Suhrkamp 1974, p. 46; Stephan Oettermann: *Das Panorama*. Frankfurt a. M.: Syndikat 1980, p. 57.

⁸⁶ Cited in Schivelbusch: *Geschichte der Eisenbahnreise*, op. cit., 1977, p. 40.

⁸⁷ Op. cit., p. 30.

⁸⁸ Op. cit. p. 112.

number of institutions that set out to make the theater safe.⁸⁹ Theater managements issue service directives for technical personnel that are essentially fire prevention regulations.⁹⁰ Construction projects in progress are interrupted to allow for escape routes and to bring back a frightened audience. As early as 1882, the Gesellschaft zur Herstellung zeitgemäßer Theater Asphaleia (Society for the Production of Contemporary Theaters Asphaleia) in Vienna designs a patented model of a new theater built of steel and electricity, doing away with scenery and putting in its place hydraulic platforms in front of a circumferential circular horizon.⁹¹ In the same year that the first theater based on this model is built in Budapest, Franz Gilardone, a fireman from Alsace, self-publishes the first manual on fire prevention.⁹² Above all, however, it is police regulations that set new safety standards in the course of the 1880s, not leaving untouched how theater is made and what theater is.⁹³

The effects are thus first of all of a *material* nature. Buildings are no longer to be constructed with wood, but only with steel; lighting is no longer to be produced with gas, but only with electricity. The new technologies are being used where the old ones used to be: Rope hoists give way to steel hoists and gas burners to incandescent bulbs. For a long time, no changes were made to the plant that could have aesthetic consequences: The Prinzregententheater, built in 1900, for example, is an exact replica of the Bayreuth model, including steel scenery carriages, free rides and floor hatches according to the baroque system. And yet these regulations have consequences, because they set standards that decide what theaters have to look like inside and what is to be called theater. From now on, theaters must consist of a stage that must be separated from all surrounding rooms and parts of the building by fire-proof walls that run up into an obligatory stage tower into which the air can rise.⁹⁴

⁸⁹ Baumann speaks very emotionally in an otherwise very sober book, of a “rationally inexplicable (in square brackets)” recklessness that led to safety in the theater being forgotten, while the strictest regulations had long prevailed for railroads and steam boilers (Baumann: *Licht im Theater*, op. cit., 1977, p. 111).

⁹⁰ Cf. among others Richard Frenkel: *Instruction für das Beleuchtungs-Personal im Stadttheater Cöln/Rhein*, Cöln o. J. [probably 1882] (Theaterwissenschaftliche Sammlung, Universität zu Köln); “Instruction für die Feuerwächter des Bühnenfestspielhauses in Bayreuth” from 1882, in: Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, p. 315.

⁹¹ Cf. *Project einer Theater-Reform der Gesellschaft zur Herstellung zeitgemässer Theater, Asphaleia*. Vienna 1882.

⁹² Cf. Franz Gilardone: *Handbuch des Theater-Lösch- und Rettungswesens für Staats- und Gemeinde-Behörden, Theater-Administrationen, Fabrikanten und Feuerwehrmänner*, Heinrich & Schmittner 1882.

⁹³ Austria reacts with a decree on theater construction of July 1, 1882, Prussia reacts with individual decrees, and it is not until 1891 that the *Polizeiverordnung über die bauliche Anlage, die innere Einrichtung und den Betrieb von Theatern, öffentlichen Versammlungsräumen und Zirkusanlagen* published on 12 Oct. 1889 as a ministerial decree for Prussia, came into force on 30 Nov. 1890, an extended decree recommended to all German states for adoption, reprinted in: Manfred Semper: *Theater* (= Handbuch der Architektur. Vierter Teil: Entwerfen, Anlage und Einrichtung der Gebäude, 6. Halbband, 5. Heft). Stuttgart 1904, p. 467 ff.

⁹⁴ Cf. Harald Zieske: *Deutsche Theaterbauten bis zum zweiten Weltkrieg. Typologisch-historische Dokumentation einer Baugattung*. Berlin: Gesellschaft für Theatergeschichte 1971, p. 42 f.

After 1891, anything that does not have such a stage tower is no longer an “actual theater” in the German Empire, but at most a “small stage facility,” for which different laws then apply.⁹⁵

The “theater proper,” however, prevails because the enactment of the police regulations is associated with an upsurge in theater construction that began in the mid-1880s and lasted until 1914, coinciding with the diversification, commercialization, and specialization of the theater business in cities.⁹⁶ In addition to the commercialization and standardization of the theater business through agents⁹⁷ and studios,⁹⁸ who specialize in the exploitation and standardization of performers and scenery, specialized architectural firms are also emerging that supply off-the-shelf theaters whose functional patterns are planned through and are oriented to safety regulations and manuals.⁹⁹

The many reform theater designs that emerged in the nineteenth century and aimed at a new relationship between stage and auditorium are reflected in these buildings only “to a very small extent,” as Harald Zielske has already noted.¹⁰⁰ The stage and auditorium in particular hardly change (compared to baroque models), only the stage house of the theater, which houses the technical equipment, multiplies in its dimensions and there is a considerable expansion of the circulation and

⁹⁵Thus, the local police regulations on fire police in theaters issued in 1879, which were incorporated into the Prussian Police Regulations for the Construction of Theaters in 1889 and into the “*Polizeiverordnung über die baulichen Anlagen, die innere Einrichtung und den Betrieb von Theatern, öffentlichen Veranstaltungsräumen und Zirkusanlagen*,” transitioned between “actual” and “full” theaters with the subtype of smoke theaters, circus facilities, and public assembly rooms. Theaters are defined as “all structural facilities for performances that require a permit pursuant to §§32 and 33a of the Reichsgewerbeordnung (Empire Trade Regulations) when organized on a commercial basis.”

⁹⁶Martersteig states that ninety new companies were founded after the introduction of the commercial code in the North German Confederation in 1869/70, and that the number of German theaters tripled in the period 1871–1896 (Max Martersteig: *Das deutsche Theater im 19. Jahrhundert. Eine kulturgeschichtliche Darstellung*. Leipzig 1924, p. 698).

⁹⁷Cf. Stefanie Watzka: *Verborgene Vermittler. Ansätze zu einer Historie der Theateragenten und -verleger* (=Kleine Mainzer Schriften zur Theaterwissenschaft 10). Marburg: Tectum 2006.

⁹⁸Vana Greisenegger-Georgila: *Theater von der Stange. Wiener Ausstattungskunst in der zweiten Hälfte des 19. Jahrhunderts*. Vienna/Cologne/Weimar: Böhlau 1994.

⁹⁹After the deaths of Karl Ferdinand Langhans (d. 1869) and Gottfried Semper (d. 1879), it was a new generation of architects who shaped the theatrical construction boom from the 1880s onward: In addition to Ferdinand Fellner (1847–1916) and Herrmann Helmer (1849–1919), these are: Heinrich Seeling (1852–1932), Bernhard Sehring (1855–1941), Martin Dülfer (1859–1942), Max Littmann (1862–1931), Karl Moritz (1863–1943), Jakob Heilmann (1846–1927). Cf. Sachs: *Modern Opera Houses and Theatres*, op. cit., 1896; Martin Hammitzsch: *Der moderne Theaterbau. The courtly theater building. The beginning of modern theater construction, its development and activity at the time of the Renaissance, the Baroque and the Rococo*. Berlin: Wasmuth 1906; Manfred Semper: *Theater* (=Handbuch der Architektur. Vierter Teil: Entwerfen, Anlage und Einrichtung der Gebäude. 6th half-volume. 5th volume), 1904; Hans-Christoph Hoffmann: *Die Theaterbauten von Fellner und Hellmer*. Munich: Prestel 1966; Helmut Schael: *Idee und Form im Theaterbau des 19. und 20. Jahrhunderts*, Diss. phil. Cologne 1958.

¹⁰⁰Zielske, op. cit., 1971, p. 58.

ancillary spaces. While externally retaining the traditional building forms, a “lasting effect of the security factor” is shown,¹⁰¹ which leads to the cementing of the separation of stage and auditorium: Opposite the towering stage house, separated by fire-walls and iron curtains, is an auditorium that can be cleared no matter what happens on stage. It is this radical separation that stands at the end of the theater of the oxidation, against which the self-proclaimed avant-gardes then run up a storm, that distinguishes the theater of the late nineteenth century from its baroque models and that still characterizes German cities today.

In other words, the actually *modern* theater is a hygienic fantasy of steel and electricity; it emerges as a mixture of commerce and apparatus through the aesthetic release of fossil energies and their safety control, which architecturally cements the separation of stage and auditorium. The electrification of the theater, however, is a component of this very process, which is anything but a break, but rather a multi-layered and contradictory reaction that takes up much, continues some, exacerbates others, and again seeks to weaken and reverse others. The electric current is intended to restore to the theater a coldness, clarity, and purity that it never had, and thus joins a longer tradition of bourgeois, Protestant, and intellectual criticism, a criticism of the impure, illegitimate, and speechless spectacle with its indecent effects and its unkempt audience. As early as 1843, when gas was just being introduced into German theaters, August Lewald sneered at this uncultivated theatrical modernity.

Where will we go from here! Steam rules the century; it is the most necessary thing, it provides, it replaces everything. In England, a start has already been made; a steam orchestra has been organized. The musicians are of cast iron, [...] a steam engine of 50 horsepower sets the lungs or bellows of this orchestra in motion for the time being. [...] Some of our new composers, who feel a tremendous aversion to everything soft and melodic, are looking forward to the first opera they will write for the steam orchestra; no drumhead will leave the hall entirely. To this marvelous invention is now added another, which we owe to the first application of electro-magnetic power to ballet. If we take a close look at the scene of such an experiment presented here, we can only be astonished at the extraordinary precision and regularity it gives to the dancers' movements, which also originate from the well-known machine factory in Birmingham, are well riveted and show great aplomb.

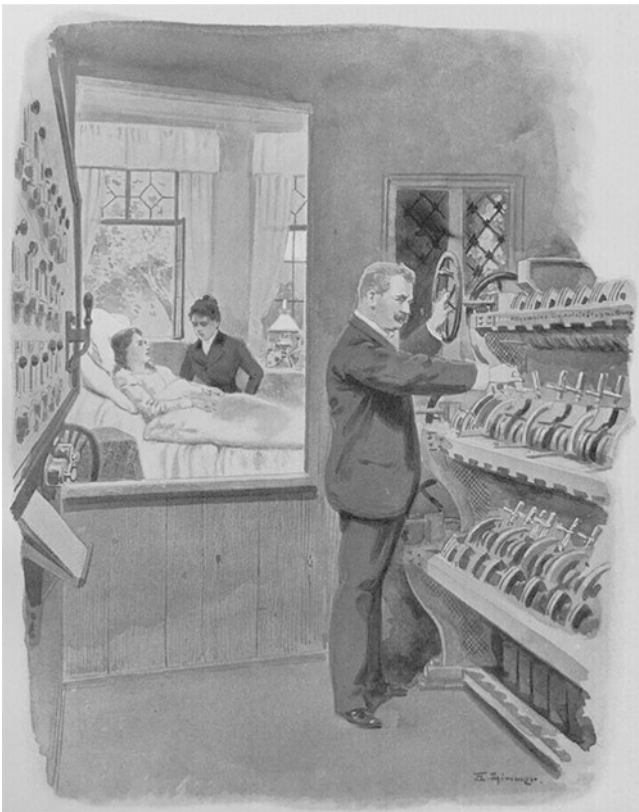
Such a seemingly absurd substitution of artistic sensibility by the “crass materialism” of the power machines is opposed, as in all culture industry phobias, by a useless “army of idlers”. The last great attempt, however, to harness this steam theater for idealism and to turn the idler into a devotee takes place in Bayreuth. Its failure leads to the switch from force techniques to control techniques and brings about the theater modernism.

¹⁰¹ Op. cit., p. 41.

Regulators

3

Control and Salvation



The switchbox, the machine that still controls the light in the theater today, deserves its own cultural history, which, however, must remain a desideratum even after this chapter. It should be pointed out, however, that these devices, the early “stage regulators,” were of central importance for the electrified theater of modernity, as well as for their aesthetic superstructure and the electrotechnical substructure. Section

3.1: “Expectations of Salvation” describes the first lighting of a light bulb at the premiere of *Parsifal*, the collective promise of recovery associated with it, its kinship with electromedical and consumer-cultural applications, and its failure with the mechanics of Bayreuth stage technology. Following this, Sect. 3.2: “Power Transmissions” undertakes a detailed rereading of Wagner disciple and theater reformer Adolphe Appia, which elaborates the organizational (rather than aesthetic) vision that stands at the beginning of theater modernism. Appia’s plea for the primacy of staging and directing reads here as essentially designed for the vertical integration and centralized control of the theater and committed to a totalitarian and nationalist project. This programmatic reorganization of theater production places Sect. 3.3: “Parallel Circuits” in a context with the socio-technical foundations of electrotechnical stage equipment, especially stage regulators, which technically implemented centralized control of staging events for the first time. The sketch of the early history of this device, with recourse to research results in the history of technology and the media, sets out the socio-technical development, namely the challenge discussed at the time as the “division of light”, which forms the common basis of the electrical industry and theater regulators. Finally, Sect. 3.4: “Switching Operations” traces the fascination of the electric light change back to a desire for switching, which with Benjamin and Marx is traced back to a modern relationship to work.

3.1 Expectations of Salvation: Festivals of Incandescence (Wagner)

An early incandescent light bulb is in use in the theater barely a year after the catastrophe in Vienna and only a few months after the first experimental electric theater is exhibited in the Glass Palace in Munich. It lit up on July 26, 1882, in a small town in Upper Franconia, in a wooden new theater building located somewhat outside the town, and was in use until 1914.¹

This light bulb made its appearance in the first and third acts of a work designated as a “Bühnenweihfestspiel,” in a prop that has become known as the Grail and is described in the libretto as a “chalice” or “ancient crystal bowl.” Reports from eyewitnesses speak of a “tall vessel with a semicircular, crystalline bowl” and “a glowing red coloration”,² of the resemblance to a “Berlin wheat beer glass,” from which the light emerges at the slightest tilt.³ The libretto states:

Here a dazzling ray of light penetrates from above onto the crystal bowl; this then glows in a luminous purple color, gently irradiating everything. – Amfortas, with a transfigured face, raises the ‘Grail’ high and gently waves it to all sides, whereupon he blesses bread and wine with it. Everything is on its knees.⁴

¹Cf. Friedrich Kranich: *Bühnentechnik der Gegenwart*, 2 vols. Munich: R. Oldenbourg 1929/1933, here: Vol. II, p. 35.

²Bernhard Förster: “Das Bühnenweihfestspiel von Bayreuth,” in: *Zeitschrift für bildende Kunst*, Vol. 17, 1882, pp. 325 ff, here: S. 329.

³Moritz Wirth: “Circus in Bayreuth,” in: *Deutsche Worte* 7 (1887), pp. 89 ff, here p. 390 f.

⁴Richard Wagner: *Parsifal. Ein Bühnenweihfestspiel. Libretto*, Bayreuth 1882.

An eyewitness later described the scene as follows:

The (electric) glow falling from the top of the dome onto the new Grail King as Parsifal takes the Grail, glowing in purple light, in his hand and swings it is of moving effect.⁵

The stage use of this first light bulb has also been handed down. George Davidson reports the sequence of events from the point of view of the backstage.

When the boy, who carries the shrine with the Grail to King Amfortas, has placed it on the tabernacle in the middle of the rotunda, the connection between the Siemens's electric light bulb, which is in the red chalice of the Grail bowl, and the motor, which is in the tabernacle, is established by a wire, which remains invisible to the audience, and this is done by a man, who is near this motor, also concealed by the tabernacle.⁶

However, the files of the Festspielhaus show beyond doubt that this first light bulb was not a Siemens, i.e. a German lamp, but a product of the English company Swan. It was purchased at a unit price of 16.50 marks, regulated with a liquid resistor, and housed in the Grail goblet with "clamp and lead" described above.⁷ For this, the "Herzogl. Sächs. Commission Councillor, glass painter and electrical engineer" Hugo Bähr from Dresden charged 97 marks, after the technical director Fritz Brandt had spent 5 days with Bähr in Dresden in February 1882 for the Grail construction, 6 days in Berlin with Geißler and Siemens, and another 4 days in Dresden in April (which cost the Festival 510 marks for this alone).⁸ In total, five Grail cups were thus equipped with Swan lamps: three of them "made for trial", two of them at 16 Marks, with one and two batteries each, a third one without further description for 4 Marks.⁹ The Grail used for the performance, however, finally got by without a battery and was powered by the man with a motor located in the tabernacle (by which one must imagine the structurally identical opposite of a motor, namely a dynamo).¹⁰

If one recalls the scenic and theatrical context of this electric relic, the punch line of this electrotechnical experiment becomes clear: the Grail is the life-giving center of a ritualistic male society weakened by the loss of a sacred spear and a consequently sickly leader. In devotion to a tabooed sensuality and in contact with a sexuality stylized as eternally feminine, the spear took away his phallus and inflicted a wound that now constantly reminds him of the sufferings of physical existence. Weakened in this way, he languishes and only reluctantly fulfills his duty to perform the rite that nourishes the community. A salvation of the community can therefore

⁵Förster, op. cit., 1882, p. 329.

⁶George Davidson: *Bayreuther Briefe. Augenblicksbilder aus den Tagen der Patronataufführungen des 'Parzival'*. Leipzig: Schloemp 1882, p. 39.

⁷Cf. Kranich: *Bühnentechnik der Gegenwart*, op. cit. Vol. 2, 1933, p. 35.

⁸Cf. Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, op. cit., 1980, p. 248.

⁹Cf. Festspielakten, vol. XII, Cassa-Belege 1882, and vol. XIII, Cassa-Belege 1882, nos. 322 and 396, cit. After Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, op. cit., 1980, p. 247.

¹⁰Cf. Förster, op. cit., 1882, p. 329.

only be brought by a new leader who, unencumbered by the knowledge of modernity and guided by a pre-social feeling of compassion, is able to resist the temptations of the modern world of life and thus regain the power over the phallus which alone promises healing. With the destruction of that “magic garden” in which the original seduction through the sensual was experienced, and with the condemnation of the “flower girls” who live there, the ascetic ideal of the Christian Platonic European, on whose destruction the former Wagner admirer Nietzsche worked for so long, is erected again in anti-modern garb. Therefore, when at the end of the festival the Grail is unveiled once again, but this time by Parsifal, the new leader, in front of the kneeling knights’ round and the festival audience gathered in the circle segment, here the aesthetic overcoming of all the ideological contradictions that had broken out after the end of the Hegelian system and its *raison d’état* takes place – and this by means of a light bulb.

So it is this light bulb before which Grail knights and festival visitors kneel, the life-giving power that is released at the unveiling of this luminous prop is *de facto* nothing other than electrical energy, generated by a stagehand who turns a wheel hidden in the tabernacle. And like the price list of Wagner’s electrician Hugo Bähr reveals, this energy flashes forth at least from the master’s late work in countless places. The following are listed for sale:¹¹

Sword with luminous hilt (‘Walküre’), lance with luminous tip (‘Siegfried’), lance tip, luminous, for flying, with lead (‘Siegfried’); anvil, sparking, with wooden block for splitting (‘Siegfried’); the Grail, luminous (‘Parzival’); the Rhinegold (‘Rheingold’); hearth fire, glowing and luminous (‘Walküre’); evening star (‘Tannhäuser’).¹²

Behind this glow and spark that gives Wagner’s props their mystical power is not by chance that mysterious energy that is not only sold by the industry with the promise to dissolve all the calamity that was created with the first wave of industrialization. Rather, in the Romantic tradition, electricity was still traded until the end of the nineteenth century as a universal life force capable of reconciling opposites, uniting natural forces, and healing bodies that had become unbalanced. Electric baths and electric amulets are said to be effective against a myriad of diseases, and the Heidelberg Electric Belt, which promises to restore lost virility, gained great prominence (cf. Fig. 3.1).

Wagner’s electric props also promise – like these electric baths and belts – a *healing*, except that in this healing not only the individual body but also the collective body is addressed. Similarly to the electro-industrial as well as the

¹¹As for the Meiningen Theater, the effects apparatus for the Bayreuth Schauspielhaus also came primarily from Hugo Bähr’s Dresden workshop. In 1876, Bähr delivers and assembles the effect apparatus in Bayreuth on 36 days for 12 marks a day each; in 1882, he is in Bayreuth for 68 days and provides “assistants for electric lighting” from his workshop for 62 days (cf. Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, op. cit., 1980, p. 74).


¹²Hugo Bähr: *Preis-Courant über Elektrisch-Optische Apparate*. Dresden 1906, quoted from Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, op. cit., 1980, p. 73. See illustration of the price list *ibid.*, p. 70.

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HAVE YOU DOCTORED? Have you perhaps written to some quack, no called institute or self styled men's physician, have you tried various so called remedies for your peculiar trouble without success, without getting any help, perhaps not even temporary relief. Perhaps you are discouraged; maybe hopeless. Don't give up. Don't despair. You may yet be cured. The Giant Power Heidelberg Electric Belt is just what you need. Just what you should wear. Send for our Giant Power 80-gauge Current Heidelberg Electric Belt at once, wear it according to directions. In a day you will feel a difference. In two days there will be a marked change for the better. In three days you will experience relief. In a week or two weeks your system will be filled with the grand health giving current. In a month you will be a new man.

OUR GIANT POWER 80-GAUGE HEIDELBERG ELECTRIC BELT AT \$18.00 comes complete with the belt in stomach attachment and most perfect, comfortable electric suspensory ever produced. The lower illustration shows the style of these attachments, but you must see and examine, wear them, to appreciate the comfort and convenience. The suspensory encircles the organ, carries the vitalizing, soothing current direct to these delicate nerves and fibers, stretches and enlarges this part in a most wonderful manner. The sack suspensory forms part of the circuit. The electric current must traverse every one of the innumerable nerves and fibers. Every wearing brings the current in contact with the organ; every wearing means that part of the organ is traversed through and through with the strengthening, healing current; the strength, suppleness, vigor induced, a tone returned, a joy restored that thousands of dollars' worth of medicine and doctors' prescriptions would never give.

DON'T SUFFER IN SILENCE. Power 80-gauge Current Genuine Heidelberg Electric Belt, show your friends, don't endure in secret. \$18.00 will buy our Giant and strength, vigor, manliness and happiness, a bigger measure for your money, a greater bargain than you could ever possibly secure in any other way.

ARE YOU IN DOUBT? fear to take advantage of this great offer? Do you hesitate to see some unreliable firm or doctor look advantage at you? With us you run no possible risk. Let us send you one of our genuine Giant Power 80-gauge Heidelberg Electric Belts under the liberal condition of our offer. We will send the belt, then after ten days' fair trial if you have any reason to be dissatisfied, if you are not greatly benefited, return the belt to us and we will refund your money.

HOW THE 80-GAUGE HEIDELBERG ELECTRIC BELT IS MADE, \$18.00. Every 80-gauge Electric belt of the Heidelberg make is the very finest belt that can be produced by scientific, skilled mechanics, hand made and finished in every part. The proper organs and special composition, has more strength, produces more current, than two coils of the ordinary electric belts usually advertised.

ELECTRODES. Four large and one extra large (five in all) electrodes, secure a fine equal distribution of the current to the proper organs and affected parts. The electrodes are large size, special conducting surface, extra full and finely silver plated. The four electrodes in back are 2 inches across, the front and largest electrode is 3 inches across. Wonderful in its treatment of diseases of the stomach, liver and kidneys. Carry the life giving electric fluid straight to the affected parts. The big current bearing electrodes can be adjusted for any position, any part, any organ, bringing it in the direct route of the current. For a weak or deranged nervous system the electric treatment has splendid results. It stops losses, repairs waste, gives tone to every tissue and muscle. The whole body feels the good effect. No words can describe the change in health, feeling, vitality, even character, from the result of wearing a genuine Heidelberg Electric Belt.

EVERY BELT IS PUT OUT UNDER OUR BINDING GUARANTEE for more current, more power, more and quicker relief than any belt sold at three times the price. Simple, comfortable, efficient. Nothing clumsy about the belt, nothing uncomfortable. No one can tell if you wear it. Complete instructions for use and wear sent with every belt.

CURRENT REGULATOR. Every 80-gauge Heidelberg Electric Belt is provided with our own special and perfect current regulator, a feature limited (but not successfully) by every electric belt maker in the country. By means of this regulator the current can be instantly adjusted to any strength desired without removing the belt from the body. You can make it mild, medium or strong, just as you like, just as your case requires. No possibility of your receiving an unpleasant shock, no chance to get a current too strong and irritate tender parts. Six different strengths, different degrees of current are possible. A simple movement of a tiny one-inch lever does it. You get just the strength, just the gauge of current required.

THE 80-GAUGE CURRENT is marvelous, really magical in its power. Will cure any case, no matter how obstinate, how long standing. Tones up the system, drives out disease, fortifies the body against cold, against sick attacks of any kind. Perfect in its relief and cure of the peculiar diseases of men. For those sexually weak or impotent or suffering from any trouble of the sexual organs the Giant 80-gauge Belt affords relief when everything else has failed. The stimulating alternating current forces a vigorous circulation of blood into the seminal glands, enlivening them into a healthy glow. They quickly respond to this infusion of energy, dormant nerves wake up and expand, general circulation is produced, youthful vigor displaces the tired out feeling. In most cases of sexual weakness the full power of this Giant Power Alternating Current Heidelberg Electric Belt is required, but a cure is certain. The 80-gauge current absolutely doubles the sexual force and power.

No. 4273020 OUR 80-GAUGE CURRENT BELT.....\$18.00



FOR QUICK RELIEF For an almost speedy cure of all weaknesses, no matter from what cause, nothing can equal anything, whether drugs or ointments, approaches the 80-gauge Heidelberg Alternating Current Electric Belt at \$18.00. The Heidelberg Electric Belt is the best, most reliable, most harmless, yet powerful, the cheapest cure possible. Don't let a specialist bleed you. Don't pay \$25.00, \$30.00 or \$50.00 for an electric belt not one-half as good as the Genuine 80-gauge Giant Power Alternating Current Heidelberg Electric Belt at \$18.00. Send for one of our \$18.00 belts immediately. Throw physic to the dogs. Strengthen and cure yourself at once.

Fig. 3.1 The “\$18 Giant Power Heidelberg Electric Belt”. (From the Sears catalog, 1905)

electro-medical healing efforts, the electro-aesthetic healing efforts are also directed towards the overcoming of the *conditio moderna*, which confronts an uprooted individual with a world dominated by unleashed forces (sung so intensively by Wagner in the Ring). The healing by electrical energies relies on a technical realization

with the abysses of technology, and this is accomplished in Bayreuth precisely not only symbolically but also aesthetically.

In the wooden building on a green hill, “in some beautiful wasteland, far from the smoke and the industrial pest-smell of our urban civilization”,¹³ culminates the steam theater of the nineteenth century with its landscapes and its weather lightning in a specifically German *féerie*,¹⁴ which, using all technically available means, is supposed to make the scene experienceable “in the aloofness of a dream apparition”.¹⁵ Even before the opening of the Festspielhaus, the expectations of the upcoming spectacle are great.

Nothing is yet known about the scenic apparatus of the Bayreuth stage, but one can expect miracles from its decoration and machinery. On every page, the author of the *Nibelungen* competes with the imagination of the most inventive ballet director. He promises us the most manifold forest and mountain panoramas, sun and moonlight in abundance, fireworks of every kind, a rainbow bridge [...], wild horsewomen of the air, gods hovering over the heads of their charges, a flame-breathing, tail-wringing dragon, a bear-baiting and what not else.¹⁶

After the composer comes the machinist in Bayreuth. Brandt was “his real scenographer”,¹⁷ Wagner lets it be known. About the *Rheingold* in 1869, he says that he has entrusted the “entire staging” to the “machinist Brandt,” Brandt is the one of whom Wagner writes to Ludwig that through him the “deficiencies of the scenic arrangement” will soon be eliminated.¹⁸ Brandt is finally also the one who threatens to leave because he was listed in the list of contributors as “first machinist” and not as “stage manager” (“*Bühnenleiter*”) (and who thus introduces a tradition-forming practice that is decisive for the later emerging position of the “stage designer”).¹⁹ In Bayreuth, however, the painters only provide the material that has to fit into the

¹³“Wagner an Liszt am 30. Januar 62,” in: Erich Kloss (ed.): *Briefwechsel zwischen Wagner und Liszt. Erster Teil vom Jahre 1841 bis zum Jahre 1853*. Leipzig: Breitkopf & Härtel³ 1910, p. 150.

¹⁴In 1880, Eduard Hanslick compared Wagner’s music theater to “the genre of magic pieces and feeries” (*Musikalische Stationen*. Berlin: Allgemeiner Verein für Deutsche Literatur 1880, p. 247) In doing so, as Hermann Kaiser comments retrospectively in 1968, he “completely overlooked” the fact that it was not “an effective dressing up of ‘grand opera’” but “that Wagner’s theater of sets was poetically conceived and dramatically motivated,” and Kaiser concludes, “Hence also the paramount importance that the stage technician assumes in it” (Hermann Kaiser: *Der Bühnenmeister Carl Brandt und Richard Wagner. Kunst und Szene in Darmstadt und Bayreuth*. Darmstadt: Roether 1968, p. 72).

¹⁵Richard Wagner: “Das Bühnenfestspielhaus zu Bayreuth. Nebst ein Bericht über die Grundsteinlegung desselben,” in: *Gesammelte Schriften und Dichtungen*, vol. 9. Leipzig: Fritzsche 1873, pp. 384–408, here: S. 402.

¹⁶Otto Gumprecht: “Das Wagnertheater in Bayreuth,” in: *Die Gartenlaube* (1873), p. 60.

¹⁷*König Ludwig II und Richard Wagner. Briefwechsel*, vol. 3, edited by Wittelsbacher Ausgleichs-Fonds/W. Wagner, edited by O. Strobel, Karlsruhe: Braun 1936, p. 21.

¹⁸*König Ludwig II und Richard Wagner. Briefwechsel*, vol. 4, edited by Wittelsbacher Ausgleichs-Fonds/W. Wagner, edited by O. Strobel, Karlsruhe: Braun 1936, p. 201.

¹⁹Carl Friedrich Glasenapp: *Das Leben Richard Wagners*, 6 vols. Leipzig 1876–1911, vol. 5, 1904, p. 270.

scenic arrangements of the machinists, and even the architect is hired and brought in only after the machinist in Bayreuth. For Wagner, the building remains something provisional, on which, in contrast to the equipment and machinery, savings can be made.

Thus, Bayreuth is still completely in the tradition of spectacular theater, which goes hand in hand with an upswing in stage technology, for which Fritz Brandt (Berlin master machinist and a son of the founder of the dynasty, Karl Brandt) retrospectively blames, on the one hand, the brighter and adjustable light of gas lighting since the 1840s and, on the other hand, the scenic requirements of the *féeries* that were coming into fashion.²⁰ According to the history written by his sons and students, it is precisely Karl Brandt, who worked primarily at the court theater in Darmstadt and to whom Wagner entrusted the staging, who is credited with the renewal of stage technology in Germany from 1850 to 1880 (often following the Parisian model, which was subsequently concealed). He is credited with improvements for the alignment of facade rods, on the drive of retracts, hoists and flying machines, and on moving panoramas. He is said to have improved upward visibility by removing the lower cross bridges, and to have introduced cantilevered lattice girders for rising decorations without visible support, and mobile stage wagons for rapid change of plastic decorations. Above all, however, his son already credits him with the imprinting of a “systematic design” of the stage-technical devices, set a standard that is repeated in every alley, on every side in the same form. With Karl Brandt, in the course of the nineteenth century, a multitude of apparatuses in the stage area became an industrial theater machine shaped according to standards, which, as Fritz Brandt claims, first completely asserted itself in the Berlin Viktoria Theater and then reached a climax in Bayreuth.²¹

But while Bayreuth thus represents the culmination of an industrial theater, which is the responsibility of machinists and whose greatest problems are of a technical nature,²² what is shown is a mythical vision, sprung from a fantasy that despises the steamboat and dreams of sailing.²³ “All our good forces go to machinery, in the families the sons become engineers”,²⁴ Wagner complains, and proposes to “turn to good climates in order to live naturally”²⁵ to escape the danger of becoming oneself a machine.²⁶

In other words, the intended ideal has a very material basis. The new *Gesamtkunstwerk*, which no longer wants to have anything to do with the

²⁰ Cf. Fritz Brandt (sen.): “Über Bühnentechnik und Entwicklung der maschinellen Einrichtungen von den Bühnen der älteren Theater bis zur Neuzeit”, in: *Glaser's Annalen für Gewerbe und Bauwesen* 47 (1900), pp. 138 ff, 158 ff.

²¹ *Ibid.*, p. 155.

²² Cf. Angelo Neumann: *Erinnerungen an Richard Wagner*. Leipzig³ 1907, p. 20.

²³ Cosima Wagner: *Die Tagebücher I, 1869–1877*, ed. by Martin Gregor Dellin/D. Mack. Munich: Piper 1976, p. 394; cf. this: *Die Tagebücher II, 1878–1883*. Munich: Piper 1977, p. 561.

²⁴ Wagner: *Die Tagebücher I, 1869–1877*, op. cit., 1976, pp. 574 f.

²⁵ Op. cit., p. 915.

²⁶ Wagner: *Die Tagebücher II, 1878–1883*, op. cit., 1977, p. 1017.

spectacular, urban, commercial, effects-laden theater of its time, is closely related to the spectacular féeries of French provenance in their infatuation with effects.

From the first image, a forest clearing, the scene transforms into a cathedral, the Grail Temple, through a section of the image that rolls from left to right in the foreground. Klingsor's magic castle, the interior of a tower open at the top, sinks in the second act, while at the same time a magic garden full of lush tropical vegetation rises. This later suddenly withers to a wasteland. A spear flies through the air and stops above the head of the hero, who seizes it, the Grail bowl glows in glory, a white dove floats down from the dome of the cathedral.²⁷

Contemporaries had already noted, writes Kaiser, that in no opera had there been such an accumulation of scenic effects and open transformations (five pieces) as in the *Ring des Nibelungen*, with which the Festspielhaus opened in 1876.

Mermaids swimming around in the water like fish, a rainbow arching over the entire stage, over which bodily gods stride, enchantments into a giant snake, into a toad or into a dragon, a sea of flames blazing around the rock with the beating Valkyrie, a castle of the gods sinking in the fire of the world, and much more.²⁸

But it is these transformations that get the Gesamtkunstwerk into trouble, because “things” happen here “that shape our imagination into the most beautiful images, but in reality virtually call the scene into question” and, moreover, expose it to the “curse of ridiculousness.”²⁹ The great promises are contrasted by great disappointments.

Everything we have seen in the Valkyrie in terms of unusual theatrical effects can hardly be called mediocre, it is downright unsuccessful. We have seen all this much better on the stages of the great court theaters and the Berlin Victoria Theater – not to speak of the London stages, which are especially concerned with set pieces for the joy of children around Christmas time.³⁰

Already at the first transformation in the *Rheingold*, a prospectus goes up too early, “you see the people standing there in shirt sleeves and the back wall of the theater.”³¹ In the last act of the Valkyrie, the sky does not sink low enough, revealing a puppet show of stagehands' feet; finally, the desperate machinist Brandt shouts his commands so loudly that they are heard even in the auditorium.³² Allegedly, in 1876, for the first time, the lights also accidentally go out completely (in the auditorium).

²⁷ Kaiser: *Der Bühnenmeister Carl Brandt und Richard Wagner*; op. cit., 1964, p. 101.

²⁸ Op. cit., p. 72.

²⁹ Richard Fricke: *Bayreuth vor 30 Jahren. Erinnerungen an Wahnfried und aus dem Festspielhause*. Dresden: Richard Bertling 1906, p. 60.

³⁰ Paul Lindau: *Nüchterne Briefe aus Bayreuth. Vergeblicher Versuch im Jahre 1876 Zeit und Geister Richard Wagners zu bannen*. Berlin: Schottlaender 1876, reissued: Berlin: Das Arsenal 1989, p. 57.

³¹ Wagner: *Die Tagebücher I, 1869–1877*, op. cit., 1976, p. 998.

³² Fricke, op. cit., 1906, p. 138 f.

These are “the capricious excesses of [a] despotic imagination”,³³ as Paul Lindau writes, that go over more badly than well in Bayreuth in 1876, which push the apparatus to and beyond its limits.

Hardly any theater, therefore, symbolizes at the same time the increase and the collapse, the triumph and the capitulation of the aesthetic apparatus of the theater of oxidation, like the Bayreuth Festival Theater and Wagner’s *Gesamtkunstwerk*. The attempt to save the theater by means of the theater, to reconcile modernity by technical means, that is, to close the wound with the spear that tore it, fails magnificently and, in this failure, ultimately leads to the questioning of the entire system, because even where it functions technically, it must fail aesthetically.

The stage with its decorations, machines and other apparatuses [...] is set up to accompany every smallest event, almost every word of the performance with decorative nuances [...]. And yet all the great devices have not fulfilled the tense expectations, not because they were not excellently executed, but because the principle of imitating nature, which was correct in itself, brought about the opposite of the intended result in the absolute execution. This strict imitation showed quite clearly that nature cannot be imitated completely, that the imagination of the observer must be given a certain amount of leeway everywhere, and that where this is too narrowed down, only the senses remain active until they too finally tire and require ever new stimuli from the eye.³⁴

But this technical recreation of the myth becomes clearest where artificial animals, primarily dragons, are involved; here “the sublime finally turns into the ridiculous,” writes Kalbeck in 1883: “We are just as little afraid of the rubber monster with movable tail and head as the young hero and heartily join in its laughter”.³⁵

If the *Lindwurm* stands for everything that threatens to make the Festspielhaus ridiculous, because in modern perception it is nothing more than a mechanical toy with a rubber coating, the *Grail* is exemplary for the aesthetics that come after Wagner and tries to create the *Gesamtkunstwerk* by electric means. It is true that the Grail, the self-luminous prop, is ultimately only a sleight of hand and a salon-worthy toy like von Kempelen’s “Schachtürke”, in which a small person sits in the tabernacle and pulls the strings. The difference is that the strings here are wires and the magic is a modern one in which the tension rises because currents flow and through an almost powerless switching in a soundless, odorless and heatless way things begin to glow and shine as if by themselves, as only saints were able to do before.

In other words, the Grail works no differently than an (electric) lamp, looks like one, and fits perfectly into the closed decorations of naturalistic living rooms. Like the light bulb that makes it glow, and whose idea was to be just a better gas lamp, the Grail provides the explosive energies of modernity in a domestic, handy and manageable form. For unlike the glory shining down on Amfortas/Parsifal from above, which in 1882 could only be realized by means of a poorly controllable and

³³Paul Lindau: “Götter, Helden und Wagner. Ein Brief post festum,” in: *Die Gartenlaube* (1876), p. 687 f.

³⁴H. Ehrlich: *Für den ‚Ring des Nibelungen‘ gegen das ‚Festspiel zu Bayreuth‘*. Berlin: L. Gerschel 1876, p. 132.

³⁵Max Kalbeck: *Richard Wagner’s Nibelungen. Erste Aufführung vom 13. bis 17. August 1876 in Bayreuth*. Breslau: Schletter’sche Buchhandlung 1883, p. 72.

dazzling carbon arc lamp, the light coming from the Grail itself no longer radiates and burns, but merely glows. In other words, the thing that is supposed to create community reconciliation here and undo the distortions of industrial modernity is a distant relative of the table lamp and the household appliance. Anno 1882 in Bayreuth, not only enlightenment turns into myth, as Horkheimer/Adorno noted for the advent of fascisms, but also into domesticity. In other words, there is a close connection between Wagner's search for home and hearth in the Nordic saga world and the retreat into a world dominated by *electrodomésticos* (home appliances) freed from work. The highlight of Wagner's oeuvre in terms of lighting technology is the glowing foreboding of a kitchen appliance onto which fall from above the rays of that light which will soon illuminate the sky in the opposite direction as an anti-aircraft searchlight. Electro-aesthetic healing is not promised here as in the *postoxidative* theater of the Futurists and others, but the tranquil glow of a light that no longer has a body or a flame, that points the way inward and backward.

Out of this scenic competition of incandescent light and arc light, out of an apparatus that is driven to its limit in the attempt to represent the unrepresentable and which, by failing, escapes the control of the despotic master, out of the unfulfilled electrotheatrical promise of salvation of the Bühnenweihfestspiel, in other words, modern theater (in Germany) emerges as a multifaceted attempt to bring the energies trapped in the Grail into flow. What can be said for many avant-gardes in a figurative sense, however, applies to an early visionary of modern theater in a quite literal sense.

3.2 Power Transmission: Vertical Integration and Avant-Garde (Appia)

The "pure fool" who was to go forth to redeem Wagner's electrotheatrical promise of salvation actually sat in the face of the glowing Grail in the Bayreuth Festspielhaus in 1882. It was a young music student from Geneva who, in keeping with his origins, can only feel pleasure in the theater guiltily (Rousseau's anti-theatrical impulse is famously ignited by the thought of now building a theater in pietistic Geneva as well).³⁶ He comes to Bayreuth with great expectations and is sorely disappointed by what becomes of the music on stage. He decides to do everything in his power to change this, and a few years later, after an apprenticeship with the very Hugo Bähr who wired the light bulb in the Grail, as well as traineeships at the operas of Dresden and Vienna, he returns to Bayreuth with his sketches for a new *Ring des Nibelungen*.³⁷

³⁶Cf. Adolph Appia: "Expériences de théâtre et recherches personnelles" (1921), in: *Oeuvres complètes*, ed. by Marie L. Bablet-Hahn, vol. 4. Lausanne 1983, pp. 36–56, here: P. 36 f.

³⁷According to Edmund Stadler, Appia was with Hugo Bähr in Dresden in 1889–1890, but also a volunteer at the Dresden Court Opera in 1889 and at the Vienna Burgtheater and the Vienna Court Opera in 1890. In 1891/1892, he wrote the well-known director's books and sketches for Wagner's *Ring des Nibelungen*, the *Meistersinger*, and *Tristan und Isolde* at Lake Geneva, and it is from these sketches that his theories on stage practice emerge. He owes insight into Bayreuth stage practice to Chamberlain, cf. Edmund Stadler: "Adolphe Appia und Bayreuth," in: *Der Fall Bayreuth* (= Theater unserer Zeit 2), Basel/Stuttgart: Basilius Presse 1962, pp. 41–85.

But the master is already deceased, his widow does not want to know anything about a renewal of the innovator and dismisses the visitor with the words that his efforts are of no value, since the staging of the work is already given in the scores.³⁸

With this double disappointment of the young Adolphe Appia (1862–1928), which is based on two surviving anecdotes from the Bayreuth environment, the history of theater modernism likes to take off. It celebrates the break between the reactionary widow and the avant-garde youth as the overcoming of an outdated aesthetics, which is just disappointing due to its intellectually naïve and technically deficient attempts to depict the extra-theatrical reality. That the aging plant administrator sees in the young fool nothing more than a better electrician fits only too well into this picture.

I assume that Appia's significance lies in the field of technology, and specifically in lighting technology. There is still a lot of room to be filled in if the intentions [of Wagner, author's note] are really to be carried out, because the electric light is there, but still very glaring. To manage the transitions, to bring about delicate modifications, this requires a technician who knows how to invent in his field; only Appia must not want dark where the poetry says light, and vice versa [...].³⁹

But Appia puts all ambition into it, namely 'to want darkness where poetry says light' – and accordingly to be more than that first lighting master of stage history as which Cosima Wagner would like him to be. To this end, in 1895, he presents *La mise en scène du drame wagnérien* and the extended German version *Die Musik und die Inszenierung*.⁴⁰ In his 1899 work, Appia presents a programmatic argument that first of all tries to explain how it can be that someone like him, who is not an author, not a composer, but also not a singer, can know more about what has to happen on stage than the master himself. Appia tries to give nothing else in the lengthy justification of his artistic design than the answer to this "staging question," which he writes forms "an apparently insoluble problem" for "all those [...] for whom the drama is inseparable from its performance."⁴¹

For those who do not want to subject the performance as the material incarnation of an ideal work to the historicity of stage practice and thus to the taste of the audience, as Appia explicitly emphasizes, run into explanatory difficulties when it comes to even allowing anyone other than the author to speak. For unlike the literary side of the theater, which is removed from time and subject to the author, staging "as a process of illustration for the eye [...] would be subject to all the fluctuations of taste and imagination."⁴²

³⁸ Letter from Cosima Wagner to H. S. Chamberlain, 28 Feb. 1895, in: *Cosima Wagner und Houston Stewart Chamberlain im Briefwechsel*, ed. by Paul Pretzsch. Leipzig 1934, p. 398.

³⁹ *Ibid.*, letter from Cosima Wagner to H. S. Chamberlain, May 13, 1896.

⁴⁰ Adolphe Appia: *Die Musik und die Inszenierung*. Munich: F. Bruckmann A. G. 1899.

⁴¹ *Op. cit.* p. 2.

⁴² *Op. cit.*, p. 3.

Dramatic art has always been closely linked to the specific conditions imposed by the given milieu for its practice, and consequently there has never been a less independent artist than the dramatist.⁴³

The task of “staging,” as Appia conceives it, therefore consists first of all in saving the performance from the arbitrariness of time and of the public, for as a “work of art” it must by no means be for Appia “a reproduction of this or that side of life, to which everyone can contribute by his experience and by his skill.”⁴⁴ Following the synthetic vision of the master, Appia is concerned with “the harmonious interaction of various artistic activities, for the sole purpose of communicating the conception of an individual to a great multitude.”⁴⁵ Only if all aesthetic means of production remained “completely and directly in the power of a creator” and made possible a “mechanical execution” like “types of printing”, could it be guaranteed that also in the performance the (ideal dramatic) work of art itself would speak and command silence, as Appia demands in the preface.⁴⁶ In order for the spirit of the dramatic work to enter into the performance through the “staging,” Appia must, however, find a fundamental “principle” that gives the poet’s will power over the scenic means, or in his own words: A “principle, which with logical necessity, without all arbitrariness, is able to direct the representational form”⁴⁷ and pushes back the “conventional [and paralyzing] influence of the milieu”.⁴⁸

So that the staging can be incorporated into the drama as an essential, i.e. indispensable, component – so that it is capable of occupying the rank of a means of expression – it requires a regulating principle which, arising from the original idea of creation, expressly prescribes the staging without passing through the will of the poet again.⁴⁹

Appia finds this principle in a *music*, to which he assigns the task of conveying an *inner* reality, which is both immaterial and idealistic as well as “German”, and to give it material form in the stage space.⁵⁰ By “the musical measure of time gaining shape in space,” that is, as Wagner puts it, time becoming space, it subjugates itself to singers and stage as scenic material, thus translating the writing of the score into embodied stage reality. In contrast to the (spoken and written) word, however, Appia conceives of music as withdrawn from both materiality and rationality and as the expression of an essential “mobility.”⁵¹ This mobility, in turn, which Appia compares to “eternally changing light[s]”⁵² does not mean a physical change of place,

⁴³Op. cit., p. VIII.

⁴⁴Op. cit., p. 3.

⁴⁵Ibid.

⁴⁶Op. cit., p. 3 f.

⁴⁷Op. cit., p. IX.

⁴⁸Op. cit., p. VIII.

⁴⁹Op. cit., p. 5.

⁵⁰Cf. op. cit., p. 9.

⁵¹Op. cit., p. 116.

⁵²Ibid.

but is rather supposed to be something that takes place in contemplation.⁵³ Through the “unspeakable magic power” of music, a new “way of seeing” is to be made possible,⁵⁴ which no longer has anything to do with imitation and eye deception for an “ordinary audience,” but instead opens up a view (distinguished by a “certain degree of education”) into the infinite of an “existence sublime to everyday reality”⁵⁵ and shows something “incomparably naïve, simple”.⁵⁶

However, in order for music to fulfill this task, it must be able to flow in Appia’s work. Like light, which here becomes the central metaphor of music, it requires an “overflow[ing] intensity”⁵⁷ and “fluid guidability”,⁵⁸ which first of all takes possession of the performer. Through the flow of the music, the performer is transformed into the “sanctified instrument”⁵⁹ “of a higher will”,⁶⁰ gets rid of the “accidental shell” of the “personality”,⁶¹ so that the “abnormal suppleness” demanded of him, a “nimble and tractable mobility”⁶² can be achieved. Only when the performer has become the ideal conductor, so that the music can pass through him without resistance, and when, in addition, there is a “material[s] point of contact between performer and decorative material,” can the music “flow from the performer and through his mediation through the entire performance [...]”⁶³ For only the “direct contact”⁶⁴ of the living human figure with the objects conducts the current of the music into the stage space; the spark cannot jump over to the screen. In this respect, for Appia, the performer is for the poet-musician like “a living brush which he dips into the light” so that this then “lets this light flow out on all sides of the stage in order to create there that reality for which the artist so ardently years.”⁶⁵

Only when the performer thus gives up resistance, i.e., any intrinsic materiality, does he become the ideal conductor for the current of musical expression, which can then leap through him to the audience and overwhelm it.

In order to realize a dramatic idea [...], the dramatist must combine the various elements [...] with such perfect symmetry, must know how to achieve such harmony between them, that before the persuasive power of the work of art portrayed, the means employed do not even come to consciousness. In this way the drama is given such an immediate organic life at the moment of its performance that there is no room left for analysis.⁶⁶

⁵³ Cf. op. cit., p. 79.

⁵⁴ Op. cit., p. 31.

⁵⁵ Op. cit., p. 33.

⁵⁶ Op. cit., p. 83.

⁵⁷ Op. cit., p. 82.

⁵⁸ Op. cit., p. 76.

⁵⁹ Op. cit., p. 36.

⁶⁰ Op. cit., p. 42.

⁶¹ Op. cit., p. 35.

⁶² Op. cit., p. 27.

⁶³ Op. cit., p. 41.

⁶⁴ Op. cit., p. 17.

⁶⁵ Op. cit., p. 117.

⁶⁶ Op. cit., p. 9.

Thus, according to Appia, the purpose of staging is to make possible, through the synthesis of all scenic elements, an expressive flow event that can spill over into the auditorium to give expression to a higher will (of the master/author). Therefore, in order to enforce this will, something like a representative of the master on earth is needed, who brings about the synthesis of the scenic means through their subjugation: the *director*, who now (quasi as the author's savior against the influence of the milieu) enforces the whole of the "staging" as a "despotic exercise master" at the expense of the performer in order to make the flow of the music possible, thereby gaining an "undreamed-of power."⁶⁷ At the center of this staging to be created by the director is therefore for Appia "an atmosphere that makes life possible," which is for him the only purpose that "illusion: scenic deception" can still have:⁶⁸

What the performer has lost in independence, the stage manager now gains, and through him the inanimate stage factors: thus, as a substitute for the illusion of the eye, which they had to sacrifice, the ability has become theirs, through the atmosphere in which they envelop the performer, to enable him the highest expressiveness.⁶⁹

This atmosphere, which the director has to create in order to give the performer his place, but builds on an aesthetic of the *terrain* that derives its expressive content from positions and movements.⁷⁰ In place of the painted decorations, which only inhibit any mobility, there is to be a scenic terrain, which is to serve only "as a suggestive orienting sign" for other forces, which in their temporality could manifest themselves in it. What comes to be performed on the stage is no longer to be a detailed and complete approximation of another place, but rather, as a fragmentary object, to help explain to the audience the "temporary nature of light."⁷¹

Some plastically executed trunks are lost in the soffits, from where that light falls, which is moved in the most diverse manner, manifoldly colored and refracted, as it is peculiar to the interior of the forest; the nature of this light now lets the spectator feel the presence of those things which just cause this light, and which he therefore no longer needs to actually see.⁷²

The stage thus becomes a place in which the performer can move and the light can refract. A new statics of things creates the space for a movability of light that has little to do with the moving images of dioramas and moving panoramas, because it immerses the "performing persons and the practicable decorative material"⁷³ in an "atmosphere" that is in flux and no longer has anything to do with the "mobility of the show-play" that "always consists only in the fact that *a* fixed, i.e. *a* permanent

⁶⁷Op. cit., p. 42.

⁶⁸Op. cit., p. 18.

⁶⁹Op. cit., p. 35.

⁷⁰Op. cit., p. 71.

⁷¹Op. cit., p. 75.

⁷²Ibid.

⁷³Op. cit., p. 75 f.

state replaces the *other*”.⁷⁴ While the scene in realism does not go beyond illustration and in realism is calculated only for effect, in Appia’s “staging” it becomes an optical medium for moods of the soul transported in “vibrations of music”.⁷⁵

However, this “staging” has so far been prevented by the prevailing conventions of the theater, a “principle of representation frozen in impotently realistic convention”, the crux of which is precisely that the “human body, [...] which lives in space, [...] cannot enter into a direct relationship with colors distributed over the surface”.⁷⁶ Thus, the furnishings must remain an external sign system that is able to offer a detailed reproduction of an “everyday spectacle of life,” but can never express “the eternal in the fleeting images of the moment”.⁷⁷ – According to Appia, however, this is precisely Wagner’s problem. Because he still completely believed in the theater as a continuation of landscape painting, his Gesamtkunstwerk, which aimed at the eternal, came into conflict with the conventions of his time: “The brittleness of the material opposed the character of his conception.”⁷⁸ A “scenic spectacle” like the Ring of the Nibelung, which shows man and nature in battle and presents “immensely mobile” natural phenomena in which the human being, mixed with them, “participates in their mobility,” is incompatible with the realistic principle of representation and leads to a scenic rigidity that is only played over and drowned out by the powerful music:⁷⁹

The ideal fluidity of an expressive scenic play is a concept that [...] never approached Wagner. For him, everything that happens on the stage really takes place.⁸⁰

It is insofar a “*technical error*”,⁸¹ Wagner, or rather Bayreuth and the Festpielhaus, have fallen for, according to Appia. The music remains stuck in the scenery or breaks through it by force, and the total work of art waits for its realization, that “staging” which is not concerned with a contemporary interpretation of the classic, an adaptation of the text to the times, but rather with the very escape of the eternity of the work and the authorial will from the temporality and the material circumstances of its creation.

This argumentation is not only congenial because it creates a completely new idea of what a scene is (an experimental set-up in which waves can break instead of a living image), it also creates the mental possibility of not questioning the infallibility of the “master” (as Wagner is called by Appia) and yet improving him. Appia’s theory says nothing else than that the master only failed where he could not do otherwise, because he was a prisoner of his time. According to Appia, it is therefore

⁷⁴Op. cit., p. 84.

⁷⁵Op. cit., p. 172.

⁷⁶Op. cit., p. 129.

⁷⁷Op. cit., p. 48.

⁷⁸Op. cit., p. 147.

⁷⁹Ibid.

⁸⁰Op. cit., p. 146, author’s emphasis.

⁸¹Op. cit., p. 152.

necessary to free Wagner from Wagner, i.e. to free the expression of the music from the visual conventions of its time, and the staging serves nothing other than this recovery of the supra-temporality.

The word-sound poet is creator. He is even the only being who may lay claim to this name; for he alone is able to convincingly impose his way of seeing upon us, and he draws it from a world which stands high above that which we bring with us in order to have his part in it. The eternally insoluble problem, which arises from the different ways of seeing, no longer exists for him: he forces us to his own way; but only then, when he strips his vision of all that it carries in it of personal and accidental.⁸²

How can one speak when the work of art actually commands silence? – With this question Appia, apologizing for the presumption in advance, opens his writing; and with Wagner’s technical error, which is now again to be excused historically, he answers it. With this, however, the position of the director is also fixed, even before a single word has been spoken about the art of the stage: he is a sorcerer’s apprentice, the prophet of a god who is perhaps already dying, who legitimizes his own power as the mouthpiece of the law and realizes it in the subjugation of the performers. He lets the eternal work command silence to everything else, so that he himself can continue to speak. In the sacred script of the score, the will of the master lives as the potential of an energy that can take possession of the stage as an immaterial stream of expression and overwhelm the spectator, if only the resistance of historical time and the material world is overcome by the director-prophet and time is given free rein.

In the third (mostly unnoticed) part of his pamphlet, Appia places next to this theory of directing a cultural-critical history of the creation of directing, which allows him to go beyond Wagner and to place the director not only theoretically but also historically in relation to the staging. This narrative begins with the “energy of a century”⁸³ that bursts with unprecedented “intensity”⁸⁴ into a comprehensive crisis of culture and ruthlessly asserts itself, an energy that for Appia bears the name ‘Richard Wagner’: “Such an energy does not know the concerns of those who follow the general current; its only concern is to acquire a lever strong enough to carry out what it sets out to do.”⁸⁵ Because this energy, concentrated in music, as “the most formidable challenge to the materialistic and utilitarian powers of our century,”⁸⁶ is still trapped in the conventions of the theater and has to do without “staging” in the sense of Appia, which could absorb and direct it, and thus lacks the means of expression, it reacts with intensification.⁸⁷

⁸²Op. cit., p. 34.

⁸³Op. cit., p. 159.

⁸⁴Op. cit., p. 158.

⁸⁵Op. cit., p. 159.

⁸⁶Ibid.

⁸⁷Op. cit., p. 165.

The master knew that in order to convince the spectator, he would have to seize his whole soul and thus conquer it. But since he was not able to grasp it by means of staging in a way that corresponded to the eye what the poetic-musical text offered to the ear, since he did not even know that this was possible, he left it to the music [...] to completely captivate the spectator.⁸⁸

The result of this musical overpowering is the “embarrassing emptiness” of a “Wagnerian hypnotism” or “Bayreuth hypnotism,”⁸⁹ which must do violence to “our oversaturated souls” because their “palate, burned by alcohol, is no longer able to extract taste from anything other than almost destructively strong spices”.⁹⁰

Only our culture, derailed into wrong tracks, has made that intensity something indispensable, and Wagner has used it as a terrible weapon. With him, however, the purpose and goal of such a waste of strength has been achieved; to let it continue to prevail in order to wage war means from now on to strike into the void, or – like children – to slur words long since understood and thus to create the impression as if one had not yet grasped their meaning.⁹¹

Thus, according to Appia, in order to go beyond Wagner, it is necessary to do without the intensity on which Wagner was still dependent, and to replace it with a “harmony of expression”.⁹² For this, however, the focus of artistic activity would have to shift, the expression in scenic presentation would have to compensate for the reduction of musical intensity and thus “restore the normal balance” and strengthen the theatrical “organism” by flowing through it evenly.⁹³ According to Appia, in other words, there is no need for new composers, but rather for new directors who guarantee the unfolding of the existing masterpieces, people like Appia.

This intensity of Wagner, however, which ultimately calls the “staging” and the director to the scene, presents itself in Appia at the same time as a war of liberation against French forms, and thus is raised as a “racial and cultural question”.⁹⁴ In line with the friend and patron Houston Stewart Chamberlain, to whom *Die Musik und die Inszenierung* is dedicated, through whom the contact to the house of Wagner was established in the first place, and who, for his part, emerged with works on Wagner as well as a standard work of biologicistic antisemitism, Appia also sees a new phase of German culture dawning in Bayreuth through the nationalization of music. Bayreuth, Appia believes, “gave the Germanic race the opportunity to express the thought that dominates its culture in a purity that our contemporary civilization did not seem to allow at all”⁹⁵ and therefore, according to the crude argumentation, the Festspielhaus gave rise to a “true cosmopolitanism” in the first place,

⁸⁸Op. cit., p. 166.

⁸⁹Op. cit., p. 163.

⁹⁰Op. cit., p. 157.

⁹¹Op. cit., p. 158.

⁹²Op. cit., p. 168.

⁹³Op. cit., p. 173 f.

⁹⁴Op. cit. p. 174.

⁹⁵Op. cit., p. 179.

“a cosmopolitanism that not only the telegraph spreads and the press is able to contain again by the monotonous hollowness of its lies”.⁹⁶ Instead of the “pestilential influence” of the “blending of the two cultures,” all cultural exchange for Appia can only take place on a national soil “on which the thought dominating the culture in question expresses itself in the greatest purity.”⁹⁷ Only through one’s own purity is it guaranteed that no “foreign element [can] impose itself [...] without [...] at the same time enriching and [fertilizing]”, that the foreign does not become something corruptible that cannot be assimilated and thus leads to infertility, perversity and disease, that, in other words, the cultural “treasure of the race” is preserved.⁹⁸

For the “German” Bayreuth thus becomes a place of “heal[ing] and regain[ing] his strength,” a “testimony to the inexhaustible viability of his race and the original purity of his blood,” a place of aesthetic-racial purification and excretion of everything foreign.

[It makes [...] him [the German, authors note] realize in his innermost being how much an unregulated dripping of certain foreign elements has clouded this purity. At first, he is seized by a vague uneasiness: a kind of painful and confusing excretion takes place in his soul. At last it seems as if conscience were pointing its finger at all those corrupt elements; and to sacrifice them, under the insistent language which Bayreuth does not cease to speak to him, becomes an imperative must.⁹⁹

At the end of this purification “the German genius” shows itself, “which has hurried ahead of all others” and has thereby taken upon itself the obligation not only to maintain rank, but also “to testify to the irrefutable validity of its prerogatives by greatness of character and appearance before all eyes.”¹⁰⁰ Racial hygiene and theatrical hygiene tend to coincide here. With and through Wagner, the French foreign domination was thus energetically shaken off, “the energy has been uniquely placed by *him*; only the intensity of *his* genius overcame the unheard-of opposition; and only the free independence of his soul conceived and executed the glorious work amid the saddest obstacles of everyday life.”¹⁰¹

For the “foreigner,” Bayreuth rises accordingly majestically and demands of him “the complete abandonment of the desires and aspirations [...] that belong specifically to his race,” to strip away everything “personally incidental” in order to respond to the “call of German genius.” “Fully aware of the benefit received and filled with gratitude to the pioneering German genius,” the latter feels an obligation “which irrevocably imposes on him that benefit.”¹⁰²

⁹⁶Op. cit., p. 177.

⁹⁷Op. cit., p. 180.

⁹⁸Op. cit., p. 182.

⁹⁹Ibid.

¹⁰⁰Op. cit., p. 183.

¹⁰¹Op. cit., p. 185.

¹⁰²Op. cit., p. 181.

But this self-emptying cannot be a permanent state: after the revelation has happened, nature gains the upper hand again; and now a strange conflict of sensations awakens in the soul of the stranger. It is overwhelmed by the element revealed to it and from now on incapable of doing without it; and yet it is still unable to bring it into harmony with its other life. This highly fruitful state pushes the soul to a completely new activity; it forms that moment which makes the exchange between the two cultures possible, an exchange which now has to appear most visibly through the enrichment of both parts.¹⁰³

This exchange, however, which is to take place after the purification from the foreign domination of French culture, now takes place under an inverted sign, on German soil, and, according to Appia, brings forth two new genres: the musical drama and the German drama, both of which are to be understood as a connection of the “soul treasure of the Germans” with the “formal consciousness of the Latins”. German inwardness is to be expressed in French outwardness, and it is precisely for this that “staging” is needed.

Staging [Inscenierung = mise-en-scene] becomes for him [...] the lever by means of which he transfers his conception to a new ground that allows it full development; and he will discover precisely there an unexpectedly productive source of invention where every source seemed to dry up.¹⁰⁴

What Appia theoretically develops as “staging” is by no means limited to enhancing the performance as an independent work of art compared to the written original of score or drama, and it is far removed from the interpretative accesses of a later director’s theater. It is a continuation of Wagner’s Gesamtkunstwerk by other means, which not only strives to introduce an authoritarian regime in the theater, but also pursues an imperialist and racist policy outwardly. In and through the “Inscenierung” (mise-en-scene) that follows Bayreuth, the German being is to appropriate the forms of foreignness for its innermost expression.

For the mise-en-scene as Appia propagates it as a continuation of the Bayreuth Festival with more subtle means, is above all also a counter-model to the Parisian theater and a pleasure-oriented relationship to the theatrical, which has produced a consumption-oriented and pluralized theater culture in the metropolises, which is reflected not least in a much-celebrated everyday theater on the street.

Between the awakened and the satisfied appetites, Parisian life consumes itself daily: a magnificent caricature of the weakness of the Latin race. To watch this spectacle is already very captivating; but to climb onto the boards oneself is even more so; also, for the participants to get onto these boards, any procedure seems good enough, provided that it is handled with indisputable virtuosity.¹⁰⁵

Not only does the condemnation of lust seem to have a thoroughly pleasurable undertone here, but above all, the popular lurks in the all too pleasurable. What

¹⁰³ Op. cit., p. 184.

¹⁰⁴ Op. cit., p. 202 f.

¹⁰⁵ Op. cit., p. 203.

seems despicable about Parisian theater life is not only that it revolves around pleasures, but that it allows everyone to get on the boards. However, according to Appia, French culture defends itself against such a becoming common in the sense of belonging to the great crowd and being inferior in equal measure by an “aristocratic system” that “protects against a popularization incompatible with the sovereignty of art.”¹⁰⁶

If living art wished to democratize its domain, it would cease to be ‘artistic’ – in other words – to be art at all for the Latin; therefore, in a culture such as Latin, it must always maintain itself at the apex of aristocratic tendency.¹⁰⁷

This aristocratic tendency, the argument continues, leads to a merely fashionable theater, which increasingly loses its artistic value.

An artistic phenomenon, however, whose existence depends on this, and which to the highest degree bears the character of fleetingness, becomes something almost impossible. Therefore, art lovers replace them with creations whose longer life span allows them to be stripped of their mere present value in favor of their essential element: Creations as they spring from the fine arts and high literature.¹⁰⁸

Precisely that ephemerality, which since Lessing has been held up as a characteristic of theatrical art, seems so exaggerated in the Parisian cultural context that art turns away from the theater and remains only superficial, like a “chemical process, i.e. the continually changing quantitative determination and distribution of known quantities”.¹⁰⁹

The *mise-en-scène* (which is to come after Wagner), on the other hand, presents itself for Appia like the “outward radiation of an inner core of light”¹¹⁰ and thus creates a timelessness within the ephemerality of dramatic art. In contrast to Parisian eclecticism, it is supposed to represent an organic synthesis and demands from the spectator, instead of intellectual activity, a “relative passivity”.¹¹¹ Like the Protestant church service, it is supposed to be a “devotion” that addresses the soul and corresponds to “intimate desire[s].” Accordingly, “the German must *before* the performance itself,” prepare the soul and bring it to a state of “perfect tranquility”¹¹² to experience a comprehensive “harmony” in the theater. Decisive, however, for such a German and *inscenatorial* production of harmony is (entirely in the Prussian tradition) the production of a rigid hierarchy – and this is not least a *technical* matter.

¹⁰⁶ Op. cit., p. 205.

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ Op. cit., p. 210.

¹¹⁰ Op. cit., p. 206.

¹¹¹ Op. cit., p. 209.

¹¹² Ibid.

Today, the Gesamtkunstwerk must pave its way by technical means; for only technical form can create, in the midst of the depravity of our artistic institutions, the sanctuary which the idea has actually and tangibly sought to erect for itself in Bayreuth.¹¹³

The mise-en-scene as continuation of the Gesamtkunstwerk and counter-model to the popular theater of French provenance is post-Wagner a technical matter. In the future, after the purification from French influences by Wagner's tremendous energy, German inwardness is to find its expression in the technical domination of the scene. The future of German theater would lie in the staging control of precisely those energies that are still unbridled in Wagner's music, and thus ultimately in the hands of directors. Thus, if it were up to Appia, German directorial theater overcame the popular French hustle and bustle in the streets by purification, by discharge, and by the subsequent establishment of regulatory techniques.

The ardent yearning for electrotheatrical healing that manifested itself in Wagner's Grail thus finds its logical continuation in Appia's concept of staging as a totalitarian current; and yet it is a different electrotheatrical concept that is sketched here. Wagner's reactionary glow functions differently than Appia's totalitarian flow event and again differently than the propagandistic tension discharges designed by Georg Fuchs a little later. What all three have in common, however, is that they link their anti-modernist impulse and their distrust of industrial capitalism to that new technology that made Germany one of the leading industrial nations at the end of the nineteenth century: electrical engineering. It is therefore revealing to see how those techniques of control that Appia introduces into the theater as aesthetic theory are at the same time technically installed in the theater. For Appia's sketches and theories are not only created at the same time as the electrification of the theater, Appia himself also goes into apprenticeship where this electrification is also advanced, with the glass painter and electrician Hugo Bähr in Dresden, exactly 1 year before the Frankfurt Electricity Exhibition.

3.3 Parallel Circuits: Dividing the Light and Controlling the Current

One year after Appia's apprenticeship with Hugo Bähr in Dresden, when he begins his sketches and director's books for the *Ring des Nibelungen* and other operas by Wagner, a "small theater model with stage regulator for colored light effects" was presented at the Electricity Exhibition in Frankfurt am Main next to the large exhibition theater¹¹⁴ (cf. Fig. 3.2) by Siemens & Halske, which, in contrast to Lautenschläger's system distributed by AEG, had been the responsibility of Fritz Brandt, the chief machine inspector of the Berlin Opera, and which also took over the installation of gas lighting: "Rows of white, red and blue incandescent lamps are

¹¹³Op. cit., p. 216.

¹¹⁴*Officieller Katalog*, p. 147.

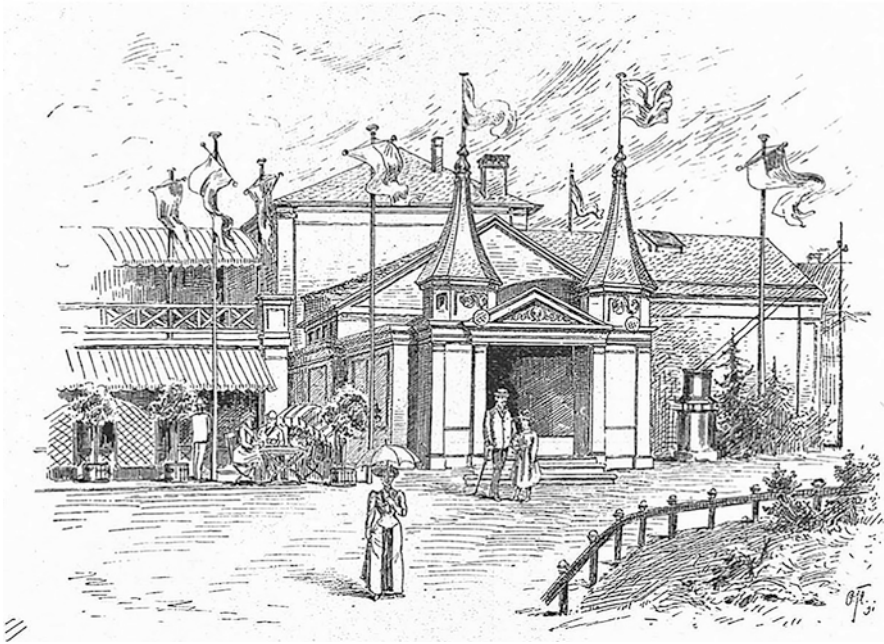


Fig. 3.2 “Modelltheater von Siemens & Halske,” contemporary engraving. (*Elektrizität. Offizielle Zeitung der internationalen elektrotechnischen Ausstellung Frankfurt am Main, 1891*)

installed behind the ramp, the side coulisses, the rear wall and the sofas, and incandescent lamps of each color in alternating sequence.”¹¹⁵

The main new feature of the new stage lighting – apart from the color temperature and the lack of side effects of the combustion process – was first of all only an improved controllability, which allowed a finer play with the colorfulness of the light.

The line fed from the large machine hall to these numerous lamps passes through the stage switch, which we have also illustrated in passing, and with the help of which or with the help of whose regulating devices any color can be made to glow or go out slowly or suddenly. This switch consists of regulating cylinders, on which the resistance is wound in the form of wires, with the associated changeover switches. [...] The spectator’s gaze now involuntarily wanders from the switch to the stage and from the stage to the switch, at which the cicerone [≈ guide, author’s note] is ‘working’.¹¹⁶

What seems to capture the audience’s attention is therefore not the light itself, but the process of its regulation. And to give visibility to this process, no aesthetic vision of a new stage aesthetic is needed; on the contrary, it is precisely the conventions

¹¹⁵ *Electricitaet. Offizielle Zeitung*, No. 19, Aug. 22, 1891, p. 606.

¹¹⁶ *Ibid.*

and clichés of late bourgeois theatrical landscapes that lend themselves to illustrating the virtues of the new technique.

The stage depicts a beautifully painted alpine landscape with a cute alpine cottage and gnarled trees in the foreground, with a Giesbach foaming between the rocks in the middle ground, and with mighty snow and ice heads rising from dark forest in the background. The ideal of a theater model, the rapture of young and old!¹¹⁷

The more catchy and ordinary the scenario presents itself, the more clearly the change of light and the change of mood can be read on it once the light in the auditorium has been dimmed and the curtain has been raised.

And now the beautiful landscape shines alternately, depending on the pseudo-director moving that or that switch at the regulator, in dazzling daylight, it is enveloped in mournful twilight, completely darkened, whereby the lights in the farmhouse burn on, lightning flashes, and this by the fact that the contact of small arc lamps is quickly interrupted, over the valley and the waterfall shines ghostly in the pale glow. Then the weather clears, a beautiful evening lies over the whole, and the ice peaks gradually begin to glow.¹¹⁸

Whoever stands at the regulator here is a *director*, even if, perhaps because of the exhibition character, a “pseudo” is still attached to him, and what this director does here is a technical-divine creation of the world by making light and weather. It is switched to mournful twilight, the interruption of contacts makes lightnings twitch and ice peaks start glowing like the lamps. That weather, which plays out over the landscape and horizon of the bourgeois aesthetic, which since Louthembourg’s *Eidophusikon* and Daguerre’s *Diorama*, also determines the theater as a peep-show and above all as a light box, which Wagner metaphysically charges like no other, and which nevertheless ultimately fails technically in Bayreuth, is here entrusted to the new creator god of the theater in the play of electrical regulation. Here in the incandescent light, landscape painting celebrates its highest triumph, and it does so in a paradoxical aesthetic constellation, in which the pleasure in illusion, which arises from the lack of understanding of the aesthetic means, is only heightened by the contemporaneous knowledge of these means.

Shall we reveal that the magnificent spectacle of this alpine glow is achieved by making the peaks transparent in the back wall and very slowly switching on a row of red incandescent lamps behind them? Shall we reveal that the pale moon that finally rises above the harmoniously tuned picture is a cute little arc lamp that is moved upwards slowly by a small electric motor in order to shine through the evening sky with a mild light?¹¹⁹

Thus the exhibition newspaper coquettishly entices and thereby draws attention to that technical dominion in the background of the aesthetic, which is at the same time hidden and yet here at the electricity exhibition is what is actually shown. What becomes enjoyable here, one can surmise, is similar to the *special effects* cinema,

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ Ibid.

the triumph of technology over images and the world they represent. The miniature theater advertises the Siemens & Halske company's theater installations, especially the company's stage regulator, by combining enchanting spectacle with demonstrations of technical operation, but at the same time it creates a vision of an aesthetic technology that promises to cure the modern stress of industrial society through the aesthetic power of electricity.

But it [the technical equipment, author's note] also robs nothing of the magic of the lasting impression that everyone takes away from Siemens' model theater in the thought that electricity is not just a huge, mysterious power that moves big wheels and wagons, but at times also, in the appropriate garb of course, a graceful fairy that provides soothing relaxation for nerves strained by the noise of machinery.¹²⁰

The theater, even in its electrified form, is a refuge and balm that provides relaxation to 'jaded nerves,' is compensation for the filth and noise of industrial modernity raging outside the temporary darkness. The exhibition visitor flees from the "devil's kitchen of electrotechnical exhibition arts" into the electro-ballet, as a contemporary visitor describes it.¹²¹ As an alternative to the "exhibition temple" with its "exhaust pipes of steam engines and blow-out duct[s] of gas engines," "a spectacle that gives one the impression that the powers of the underworld have erected a branch here for the cruder pursuits of their studio,"¹²² the theater offers an illuminated natural showcase that represents a different modernity. Like that light that comes from Wagner's glowing grail, this glow is something indirectly colorful that stands precisely in contrast to the clear, cold, focused beams of light from the spotlight that falls obliquely from above, which was to become so central to twentieth century stage lighting and iconography, and here, anno 1891, is exhibited at most as an effects device or military apparatus.

However, what makes this colored glow possible in the first place and gives the 'pseudo-director' the threads in his hands is an apparatus that allows a resistor to be inserted into the current flow that can be variably controlled. It is a combination of regulator and rheostat (cf. Fig. 3.3), as it is being installed in theaters throughout Europe and makes possible a previously undreamed-of centralization of control.

This is the mechanism in which the current supply to the entire stage lighting units is centralized and by means of which it is possible to produce any variation and combination of light intensities and colors in each individual group of lamps completely according to the will of the person operating the regulator.¹²³

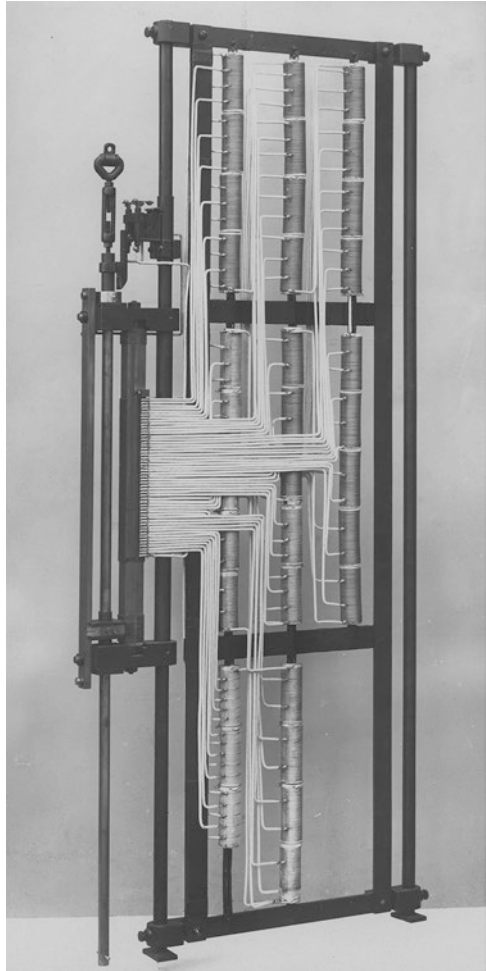
¹²⁰ *Electricitaet, Offizielle Zeitung*, No. 19, Aug. 22, 1891, p. 606.

¹²¹ Conrad Wuest: "Elektrische Ausstellung in Frankfurt a. M.," in: *Programm der Städtischen Schulen*, Aarau 1893, pp. 9–10 quoted from David Gugerli: "Modernität – Elektrotechnik – Fortschritt," in: *Elektrizität in der Geistesgeschichte*, ed. by Klaus Plitzner, Bassum: Verlag für Gesch. d. Naturwiss. und d. Technik 1998, pp. 51–63, here: S. 51.

¹²² *Ibid.*

¹²³ Dr. O. Feuerlein: *Die elektrische Theaterbeleuchtung unter besonderer Berücksichtigung der Fabrikate von Siemens und Halske*, offprint from the *Elektrotechnische Zeitschrift (Centralblatt für Elektrotechnik)* H. 19 (1896), p. 5.

Fig. 3.3 Stage rheostat for an electric circuit.
(Deutsches
Theatermuseum)



Edison's employee Charles Batchelor designed a first device of this type for the theater in Brno. A design has been preserved via a letter to his Munich colleague Philipp Seubel, who designed the regulator for the Munich experimental stage based on it (cf. Fig. 3.4).

Now for the regulation: – A man must be able to regulate the intensity at will of the auditorium, the footlights, the crosslights [?] the sidelights, the orchestra, the transportable objects all together or separately. All the crosslights and the side lights of which there are generally ... each separately of together and it must be possible to reduce or lower them very gradually – we make for the Brno theater a ... for each that turns like a gas switch and put the resistance in another room and run wires to the regulators. You would want at least 14 you see and they would have to be made to suit the number of lights but the switches must be all the same and like rough sketch – A theater ... wants red and blue lights which we

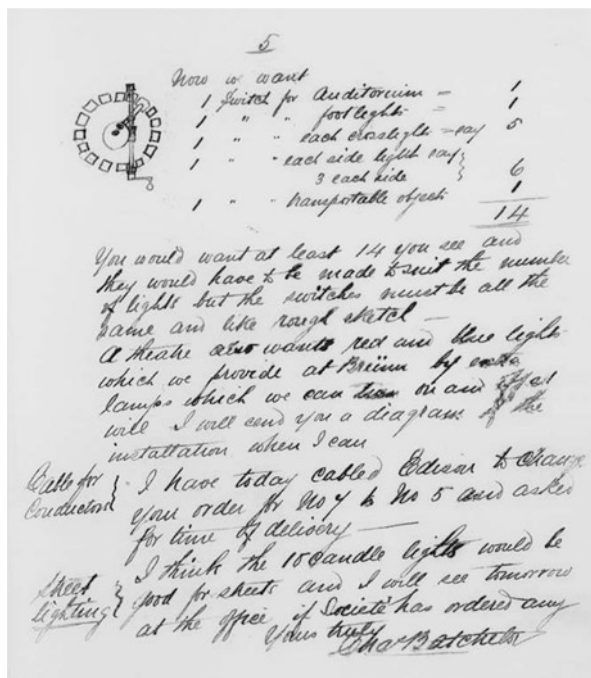


Fig. 3.4 Page from a letter from Charles Batchelor to Philip Seubel dated July 29, 1882. (Edison Papers Digital Edition)

provide at Brno by ... lamps which we can turn on and off at will. I will send you a diagram of the installation when I can.¹²⁴

Accordingly, a regulator is a device that can be used to arbitrarily regulate intensities, independently from above, below, sideways, and mobile, in the smallest possible increments and different colors. The regulator designed by Seubel was housed in the Munich Residenztheater as the “main regulation apparatus” next to the prompter apparatus. From it, 29 circuits could be regulated individually in 25 steps via the corresponding number of “regulating levers” (Fig. 3.5).¹²⁵

It is not surprising that the first stage regulator comes from Edison, because Edison is the company that in the 1880s develops electricity into a consumer business, because it begins to distribute electric light from central stations to individual consumers via supply networks, just as the regulator does with electricity in the

¹²⁴ Charles Batchelor to Philip Seubel on July 29, 1882, *The Thomas Edison Papers, Charles Batchelor Collection*, Letterbooks: Cat. 1239 (1881–1883), MBLB4319; TAEM 93:693, edison.rutgers.edu.

¹²⁵ Cf. *Zeitschrift des Vereins deutscher Ingenieure* 27, July issue 1883; DEG: *Elektrische Beleuchtung, Centralblatt Bauverwaltung* 3 (1883), p. 218 f.

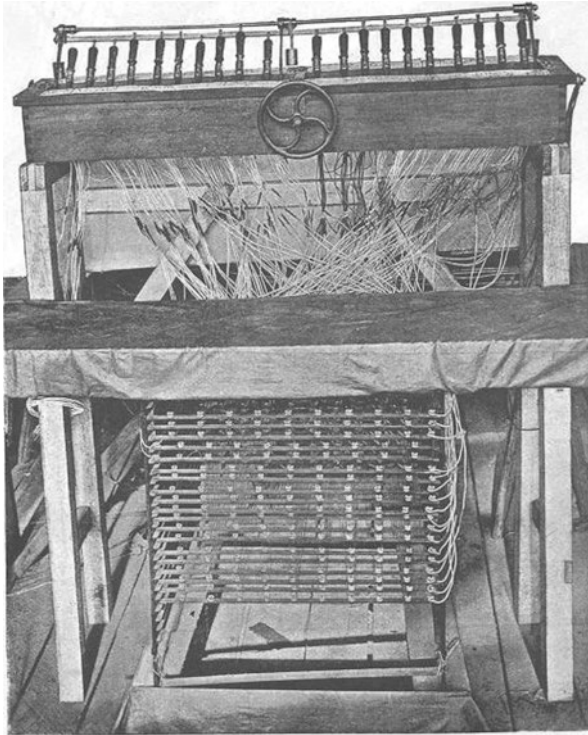


Fig. 3.5 “Regulator der Glühlichtbeleuchtung des Bühnenraumes.” (*Offizieller Bericht über die im Königlichen Glaspalaste zu München 1882, 1883*)

theater. But this business, like the regulator, is built on the fact that light can be divided into the smallest units, which can then be distributed anywhere at will.

This question of the “division of light,” as it was called at the time, arose with the invention of the dynamo and industrial power generation and was the decisive prerequisite for the construction of power plants. Before Grammé and then Werner Siemens constructed electromagnetic machines from 1870 onwards, which achieved a conversion of motion into electricity through the principle of self-excitation, in which not too much power was lost, accumulators and batteries were the only sources of electricity. And as long as these were the only ones available, every consumer remained connected to a generator, as is still the case today with flashlights. But if you wanted to not only generate electric light on a large scale, but also sell it (and that was Edison’s great project), then you needed above all a way to break down a large quantity of electricity into small commercializable units, and, more fundamentally, a quantity that could also be shared. How to connect several consumers to one generator was the question. At the beginning of the electricity industry, as Peter Berz has explained in detail, it was a question of the production of and

in series, of the creation of standardized, exchangeable and, above all, divisible units.¹²⁶ This, in turn, was not as simple as the supply systems of gas and water.

For the electric light, and that means the *carbon arc light*, which was the only known electric light until 1880, was bright but hardly divisible (Figs. 3.11 and 3.12). The arc from which this light emerged had been discovered during experiments with the voltaic column, the prototype of the battery, at the beginning of the nineteenth century: By bringing together two carbon rods connected to a battery, two electrodes, and then carefully removing them, a current flow was created (by ionization of the air, as was later discovered) that caused the tips of the two coals to white-hot (cf. Fig. 3.6). Unlike in the vacuum of the later incandescent lamp, however, the carbons burned in the process, which firstly changed the distance between the electrodes and secondly caused the voltage to collapse. What had to be solved in order to turn the arc into an arc light was a question of *regulation*: As the rods burned down, the distance between them increased, the resistance rose, and because the voltage of the battery was constant, the current decreased and with it the luminosity, until the arc finally broke down completely. A first manual and then after 1845 mechanical tracking of the carbon rods by clockwork failed because of the irregular burning of the carbon rods. It was not until 1847 that an electromechanical design, which controlled the feed as a function of the current, which changed due to the resistance fluctuations, led to a successful solution to the problem.

Such main current lamps (as the later *terminus technicus*) allowed individual lights of great intensity to burn largely constantly over long periods, but any connection of several lamps in one circuit, i.e. any connection of many lamps to one current source, was thus ruled out: Since the fluctuation of the current intensity in one lamp affected the current intensity in the entire circuit, and since this very current intensity was used to regulate the distance between the carbon rods, the regulation of irregularly burning carbons in one lamp was bound to lead to misregulations in other lamps. Thus, for a long time, arc light remained an exclusive and sovereign light, emitting a great brightness and remaining a singular event, with each light relying on its own energy source.

Only the *electric candle* by Jablochhoff changed this, starting in 1876, by circumventing the problem and dispensing with electromagnetic regulation. Instead, it arranged the carbon rods side by side in an elongated fashion and surrounded them with incombustible insulating material (first porcelain, then plaster), so that in this way the distance between the rods remained constant. Up to 16 lamps, burning for about 90 min, could be operated in this way from one power source, and at the Paris World's Fairs in 1878, 1000 of them decorated streets and halls every evening. But in the same year, Siemens developed the *differential arc lamp* (Differentialbogenlampe), which made it possible to operate several such so-called "shunt lamps" (Nebenschlußlampen) with electromagnetic control in a parallel circuit (cf. Fig. 3.6b).

¹²⁶ Berz, Peter: "Das Glühlicht. Kritik der technischen Ökonomie. Edisons electric light campaign und ein Feind namens MAXIM", in: *Das Glühbirnenbuch*, ed. by Peter Berz/H. Höge/M. Krajewski. Vienna: Edition Seleno 2001, pp. 27–133.

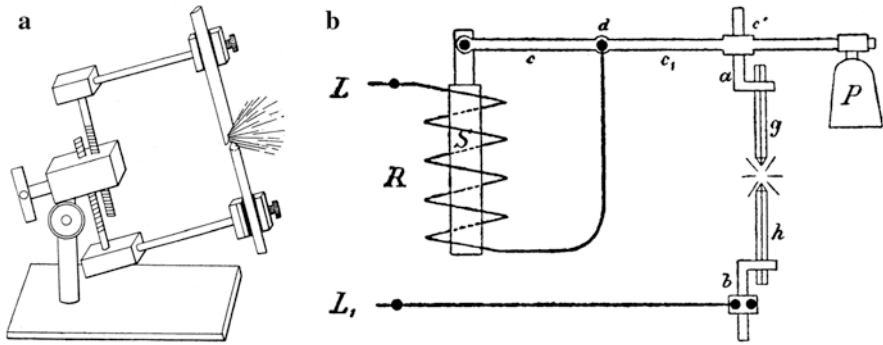


Fig. 3.6 (a) Arc lamp (Victor Trudelle: *La Lumière électrique*, 1914), (b) Control principle of a main current lamp. (*Zeitschrift für angewandte Elektrizitätslehre*, 1880)

As with the main shunt lamps, as the carbon burns down, the resistance increases due to the increasing distance between the rods and the current drops at this point in the circuit, so that the field of the coil decreases and the carbon rod sinks. But at the same time, in the circuit connected in parallel, the “shunt”, the amperage now becomes larger (because in a parallel circuit, the voltage in both circuits is the same and the currents add up to the total current). The coil there causes a mechanical counter-movement, which makes the control of the carbon rods more precise. However, the real advantage of this circuit becomes apparent when the total current varies outside the lamp, for example, due to another lamp operating in the same circuit: Without a shunt, any decrease in this total amperage would cause the electromagnetic force in the main shunt to diminish, causing the carbons to sink. In the differential lamp, however, a slackening incoming current leads to the sinking and lifting of the carbon rod to the same extent, so that the external fluctuation is compensated internally.¹²⁷

With the differential lamp (similar to the Jablochhoff candle), the individual lamps thus gain a partial independence, and thus can be used in *limited series* together (as Peter Berz puts it, who compared this aspect of the technology with the six cartridges in the drum of the *Colt* and the series of images of the *zoetrope*). But these series remain limited, because still with each lamp added to the circuit the current generation must be adjusted. With parallel connection, a higher amperage must be generated for each additional lamp to supply all lamps; with series connection, an increase in voltage is needed for each additional lamp. Voltage and amperage of the power source remain consumption-dependent variables in the limited series.

However, both the consumer-oriented business with electricity and its aesthetic use in the theater required the *unlimited and open series*, the “indefinite subdivision of light” according to the model of American production methods, which Edison

¹²⁷ Cf. Johannes Abele: *Die Lichtbogenlampe*. Munich: Deutsches Museum 1995.

took as his model. Their introduction and implementation were due to a fundamental change in the approach to the problem, as Peter Berz has pointedly elaborated. Instead of starting from thermodynamic calculations, i.e. the electromagnetic regulation of mechanical forces as in the differential arc lamp, Edison experimented with resistance and Ohm, i.e. with those laws that describe the relationship between current strength and voltage in the electrical circuit. This is because the prerequisite for economic exploitation on a large scale is the stability of the circulation, i.e., a supply network that remains stable regardless of the number of consumers (just as the pressure in the water pipes does not drop as soon as another tap is connected). In the electrical field, however, this can only be achieved with consumers that have the highest resistances and are arranged in parallel (because only in this way is the same voltage present everywhere and the current remains minimal) – and this is where the incandescent lamp comes into play. Incandescent lamps not only do not require complex electromechanical regulation, they can also be built with high resistances, namely when what glows inside them can withstand the highest possible temperatures, which in turn works best when there is no oxygen in the environment. That is why light bulb manufacturers build vacuum pumps, and why Edison searched the world in 1880 for something that could be carbonized and withstand the highest possible temperatures, which he eventually found in the fibers of Japanese bamboo. What really makes the light bulb is not so much the discovery that a current-carrying conductor starts to glow and emits light, but rather the discovery of a material that can withstand high temperatures and thus emits a high-impedance consumer that can be switched as an infinite series and thus provides the occasion for serial mass production of electric light in the first place.

In the stage regulator, which controls an entire system by changing resistances in the conduction system and thus takes the place of the isolated and independent thermodynamic arc light regulators, such unlimited and open series become an aesthetic effect (cf. Fig. 3.7). Just as the light bulb acquires its meaning only from mass distribution and area-wide distribution, it could similarly be argued that it is only the regulator which gives the light bulb its meaning in the theater. For unlike the carbon arc light, the incandescent light brings more than an effect to the theater; rather, it practices and celebrates that division and distribution of energy, the control over its distribution, which becomes so important in society, in the aesthetic. The stage regulators are an aesthetic instrument of domination, introducing a new power into the theater to control the new forces emerging there at the end of the nineteenth century. As the analysis of Appia's programmatic writing in the previous section has shown, this new power is introduced into the theater not only in new devices, but also as an aesthetic program that places the director at the center of the theater, that new power figure who no longer pulls the strings but pulls the lever.

Accordingly, the stage regulators initially received a not insignificant amount of attention, both in popular circles and in the electrotechnical trade press. The first apparatuses, which were subsequently permanently installed in Munich and Stuttgart by AEG, are described in retrospect in the *Elektrotechnische Zeitschrift* at

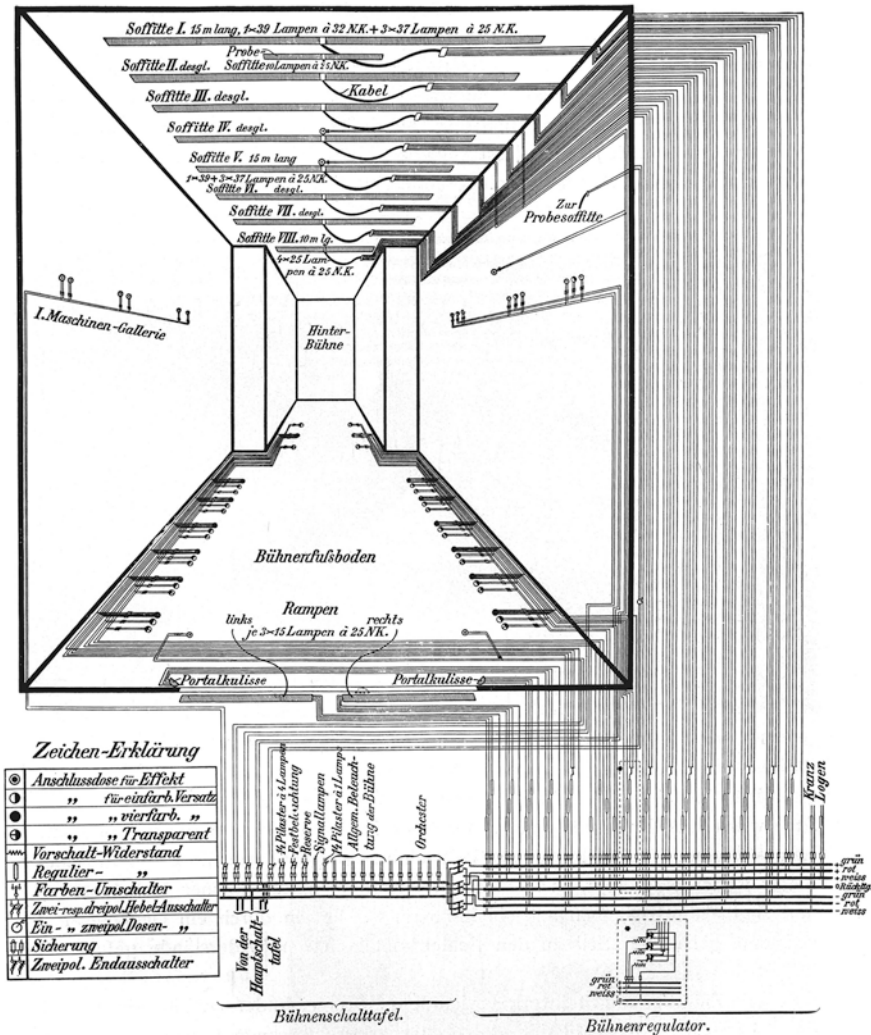


Fig. 3.7 Arrangement of stage management at the Hoftheater Darmstadt. (Siemens Corporate Archives)

the end of the 1880s.¹²⁸ They feature “two-armed levers that guide a contact piece over a number of segments, which are connected by wire leads to a rheostat.” These rheostats are early forms of resistors, long coils of wire that provide a different resistance depending on where the contact is made, they “are made of nickel silver wire passing over porcelain rollers attached to iron frames.”¹²⁹ Control is thus

¹²⁸ Görz: “Über elektrische Theaterbeleuchtung,” in: *Elektrotechnische Zeitung* 9/2 (Jan. 1888), pp. 17 ff.

¹²⁹ Op. cit., p. 19 f.

mechanical by the position of the regulators and the corresponding position of the current pickup.

The current enters through the axle, on which the regulating levers are united, and is transmitted through the lever to the contact piece. Coupling of the levers when regulating a large number of lighting fixtures is achieved by inserting a bushing on each lever into an iron frame that moves above the levers.¹³⁰

The Berlin Kgl. Schauspielhaus with its three-lamp system has two rheostats for each lighting fixture and a switch between the different colors; here, too, the levers loop over a fixed number of segments connected at different points on the rheostat.

The current is conducted from the main conductor rail to a metal plate attached parallel to the face of each segment. The contact piece provides the conductive connection between the plate and the segment. [...] Each regulating lever can be coupled individually and at any point of its travel by means of a gear and pin. The levers are combined in different series, which in turn can be connected together. The movement of the lever series is done by large hand wheels.

In this respect, both systems allow only gradual changes of light. Only Hugo Bähr, with whom Adolphe Appia was apprenticed, seems to be credited with the fact that a “continuous regulation” is established, “in that a contact grinds on the outer surface of an insulating cylinder wound with wire. Thus, only a resistance corresponding to the turn length of the wire is switched off and on as the contact slides”.¹³¹

For Pearl Bartly, describing electricity in the theater in 1929, the key to art also lies in control: “A theatre may have splendid lighting equipment, but if there is no means of controlling it, nothing is gained, as it is only by control that any effects can be achieved.”¹³² Decisive is the regulator – the “switchboard” – one of the most expensive things in the theater, because it allows the transition from the “improvised control” of the arc light, with its isolated and decentralized devices, to the “predetermined control”: with it everything could be set beforehand, centrally and simplified.

3.4 Switching Operations: Button Pressing and Weather Lighting (Benjamin)

So while there is little change at first in what is regulated (each soffit can be regulated individually, backdrops are often grouped by stage sides; there are at least two offsets and the two halves of the ramp, one circle for the chandelier and possibly one for a special fixed lighting of the hall), the fineness of the regulation and its complexity changes in the early years: the regulator of the royal playhouse in Berlin has 58 regulating levers, 90 color settings and 30 flash devices as well as various

¹³⁰ Ibid.

¹³¹ Ibid.

¹³² Pearl Bartly: *Electricity in the Modern Theatre*, MA thesis, Butler University, Indianapolis 1929, p. 29.

possibilities of a mechanical coupling of the individual levers at the end of the 1890s, and has dimensions of 3.50×1.20 m.¹³³ What improves are the details in the transitions of the light changes that appear over the bourgeois landscape paintings, the complexity of the composition of these post-Romantic worlds of light and weather. And so, the *Elektrotechnische Zeitschrift*, reporting on the development of stage regulators in the late 1880s, concludes its technical rapport with an observation from the auditorium, from which alone “the performances of a good regulator can be judged.”

The scene depicts a landscape bordered on one side by a village. It is bright afternoon. Slowly and steadily the evening descends; a slight, then more intense redness announces the parting of the sun. Slowly the evening redness disappears and a deep darkness settles over the stage, interrupted only by a few faint glimmers of light coming from the small windows of the farmhouses. Then one hears distant thunder rolling, and a still faint weather glow points to the approaching thunderstorm. The thunder becomes stronger and bright lightning illuminates the scene. The weather recedes, a light bluish glow gradually spreads over the landscape, it increases more and more, and suddenly a full, clear moonbeam breaks through the clouds and magically illuminates the peaceful scene. The curtain rushes down, the lamps of the crown glow brightly and outside in the foyer the incandescent light shines calmly and soothingly.¹³⁴

This is followed in the narrative by the change of perspective to the “illuminator’s lodge”. Same as at the Frankfurt exhibition, the illusion of nature can only be fully enjoyed here when one is nevertheless aware of those means which one no longer sees.

At first, the white lamps are switched on at the regulator; they burn brightly and the respective regulating levers are coupled so that they can be moved by the common transmission. During the slow darkening, there is enough time to switch on the red lamps of the respective stage lighting fixtures and to engage the regulating levers as well. Then the handwheel of the gear for the white lamps is moved back, the handwheel for the red lamps is moved forward to a previously determined position, and then the red lamps are dimmed again. An offset lever switched to white light remains uncoupled; it is now turned bright and causes the offsets mounted behind the windows of the houses to glow. When the thunderstorm begins, the flashes are first set in the rear set pieces, but then move to the front set pieces and soffits. In the meantime, the red lamps have been switched off and are replaced by the green ones, which are now slowly turned bright. A second offset lever, switched to ‘green’, has also remained uncoupled; at the given moment, it too comes into action and causes the moonlight to appear. Shortly before the end of the act, the lamps of the foyer are switched on at the switch-off board, and during the fall of the curtain, the crown of the auditorium is illuminated.¹³⁵

It is noticeable that there are more words for the events behind the stage than for those in front of it; here no simple trick creates a complex perception, but a highly complex procedure creates a rather simple impression. Above all, the narrative of

¹³³ Cf. Kranich, op. cit., p. 47.

¹³⁴ *Elektrotechnische Zeitschrift* 9/1 (1888), p. 24.

¹³⁵ *Ibid.*

what happens in front of and behind the stage lives from the weightlessness with which all these scenic wonders can be created.

When one has thus observed the processes in front of and behind the scene and seen how one man, without haste, without effort, produces these surprising and effective appearances, one cannot help but be convinced that electric theater lighting has today reached a high level of perfection.¹³⁶

As in the Frankfurt exhibition, the attraction consists in making the spectator's gaze wander involuntarily back and forth, and the fascination of the apparatus results from the incredible ease with which the comprehensive changes can be produced. Iconographically, too, the switchboard hidden in the backstage and understage and the process of regulation are repeatedly put into the picture in period and commemorative publications (cf. Fig. 3.1). In this respect, the stage regulator celebrates on a large scale what the switch already celebrates on a small scale: the absence of work, a radical relief of the hand. The handle that changes the light here is no longer a real handle, only a switching on instruments that can largely and increasingly do without force.

Already Edison's demonstration of the light bulb, in 1881 at the first electricity exhibition in Paris, has the crowd lining up to press the button just once and experience the on and off (cf. Fig. 3.8). For even as electrical force tends to elude perception, becoming visible only in the change it brings about, it is the play of switching on and off, ramping up and down, observing the effect as a function of its quasi-magical causation, that becomes the fascination – an activity that seems so easy (and magical) that it is only referred to as “work” in quotation marks. The model of this powerless switching, however, is found in the turning on of taps, which in the supply systems of gas and water sets circulation in motion and allows resistance to be overcome.

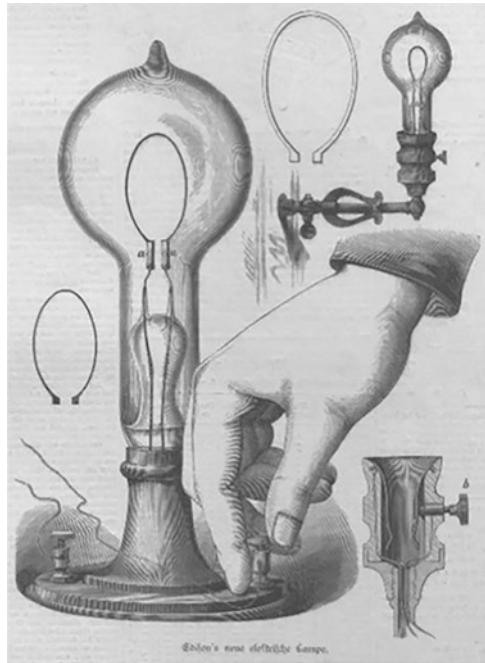
Walter Benjamin quotes Paul Valéry in his artwork essay, who compares the modern supply of image and sound sequences, “which, at a small touch, almost a sign, set in and leave us again in the same way,” with that “almost imperceptible touch” upon which “water, gas, and electric current [...] come into our homes to serve us.”¹³⁷ In the Baudelaire book, he then takes up this idea again when he describes the technical relief from manual labor as something that is perhaps best described as the *dialectic of comfort*: “Comfort isolates. It moves, on the other hand, its beneficiaries closer to the mechanism.”¹³⁸ On the one hand, there is isolation through the absence of work on and with the environment, on the other a new closeness to the apparatus.

¹³⁶ Ibid.

¹³⁷ Cf. Walter Benjamin: “Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit,” in: *Gesammelte Schriften*, ed. by R. Tiedemann. Frankfurt a. M.: Suhrkamp 1980, pp. 431–470, here: p. 470.

¹³⁸ Benjamin: *Gesammelte Schriften*, vol. I, op. cit, 1980, p. 630.

Fig. 3.8 “Edison’s neue elektrische Lampe.”
(*Illustrirte Zeitung*, 1880)



With the invention of the match around the middle of the century, a series of innovations appears on the scene that have in common the one thing of triggering a many-limbed sequence of events with an abrupt flick of the wrist. The development takes place in many areas; it is illustrated, among other things, by the telephone, where the steady movement with which the crank of the older apparatuses wanted to be operated has been replaced by the lifting of a receiver.¹³⁹

With the technical unburdening of the hand, the *handgrip* becomes the “finger pressure,” which replaces the formerly “steady movement” of mechanical apparatuses by the electrical “switching” and produces its most radical consequences in the field of media techniques.

Among the innumerable gestures of switching, throwing, pressing, etc., the photographer’s ‘snap’ became particularly momentous. A press of the finger was enough to capture an event for an unlimited time. The apparatus gave the moment a posthumous chock, so to speak.¹⁴⁰

For Benjamin, the modern “chock” is something that happens to the “moment,” posthumously, that is, something that divides continuous temporality retrospectively into discrete moments because, crucially, they can be fixed by a handgrip that is no longer one, a movement without force that is not labor. Sensory experience is

¹³⁹ Ibid.

¹⁴⁰ Ibid.

broken down into a time sequence by media technology. The snapshot shocks the moment, dissolves “steady movement” as well as perception into moments. This is precisely the experience of technical modernity in the everyday life of the big city.

Haptic experiences [...] were joined by optical ones, such as the advertisements in a newspaper, but also by the traffic in the big city. For the individual, moving through it entails a series of chocks and collisions.¹⁴¹

What can thus be experienced in the city is an electric happening through which one can move by means of switching points.

At the dangerous intersections, like shocks from a battery, innervations flash through him in rapid succession. Baudelaire speaks of the man who plunges into the crowd as into a reservoir of electrical energy. Soon after, paraphrasing the experience of the chock, he calls him ‘a kaleidoscope endowed with consciousness’.¹⁴²

Thus, with the circuits and shocks of electric light in the streets ushering in the end of gas lighting would go the “appearance of the street as an interior in which the flâneur’s phantasmagoria is summed up”,¹⁴³ that time of passages and strolling, of the “noctambulisme” of the *Second Empire*, whose rhythm was still determined by the lantern-lighters who wandered through the streets in the evening, and which, as Benjamin conjectures, only gained its contemplative character in retrospect from the shocks of electricity.

First this rhythm stands out from the uniformity of the twilight, but now from a brutal chock, with which whole cities lie there at one blow in the glow of the electric light.¹⁴⁴

More important than the brightness or colorfulness of the new light is its rhythm, the one “beat” upon which the glow suddenly lies there; and for this very reason it is film in which, for Benjamin, the perception of the big city is most obviously reflected, for, like film, the live world of the big city dissolves into a series of snapshots.

If Poe’s passers-by still cast seemingly gratuitous glances in all directions, today’s must do so in order to orient themselves via traffic signals. Thus technology subjected the human sensorium to training of a complex kind. The day came when a new and urgent need for stimulation was met by film. In film, chock-shaped perception comes into its own as a formal principle.¹⁴⁵

Where the uninterrupted shifting of gears determines everyday life, there is no longer any room for constant churning; and in the city, which is experienced as a

¹⁴¹ Ibid.

¹⁴² Ibid.

¹⁴³ Op. cit., p. 552 f.

¹⁴⁴ Op. cit., p. 630.

¹⁴⁵ Ibid.

discontinuous series of “chocks,” the human sensorium is transformed by a “complex training”. This then gives rise to a need for stimulation, which is finally met by an art. “The day came,” Benjamin lets us know, when something “corresponded” to something else. Film and the city have a “chock-shaped perception”, which, according to Benjamin, can also be found on the assembly line in the factory and, last but not least, in the match and the gear shift, and which goes back to the decomposition and acceleration of the previously constant movement of people, images, things, money.

The background to this materialist analysis of the shock effect of switching gears, however, is Karl Marx’s critique of alienation, which builds on Adam Smith’s analysis of the division of labor, as it received its iconic formula in Charlie Chaplin’s *Modern Times*: The previously fluid context of an artisanal labor is juxtaposed with factory work as a reified event in which man no longer relates to his environment through the tool, but the machine applies the man.¹⁴⁶ What becomes “palpable” reality with industrial machinery is the supremacy of a production and market process over a self-determined working of nature in palpable confrontation with the material of nature.

In Marx’s view, this development is triggered by the tremendous unleashing of the productive forces, which leads to an unprecedented increase in production and whose forward momentum is not only decisive for the worker in the factory. There is an acceleration of the course of history and a permanent upheaval of social relations. As on the assembly line, henceforth it is no longer the deeds of great men but abstract forces to which small workers and great masters submit themselves. The basis of all industrial capitalism, according to Marx, is this double-edged release of subjects: They are freed from the relations of dependence, but also the relations of provision, of feudalism. With the abolition of serfdom and class privileges, they would be free to buy and free to sell themselves. The subjects of the lower classes gained a world that had previously been closed to them, which now became available in principle as a commodity, and henceforth, with their labor power, were themselves such a commodity available in principle. From now on, social cohesion is primarily organized in monetary terms, and things and subjects are dominated by their commodity-like nature.

The flip side of this industrial liberation, however, appears in Marx’s work under the keyword *alienation* and means a multiple expropriation of labor. For the labor of the wage worker is in many senses no longer his own: Neither does he own what he works on, nor is it up to him to determine what and how he works. Accordingly,

¹⁴⁶ Ibid.: “What determines the rhythm of production on the assembly line underlies that of reception in film. It is not without reason that Marx emphasizes how much in craftsmanship the connection between the moments of work is a fluid one. On the assembly line, this connection confronts the factory worker as a material one. Independent of the will of the worker, the workpiece enters his radius of action. And it withdraws from him just as self-willedly. ‘It is common’ to all capitalist production...., writes Marx, ‘that not the worker applies the condition of labor, but conversely the condition of labor applies the worker, but it is only with machinery that this inversion acquires technically tangible reality.’”

he is a stranger to things as a producer, but as a consumer he longs all the more intensively for their appropriation. The commodity *can* become a fetish because it has been detached from the context of production and use and is in turn alienated; it *must* become a fetish in order to compensate for the resulting alienation. Behind the utilitarian determination of commodity exchange, to distribute things as optimally as possible in terms of supply and demand, there is a libidinous occupation. For at the end of the industrial production chain there is not only a saleable product, but also an (absent) object of desire around which the games of the market economy revolve and which finds expression not least in the increasing aestheticization of commodities.

But with the aestheticization of the commodity and the shaping of the thing into a fetish, the connection between collective labor processes and the products sold as commodities becomes increasingly invisible. The very process that is responsible for the detachment of things from their context of production and thus makes them accessible to aestheticization as a commodity fetish is withdrawn from visibility by this very aestheticization. And it is precisely this blindness to the connection between labor and things that keeps the libidinous game of commodities going. Like the spotlight, which eludes visibility precisely because it allows things to shine as if by themselves and knows how to make them stand out from their surroundings as individual things in the first place, the aestheticization of the commodity is always at the same time the reason, consequence, and cloak of the separation of labor and thing, and produces consumption as a fetishist desire in reaction to the alienation of labor.

The desire to shift gears, which is at the beginning of Benjamin's shock theory, could also be situated in the context of such industrial capitalist desire. In the instantaneous illumination in the distance, not only does an unprecedented power of technology appear, the electric light is rather *the ideal commodity fetish*: in no other manufacturing process is the product so far removed from the worker as in the production of electricity; and no consumer good better suited than the fleeting and intangible electrical energy to incite a desire that can never be quenched. Light is always already consumed, and more is needed the more of it there is. Even more than in standardized consumer goods such as the later legendary Ford *Model T*, the new powers of industry seem incarnate in electric light. At the moment of switching, however, this power becomes tangible, and as an illusory empowerment of the individual, simulating an availability and mastery over that object of desire which, however, inevitably eludes us because it is not only essentially ephemeral and immaterial, but also belongs to larger powers, fields, and corporations.

The shock of modernity, however, is experienced pleasurably in this switching, similar to the cinema and different from the assembly line, because here the separation of thing and work can be experienced paradigmatically and above all as individual empowerment instead of collective alienation. In the turning on of the taps, in the switching of the lights, the shock reconciled as comfort is celebrated similarly

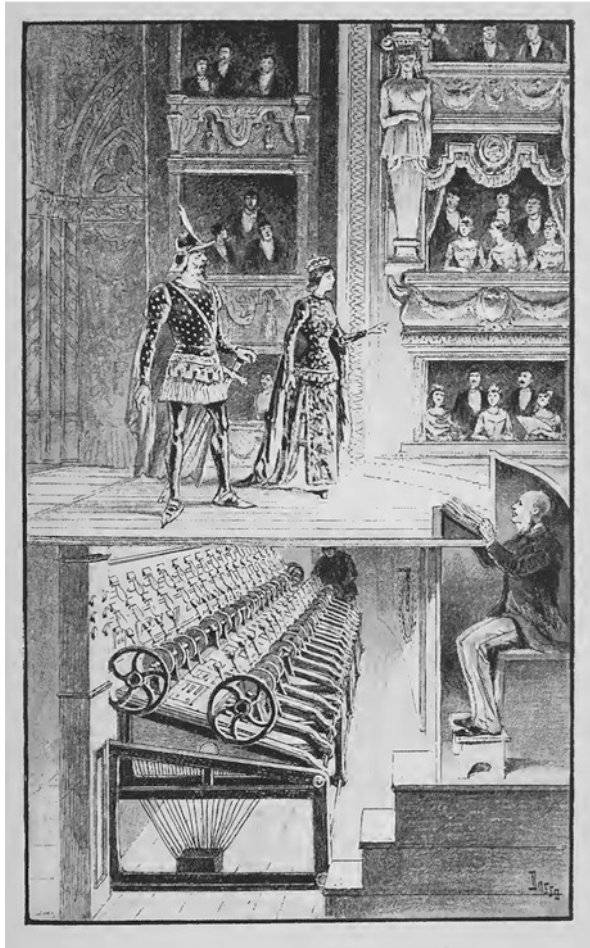


Fig. 3.9 “Le Jeu d’Orgue pour l’Éclairage de l’Opéra.” (Georges Moynet: *Trucs et décors*, 1893)

to the cinema, and in the stage regulator it has its cathedral (cf. Fig. 3.9). Here the relief of the hand is celebrated in the highest form, as an artificial cycle of nature over romantic landscapes, which shine in the dawn only the more beautifully, the more one knows about the technical miracle in the background, which brings this change so apparently completely without work to the way. The appeal of the stage regulator lies in the fact that it cultivates the shock, regulates it, dims it, transforms the glistening into a colorful shine and restores continuity: It is no accident that it is natural landscapes (and Grail cups) and not city scenes or body images that are used here to stage the phantasm of central control over the very thing one is at the mercy of.

It is not merely pleasant to turn night into daylight by pressing a button, it is simply beautiful. It penetrates deeper into our heart than a comfortable bed, than a good meal, it leads us closer and closer to the contemporary force of nature, to which we belong, which we use without knowing it.¹⁴⁷

For this theater, which lives from close timing and depends decisively on regulating techniques in order to successfully control its entirety, it needs not only new devices such as stage regulators or new professions such as the director, it also needs a new kind of knowledge; a knowledge that cannot simply be acquired from mouth to mouth, but must be learned at universities. And this knowledge also opens up entirely new horizons for aesthetics.

¹⁴⁷Peter Rosegger: "Schönheit in der Technik", *Kunstwart* 14/1 (1901), p. 147.



With electrification a new kind of knowledge enters the theater: a knowledge that introduces a new kind of technology into theater, a technology that is only technology and has stopped being part of art. Closely connected to this new knowledge of stage technology is a number of aesthetic innovations that ultimately culminate in a new theatrical ideal. Therefore, Sect. 4.1: “Engineering knowledge” outlines how the craft of stagecraft is transformed into an engineering science around 1900, how theater as an industrial enterprise is subjected to standardization and optimization, and how art and technology are thus radically separated. Section 4.2: “Transport Systems” shows, on the basis of a selection of patent specifications, how this engineering knowledge primarily works on the circulation of the materiality of a stage set that has become plastic, in order to regain or preserve aesthetic flexibility. And Sect. 4.3: “Projection Surfaces” demonstrates that, in contrast, the most effective stage invention is presented as a configuration of fabrics and projection devices that results, rather accidentally, in the use of the spotlight and an artistic lighting practice. Section 4.4: “Soul Vibrations” subsequently follows how at the center of this technical configuration of the stage horizon with its cloud apparatuses are precisely the overcoming of material heaviness, the transcendence of the stage wall, the directing of attention, and ultimately an auratic metaphysics of aesthetic atmospheres. Finally, Sect. 4.5: “Atmospheric Arts” shows, on the basis of Reinhardt’s *A Midsummer Night’s Dream*, that the technical developments outlined above never take place context-free and independent of aesthetic development, but rather only make sense and produce sensuality at the same time in artistic contexts.

4.1 Engineering Knowledge: Stage Engineering and Industrial Operations

In retrospect, as early as 1905, the architect Manfred Semper (1838–1913) described in an essay in *Bühne und Welt* the upheaval in the knowledge culture of stage engineering.¹ That knowledge of stage technology, which still in his time represented the

¹ Cf. Manfred Semper, “Theatermaschinen,” in: *Bühne und Welt* VIII, 5/1 (Dec. 1905), pp. 197–204, continued in VIII, 6/2 (Dec. 1905), pp. 239–244 and VIII, 7/1 (Jan. 1906), pp. 285–289.

“basis of even the most modern stages,” would hardly have found a written mention, Semper states. The reason for this being that it was “transmitted and continued for generations from father to son, from teacher to pupil, as a kind of personal and oral tradition”.² Accordingly, there are few families in Germany who, like the Bibienas or the Quaglios in stage painting, helped to determine the standards of stagecraft, and at that time also of aesthetics, until the beginning of the 20th century. Carl Lautenschläger (1843–1906)³ and Fritz Brandt (1846–1927)⁴ who were the first to promote electrification in Berlin and Munich at the end of the nineteenth century, as well as the brothers of the latter, Ludwig Brandt (1835–1885)⁵ and Georg Brandt (1846–1923),⁶ were apprenticed to Carl Brandt (1828–1881) in Darmstadt.⁷ The

²Op. cit., p. 198.

³*Lautenschläger, Carl*; apprenticeship at the Darmstadt Theater (with Carl Brandt); 1863 Riga; 1965–1880 Hoftheater Stuttgart technical director, 1880–1902 Hoftheater Munich machine master, then machine director; separate performances for Ludwig II; total guest performances 1880, 1889; New Shakespeare Stage; revolving stage; div. stage facilities with own office; cf. Günter Schöne: “Karl Lautenschläger. Ein Reformator der Szene”, in: *Bühnenformen – Bühnenräume – Bühnendekorationen. Beiträge zur Entwicklung des Spielorts*, ed. by Rolf Badenhausen/H. Zielske. Berlin: Erich Schmidt 1974, pp. 177–186; Adolf Linnebach: “Karl Lautenschlägers 100. Geburtstag”, in: *Bühnentechnische Rundschau* 5/6 (1943), p. 40; Kurt Hommel: *Die Separatvorstellungen vor König Ludwig II. von Bayern*. Munich: Laokoon 1963, pp. 298–299; Michael Vogt: *Eine Theatermaschinenkarriere des 19. Jahrhunderts. Forschungsbeitrag zu Carl Lautenschläger unter Berücksichtigung der Quellen*, Diss., Universität Köln 2007.

⁴*Brandt, Friedrich Carl (Fritz)*; polytechnic in Darmstadt and Stuttgart art school (student of Carl Brandt), set up the Wallner Theater stage in 1864, 1865 set up the stage of the Gärtnerplatz Theater in Munich, there until 1868; from mid-November 1868, theater master at the Munich Hofbühne; from 1870 as theater machinist; until 1875, separate performances of Ludwig II.; 1876–1916 technical director at the Berlin Court Theater, also various stage establishments, including Court Theaters in Karlsruhe and Wiesbaden, Covent Garden, Imp. Opera Tokyo; 1906 foundation of the Association of German Stage Technicians; cf. Kranich: *Bühnentechnik der Gegenwart*, op. cit., here: Vol. I, p. 19/20; Hommel: *Die Separatvorstellungen vor König Ludwig II. von Bayern*, op. cit., p. 298.

⁵*Brandt, Ludwig* (also: Louis); machine inspector in Dresden and Hanover.

⁶*Brandt, Georg*; Stuttgart, Prague, Dresden, Munich, Altenburg, 30 years machine inspector at the court theater in Kassel.

⁷*Brandt, Carl*; born June 15, 1828 in Darmstadt, died 1881, apprenticeship with Ignatz Dorn in Darmstadt, from 1847 to 1848 first machinist at the Köngistädter Theater in Berlin, from 1849 in Darmstadt as a result as machine master, head machine master and court theater machine director. Various stages technically re-equipped from 1857 to 1881, including the Victoria Theater, Cologne City Theater, Riga City Theater, Dresden Court Theater, Wallnertheater Berlin, Gärtnerplatz Munich, Altenburg Court Theater, Munich Court Theater, Teplitz City Theater, Aschaffenburg City Theater, Kassel Court Theater, Düsseldorf City Theater, and many others. Kassel, City Theater Düsseldorf, City Theater Hamburg, City Theater Magdeburg, Bayreuth, City Theater Augsburg, City Opera Frankfurt, National Theater Prague, Alberttheater Dresden, Davos; *Rheingold* and *Walküre* (1869 and 1870) in Munich; technical direction *Ring* (1876) and *Parsifal* (1882); cf. Kranich: *Bühnentechnik der Gegenwart*, op. cit., here: Vol. I, pp. 15–20; Walter Huneke: “Parsifal” – die technische Einrichtung, mit historischem Rückblick,” in: *Bühnentechnische Rundschau* 3 (1975), pp. 9–12; Hommel: *Die Separatvorstellungen vor König Ludwig II. von Bayern*, op. cit., pp. 297–298; Ernst Pasqué: “Karl Brandt. Ein Nachruf von Ernst Pasqué,” in: *Vor und hinter den Kulissen. Erlebnisse aus meiner Dienstzeit am Großh. Hoftheater in Darmstadt*, ed. by Ludwig Winter. Darmstadt: Gesellschaft hessischer Bücherfreunde 1925, pp. 129–134; cf. Herrmann Kaiser: *Der Bühnenmeister Carl Brandt und Richard Wagner. Art of the Scene in Darmstadt and Bayreuth*. Darmstadt: Eduard Roethler 1868.

latter, in turn, learned from Ignatz Dorn (1822–1869)⁸ who, together with Joseph Mühlendorfer (1800–1863)⁹, was one of the most influential stage masters in Mannheim at the time of gaslighting. However, in the middle of the nineteenth century, Semper notes, the “well-known events that occurred around this time, some of which were accompanied by particularly painful consequences” gave rise to a “tremendous change that began to take place around this time and began to affect the entire theater construction industry”.¹⁰ Not only had wood as a building material been displaced by iron and man as a labor force largely replaced by mechanical, hydraulic and electrical forces, but this had been accompanied by “previously unknown demands on [...] the technical and scientific training of stage technicians”.¹¹ Instead of an empirically acquired and routinized art (skill), a technical-scientific treatment had become necessary, which had elevated stage technology to a “full-fledged branch of engineering sciences”¹² (cf. Fig. 4.1).¹³

Semper contrasts this engineering knowledge with the older stagecraft, that Semper deliberately describes as apparatuses instead of machines – because they “bring to representation [...] those elementary or accidental phenomena which are required to enliven the stage set, to characterize the situation, and to achieve the

⁸ Dorn, Ignatz; Darmstadt, estate in the holdings of the theater collection of the Darmstadt State and University Library; cf. Hermann Kaiser: “Der Darmstädter Bühnenmeister Ignaz Dorn,” in: *Kleine Schriften der Gesellschaft für Theatergeschichte* 16, 1958, pp. 37–43; Herta Klein-Seger: *Bühnentechnik und Inszenierungsform des Darmstädter Hof-Operntheaters in der ersten Hälfte des 19. Jahrhunderts*, Diss. Vienna 1966, LaBi HS 5/1556.

⁹ Mühlendorfer, Joseph; worked at the opera house in Bayreuth in 1818/1819 and at the city theater in Nuremberg from 1822; municipal theater machinist and painter in Aachen in 1826; with German romantic operas at the Opéra Comique in Paris in 1829/30, decorator and machinist at the Mannheim Court and National Theater from 1832; Introduction of moving panorama in Germany with *Oberon* 1830 in Aachen, elimination of stage fall 1841 in Dresden, elevation of stage house in Mannheim 1853; close following of Galli-Bibiena, Quaglio, Schinkel in scenic designs; multiple individual effects: Waterfall for *Freischütz*, Fire and Water for *Zauberflöte*, Bridge Collapse and Water Surge for *Dinorah*, Shipwreck for *Belagerung von Corinth*. Cf. Walter Friedrich: “Josef Mühlendorfer, ein deutscher Bühnentechniker vor 100 Jahren,” in: *Bühnentechnische Rundschau* iss. 3 (1929), pp. 15–16; Alfons Fritz: “Die Aachener Lehrjahre Joseph Mühlendorfers,” in: *Bühnentechnische Rundschau* iss. 5/6 (1943), pp. 33–37.

¹⁰ Semper, op. cit., 1908, p. 198.

¹¹ Semper, op. cit., 1908, p. 198.

¹² Ibid. Cf. also Semper’s remarks in the *Handbuch der Architektur*. There, it is said that this “former secrecy” of passing on from master to pupil or father to son would hopefully come to an end when the “specialist engineers” were in charge (Manfred Semper: *Theater*, in: *Handbuch der Architektur*, vol. 6, 5, Stuttgart: Bergsträsser 1904, p. 266).

¹³ Cf. also Carl Lautenschläger’s remarks, who characterizes Karl Brandt as a transitional figure who not only was the first to undertake the systematization of stage technology, but also broke with the custom of passing on knowledge only to sons: “Karl Brandt, however, who also had to provide expert theater machinists for the stage buildings he was setting up, broke with the old custom and took in other young people besides his next of kin[]”, Carl Lautenschläger: “Bühnentechnik in der alten und neuen Welt,” in: *Bayerisches Industrie- und Gewerbeblatt*, ed. by Committee of the Polytechnic Association in Munich. Munich 1905, p. 138.



Fig. 4.1 Storage room for lighting apparatus, Cologne Municipal Theater. (Siemens Corporate Archives)

general mood intended for the whole of the action and supporting it.”¹⁴ They were simple and movable apparatuses in production and operation, “no masterpieces of precision mechanics, but the simplest, often naive means, effects that were copied from nature in an almost astonishing way”.¹⁵ They could not be dealt with by engineering science, nor by theorizing and systematics, because instead of technology they required the dexterity, resourcefulness and skill of a master craftsman. Semper tells an anecdote about a stage master who drew his inspiration from mechanical children’s toys at Christmas markets. From Semper’s perspective, there is a categorical separation between the old baroque acoustic devices and the new machines, which are primarily aimed at the visual, and this separation is based in particular on the knowledge on which they are based. For unlike these acoustic devices, which “without exception are based only on a happy, if often almost childlike, imitation of natural processes” and can be obtained “without any special scientific or technical knowledge”, everything “that is visible to the eye of the human being” can be understood as a “visual experience”,¹⁶ everything “that presents itself to the eye of the spectator” is the result of machines that “in their present form are children of the new and latest advances of technology” and encroach “into the fields of the exact sciences, whose achievements they make serviceable to themselves”.¹⁷

Alfred Wedemeyer, who wrote a dissertation on modern stage technology at the Technische Hochschule in Berlin in 1916, even blames this knowledge for the fact

¹⁴Op. cit., p. 199.

¹⁵Op. cit., p. 200.

¹⁶Semper, op. cit., 1908, p. 661.

¹⁷Ibid., p. 662.

that the technical reforms in the theater were inadequate in relation to the “aesthetic-ideological”.¹⁸ He explains this from the fact that “by far the largest part of the technical stage personnel [...] consisted of people who did not have the slightest theoretical knowledge, but who, serving from the ground up, knew the theatrical facilities as they had existed up to then from practice and transferred their knowledge again in the same way to their successors, keeping every small advance to themselves like a sacred secret.”¹⁹ It was only with the “blossoming of the technical sciences” that “technicians outside the theater were also concerned with stage equipment,” and only then did “the reforms reach the wider public for common discussion”²⁰ (cf. Fig. 4.1).

An expression of this changing knowledge are the first stage-technical manuals and specialized publications that appeared at the end of the nineteenth century. M. Jules Moynet’s *L’Envers du Théâtre*²¹ 1873 in Paris, Lloyds *Practical guide to scene painting*²² 1875 in London; then, with the early 1890s, books focusing particularly on modern stage construction and electric lighting: Georges Moynets *Trucs et Décors*²³ 1893, Julien Lefèvres *L’Électricité au Théâtre*²⁴ 1894, in the USA Albert Hopkins *Magic*.²⁵ England’s Edward Sachs *Stage Construction*²⁶ 1898, and in Germany Theodor Weil’s *Electric stage and effect lighting*.²⁷ The formalization and normalization of knowledge through a number of ordinances and regulations issued from the 1880s onwards by police authorities, theatrical directors and professional associations followed. This is accompanied by the gradual institutionalization of the new profession. 1905 sees the founding of a *Verband deutscher Bühneningenieur und Bühnentechniker* (Association of German Stage Engineers and Stage Technicians) with headquarters in Wiesbaden, followed in 1906 by the founding of the *Vereinigung der technischen Bühnenvorstände* (Association of Technical Stage Managers) with headquarters in Berlin. Finally, in 1907, the *Deutsche Theater-technische Gesellschaft* (German Stagecraft Society) was founded to represent the interests of stage technicians and thus left the *Genossenschaft deutscher*

¹⁸ Alfred Wedemeyer: *The Modern Stage. Its Development and the Influence of Stage Design Art on the Development of Stage Technology*, Diss. Technische Hochschule Berlin, Charlottenburg March 30, 1916, excerpt printed by Hoffmann & Reiber, Görlitz 1922, p. 22.

¹⁹ Ibid.

²⁰ Ibid., p. 21.

²¹ Jules Moynet: *L’Envers du Théâtre. Machines et Décorations*. Paris: Librairie Hachette 3 ed. [1873, ²1874, ³1888], new English transl. by Christopher Baugh: *Backstage in the Theatre. Scenes and Machines*, Harrogate: Theatreshire Books 2017.

²² F. Lloyds: *Practical guide to scene painting and painting in distemper*. London: George Rowney 1875.

²³ Georges Moynet: *Trucs et décors. La machinerie théâtrale*. Paris: Librairie Illustrée 1893.

²⁴ Julien Lefèvre: *L’Électricité au théâtre*. Paris: A. Grelot 1894.

²⁵ Albert A. Hopkins: *Magic. Stage Illusions and Scientific Diversions, Including Trick Photography*. London: Sampson Low & Co./New York: Munn & Co. 3 ed. [¹1897, ²1901, ³1906].

²⁶ Edward Sachs: *Stage Construction. Examples of Modern Stages*. London: B. T. Batsford 1898.

²⁷ Theodor Weil: *Die elektrische Bühnen- und Effektbeleuchtung*. Vienna/Leipzig: A. Hartleben 1904; Victor Trudelle: *La Lumière Électrique au Théâtre*. Paris: Dunod et Pinat 1914.

Bühnenangehöriger (Union of theater personnel),²⁸ of the actor's professional association, which had already been founded in 1871 in order to follow the association of theaters that had existed since 1846. From the same year on, the Deutsche Theatertechnische Gesellschaft publishes the *Bühnentechnische Rundschau* (Stagecraft journal).

Goethe's "Naturmeister" or "Directeur de la nature",²⁹ which, as in the case of Karl Brandt (1828–1881) from Darmstadt, was still in charge of the "Scenic Direction" in Bayreuth in 1876 as "Obermaschinenmeister" and founded a whole dynasty of students, turns into a technical director after 1880 who, like the leading technical directors of the next generation, Max Hasait³⁰ (1874–1951), Adolf Linnebach³¹ (1876–1963) or Friedrich Kranich³² (1880–1964) had gone to a technical college and could call himself an engineer – a technical expert and at the same time an artistic layman who had to keep out of art.

For, as shown above with the Bayreuth example, already in the oxydative spectacle theater, at the latest from the middle of the nineteenth century, it was no longer the painter but the machinist who was in charge and to whom painting had only to supply the material. In 1869, for example, the Stuttgart theater management announced the following about a new production of the *Freischütz*: "Incidentally, the decoration of the Wolfsschlucht does not require a special artist, but only a man who understands how to respond to the intentions of the machinist."³³ This can apply to wide circles of that advanced theater that draws its inspiration from the spectacular productions of the Paris Grand Opéra and its popular imitators. The machinery masters are still, or again as in the Baroque, the directors of this theater. Ballet master Fricke reports various conflicts between him, Döpler and Wagner: "In

²⁸ Cf. Max Hochdorf: *Die deutsche Bühnengenossenschaft. Fünfzig Jahre Geschichte*, Potsdam: Kiepenheuer 1921.

²⁹ Johann Wolfgang von Goethe: *Triumph der Empfindsamkeit. Eine dramatische Grille*, 8th ed. Leipzig 1787, p. 28: *Auf Miedings Tod* (poem 1782).

³⁰ *Hasait, Max*; studied civil and mechanical engineering at the Technische Hochschule Berlin; trainee of the machinery director of the Royal Theaters Berlin (Fritz Brandt); 1899 Stadttheater Graz, technical director; 1903–1928 Staatsoper Dresden technical director; stage facilities, among others, Dresden, Duisburg, Sofia, Théâtre Pigalle Paris, Teatro Colon Buenos Aires; co-founder of the professional group "Techn. Bühnenvorstände" in the Genossenschaft deutscher Bühnenangehöriger. Since 1939, special courses for technical stage managers at the Dresden School of Engineering; editor of *Bühnentechnische Rundschau*; appointed professor in 1944. Cf. Walter Unruh: "Max Hasait gestorben," in: *Bühnentechnische Rundschau* iss. 6 (1951), p. 10.

³¹ Cf. Karin Taschner-Striedl: *Die bühnentechnischen Projekte von Adolf Linnebach*. Frankfurt a. M.: P. Lang 1991.

³² *Kranich d. J., Friedrich*; studied electrical engineering, mechanical engineering, and art history; Wiesbaden Court Theater technical assistant; Berlin (with Fritz Brandt); 1906 Schwerin Court Theater technical director; 1924 Bayreuth Festival Theater technical director; 1925–1945 Städt. Bühnen Hannover technical director; lectures in the architecture department of the Technische Hochschule Hannover; publications: 1929 and 1933 *Bühnentechnik der Gegenwart*, Vol. I and II; cf. unknown Author: "Friedrich Kranich d. J.," in: *Bühnentechnische Rundschau* iss. 6 (1964), p. 26.

³³ Intendanz Stuttgart an das Stadtamt Kreishauptstadt Ulm d. 31. Juli 1869, Staatsarchiv Ludwigsburg E 18.II, quoted from Vogt, op. cit., 2007, p. 166.

the list of contributors he is listed as ‘first machine master’. There has been an appearance on the board of directors, he wants to be called ‘stage manager,’ in which word lies for him the concept of a director with everything in everything.”³⁴ Finally, the plaque in the Festspielhaus posthumously assigns him the title of “Scenic Director”.

A letter to Ludwig II from Fritz Brandt (Sr.), who in his contract drawn up in 1869 is already no longer named as a “machinist” but as an “engineer”, gives a closer insight into the circumstances from the point of view of the “machinist”.³⁵ He defendend himself against accusations of “incompatibility and arrogance” made against him by stressing the necessity of a strict regime in the name of overall artistic efficiency.

Machinery, decoration and lighting, these three factors of which the framework of the performance (or scene) consists, can never achieve artistic effect in isolation; they must be mutually joined together from one point. The necessity of performance and the scenic requirements demand a strong, prudent and artful direction, all the more so at that time, as is evident from the above-mentioned reasons.³⁶

Since, however, the theater director (“Direction”) and the artistic director (“Regie”) always turned to him in case of mistakes and held him responsible, he felt compelled to take care of the “other factors” as well, to take “the overall direction”, which in turn led to “disputes with Direction and Regie” due to mutual misunderstandings.³⁷

Shortly before the (theater) technique is relegated to the cantina table, it appears once again with the claim to the whole. But this is no longer that technique which is art itself, which unites and combines painting, architecture and mechanics in one (Italian) person (like Bibiena’s, Nicola Sabbatini’s or Giacomo Torelli’s). It is rather already a modern technique that emerged after the separation of painting and architecture in the first half of the nineteenth century and appears here once again with a claim to power over the whole theater, although the very power of the technique that springs from a new scientific knowledge is only the flip side of a radical disempowerment of the scenic art (craft) in favor of a third party, the director or stage designer. The professionalized technology that became so powerful in the theater at the end of the nineteenth century is only the assistant of an art that no longer wants to know anything about technology.

At the end of this development in Germany stands the *Bühnentechnik der Gegenwart* (Stagecraft of the Present), the first comprehensive German-language handbook of stagecraft, which explicitly treats that “technical design” which is “almost uniquely determined” and whose forms recur again and again, while “the artistic content of the stage design,” which is dependent on the “taste of the time”

³⁴Fricke: *Bayreuth vor 30 Jahren. Erinnerungen an Wahnfried und aus dem Festspielhause*, op. cit., 1906, p. 124.

³⁵Baumann: *Bühnentechnik im Festspielhaus Bayreuth*, op. cit., 1980, p. 55 f.

³⁶Ibid.

³⁷Brandt’s letter to von Perfall, cited in op. cit., p. 55 f. (no sources cited there).

and “style of the designer,” no longer finds an entry.³⁸ Even after the turn of the millennium, this survey work, written in two volumes in 1929 and 1933 by Friedrich Kranich, the then technical director of the Bayreuth Festival Theater and the Hanover Theater, is described as the “bible” for all those concerned with theater construction, technology and operation.³⁹ This impressively proves that the author succeeded in achieving the set goal, namely to create a standard for stage technology: to provide a presentation of the knowledge “in context” and from the “economic point of view” through the “structuring of the material, presentation of errors and practical suggestions” and to contribute to the optimization of the processes, basically to design a “technical ideal stage”⁴⁰. But the theater for which Kranich writes has long since become a modern machine in 1929, which needs a suitable knowledge for its operation.

For most theatergoers, the so-called ‘magic of the stage’ is shrouded in mystical darkness; what happens behind the curtain, some may think they know from the puppet theater of their youth; they are highly surprised when, during an occasional guided tour, they perceive large machinery and factory-like gears.⁴¹

What after 1900 can no longer be seen, is separate from art and lies behind it, the actual magic of the theater, is no longer a baroque box of wonders (with which precisely the workings of the apparatus were demonstrated in a way that inspired wonder), but modern machinery that no longer has much to do with the puppet theater of individual and collective childhood. Like all technical operations, it has to follow Taylor’s principles for optimizing the operation and Wilhelm Ostwald’s thermodynamic imperative:

Don’t waste energy!⁴²

More than a mere systematization of the stage-technical knowledge of his time, Kranich’s book is thus the program for a new type (prototype) of theater, which consistently takes the step from manufacture to factory and, in orientation on contemporary industrial operations, completely subordinates the theater to a new organization under the imperative of economic optimization. Chapter by chapter, Kranich goes through the individual aspects of the theater, from the technical personnel and the working spaces to the operation and the technical aids, to the change of images and scene construction, and subordinates them piece by piece to the same criterion of efficiency.

³⁸Crane: *Bühnentechnik der Gegenwart*, vol. 1, op. cit., 1929, p. 202.

³⁹Klaus Wichmann: “80 Jahre ‘Bühnentechnik der Gegenwart’” in: *Bühnentechnische Rundschau*, special volume 2009: *Stage Machinery*, pp. 19–23, here: S. 19.

⁴⁰Crane: *Bühnentechnik der Gegenwart*, vol. I, op. cit., 1929, p. 346.

⁴¹Op. cit., p. 1.

⁴²Op. cit., p. 4.

Is the technical stage operation in its present form still tenable and what measures are to be recommended for its technical and economic further development?⁴³

For Kranich, thinking along the lines of Taylor and “American” production methods, it is in particular the lack of time management in the theater, which leads to “unproductivity” that is difficult to accept. (cf. Fig. 4.2).

The performance of a work is between 7 p.m. and 11 p.m., the main rehearsal time between 10 a.m. and 2:30 p.m ... Thus, only the intermediate times are available for setting up the performance and rehearsing. In the factory, two shifts of 25 men each work continuously for 17 hours in one and the same room. On the stage, the same number of workers can work

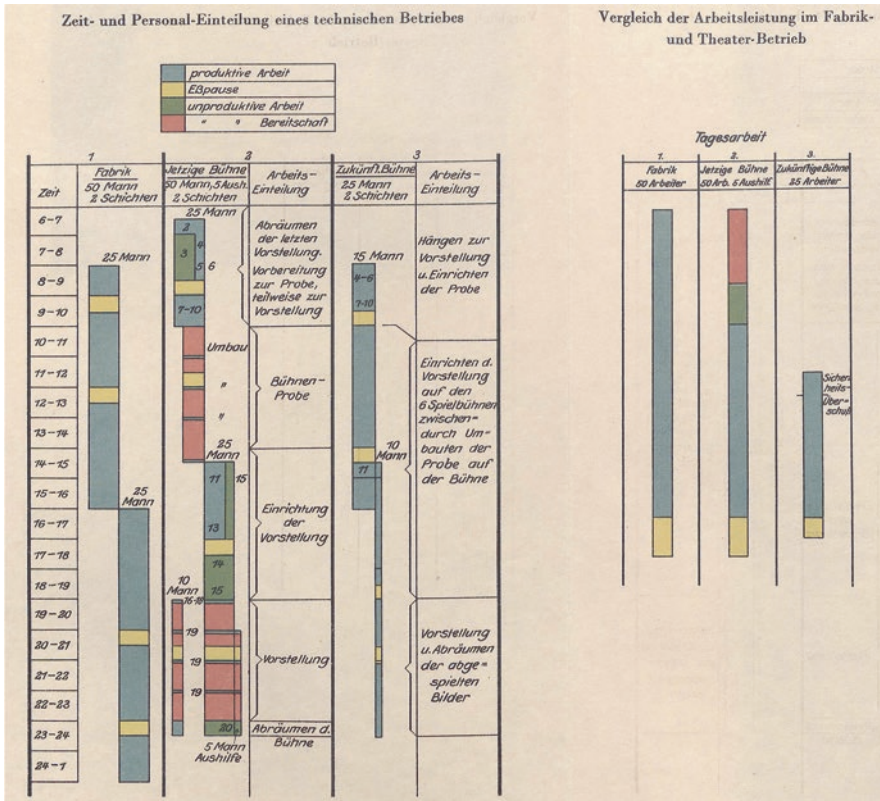


Fig. 4.2 “Zeit- und Personal-Einteilung eines technischen Betriebes” (Time and personnel division of a technical operation), “Vergleich der Arbeitsleistung im Fabrik- und Theater-Betrieb” (Comparison of work performance in factory and theater operation). (Friedrich Kranich: *Bühnentechnik der Gegenwart*, Vol. 1, 1929)

⁴³Op. cit., p. 9.

only 6 hours in the same paid time; during the rest of the time, either unproductive work is done or the personnel is on unproductive standby.⁴⁴

For Kranich, any unproductivity must be eliminated by optimizing the work processes; the aim is to prevent “inefficient work, ignorance and a lack of determination to change mistakes from constantly wasting energy.”⁴⁵ This, however, could be achieved by “skilful maneuvering and drill”, as practiced by Julius Richter of the Piscator-Bühne at Nollendorf-Platz, and the optimization of the smallest work steps. “Every wrong move creates a stain!”⁴⁶ Kranich exclaims, noting euphorically, “Every hole avoided is a gain!”⁴⁷ The bogeyman of these efficiency efforts, however, are those “mavericks who are, of course, the most uneconomical elements of a freelance theater operation, and contribute to the demise of our forward-looking theater culture and are therefore to be removed from the operations [...]”⁴⁸

Decisive means in technical optimization and the attempt to make workshops “as factory-like as possible”⁴⁹ is the standardization of everything and everyone (cf. Fig. 4.3). Thus, a tendency is taken up here in the theater, which develops with the ‘american’ production methods in Germany since the 1890s starting from the

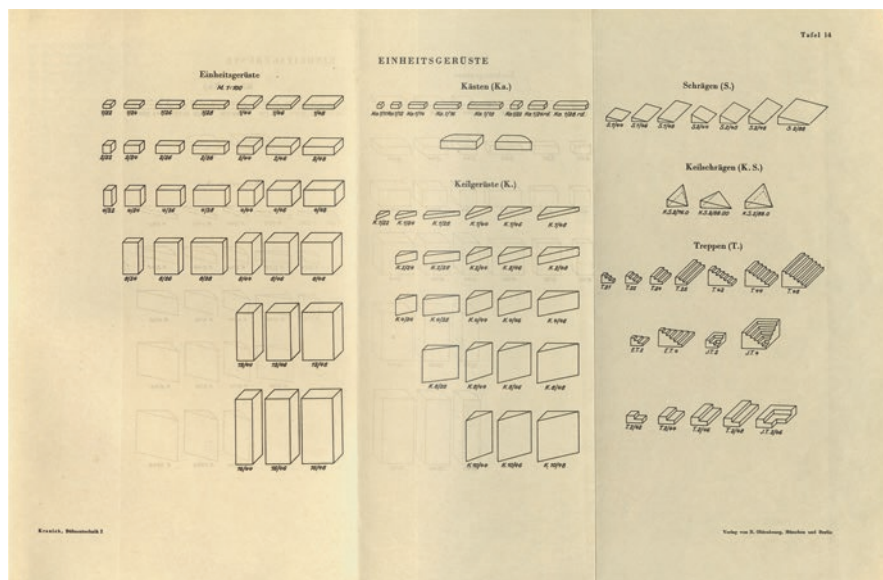


Fig. 4.3 “Einheitsgerüste“ (Unit scaffolds). (Friedrich Kranich: *Bühnentechnik der Gegenwart*, Vol. 1, 1929.)

⁴⁴Op. cit. p. 94.

⁴⁵Op. cit., p. 100.

⁴⁶Op. cit., p. 224.

⁴⁷Op. cit., p. 227.

⁴⁸Op. cit., p. 5.

⁴⁹Op. cit., p. 90.

electrical industry. This starts with the determination of names and a classification of tools and continues with uniform service regulations and office designations for the technical staff and the artistic directors and ends with the storage, carrying and setting up of scenery parts, the relationship of the width dimensions of the proscenium, stage and house, the correct designation of the stage sides, the marking of scenery parts and the transport of set pieces.

An example of the fact that Kranich was not entirely alone with this vision of standardization, and of the immediate proximity of the technical and the aesthetic, is the *Würfelbühne (Cube Stage)* by Hans Fritz, which Kranich also mentions as a positive example of a theater of the future: a system of standardized blocks of multiples of a basic dimension, consisting of a light frame structure covered with a fabric, somewhat reminiscent of building blocks, Lego bricks, or Minecraft.

The leap in development to the cube stage is great, through it the face of the theater was completely changed, tectonic construction took the place of curtains and painted rags. Decisive are the artistic and economic advantages, which always join hands here.⁵⁰

For the handling of the cube stage, according to the report quoted here in the *Zeitschrift für Österreichische Bau- und Werkkunst*, only a few stagehands were needed and at the same time it offered unlimited possibilities for variation: Theater à la Reinhardt, Tairoff, Léger or Prampolini, whether naturalistic or abstract, everything was feasible with the cube stage and even historical dramas would lose “the inartistic anxious imitation.” In addition to saving money, the introduction of the cube stage therefore has the advantage that the acceptance of a play by the audience no longer depends on the equipment budget. Above all, however, the reporter raves about the new order that the cube stage would bring to theater production.

A look into the storage room of the cube stage is a delight for every creative stage person. There, cubes and building elements in all shades of color lie well-ordered, clearly arranged and – surprisingly – in the utmost cleanliness, ready to help make every dream come true. The director can make, change and discard every wish as often as he wants, without new acquisitions, without costs.⁵¹

With such a radical standardization of the scenic material, as it appears in the cube stage and Kranich’s manual, the separation of technique and design becomes absolute: neither does the art here have any effect on the technique, which as a standardized system determines in advance what can be done and how it can be done, nor does the technique have any influence on what the art makes of it; it is supposed to make everything conceivable possible as precisely that standardized system. It is the vision of a transparent medium, the three-dimensional answer to the scenery stage, which also in its mature form represented an almost perfect system for universal image change. For where technology is standardized, creativity is no longer needed in technology, but only optimization, and art is henceforth no longer the technology itself, but only what is done with it, with the cubes and the spaces. And what is done is henceforth decided by artists.

⁵⁰ S. W. Rochowanski, in: *Österreichische Bau- und Werkkunst* 1 (Feb. 1925), p. 138.

⁵¹ *Ibid.*

One such artist, Alfred Roller, Austrian stage design pioneer, writes from Vienna to New York in 1908 in order to avoid any “misunderstandings” in this matter, which could then lead to his financial disadvantage:

To avoid misunderstandings, I note that I call ‘factory-produced stagings’ those in which the various elements of the staging: i.e., direction, decoration, lighting, costumes, are in different hands, so that a – depending on the size of the means employed – more or less ostentatious but completely external showpiece results. The fact that in productions of this kind, when the Metropolitan orders them, the individual “ateliers”, as they write, undercut each other, is in their business interest. But I am not a ‘studio’, nor am I in a business relationship with one, but I am an artist and can only be interested in artistic productions. But I know very well how such productions are paid, not only in America, but also elsewhere.⁵²

What distinguishes art from the non-art of the studios is first of all that it should not be “factory-made” and accordingly “superficial”. Factory-produced, however, means for Roller first and foremost that production is placed “in different hands,” which now compete with their offerings. However, like those of Richard Wagner and Karl Brandt, his increased claim to art and his increased demands for fees are based on the claim to have everything under control and thus to create a total work of art that can be individually accounted for. A single head is to take the place of the “various hands”: Who this one head is, is still disputed in 1900. Composers like Wagner, theorists like Appia, leading machinists like Karl Brandt and set designers like Alfred Roller fight with similar arguments for this new and central position of power in the theater. That it ultimately becomes the director who occupies this position and continues to occupy it until the end of the Regietheater at the beginning of the twenty-first century is not decided until the 1920s. What is decisive, however, is that art in the theater begins in the nineteenth century as *Gesamtkunst*, where it always tends to become totalitarian, and that this *Gesamtkunst* is only one aspect of a new technical and bureaucratic control of the theater apparatus and its transformation into a machine. The director, who finally takes absolute control of this machine, is in many ways also an engineer of the theater. Not only does he continue the claims to power of the machinery masters and take their place in the supreme power over everything scenic, he also introduces engineering thinking and working into the art of the theater, or better yet, he bases the art of the theater on that planned, delegating, and correcting action which becomes customary for trained engineers, in contrast to the personal and practical knowledge of technicians who come from the trades.

4.2 Transport Systems: Patent Stages and Image Changes

This knowledge of engineers, however, has not only radically separated art and technology, it intervenes even more deeply in what theater is. For it transforms that hall from which one looked out on a stage that sometimes showed more and sometimes less distant places, into a theatrical machine that schedules certain functional places for those spectators who were previously an audience. In Kranich’s case, this

⁵²Alfred Roller to Dippel, Schluderbach July 12, 1908, Roller Archive of the Austrian Theater Museum, quoted from Greisenegger-Georgila: *Theater von der Stange*, op. cit., 1994, p. 7.

change begins with his agitation over the hitherto customary and, in his view, completely inappropriate subordination of stage technology to theater construction. As he tries to show with buildings by Manfred Semper and the architectural firm Fellner and Hellmer, architects plan theaters from the outside in as buildings, in the center of which there is an indeterminate box that then has to be equipped more badly than well in terms of stage technology. According to Kranich, however, this had to be fundamentally and radically turned upside down, “from the inside to the outside”⁵³. The idea is to build a new theater, because theater is not a square “empty space”, but first a complex machine, which in a second step has to be given the right enclosure. Like an enclosure around a machine, Kranich believes that in the future the theater should be built around the stage technology and according to its requirements. This is the only way to harmonize the “spatial requirements of the performing artists with all the other spaces for the receiving audience”.⁵⁴

Of the three professions connected with the stage, the architects, the painters and the engineers, the latter must therefore be given the leadership, Kranich states. The belief in the supremacy of the stage designer is unjustly prevalent, because the decisive factor is “how the ‘little picture’ is to be designed three-dimensionally, whether it is in harmony with the ‘most important law of stage engineering’ – rapid erection and dismantling”.⁵⁵ For what this theater machine, which Kranich is willing to optimize, has to accomplish, what is both its challenge and its purpose, is nothing other than the “quickest possible change of images”.⁵⁶ All the rationalizations recommended for the desired “factory-like economic work” in the theater prove futile for Kranich, if it is not possible at the same time to optimize the actual “*work performance during picture change*”⁵⁷ down to the seconds.

The problem that most stagecraft thus tries to solve around 1880 arises from the contradictions of the spectacular theater of the nineteenth century: as a place that is no longer merely emblematic, but realistic, the scene demands to be furnished in as much detail as possible, and it is precisely from this demand that it becomes more and more material, consisting increasingly of things instead of picture frames. But because many of those older scores and literatures of the theater that are canonized in the same period make intensive use of rapid scene changes, the theater of the time is faced with the great problem of how to move large quantities of heavy things in a short time. The example par excellence is Shakespeare, and accordingly, in the nineteenth century, new Shakespearean stages are invented all the time, which make use of rapid scene changes by means of new stage architectures and abandonment of depth or staggering of back stages.

While such *reform stages* thus try to circumvent the problem of accelerated scene changes by simplifying the images themselves, at the same time a whole series of proposals emerge as to how the massive stage structures could best be set

⁵³Op. cit., p. 8.

⁵⁴Op. cit., p. 5.

⁵⁵Ibid.

⁵⁶Ibid.

⁵⁷Op. cit. p. 251.

in motion in their full materiality. It is techniques of *pushing*, *turning* and *sinking* complete scenic constructions that ultimately propose a new type of theater. With his characteristic penchant for systematics, Friedrich Kranich also discusses the designs he is familiar with. Eduard Wullf from Budapest, for example, came up with the invention of a “stage with a fold-down floor”.

It consists in a stage construction which makes it possible to fold down the stage floor about a horizontal axis, so that while on the upper surface of the stage floor the performance takes its course, at the same time on its lower surface the decorations necessary for the next scene can be fixed.⁵⁸

A “retractable stage which, in the manner of shutters, is stored under the existing floor and, when pulled out, forms its extension”⁵⁹ was suggested by Clemens Werrn from Dortmund (see Fig. 4.4b).

The *Diagonal-Bühne* (Diagonal Stage) by Rudolf Hartig (Wolfenbüttel) divides the stage into a right and left half, between which one can switch back and forth with the help of a revolving wall.

The double revolving wall, which can thus be quickly covered from both sides, is now placed once in the direction of the diagonal running from the intersection to the left proscenium, and for the next picture in the direction of the other diagonal pointing to the right picture.⁶⁰

As late as 1909, Adolf Winds proposed “folding decorations” to speed up the transition from room to room.

It is a rapid transformation from one room to another. The walls of the decorations are double and made in such a way that they can be folded down (in hinges) in the middle. For example, the outside represents a rich room, the inside a poor one. The slider or cord holding the upper folded half of the wall decoration is released, and half of the upper wall folds over and covers the lower half. At the same time, the upper folded half now turns its inside out and has thus come down; at the top, the hitherto concealed inner painting becomes visible, and this simple transformation happens as if with a magic stroke.⁶¹

But Kranich sees all these attempts at a physical change of picture, which no longer only exchange flat scenery, as fundamentally erroneous, because they all made the mistake of disassembling the picture during the conversion and thus mixing up work and play space.

The basic principle of the modern stage, on the other hand, must be the exchange of entire scenes, according to Kranich as was first done with the use of a mobile stage wagon by Karl Brandt for the ballet *Die vier Jahreszeiten* in 1857 in Verdi’s

⁵⁸Crane: *Bühnentechnik der Gegenwart*, vol. 1, op. cit., 1929, p. 132.

⁵⁹Ibid.

⁶⁰W. Gelmar: “Die Diagonal-Bühne,” in: *Bühnentechnische Rundschau* 1 (1927), p. 7.

⁶¹Adolf Winds: “Wandelbare Dekorationen,” in: *Bühne und Welt*, No. 17 (1909), p. 737/39.

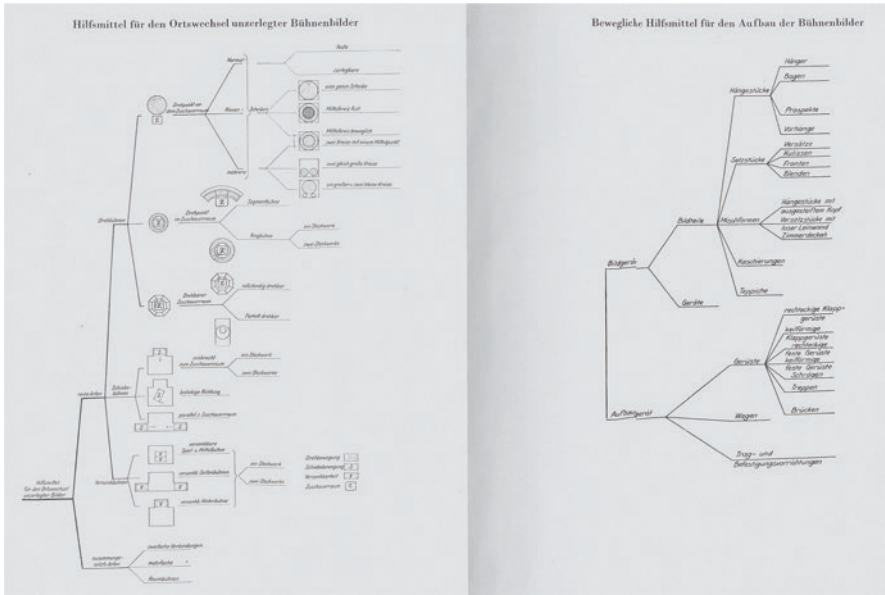


Fig. 4.4 “Hilfsmittel für den Ortswechsel unzerlegter Bühnenbilder“ (Auxiliary means for changing the location of unassembled stage sets), “Bewegliche Hilfsmittel für den Aufbau der Bühnenbilder” (Movable auxiliary means for assembling stage sets). (Friedrich Kranich: *Bühnentechnik der Gegenwart*, vol. 1, 1929.)

Sizilianische Vesper in Darmstadt in 1857.⁶² Only with the *revolving stage*, *sliding stage* and *retractable stage*, with which the centuries-old techniques of revolving, sliding, and retracting were renewed, the requirements of the modern theater, the fast and economical exchange of plastic stage sets, were really fulfilled for Kranich. The only difference was that now it was no longer just parts but entire pictures that were set in motion, which meant that the stage remained reserved for the play, while the erection and dismantling could take place on side, back and lower stages (cf. Fig. 4.4).⁶³

According to Kranich, one possibility of no longer disassembling the scene into parts and building it up “modularly”, but of exchanging one “firmly assembled picture” for another, consists in “building several pictures [...] on a movable disc and rotating it around its center during the picture change until the next picture fit into the cutout of the stage frame”.⁶⁴

⁶²Crane: *Bühnentechnik der Gegenwart*, vol. 1, op. cit., 1929, p. 241; cf. Hermann Kaiser: *Das Großherzogliche Hoftheater zu Darmstadt 1810–1910*. Darmstadt: E. Roether 1964, p. 63 f.

⁶³Ibid.

⁶⁴Op. cit., p. 281.

Such a revolving stage with steel substructure and complete electric drive with control from the regulator by the “conductor of stage machinery”⁶⁵ was invented by Carl Lautenschläger in the 1880s and first used by *Don Giovanni* at the Munich Court Theater on May 29, 1896. In the brochure published for the marketing, Lautenschläger gives as the reason for the invention the many scene changes, the stage-technical mastery of which by the Meiningers and others had led to ever new “distortions and twisting” of the dramatic text.⁶⁶ Lautenschläger speaks of up to twenty “decoration changes” that a Shakespeare production requires in the cut and which, if they last more than a few minutes, drag out the performance excessively.

Here the revolving stage acts in two directions [...], so that in this way pauses of no more than 15–20 seconds are necessary for the change of the decorations visible to the audience.⁶⁷

Lautenschläger himself describes this revolving stage as a “second child”, which resembles the “sister” Shakespeare stage, which Lautenschläger realized in 1889 with von Possart and the director Savits, but which is “more powerfully built, healthy and talented”.⁶⁸ This Shakespeare stage was also intended to allow quick scene changes, but like many relief stages of the time, it went the way of reducing the depth; and according to Lautenschläger, it was denied success because of a “lack of great scenic effect”.⁶⁹

The revolving stage, too, is thus only an attempt to solve a technical problem that arises from the realism of the scene and becomes glaring precisely at the moment when the scenery has become plastic and the old wing system with its substage machinery is discarded.

However, if one considers that the revolving stage was supposed to work covertly in order to let different images run in the shortest possible interruptions, then the connection to the film made shortly before suggests itself. Lautenschläger himself suggests this when he rejects a relationship of the revolving stage to a similar device in the Kabuki or medieval wagon stages and instead refers as a central impulse to “the kind of presentation of living pictures in England,”⁷⁰ which, however, was not usable for stage operation: “The impulse for my system was given to me by the kind of presentation of living pictures in England, but this device was not usable for the

⁶⁵ Carl Lautenschläger: *Die Münchener Dreh-Bühne im königl. Residenz-Theater nebst Beschreibung einer kompletten neuen Bühnen-Einrichtung mit elektrischem Betrieb*. Munich: 1896, p. 23.

⁶⁶ Ernst von Possart: *Über die Neueinstudierung und Neuinszenung des Mozart'schen Don Giovanni (Don Juan) auf dem kgl. Residenztheater zu München*. Munich: A. Bruckmann 1896, p. 20.

⁶⁷ Carl Lautenschläger: *Bühnentechnik in der Alten und Neuen Welt*, [Bayerisches Industrie- und Gewerbeblatt] Ausschuss des Polytechnischen Vereins München. Munich 1905, p. 146.

⁶⁸ Carl Lautenschläger: “Handwritten dedication in the copy of *Die Münchner Drehbühnen* from November 1897 for his friend Savits,” cited in Schöne: “Karl Lautenschläger, ein Reformator der Szene,” op. cit., 1974, p. 182.

⁶⁹ Cf. Vogt, op. cit., 2007, p. 123 f.

⁷⁰ Lautenschläger: *Die Münchener Dreh-Bühne*, op. cit., 1896, p. 1.

practical stage operation.”⁷¹ However, Kranich at least maintains that this did not refer to the theatrical *tableaux vivants*, but that “optical play” also called “wheel of life” which used the same principle of “turning images past the spectator.”

Inside a cardboard drum with several cutouts, a second one moved with transparent glass or paper images; they were illuminated by a candle placed in the center and, as they rotated, became visible to spectators placed around the drum.⁷²

Knut Hickethier also compares the revolving stage (together with the darkening of the auditorium) with the cinematic effect of a tracking shot⁷³, and places them in the prehistory of film.

These were, historically speaking, further steps in the process of illusionizing the audience through the play, which had already begun earlier with a commitment of the players to the literary text, with the enforcement of a three-dimensional stage set, with naturalistic props. The cinema was a logical extension of the art of illusion, a continuation of the theater, which had reached its media limits, and at the same time an intermediate step on the way to television. On the stage, preparations were made for what would later make montage a special attraction in film: the effortless change of location, action, perspectives and points of view. In the theater, the senses of the audience were trained so that they would then become receptive to film and its possibilities.⁷⁴

It is worth asking whether, after the first hundred years of film history, we should not see it “embedded in a history of the electrification of culture, in which the developments of cinema and television are part of a great overall development.”⁷⁵

It almost seems as if the cinema apparatus should be seen as an end point of a technological history of the art of projection and visual illusion anchored in the eighteenth and nineteenth centuries, while in television begins the starting point for a line of development of audiovisual that extends beyond the twentieth century and now enters into a new synthesis with the computer.⁷⁶

However, these considerations must be put into perspective from the point of view of what is presented here. On the one hand, the revolving stage originally did not want to produce a continuous movement, as it is characteristic of camera movements or, before that, of changing decorations, but a complete (invisible) image change, which would be more comparable to a cut. On the other hand, it is certainly not enough to define and limit the history of optical spectacles to a progressive illusion, since it is evident that the extremely fuzzy concept of “illusion” conceals the most diverse constellations of perception. What connects the revolving stage and

⁷¹ Lautenschläger quoted in Schöne, op. cit., 1974, p. 182.

⁷² Crane: *Bühnentechnik der Gegenwart*, vol. I, op. cit., 1929, p. 283.

⁷³ Cf. Knut Hickethier: “Am Anfang der Elektrifizierung der Kultur – die ersten Filme und die Idee des Fernsehens,” in: *Mobilisierung des Sehens*, ed. by H. Segeberg, 1996, pp. 359–374, here p. 371.

⁷⁴ Op. cit., p. 372.

⁷⁵ Op. cit., p. 376.

⁷⁶ Ibid.

the film camera with each other, but also with the ferris wheel and the assembly line, seems rather to be the already frequently emphasized mobility of things. Nevertheless, it is appealing to think of cinema less as the beginning of a new medium than as the end point (the closure) of a development of projection arts and optical spectacles.

4.3 Projection Surfaces: Cloud Apparatuses and Broadening Horizons (Fortuny)

But apart from the mobilization of sculptural sceneries, it is projections that become decisive for the theater space at the turn of the century. As already shown, in the course of the nineteenth century the prosceniums expand in width, the depth of the stage is partially lost, and the end is often formed by a panoramically arranged landscape. The reconstruction of the stage in 1869 by Karl Brandt, which von Perfall mentions even before the electrification as a modernization of the theater brought about by him, already has a rounded final prospectus. The “eternal prospectus” is “actually nothing other than a prospectus bent *over* at the ends, the wings of which are extended to the front wall of the stage”.⁷⁷ The view from the hall is now also no longer limited laterally by false columns and, quite panoramically, tends to lose itself also to the side into the same landscape that is built up in depth. Only towards the top the (sky) soffits limit the view into the distance, because the prospectus does not (yet) hang high enough to let the view from the first rows fall into the laced floor. According to Wedemeyer, such a circular horizon, initially painted as a blue sky with clouds, was something like a room decoration bounded on four sides, only for landscapes: “to a certain extent a closed decoration [...], the final boundary of which it itself forms”.⁷⁸ It opened up the stage space for a nature that no longer consisted of painted canvases but of sculptural set pieces, and brought with it the problems of scene change discussed (cf. Fig. 4.5).

Apparently the *Asphaleia* Society⁷⁹ speaks of the *horizon* for the first time in its ideal stage design of 1882, which envisages a U-shaped closing prospectus that is raised so high that it still catches every line of sight and makes the wing system completely obsolete. But the round horizon achieves its real breakthrough only in conjunction with a special light that illuminates it. The painter and inventor Mariano Fortuny presented a textile dome in Paris in 1902, illuminated by colored indirect light from massive arc lamps, which made a great impression on the Parisian public. This ‘System Fortuny’, which, starting from Paris, makes sensation in Europe’s theaters, is laid down in two complementary patents.

⁷⁷ Alfred Wedemeyer: *Die modern Bühne*, op. cit., 1916, p. 22.

⁷⁸ Ibid.

⁷⁹ *Project einer Theater-Reform der Gesellschaft zur Herstellung zeitgemässer Theater ‚Asphaleia‘*. Leipzig: Polytechn. Buchh., 1882; cf. Arnold Alfred: *Von der Asphaleia bis zur Doppelbühne*. Tübingen: Göbel 1934, diss. Oct. 20, 1932. Munich Technical College.



Fig. 4.5 Stage design with circular horizon. (Deutsches Theatermuseum Munich)

The first patent, first applied for in England in April 1901 under No. 8113 and then throughout Europe, essentially describes a projection device that casts the light of an arc lamp onto a cloth that contains all the colors of the spectrum (cf. Fig. 4.6). This creates an indirect, planar, and colored light that allows for smooth transitions in color change and allows the entire stage to be gently filled with indirect light.

The second patent, applied for in England in April 1905 and granted there under No. 7230, relates to a projection screen which, serves to “replace the decoration representing the sky and background in theaters and the like” (cf. Fig. 4.7). The patent describes it as follows:

Device for constructing curved walls preferably for stage purposes, characterized in that the wall consists of a loose fabric surface (A) fixed only at its edges and a hollow body (B) connected to these edges, stiffened after erection by suitable supporting devices (c.g.x.O) and receiving in itself the curvature to be formed, [...].⁸⁰

The dome horizon, as designed by Fortuny, is in this respect fully an optical invention, an arrangement of fabric and light, which opens up a new theater of the distance, which finds widespread use in the first years of the twentieth century. It is only with and through this artificial sky dome that there is a fundamental change in how lighting works in the theater. As late as 1907, Max Littmann notes that “even today, electric light is still very little used on stage in its essence” and mainly serves to “replace the old oil and gas lights,” but conjectures following this assessment: “Only now should a decisive innovation blossom for us here, too, through the

⁸⁰Austrian Patent No. 17610B: “Vorrichtung zum Ersatz der den Himmel und den Hintergrund darstellenden Dekoration in Theatern u. dgl.“ (Device for replacing the decoration representing the sky and the background in theaters and the like).

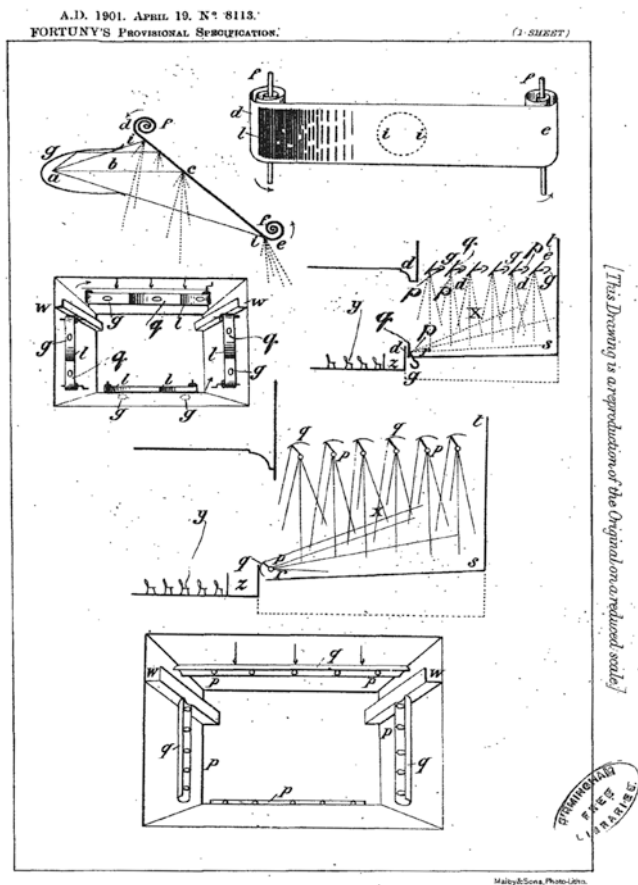


Fig. 4.6 “Improvements in Stage Illumination and the Production of Scenic Effects,” (excerpt from Mariano Fortuny’s patent, dated Apr. 19, 1901.)

invention of [...] Fortuny.”⁸¹ A story about how, mediated by Fortuny’s stage sky, the old oil and gas lights transformed the modern theater illumination is told by Friedrich Kranich in his *Bühnentechnik der Gegenwart* (stagecraft of the present). And this story begins with the clouds that, thanks to increasingly sophisticated machines, pass over these stage horizons in various formations and velocities in the 1900s and 1910s.

It is precisely these artificial clouds, indeed the theatrical images of nature in general, that drive the change in stage lighting in Friedrich Kranich’s narrative and finally produce a light that is more than nature, namely art. According to Kranich, it was precisely the realization that “natural phenomena are better rendered with light images rather than painting” that brought about “the greatest turnaround in pictorial

⁸¹ Baumann: *Licht im Theater*, op. cit., 1988, p. 193.

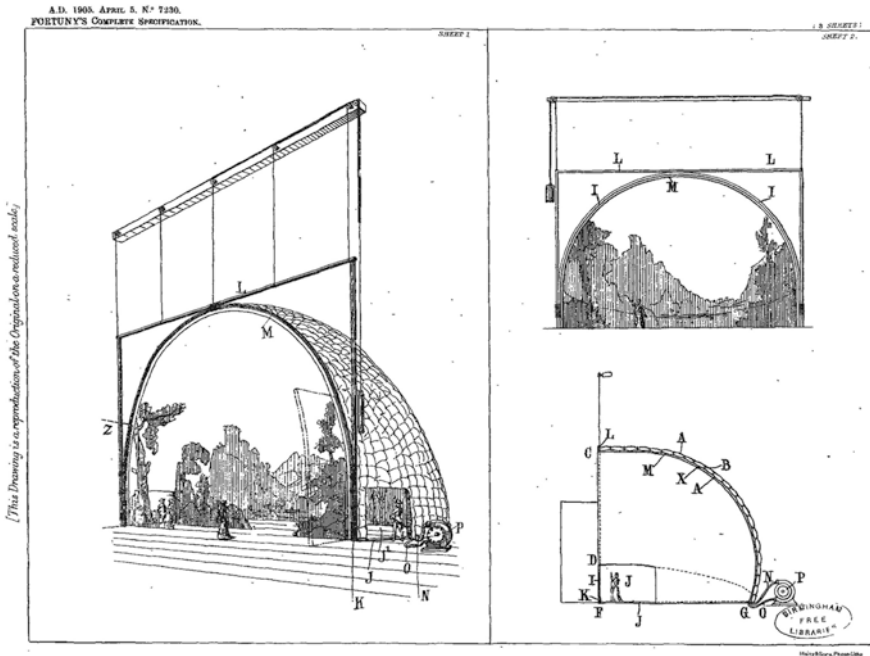


Fig. 4.7 “Method of Constructing a Concave Wall or Shell for Theatrical Backgrounds and the like,” (excerpt from Mariano Fortuny’s patent of Apr. 5, 1901.)

construction and lighting methods that stage art has ever experienced.”⁸² Even the moving panoramas had relied entirely on painting to create the air and clouds. But “[a]ttentive spectators did not fail to notice that the cloud formation never changed, which very soon seemed boring; so it was necessary to bring variety into the scenery.” It was this desire for variety, however, that paved the way from painting to projection. But the light images, the projected clouds, as they were first offered by Hugo Bähr, were too weak to stand up to the painted blue sky. And so the experiments with projected clouds finally led to making the sky a white sky, to removing the color completely and to converting it entirely into a projection surface that received color and forms only from the outside.⁸³

This tendency toward projection, however, had far-reaching effects on the development of the stage and its technology, as Kranich describes it: “In the course of the development from colored to pure white stage skies, the scenery carriages were considered superfluous and obstructive, at least in Germany, and were eliminated almost everywhere.”⁸⁴ Frame lights and sidelights had also been abolished, and instead lighting towers at the side of the portal and lighting bridges had been

⁸² Crane: *Bühnentechnik der Gegenwart*, vol. 2, op. cit., 1933, p. 81.

⁸³ Cf. *ibid.*

⁸⁴ Op. cit., p. 29.

introduced, and the skylight had been strengthened. This was because the strong effect of the bright background, Kranich explains in retrospect, had turned the actors into black shadows – an effect that was made even more pronounced by the side lighting “as soon as they crossed the light boundary to the front” in the play. And because the “foot light could not be utilized for artistic purposes because of its false effect,” the circular horizon with its view out of the theater into a cloud-fringed distance of the horizon finally calls for a light that comes from above and from above in front: a light which, even after Fortuny and his horizons have long since become a largely forgotten chapter of theater history, still constitutes the most common and important lighting position in the theater today.

Kranich, who does not like foreign words and therefore always speaks of the stage sky instead of the dome or round horizon and describes this as the most momentous phenomenon for theatrical lighting, thus attests to a complete break with the previous lighting practice, which was triggered by Fortuny’s invention.⁸⁵ More specifically, he characterizes Fortuny’s lighting system as a transitional stage, the middle phases in which, through a gradual *change of location*, theatrical lighting starts to fundamentally change.⁸⁶

According to Kranich, classical stage lighting was a “moodless illumination of painted canvas pieces”,⁸⁷ which, with the help of footlights, sidelights, and skylights, had basically only illuminated scenery painting, and had thus passed through the conventionalized changes of day.

For daytime lighting, overhead, sidelights, footlights, offset, and banner were switched to ‘white-bright’; in addition, one or more ‘sun effects’ were added from the working bridges on the left or right. For evening mood, red was added everywhere. One started with the back skylights; at the same time, white was withdrawn and gradually exchanged with blue, then red was slowly withdrawn again and blue was intensified until the full night mood for moon and stars was achieved. Although small changes and shifts were necessary for each performance, this basically remained the lighting method for the arched and proscenium stage. Even the first stage sky pictures were still illuminated in this way.⁸⁸

With the prospectus stage developing from the wing system in the nineteenth century, individual spotlights – in Kranich’s case “light-casting devices” – and new locations had been added (prompter’s box, connecting bridges, backstage wall, lower machinery, lacing floor) to “highlight individual parts” for the first time.⁸⁹ The circular horizon, however, would have established the stage towers (right and left behind the portal) and the lighting bridges (walkways connecting both sides of the stage, above the sight lines), and finally also the position from diagonally above, namely from the auditorium (side arbors, back wall of the tier, center chandelier). The latter precisely because, as already mentioned, the indirect back light from the

⁸⁵ Cf. op. cit., p. 7.

⁸⁶ Cf. op. cit., p. 8.

⁸⁷ Op. cit., p. 82.

⁸⁸ Op. cit., p. 81.

⁸⁹ Ibid.

circular horizon had been so strong and bright that the total light intensity that prevailed on the stage had increased so that the faces of the actors had been in a darkness surrounded by brightness.

The technical means for creating landscape images and illusions of nature in the theater had thus become so powerful, the landscape reaching into infinity so spectacular, that a new light was needed so that people on stage would not disappear and get lost in this spectacular nature. And this light had to come from above, as in vaudeville, which in turn was only possible if the equipment was placed where it was not supposed to be seen, namely in the auditorium.

This front light, however, which first had to compete with the back light of the horizon and was then the beginning of the art of light in the theater, was the *spot-light*. It has its origin in the military and seems to have found its way into the “legitimate” theater only later via vaudeville.

What is taken for granted in cabarets, vaudeville, circus, light houses and does not encounter any difficulties, became an event for the theater when the first room lights or proscenium lights [...] were installed in the auditoriums.⁹⁰

In the Grand Ducal Court Theater in Weimar, reopened on November 11, 1908, Max Littmann introduces an innovation which, in Semper’s opinion, “seems indeed called to supplant the old ramp lighting once and for all.”⁹¹

In the center of the ceiling of the auditorium is arranged a small dome, the lateral transformations of which serve mainly for the discharge of stale air, while the central one, facing the stage, is intended for the passage of the mass of light emitted by a naval reflector M placed behind it and thrown onto the front stage.⁹²

Like Semper (and whole similarly Trudelle)⁹³ this naval reflector not only illuminated the proscenium very favorably, but also “cast an effective light all the way to the center of the main stage”.⁹⁴ An indispensable prerequisite for such a use of light, however, was “that the apparatus be set up and handled with the greatest care, so that neither the source of the light can be seen, nor even the edge of the frame of the opening be hit by the light rays”⁹⁵.

The obvious danger of an effect reminiscent of vaudeville is avoided by using a marine reflector instead of an ordinary spotlight. With this, not only is a very precise adjustment to

⁹⁰Op. cit., p. 10.

⁹¹Semper, op. cit., 1908, p. 672.

⁹²Ibid.

⁹³Cf. Trudelle, op. cit., 1914, p. 44 f.

⁹⁴Semper, op. cit., 1908, p. 673.

⁹⁵Ibid. Cf. Wilhelm Wegener: *Die Reformation der Schaubühne. Eine technisch-dramaturgische Interpretation der Theaterbauten des Münchner Architekten Max Littmann und ihre Bedeutung für die Entwicklung der deutschen Schaubühne*. Munich 1956; Bernd-Peter Schaul: *Der Architekt Max Littmann. Sein Beitrag zur Reform des Theaterbaus um 1900*. Dissertation, University of Tübingen. Tübingen 1978.

the surface to be illuminated possible, but due to the peculiarly designed lenses, the boundaries of the light cone also remain completely invisible.⁹⁶

What ensures that the circle of light is not recognizable as such is a Fresnel lens, invented in 1822 by Augustin Jean Fresnel for lighthouses, which has the side effect, used here, that the edge of the thrown circle of light is very blurred. So that the spotlight can move from the vaudeville to the theater, it is important that not only the light source is not visible, but also that the circle of light does not stand out, that in other words the light itself as such does not move into the horizon of attention.

In a very similar way, Friedrich Kranich distinguishes between two ways of illuminating the performers, on the one hand by “visibly following moving persons”, and on the other hand “by prepared invisible and immovable shafts of light”,⁹⁷ which appear only slowly before the appearance of the performer: “For a long time before the appearance of the performer, the place of his appearance should already be inconspicuously illuminated.”⁹⁸ The former, which Kranich assigns to revue and operetta, he describes as tedious and not very artistic, while the latter is clearly the “more artistically valuable” one.⁹⁹

But the enforcement of such an artful front light takes place only slowly in the legitimate theater. As late as 1937, an AEG prospectus divides stage lighting equipment into *decorative lighting* (foot ramps, skylights, attachments), *horizon lighting* (horizon lights with color changer, cloud apparatus, star lights, flash lamp) and *effect lighting* with spotlights: “Lighting fixtures used to highlight individuals or groups or to imitate certain light phenomena occurring in nature.”¹⁰⁰ In addition, there are play area lights and play area spotlights, which serve to highlight individuals or groups, and also the arc lamp spotlight, which is “preferably also suitable for illuminating the stage from the front”, “as is required, for example, in cinemas with cabaret performances or in cabarets and vaudevilles”.¹⁰¹

The consequence of the introduction of this front light, however, is the final separation of “picture lighting and performer lighting”¹⁰² and it is precisely this separation that, because it gives the light a new, unprecedented freedom, leads, according to Kranich, to a final phase of stage lighting, which in turn is characterized by the increased importance of the fourth wall¹⁰³ and “the illumination of the stage set according to purely artistic aspects”.¹⁰⁴

⁹⁶ Semper, op. cit., 1908, p. 673.

⁹⁷ Crane: *Bühnentechnik der Gegenwart*, vol. 2, op. cit., 1933, p. 109.

⁹⁸ Ibid.

⁹⁹ Op. cit., p. 111.

¹⁰⁰ *Elektrische Anlagen in Theatern*, ed. by Siemens-Schuckertwerke AG. Berlin-Siemensstadt 1937, p. 3.

¹⁰¹ Op. cit., p. 46.

¹⁰² Crane: *Bühnentechnik der Gegenwart*, vol. 2, op. cit., 1933, p. 61.

¹⁰³ Cf. op. cit., p. 73.

¹⁰⁴ Op. cit., p. 8.

This artistic illumination, however, is paradoxically first of all the imitation of natural light. According to Kranich, the problem of all previous stage lighting lies in the fact that it comes from all sides at the same time, feeds itself from diverse sources, goes in innumerable directions, and casts the most diverse shadows. It is precisely this diversity of light that Kranich condemns as unnatural, because it contradicts the law of nature: “In nature, light emanates from *one* source, floods the whole room in *one* direction, each object only casts *one* shadow, which is greatly lightened by the scattered light of the upper space.”¹⁰⁵ Thus, light can only become artistic where, as in nature, it only comes from *one* direction, emanates only from one instance. But because this is not really possible on stage, artistic light begins with a mode of illumination that tries to come as close as possible to the one-directional light. For this purpose, the technique divides light into three groups that serve different purposes: first, “illuminating the stage set,” second, “highlighting the performers from their surroundings,” and third, “reproducing natural phenomena.”¹⁰⁶ This division thus corresponds exactly to the division introduced with Fortuny’s dome horizon: the indirect light that opens up the vastness of space, the direct light that makes the performers visible again in this radiant space, and the image-forming light of the circling clouds. For Kranich, it is precisely this synthesized imitation of natural sunlight that represents the transition from an “earlier craft-like” approach to a “scientifically founded and artistically exploited” light, with which all “*art of stage design*”¹⁰⁷ begins.

4.4 Soul Vibrations: Stage Walls and Cloud Apparatuses

But what this artistic lighting, which begins as an imitation of natural light, is supposed to accomplish in the following is much more: it is charged with creating an “artistic atmosphere”¹⁰⁸ that holds together the image and directs the attention of the viewer.

We want, as the poet only essential [...] ‘condensed’ put before the spectator, nothing else, than to see the momentarily essential picture element on the scene lifted out by light from the graded brightness values of the trivialities.¹⁰⁹

Even though that to which attention is to be directed in Kranich’s work is still first and last the performer, a completely new kind of perception of the stage emerges from the directed attention through light, characterized by an intense dynamism and the continuous change of an iridescent aura.

¹⁰⁵ Op. cit., p. 82.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.

¹⁰⁸ Op. cit., p. 80.

¹⁰⁹ Op. cit., p. 83.

Thus, parallel to the action, flow arises out of the fixed, modulating gliding from phase to phase of the diagrams; thus, in an increasing expansion of its tasks, the light follows the meaning of the event, the spiritual development of the human being, it spreads a play of colors over the figures [...] beyond that which is taken from 'real' experience, – is able to throw over them a dress of colors as a symbol of the super-ordinary, like an aura, an emanation of essence, of soul vibrations.¹¹⁰

The simplified technical handling, “an accumulation of electrical switches, with which every layman can give light waves, but never evoke an artistic atmosphere”.¹¹¹ In Kranich’s depiction, therefore, this corresponds to increased aesthetic requirements. The far-reaching significance of this artistic stage light, which is celebrated here as an expression of the “vibrations of the soul,” is revealed in a company brochure from the same period: *Moderne Bühnenbeleuchtung* (Modern Stagelighting) by Schwabe & Co. opens the chapter on “Light and Colors” with the image of a human being thrown into metaphysical homelessness.

Man, placed as a stranger in a world whose beginning, meaning and end he does not know, possesses in the main only one sensory tool to find his way in the environment. By observing, which is further processed mentally, by looking alone he recognizes the world.¹¹²

Here the spectator appears as a primarily optical apparatus, which shows itself as receptive to a colorful but simple nature, which presents itself as a section of an electric radiation spectrum.

If the world ether surges in long waves, the appearances of electric nature arise. On the wings of shorter oscillations the heat appears until at a wavelength of 750 millionth millimeters the retina of our eye is excited. The optic nerve then reports the sensation of red to the brain.¹¹³

It follows a listing of the other colors according to their wavelengths and finally the invisible, which can only be recognized chemically: “If the wavelengths of the ether vibrations shorten further, our eye ceases to be a display instrument for them. However, they are still able to act on the photographic plate as chemical radiation.”¹¹⁴ All non-glowing bodies would be invisible in themselves if a merciful nature did not ensure that there were no truly “black bodies.” For “[t]his would be a strange world if all solid matter did not have inherent in it the property of reflecting back more or less powerfully light that falls upon it.”¹¹⁵ Thus, the eye remains a safer guide.

If the light disappears, we can only determine the presence of bodies by touching them. Thus a permanently unbearable narrowing of our senses occurs, the distance becomes

¹¹⁰ Ibid.

¹¹¹ Op. cit., p. 80.

¹¹² Schwabe & Co.: *Moderne Bühnenbeleuchtung*. Berlin 1923, p. 6.

¹¹³ Ibid.

¹¹⁴ Ibid.

¹¹⁵ Op. cit., p. 7.

impenetrable, only the very closest things become apparent. We have become strangers in our homeland. Light, light is what we call for with fervor.¹¹⁶

The fear of touch or its exclusivity corresponds to a belief in a life that cannot be without light and celebrates itself in the “colored reflection”, and amounts to the justification of the comprehensive “power of stage light”.

Just as things without the sun sink into the unbearable proximities of darkness, so nothing can work on the stage without illumination: no performer, no prop, no stage painting, for “the pigments are as little bearers of properties as, say, the moon.”¹¹⁷ But once it is recognized that things on the stage are only reflectors of light, their significance is also relativized.

This fact has been recognized to such an extent today that very much what was formerly placed on the stage in heavy physicality is now replaced by its impression of light. One is content with only hinting at a landscape, city or hall physically, but to evoke the overall impression by setting suitable lighting.¹¹⁸

A prototype of this gutted stage, which achieves a completely new dynamic due to the lack of breaks for reconstruction, is that “novel conclusion that one is able to give to the open landscape, from the artificial sky, which stands all-encompassing in the background and is able to feign the view into intangible, infinite distance almost completely.”¹¹⁹ Benjamin’s aura, the “unique appearance of a distance, as close as it may be,” is technically reproduced here.

According to the prospectus, however, the most important means for the desired luminous lightness of the stage action is, in addition to an overwhelming abundance of light, the “gradation of the stage light”.

The light must be available on the stage in millions of candles. Over the dance on a summery meadow the rays must pour out in blazing waves; the ballroom is to be bathed in floods of brightness. But it is also necessary that every gradation can be made.¹²⁰

In addition to the “gray light of dawn” or the “red radiance of the setting sun,” gradual and sudden transitions are to be created, parts sharply emphasized and others left in darkness. Entirely “according to the will of the artistically sensitive play director”¹²¹ the colors are to be set. By means of a regulating apparatus, it is a matter of “mastering the light in forte and piano, in crescendo and diminuendo, in chords and single notes just as the organist is able to regulate the sound waves.” For “[t]he

¹¹⁶ Ibid.

¹¹⁷ Op. cit., p. 10.

¹¹⁸ Ibid.

¹¹⁹ Op. cit., p. 11.

¹²⁰ Op. cit., p. 12.

¹²¹ Op. cit., p. 14.

light organ, the modern stage regulator with all its accessories, only gives the right sound to every stage work.”¹²²

Just as the organs of the human body are dead and useless if they are not stimulated to meaningful activity by the brain, so too the multi-part lighting apparatus of the stage gains life only through the associated, all-controlling control mechanism. Its power in the stage area is perfect. It gives expression to the scene, prepares the field of action for the performer, and itself exerts a significant influence on the spoken word, which it is able to underline and muffle.¹²³

Consequently, light is no longer merely the “illuminator of the stage” but also a “guide for the spectator.”¹²⁴

Nothing is able to direct the attention so sharply to the process that is most important at the moment than when the group of performers that brings the decisive is particularly sharply illuminated. The words that are spoken there are then just as emphasized as the blocked on the printed page. Every gesture has a double expressive power. Objects and people that are on the stage but receive only low light are virtually disembodied for the viewer; they dissolve into nothingness as the darkness increases, they are as if non-existent.¹²⁵

Therefore, it is necessary to “direct” light; the numerous small light bodies scattered over the stage are no longer usable; instead, thousands of lumen are combined in one lamp. “Since from this the light is thrown out with great force, they are called spotlights.”¹²⁶ They allow focused beams to be directed sharply onto specific parts of the stage, and allow the light, which was so easily directed, to travel across the stage: mirror spotlights, lens spotlights, projection apparatus. The problem, however, still remained the front light in 1923. For the foot ramp accompanies the stain of visibility: “While the other parts of the stage lighting hide themselves shamefacedly, such a foot ramp steps out boldly.”¹²⁷ But those very spotlights in the auditorium, in the highest boxes, which no theater today can do without, are still a problem: “The spectator not only sees the cone of light descending as something almost corporeal, but his eye is also exposed to the lighting apparatus itself, and he witnesses how the operating crew carries out switching operations and changing the color discs.”¹²⁸ But this contradicts the aesthetic regime of the time.

The technique must be nothing else on the stage than a servant to the poetry. It has to fulfill the demands of the director without coming forward itself. In accordance with its bashful nature, the art of engineering always strives to hide itself in life as well. On stage, it withdraws completely into the hidden. It remains completely unknown to the spectator and must also remain unknown to him what a multitude of circuits the lighting technician has to carry

¹²² Ibid.

¹²³ Op. cit., p. 98.

¹²⁴ Op. cit., p. 20.

¹²⁵ Ibid.

¹²⁶ Ibid.

¹²⁷ Op. cit., p. 32.

¹²⁸ Op. cit., p. 38.

out in the course of a performance so that it runs smoothly. The audience does not need to know that the man at the controls, in addition to his technical knowledge, must also have artistic feeling, so that he brings the light intensity, color and the moments of tone change correctly.¹²⁹

At the end of the prospectus stands a vision of an infinite distance (as close as it may be) that transcends the walls of the temple of the Muses and leaves behind all the dusty and sooty materiality of painting.

The scene shows an open landscape. The viewer looks across a colorful carpet of meadows and low shrubbery into the infinity of the blue radiant firmament. The view seems to roam far, far out, diving indefinitely into the distance; the closing wall of the stage house has disappeared. How different this scene appears from its older design, in which the end was formed by a blue painted canvas, crisscrossed by folds, in the furrows of which the dust formed black tracks. The spectator smiled at the decorative painter who wanted to try with brush and canvas to represent the most beautiful, free and magnificent of creation, the dome of the sky. [...] Now, however, the apparently incorporeal has taken the place of the canvas. A reflector of incident light is the atmosphere, which arches over our heads in the free nature; reflecting light closes today immaterially the free scenes.¹³⁰

But because it is a technical pamphlet, the author quickly comes back down to earth: “The closing wall of the stage has, of course, remained in reality, but it has succeeded in giving it an arrangement in which it itself remains invisible, it is nothing more than a carrier of light.”¹³¹ The stage space, thus transformed into a single projection surface, ultimately opens up the space for an auratic theater aesthetic and a new aesthetic metaphysics.

A property of the artificial sky that cannot be valued highly enough is that it permits the representation of all natural phenomena that take place in the firmament in a perfect manner. All these luminous processes, whether they are of earthly or cosmic origin, are sacred to us, because they all represent revelations of a power that goes beyond human comprehension.¹³²

And on that horizon of celestial powers which the theater presents, the spectacle of nature takes counters “storm clouds of industrialization” (Ruskin) within the modern theater.

On the clear, bright sky the first small cloud appears. It moves in silent flight over the bulge. Larger formations follow it, heavy clouds have gradually piled up. All blue has disappeared; the whitish sky has already taken on a yellowish tinge. One believes to feel the highly tense sultriness of the summer atmosphere saturated with electricity. A ray of lightning is already flashing down.¹³³

¹²⁹ Op. cit., p. 98.

¹³⁰ Ibid.

¹³¹ Op. cit., p. 66.

¹³² Op. cit., p. 74.

¹³³ Ibid.

But while the spectator is overwhelmed by the poetry of this natural spectacle, he knows at the same time, like the customers of Schwabe & Co, the engineers and directors of the modern theater, that this lightning is caused “with the help of a special lamp”. “There is an arc light device in it. The coals are impregnated with salts, which impart a greenish tint to the light-giving incandescent crater.”¹³⁴ What makes the natural spectacle so beautiful is not least the technical knowledge that is concealed within it.

4.5 Atmospheric Arts: Rotation and Elfin Forest (Reinhardt)

Modern technical knowledge not only gives rise to the factory-like organization of the theater, it also leads to a previously unthinkable categorical separation of art and technology in the theater, to the emergence of the director as an art engineer, and to a new aesthetic configuration characterized by plasticity of decoration, transport systems to accelerate the change of images, and the illusion of infinite space. This aesthetic configuration, which emerges at the beginning of the nineteenth century and becomes the ideal standard at least in the German-speaking world until the First World War, has its decisive prototype in a scenic group of trees.

This forest, which led German theater into the twentieth century, was, as the *Neue Preussische Zeitung* reports, a “German beech forest, through which individual white birch trees gleamed ghostly in the moonlight.”¹³⁵ “The birch trunks with the light white of their slender figures stood out next to the serious beech”,¹³⁶ observes the *Frankfurter Zeitung*. This forest owed its success to the fact that it was “sculptural” and therefore seemed “real”: “One saw trunks and branches to grasp and shake. Real leafy tendrils stretched from tree to tree, and the branches occasionally cracked and crunched.”¹³⁷ The authenticity stemmed from the fact that it was alive, and this life, in turn, it owed firstly to the actresses who played it (for on the branches of the trees “squatted the elves”¹³⁸), and to the light that fell on it, “the fine lights, the discrete shadows, the undulating rhythmic life.”¹³⁹

Phosphorescent glowed the swamp over which Titania’s playmates danced the round dance, the gnomes rolled straight down the mossy slope, the amorous wanderer stumbled over the roots, and through the treetops shimmered the dark blue of the star-studded sky of a Greek summer night.¹⁴⁰

¹³⁴ Op. cit., p. 84.

¹³⁵ *Neue Preussische Zeitung*, Feb. 1, 1905.

¹³⁶ *Frankfurter Zeitung*, Feb. 4, 1905.

¹³⁷ *Norddeutsche Allgemeine Zeitung*, Feb. 2, 1905.

¹³⁸ *Frankfurter Zeitung*, Feb. 4, 1905.

¹³⁹ *Norddeutsche Allgemeine Zeitung*, Feb. 2, 1905.

¹⁴⁰ *Frankfurter Zeitung*, Feb. 4, 1905; cf. also *Der Tag*, Feb. 2, 1905.

In particular, it was the interplay of actors, light, and movement that made this forest come alive, for in this forest, which Max Reinhardt staged at the Deutsches Theater in 1905 for *Midsummer Night's Dream* (*Neues Theater*, January 31, 1905), not only did the light break and not only did elves sit on the branches, it also turned. Here, the revolving stage became an epochal theatrical event that went down in German theater history because, as it is said, it carried here for the “first time the dramaturgical structure of a production”.¹⁴¹ Reinhardt, who had experimented with the revolving stage before (in 1904 in *The Merry Wives of Windsor*; 1905 in the *Faust*), but without history-making success, told his stage designer in advance.

A large turntable, on which possibly the whole play is carefully and safely set up beforehand, with ceilings (plastic ones then, of course), with treetops on the trees and a sky dome above – that is my ideal, [...].¹⁴²

About the sky dome it goes on to say: “we saw something so exhilarating in Paris that the thought of it won’t let me go.”¹⁴³ – in other words, it is Fortuny’s lighting system that appears here as the ideal complement to the revolving stage. But there is a second model for the stage design, which is decidedly closer and from which in September 1900 the *Berliner Lokalanzeiger* reports.

Yesterday [...] the new starry sky was opened in the Winter Garden. In the gleam of innumerable twinkling stars, ‘golden lies in the sky-blue nothingness’, the new old hall shone, to whose rebaptism all had come, which belongs in Berlin to those, which are to be found everywhere, where what is ‘going on’. [...] The audience followed with interest the biggest novelty of the evening, the revolving stage.¹⁴⁴

The remodeling of the *Wintergarten* variété with the installation of starlight and a revolving stage in 1900 marks another step in the development of the vaudeville from a disorderly and disreputable attraction to a closed bourgeois form. According to plans by Bernhard Sehring, the remaining plants are removed, and the glass roof, which had previously provided a view of the night sky as in the glass architectures of the arcades, is covered from the outside with panels and replaced instead by artificial stars in the form of modern light bulbs. On the stage, Carl Lautenschläger, in cooperation with the companies Riedinger and Schuckert & Co, installs a revolving stage 10 m in diameter, driven by a direct-current motor of the company Brown, Boveri & Cie. operating at 200 V. The revolving stage is then used as a stage for the night sky. However, this revolving stage did not really catch on in vaudeville,

¹⁴¹ Cf. the introduction to the production in the collection of critiques (after which the critiques are also quoted here) *Berlin. Theater der Jahrhundertwende*, ed. by N. Jaron, R. Möhrmann/H. Müller. Tübingen: Max Niemeyer 1986, p. 565.

¹⁴² Max Reinhardt to Berthold Held on July 28, 1905, quoted from: *Max Reinhardt. Leben für das Theater. Briefe, Reden, Aufsätze, Interviews, Gespräche, Auszüge aus Regiebüchern*, ed. by Hugo Fetting. Berlin: Argon 1989, p. 107.

¹⁴³ Ibid.

¹⁴⁴ *Berliner Lokal-Anzeiger* of Sept. 2, 1900.

because as an industry observer noted in the journal *The Artist* notes, it conflicts in several respects with essential features of the genre.

Certainly, the stage is based on a highly original, witty idea, but I myself would like to claim that, apart from the savings in time and human material, the earlier mode of appearance of the artists must have suited them better, since it was a completely different appearance and departure of the artists when the stage was still, and the small breaks in a performance of almost four hours were quite pleasant, and finally, the stage itself was much larger.¹⁴⁵

Thus, after the revolving stage had not really prevailed at the theater (in Munich it saw only individual tries, for Mannheim and Bremen Lautenschläger worked out plans, but these were never realized),¹⁴⁶ even its use in vaudeville with high celebrities was only moderately successful. The change of image could be better realized in a different way in the theater, and in vaudeville, which lives essentially from the performance of the artists, a technique that restricts the performance was bound to fail.

In other words, the revolving stage itself is not yet much, it only begins to make sense in a concrete aesthetic constellation, only in the interplay with the sculpted trees, the arched circular horizon does the revolving stage assert itself, or more precisely: does it become aesthetic reality. Before that, when it is a matter of exchanging scene images at the greatest speed with the curtain closed, the same technique is something else, even if here it already goes together with the plasticity of the stage design. But only in connection with that horizontal opening of the stage space into an infinite expanse and a scenic elf forest, which functions like a biotope in a diorama, the aesthetic is created, which becomes typical for the revolving stage: a rotation of attractions and an attraction of rotation. For unlike in the *Wintergarten*, where the acrobats are the attractions and the revolving stage is largely denied success, in 1905 in the German theater it is not so much the actors as the trees that become the attraction, or rather the forest that results from the rotation of the trees, the light of the stars, and the play of the actors.

The forest, the vision of “an unleashed nature” that lives out its life freely and unbound, becomes an artistic end in itself and the center of the production, and leads the “intimate brotherly alliance that the poet has made here with nature”.¹⁴⁷ The play of the elves appears less as a decorative accessory than as the “beating heart, the animating soul of the whole”¹⁴⁸ and the plot as nothing more than a pleasing pretext for this round dance. Performers are praised for “nowhere disturbing the impression”,¹⁴⁹ or criticized for being stuck in naturalistic play – only two female characters, Gertrud Eysoldt, who plays Puck, and Tilla Durieux, who gives Oberon, stand out, not least because they show themselves to belong to the elfin forest in their play. Instead of plot, the mood is admired, from this “wonder smelling forest

¹⁴⁵ *Der Artist*, No. 813 of Sept. 9, 1900.

¹⁴⁶ Cf. Vogt, op. cit., 2007.

¹⁴⁷ *Deutsche Zeitung*, Feb. 2, 1905.

¹⁴⁸ *Ibid.*

¹⁴⁹ *Frankfurter Zeitung*, Feb. 4, 1905.

fairy tale” which is praised as a “sight” and “showpiece”¹⁵⁰. “The forest interior [...] opened up, and all the magic grew out of its mossy soil”.¹⁵¹ This magic from the forest interior, the turning of the plastic trees in front of endless star-studded horizon overcomes the Nordic naturalism with its alcoholics and starving people trapped in their closed room decorations and bourgeois morals. By setting in motion and rotating the dusty classics, whose open dramaturgies had become bogged down in the course of the nineteenth century by ever longer scene changes, it adapts them to the urban and industrial rhythm and creates in the commercial center of Berlin the dream of a Greek summer night in the German forest, a, as the *Deutsche Zeitung* writes, “reals germanic fairy tale atmosphere.”¹⁵²

Responsible for such a fairy-tale atmosphere, however, is, as the *Neue Freie Presse* goes on to say, an “art of atmosphere in the performance,” to which applies: “Direction is everything,” and which is at the same time the reason why this *A Midsummer Night’s Dream* “was more by Max Reinhardt than by Shakespeare.”¹⁵³ Direction (Regie) is atmosphere art and creates performances. What Peter Marx has identified as a special characteristic of Reinhardt’s productions, the “search for a specific atmosphere that goes hand in hand with experiments for an adequate spatial design”,¹⁵⁴ can be generalized to what directing is: an aesthetic synthesis that, after Wagner and with Appia, is no longer after myth and rite but after atmospheres, and for this purpose equips spaces with technology, which, however – this is the continuity that is often overlooked – are still filled with artificial nature. A motor that turns a disc on which a forest stands, that creates a mood – this is the basic constellation of director’s theater, which replaces literary theater, which consisted of a text that sounds a voice that comes from a character that suggests a depth.

Among the despisers of Reinhardt’s art of directing, who not infrequently belong to the chauvinistic and antisemitic cultural pessimists and enemies of modernity, this very quality, positively described as atmospheric art, is mirrored in the reproach of “oriental” superficiality: “too midsummery, too lush, too soft, too tropical” attests *Der Tag*, and Ernst Bergmann gets personal:

Reinhardt’s stagecraft is specifically surface art, which has nothing to do with the essentials of the performed piece, nor does it want to have much to do with them. [...] [I]n all these manifestations of Reinhardt’s stage art I see a specific characteristic of an oriental fantasy.¹⁵⁵

What can still be attributed to an oriental fantasy in Bergmann’s case is then already biologically and racially justified in Epstein’s case; he recognizes the

¹⁵⁰ *Norddeutsche Allgemeine Zeitung*, Feb. 2, 1905.

¹⁵¹ *Frankfurter Zeitung*, Feb. 4, 1905.

¹⁵² *Deutsche Zeitung*, Feb. 2, 1905.

¹⁵³ *Neue Freie Presse*, Feb. 3, 1905.

¹⁵⁴ Peter W. Marx: *Max Reinhardt. Vom bürgerlichen Theater zur metropolitanen Kultur*. Tübingen: Francke 2006, p. 153.

¹⁵⁵ Ernst Bergmann: *Der Fall Reinhardt oder Der künstlerische Bankerott [sic] des Deutschen Theaters zu Berlin*. Berlin 1906, p. 37.

“oriental desire for something new, unheard of in the look and posture of the head”¹⁵⁶ of the director. From this, as with Dinter, a whole clash of civilizations can be made, who sees the foundations of the German theater endangered in the clutches of oriental head-holdings and fantasies: “The oriental opulence and debauchery peculiar to this ‘culture’ has produced an equipment mania on German stages that has contributed not insignificantly to putting the entire German theater business on an unsound footing, even economically.”¹⁵⁷ Metropolitan atmospheric art endangers national-chauvinistic resentments and is therefore to be disqualified biologically.¹⁵⁸

But the imputed Orientalism, the “lush, soft, tropical” character of atmospheric art also recalls the demands for electric theatrical hygiene in the brochures of the electricity industry and the scenic Orientalism without which the spectacular, gas-driven theater of the nineteenth century would have been inconceivable. (As cited above, for example, AEG blamed the heat generated by gaslighting for “tropical” conditions in theaters that led to the decline of theatrical culture). So how does Reinhardt’s forest rotation relate to the spectacular realisms of the past century? Does this Germanic fairy-tale atmosphere stand in the tradition of orientalist féeries like *Aladin* and Wagner’s Germanic variations, and are these Greek elves in the German birch forest, like the flower girls in Klingsor’s Magic Castle, perhaps just Bayadères in disguise? – In any case, Reinhardt’s *Elfenwald* is no longer about that oriental foreign land which is above all the projection surface of an Other of European identity, a backdrop against which the victory of reason, civilization and bourgeois culture over absolutist rulers and uneducated peoples can once again be celebrated. Here, one no longer recognizes one’s own in the foreign, as in the case of the fisherman Aladdin, who turns out to be an ideal *citoyen*; rather, conversely, the familiar appears as foreign. The spectacle no longer serves the appropriation of the Other or the foreign but rather of the familiar, which now itself seems to have become foreign and exotic. That is why in *Midsummer Night’s Dream*, it is not Greek or exotic plants but Nordic birch and beech trees that are set in rotation; it is a German beech forest inhabited by Greek elves.

Already in E. T. A. Hoffmann’s *Irrungen*, the forest is only a decoration, built up outside the city for the pleasure of excursionists during the summer.

In the forest, my magus was overcome by his grumpy mood. When I praised the walk, he drove me hard, I should not foolishly imagine that these were real trees, that this was really grown grass, field, water: I could see that already by the dull colors, that everything was only in fun art fabricated stuff. In winter, my magus claimed, everything would be packed up, taken to the city and partly rented to the confectioners who needed it for their so-called exhibitions.¹⁵⁹

¹⁵⁶Max Epstein: *Max Reinhardt*. Berlin: Winckelmann Söhne 1918, p. 209.

¹⁵⁷Arthur Dinter: *Mein Ausschuß aus dem Verband Deutscher Bühnenschriftsteller*. Munich: J. F. Lehmann 1916, p. 21.

¹⁵⁸Cf. Marx: *Max Reinhardt*, op. cit., 2006.

¹⁵⁹E. T. A. Hoffmann: “Die Irrungen” [1820], *Poetische Werke in sechs Bänden*, vol. 6. Berlin: Aufbau-Verlag 1963, p. 282.

A good hundred years later, in the case of Robert Musil, in his 1936 *Nachlass in Lebzeiten*, it is no longer the “dull colors” but the unusual regularity that exposes the forest as a product of urban culture. A forest here is something that is “mostly rows of boards plastered with greenery on top,” and which one seeks out to recover from the irregularities of the big city.

[I]t would be impossible to plunge one’s gaze into the greenery at all if it were not already laid out for it with dead-straight crevices. The clever foresters merely provide for a little irregularity, for some tree that is a little out of line at the back to intercept the view, a cross-cutting blow, or a fallen trunk that is left to summer over. For they have a fine feeling for nature and know that you don’t want to believe them more.¹⁶⁰

The forest thus becomes the counter-model of the urban jungle and, accordingly, primeval forests have “something highly unnatural and degenerate” about them for Musil: “Unnature, which has become second nature to nature, reverts to nature in them. A German forest does not do such a thing.” The artificial “bosom of nature” corresponds to a similarly artificial “man on vacation.” But where the forest no longer figures pastoral counter-world or romantic wildness, but precisely to the image of order still to be maintained in the time-out, the spectacle of nature is also an entirely different one.

But in 1905 in Reinhardt’s *Midsummer Night’s Dream*, this transition from exoticism to tourism is not yet quite complete. The forest arranged on the stage still wants to be a little primeval forest, the elf round dance resists the order of the German forest. As in the mask plays and South Sea adventures of the fine arts, the elves dance is a place of longing for a European reason in the Romantic tradition, which not only becomes aware of what has been excluded, but also begins to mourn this as a loss, and now tries to compensate for it by incorporating what once was. Instead of the export of European reason to the peripheries of an exotic foreign country, it is about the import of the exotic foreign country into the center of European reason.¹⁶¹

In this forest, however, which turns in front of electric stars and by help of amotor in the theater, not the elf dance of the turn of the century appears as the last array of bourgeois *Féerie*, that dissimulates all the contradictions of industrial capitalism in its illuminated rotations. Precisely because the curtain no longer goes down in Reinhardt’s work and all change is openly revealed and invites us to marvel at the power of the transformation, more is hidden here than is revealed. The new thermodynamic stage machinery no longer groans and croaks like its mechanical predecessors; it runs as if on rails and, like the railroad and electricity, has overcome most natural resistance in favor of almost weightless motion to provide a natural spectacle.

In an essay on the functions of light in theater by Erika Fischer-Lichte, it is said of Max Reinhardt that he was the first to systematically test out its possibilities for

¹⁶⁰ Robert Musil: *Nachlass zu Lebzeiten*, ed. by Fred Lönker. Stuttgart: Reclam 2013, p. 89.

¹⁶¹ Cf. Peter W. Marx’s interpretation, in Marx: *Max Reinhardt*, op. cit., 2006, p. 216.

creating atmospheres after the invention of electric light.¹⁶² According to this logic, atmospheres here are phenomena which, as Gernot Böhme has pointed out, take place between things,¹⁶³ but which have always existed, just as light has always produced atmospheres in the theater. So when light becomes electric, it is no more than a rather indeterminate improvement that leads to new possibilities, which then have to be discovered by an artist and made usable for his art. So the question is who did what when with this electric light and what meanings and experiences were made with it in the audience.

The present work, on the other hand, understands (theatrical) atmospheres, first, as a historical phenomenon and wants to show how they came into being. Second, it sees them as emerging from a complex configuration of different actors, practices, and discourses, which in turn have their own history. Finally, thirdly, it assumes that the medial entities that float within these configurations and their sensual qualities are not independent of the techniques that produce them. It is only with the light bulb that this technical separation of heat from light emerges, whereby our (modern) sensing and thinking allows the two things to be experienced as distinct.

The aesthetic atmospheres of modernity, in other words, emerge from the incandescence of light bulbs, are closely linked to modern theatrical hygiene and control techniques. They continue the theater of fossil energies and optical spectacles, with their exotic locations and meteorological times, while breaking with its material and materialistic foundations. With the fluorescent glow of the Grail in the Gesamtkunstwerk, still composed of scenery and rubber, there is an inkling of such an atmosphere to reconcile an industrial world that has come apart at the seams. But only in the round horizon does this theatrical atmosphere become reality for the first time as a planetary atmosphere, transcending the walls of the peep-box and opening up a view of an infinite expanse over which the clouds drift peacefully.

In order to understand the forest and its atmosphere that rotates on a disc in a closed space and is climbed by mythical creatures in 'Spree-Chicago' in 1905, it is not enough to look at the writings of directors and reviewers; it is necessary to reconstruct those apparatuses, the knowledge and practices that go along with them, as well as the entities and qualities that emerge from them. Only from such a perspective it becomes understandable that not only aesthetics is based on technology, but also that technology arises from aesthetic needs in the first place.

This Reinhardt forest, however, has another relative besides the artificial forests outside the city, a "fairy-like" "magic forest," whose description by the publicist Lothar Bucher can be found quoted in Walter Benjamin: "like a piece of Midsummer

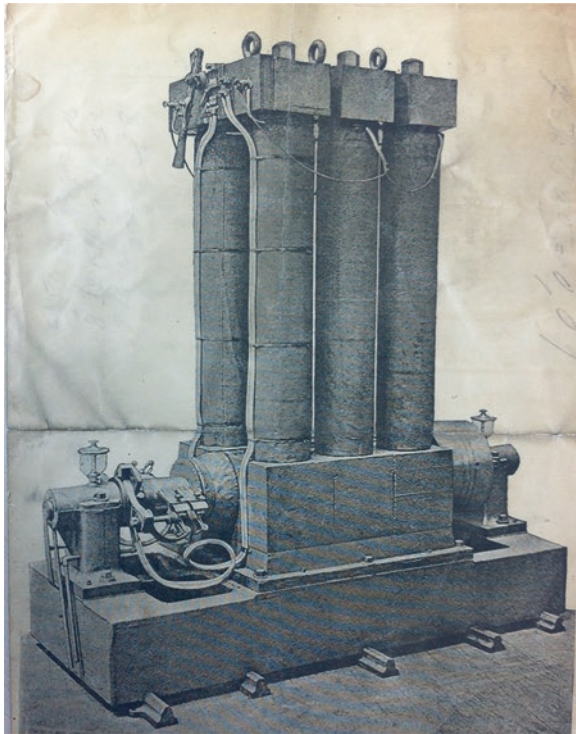
¹⁶²Erika Fischer-Lichte: "Beleuchtung, Erleuchtung, Verklärung. Über praktische, symbolische und performative Funktionen des Lichts im Theater," in: *Licht, Glanz, Blendung. Beiträge zu einer Kulturgeschichte des Leuchtenden*, ed. by Christina Lechtermann, Bern et al: Lang 2008, pp. 225–240, here: S. 235.

¹⁶³Cf. Gernot Böhme: *Atmosphäre. Essays zur neuen Ästhetik*. Frankfurt a. M.: Suhrkamp 1995.

Night's Dream in the midnight sun" it appeared to him, and Lessing concurs: "What we had in mind from old fairy tales of the princess in the glass coffin, of the queens and elves who lived in crystalline houses, all that seemed embodied."¹⁶⁴ This enchanted forest, however, was London's Krystallpalast, where the exhibition culture of the nineteenth century got its start in 1851. Here, too, atmospheres emerged at the end of the century in the interplay of electricity and Orientalism, which will be examined in more detail in the following chapter.

¹⁶⁴Lothar Bucher: *Kulturhistorische Skizze aus der Industrieausstellung aller Völker*. Frankfurt a. M. 1851, p. 11, quoted in: Julius Lessing: *Das halbe Jahrhundert der Weltausstellungen*. Berlin 1900, pp. 6–10, quoted in: Walter Benjamin: *Das Passagenwerk*, in: *Gesammelte Schriften*, 7 vols. vol. 5. Frankfurt: Suhrkamp 1972–1999, pp. 247–249.

Electricity and Its Staging



The appearance of electricity on the theater stage in Frankfurt in 1891, which was the starting point and occasion for the excursions into the history of theater technology in the previous chapters, did not only take place in the context of the theater, but must also be understood as part of an exhibition. The electric ballet was part of a larger staging of electricity and was integrated into the topography as well as the dramaturgy of the event space, which for some time built up its own world of technology and pleasure within the city and which the following chapter describes. Section 5.1 “Rollercoasters” begins with a walk through the exhibition and outlines

the topography of the attractions. Far more than about generating acceptance, this hybrid of trade conference and amusement park was about making sense out of technology, in both a technical and cultural sense. With the new power currents, electricity transitioned from communications to industrial technology, and questions about technical standards were closely linked to questions about political ownership, urban spaces, and social identities. Following up on from this, Sect. 5.2 “Water Forces” examines the electrically powered waterfall as a paradigmatic attraction of electricity, the staging of which not only gives an image to the invisible current but also embodies the promise of healing the dislocations of industrial modernity through the lossless transmission of pure natural power to the urban center. The question of making the invisible visible is pursued further in Sect. 5.3 “Arts and Crafts”. It is shown that and to what extent the decorative arts staging of electrical engineering is used by industry to materialize the immaterial and a vision of the future becomes the actual product of the electrical industry. Section 5.4, “Festivals of Light,” examines the staging of nocturnal artificial light as a counterpart to the artistic upholstery of electrical engineering against the background of baroque illuminations and bourgeois glass architecture since 1851, describes its rhetorical references to the Enlightenment, and its appearance in Orientalist garb at electrical and world exhibitions after 1889. Finally, Sect. 5.5 “Dynamos” deals with the exhibition of power machines, the God-grounding of the abstract “energy”, and the belief in the fertility of technology. Starting from Henry Adams and passing through a theoretical panorama from Freud and Ostwald to Marx and Heidegger, it is argued that at the center of the electric exhibitions is staged the belief in a new universal and eternal entity and thus an energetics whose theatrical incarnation is the spectacular attraction.

5.1 Rollercoasters: Power Transmission and Amusement Parks (Frankfurt 1891)

In addition to the “main exhibition square” (cf. Fig. 5.1) with its 77,000 m², the Frankfurt exhibition of 1891 included, according to the catalog, a naval exhibition, a tethered balloon square, and an engineering plant in the palm garden.¹ There was an art exhibition in the former Main-Necker station, electric trains ran from the exhibition grounds through the city, and several power transmissions delivered electricity to the grounds. Numerous music transmissions ran both “from the western music pavilion of the exhibition to the gondola of the captive balloon, from Bockenheim to the automatic listening points on the exhibition site” and “from the music hall of the Frankfurt infantry barracks, from the stage of the Frankfurt Opera House, from the Wiesbaden *kgI.* Schauspielhaus and from the Munich Royal Court

¹Cf. on the Frankfurt Electricity Exhibition unless otherwise noted: „Eine neue Zeit...!“ *Die Internationale Elektrotechnische Ausstellung*, Ausst.-Kat. Frankfurt a. M.: Historisches Museum 1991.

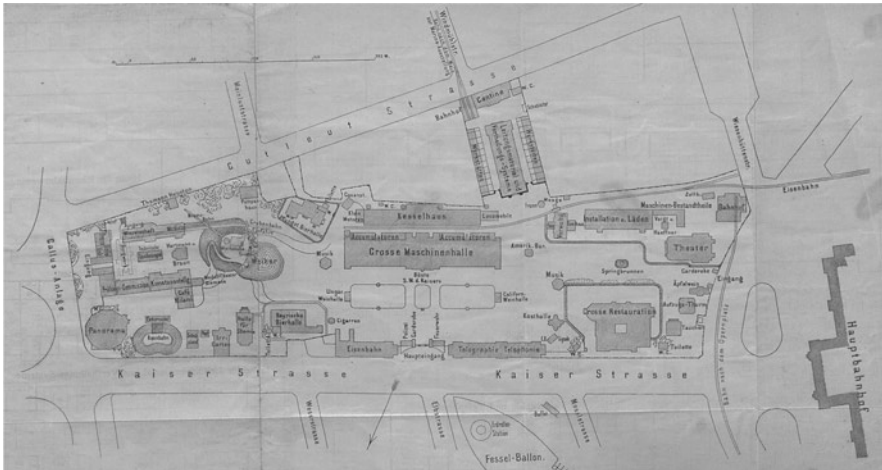


Fig. 5.1 Plan of the exhibition. (*Officieller Katalog der internationalen elektrotechnischen Ausstellung zu Frankfurt am Main, 1891*)

and National Theater to the soundproof booths of the Hall for Telegraphy and Telephony on the exhibition square,” thus also acoustically completing the networking of the exhibition with the surrounding city.²

However, if one entered the exhibition through the main entrance, in the center of the exhibition area, one first approached that “source from which all the luminous and other wonders we shall behold receive their nourishment”: A boiler house with 20 mighty steam boilers that had to feed the large number of 50 different steam engines, through which a quantity of power of about 3000 hp was produced.³ Adjacent to this was the machine hall, which, like a cathedral under a central dome, presented the great dynamos by means of which the crude natural forces of fossil fuels were transformed into that invisible electric current which was then distributed over the exhibition site to work its wonders. A contemporary visitor spoke of an “exhibition temple” in which the exhaust pipes of the steam engines and the gas engines made a “spectacle” “that one gets the impression that the powers of the underworld had erected a branch here for the coarser pursuits of their studio.”⁴

Lined up in a circle around this machine hall were the exhibition halls, divided according to subject groups and areas of application, which above all displayed the diverse electrical instruments of the time – including those for telegraphy, railroad signaling or medicine (cf. Fig. 5.1). In addition to various apparatuses more

²*Officieller Katalog der internationalen elektrotechnischen Ausstellung zu Frankfurt am Main 1891*, edited by A. Askenasy, 2nd edition, Aug. 26, 1891. Frankfurt a. M.: Haasenstein & Vogler 1891, pp. V f.

³J. H.: “Das Zeitalter der Elektrizität”, in: *Die Gartenlaube* 1891, pp. 283–286, here p. 283.

⁴Conrad Wuest: “Elektrische Ausstellung in Frankfurt a. M.”, in: *Programm der Städtischen Schulen*, Aarau 1893, pp. 9–10 cited in David Gugerli: “Modernität – Elektrotechnik – Fortschritt”, in: *Elektrizität in der Geistesgeschichte*, ed. by Klaus Plitzner, Bassum: Verlag für Gesch. d. Naturwiss. und d. Technik 1998, pp. 51–63, here: S. 51.

accessible to the specialist public, there were a variety of media apparatuses accessible to the layman: devices for “displaying the movement of the telephone diaphragm by means of dancing flames” or for “displaying the vibration curves of the human voice, musical instruments and the curves of electric currents”.⁵ In addition to telephones and gramophones, pioneering media technology devices such as the “Lautsprechende Mikrophon”⁶ (Loudspeaking Microphone) and “Ottomar Anschütz’ elektrischer Schnellseher”⁷ (electric high-speed viewer) were on display.

By inserting a ten-penny piece into the opening intended for this purpose, an electrical contact is established inside the apparatus, a hitherto dark surface glows in electric light of the induction spark jumping over in the air-diluted space, and one sees the various images passing by in rows following each other, such as a rider being placed over a hurdle.⁸

On the borders of the site, however, as if as intermediaries to the surrounding city, the cultural institutions and popular show devices were located: art exhibition, model theater and panorama to the west, exhibition theater and tower with viewing platform to the east. “That the use of electric light for theatrical purposes will be illustrated in an exhaustive manner” was a matter of course, according to the *Gartenlaube*. In addition to the large exhibition theater, “the whole magic of modern stage technology would be presented in larger ballets, pantomimes, etc.,” and a second, smaller theater “would especially illustrate the technical peculiarities of electric stage lighting.”⁹

The entertainment also included an orchestrion and various telephone broadcasts (Léo Delibes’ *Le roi a dit* and Jacques Halévy’s *Die Jüdin* were transmitted by J. Berliner from the Munich Court Opera, Deckert & Homolka had transmissions from Wiesbaden, Mix & Genest from the Frankfurt Opera). There was “snapshot photography, also by electric light”,¹⁰ an “electric carousel,” an electric racetrack, a “maze with mirror reflexes under electric lighting,” and a shooting range with incandescent lamps as targets.¹¹ An electric boat could be used to travel up the river, and with an “[e]lectrical mine railroad, consisting of a locomotive, two dogs and a tunnel track”¹² by Siemens & Halske one could descend into an artificial mine. The tethered balloon installation of Captain Georg Roeck, military airship pilot from Hamburg, carried the spectator aloft and promised a telephone connection to the exhibition and a spotlight of 20,000 candles (Fig. 5.2).¹³

⁵ *Officieller Katalog*, op. cit. p. 150.

⁶ *Officieller Katalog*, op. cit., p. 148.

⁷ *Officieller Katalog*, op. cit., p. 149.

⁸ Cf. *Electricität. Offizielle Zeitung*, op. cit., No. 13. of July 11, 1891, p. 382.

⁹ J. H.: “Das Zeitalter der Elektrizität”, in: *Die Gartenlaube* 1891, pp. 283–286, here 284.

¹⁰ *Officieller Katalog*, op. cit., p. 11.

¹¹ J. H.: “Das Zeitalter der Elektrizität,” op. cit., 1891.

¹² *Officieller Katalog*, op. cit., p. 146.

¹³ *Officieller Katalog*, op. cit., p. 129.



Fig. 5.2 Contemporary photograph of the exhibition hill. (Theaterwissenschaftliche Sammlung, Universität zu Köln)

Flanking the machine hall on both sides was an artificially constructed and electrically operated cultural and natural scene: on one side was a fountain, which for financial reasons had turned out to be much smaller than planned, on the other was a hill with a mountain restaurant “imitating a construction on Capri that was built under the influence of Moorish architecture”¹⁴ and whose “coziness was to be heightened by colorful windows” from which “streams of electric light” poured in. The hill itself contained a grotto with a waterfall: a dragon and the nymph held captive by it were also part of the scenic arrangement, whose main attraction was the electric illumination: “roaring and gurgling partly in a single large jet, partly in rippling cascades,” the water rushed back from a reservoir over the grotto opening into the pond.

There, it surrounds a nymph modeled by the sculptor Sand, whose magnificent forms will shine in the electric light. But above all, at night time, the two waterfalls of the hill glow in

¹⁴ *Elektrizität. Offizielle Zeitung*, op. cit. n. 4, p. 81.

double electric illumination, from the inside and from the outside, like liquid metal, a fairy-tale image, to which the crowning of the hill is sensibly designed by Professor Sommer.¹⁵

The exhibition newspaper writes that this “wonder hill”, whose electrical equipment was designed by Schuckert, will still be remembered “when the sober everyday prose has once again replaced the exhibition site with its hill, grotto and pond by streets and houses.”¹⁶ This green hill with a dragon, which, in contrast to the Bayreuth Festival Hall, was not erected outside but in the middle of the city and could therefore only exist temporarily, was already brought close to Germanic myths in the run-up to the exhibition.

An artificial waterfall, which lets its floods fall from a height of 10 m, will present fairy-like illumination plays similar to the fontaines lumineuses of the Paris and Vienna Expositions. The top of the rock, from which the floods of water will fall, will be crowned by a romantic castle, in front of the entrance of which a huge grim dragon will stand guard. Mighty clouds of steam, bathed in glowing hues by electric reflectors, spray from the monster’s maw. But whoever penetrates to the interior of the castle with the courage of a Siegfried will be greeted, if not by Brunhilde, then by a cozy drinking room.¹⁷

In fact, there were not exactly few establishments for the enjoyment of alcoholic beverages on the exhibition grounds: In addition to the “large” and the “small restaurant,” there was a “Californian Wine Tavern” and a “Hungarian Wine Tavern,” an “American Bar,” a “Cider Hall,” the “Café Milani,” the “Garden Restaurant,” and the “Restaurant on the Hill,” not to mention the “Pfungstädter Beer Hall” as well as the “Bavarian Beer Hall” and, of course, the “Cigar Kiosk.”¹⁸ Likewise the official catalog of the exhibition opened even before the title page and the advertisement for the trade journal *The Electrician*’s advertising for Havana cigars, wines, cognac and delicacies from the Schepeler department store, and the trip on an electrically lit steamer from Zeeland-Vlissingen to London.

If it was the modern world that one encountered at the Electric Exhibition in Frankfurt in 1891, then one had made oneself comfortable in it. One sang electrotechnical variations of student drinking songs: “Alles was Anschluss hat – Lobe den Herrn” instead of “Alles was Anstich hat, lobe den Herrn!” [= “Everything that has *connection* – praise the Lord!”].¹⁹ and sent out relevant postcards, which blissfully paid homage to a chauvinistic internationalism characteristic of the time and occasion (cf. Fig. 5.3).

In addition, the “Bedouin Caravan” made a guest appearance in the immediate local and temporal vicinity. It was not an official part of the electricity exhibition, and yet its local proximity was no coincidence, but an indispensable part of the staging of technology and progress. As a complement to the celebration of the progress of the “cultured peoples,” as it was called in the jargon of the time, the “human zoo”

¹⁵ Ibid.

¹⁶ *Elektrizität. Offizielle Zeitung*, op. cit. no. 4, p. 81.

¹⁷ J. H.: “Das Zeitalter der Elektrizität”, in: *Die Gartenlaube* 1891, pp. 283–286, here p. 284.

¹⁸ J. H.: “Das Zeitalter der Elektrizität”, in: *Die Gartenlaube* 1891, pp. 276–280.

¹⁹ *Elektrizität. Offizielle Zeitung*, op. cit. no. 10, p. 276.



Fig. 5.3 Pictorial postcard from the publishing house of the Staudt brothers, colored lithograph, Frankfurt am Main 1891. (Historisches Museum Frankfurt am Main)

which could hardly be missing from an industrial (or world) exhibition until into the twentieth century, served as a foil of contrast that presented a supposed “primitive-ness” from which one felt oneself absolved. The exhibited technology functioned as proof of this very detachment.

It was not the construction of an Other that was at stake here, but rather the confirmation of one’s own superiority. In the rhetoric of the arrangement, the technology is that which proves superiority and thus, in a circular argument, appears itself as superior. If the possession of technology proves one’s own superiority, this own superiority always rubs off on the technical. That we are better because we have technology always means that it is technology that makes us better. The racist joke of the postcard depicted here is that the German citizen and engineer makes himself common with the clichés of the foreigner when and through drinking. But this is egalitarianism, which after all only emphasizes the actual difference between stupor and sobriety, between higher intellect and lower drives, i.e. between those who invent light bulbs and build power plants and those others who are discovered and explored by the former. Nothing assures the status of the civilized as civilized better than occasional uncivilized behavior.

In any case, one must think of the electrical exhibition anno 1891 as both a professional meeting and a great amusement park. The crude form of the metal machines was set in an environment that was otherwise mostly kitsch. A hill was made of concrete, with nymphs and dragons made of plasticine, facades made of wood, canvas and paint, which were supposed to represent sometimes the Middle Ages, sometimes the Renaissance or some imaginary Ancient Germany. It was a superficial structure in the literal sense of the word, which, like the window display, serves only to decorate the merchandise that is to be experienced in it and through it, is then deconstructed again and usually appears pale and thin, if not in the right light and viewed from the wrong side.

Nevertheless, there was more at stake in this beer-soaked amusement park of electricity and its industrial displays than what social science calls acceptance generation and economics calls marketing. On the one hand, it was a matter of settling into the rapid technical change of the living world and giving it meaning, that is, of transforming technology into progress and industry into modernity. On the other hand, it was about the very concrete question of how to organize the supply of electricity to cities in the future, because, as this amusement park shows, in those very years electricity was becoming something more than outrageous luxury, more than an extraordinary event and a rare speciality, something to be produced, distributed and used *en masse*. For with the beginning of the 1890s, at the time of the Frankfurt Exposition, electrification enters a new phase. An article in the exhibition newspaper speaks of an “encroachment” of electrical engineering into hitherto “foreign territories”.²⁰

Until then, electricity had remained largely an event and a representation; electric light shone in individual hotels, theaters, or villas, and was usually still too expensive for night work in factories. Yet electricity remained local, was limited to one business, one building, one block. It is true that since the first electricity exhibition, the *Paris Exposition internationale d'Électricité* in 1881, there was a supply system for electricity that approached the production, distribution and consumption of electricity as a commercial enterprise (or rather, of *light*, for initially neither electricity nor light bulbs were sold, just light) – namely, that of Edison, whose achievement was not the “invention” of the light bulb, of which there were countless, but the design and enforcement of a commercial distribution system that solved technical and economic problems together.²¹ Nevertheless, electric light had long remained a luxury and had lost little of its exclusivity: By 1890, Siemens & Halske had installed fewer than 2000 individual systems with just 3400 dynamo machines with power for 37,400 arc lamps and 400,000 incandescent bulbs; in Europe, there is talk of one million incandescent bulbs by 1890.²²

What was almost non-existent until 1890, on the other hand, were *motors*, partly because the currents that could be generated and distributed by then were limited. Electricity, apart from the new luxury lights, was still until the early 1890s above all what it had been for most of the nineteenth century: a specialized communications technology of the military men, the railway and the stock exchange, based on weak currents originating from batteries, and with which people and companies (which often could not be distinguished in this phase of economic development) like Siemens had grown up. But in the early 1890s, a new mass of electricity seemed to become available, and with it new applications and a new spread could be foreseen. It was now suddenly a question of “power currents” which could be used for “work” and which could be expected to bring about far-reaching “upheavals in the fields of production”.²³ As the journalist Emil Peschkau wrote in *Über Land und Meer*, it was

²⁰Dr. J. Epstein: “Einführung in das elektrotechnische Maass-System”, in: *Officieller Katalog*, op. cit. pp. VXII–XXXV.

²¹Cf. Hughes, op. cit., 1983.

²²Cf. Ernst Rebske: *Lampen, Laternen, Leuchten. Eine Historie der Beleuchtung*. Stuttgart: Franck'sche Verlagshandlung 1962, p. 169.

²³Dr. J. Epstein: “Einführung in das elektrotechnische Maass-System”, in: *Officieller Katalog*, op. cit. p. VXII–XXXV.

about nothing less than the “great world riddle,” i.e., to make electricity “so serviceable to the needs of our life that it itself is transformed in an almost unprecedented way.”²⁴ At issue were the effects of “power transmission and power distribution” on “social conditions” and “public life.”²⁵

This question of the transmission and distribution of the new power, however, hinged directly on the hotly contested decision for *direct* or *alternating current*, which in the United States was strongly influenced by the competition between General Electric and Westinghouse Electric and went down in history as the *battle of current*. Thus, as Peschkau writes, the machine shop became the “arena for the contest” of the various systems of electrical power generation: “‘Direct current’ or ‘alternating current,’ was the burning question [...]”²⁶ And this Hamletian question was anything but a purely technical one; rather, it was closely linked to social and political concerns. For linked to the type of electricity was also the form of ownership – private or public – the place of electricity generation, and the role of industry in the city, and thus ultimately the identity of the city.²⁷ It is precisely these questions that the Frankfurt exhibition sets out to decide. In its self-portrayal, the need for a joint “testing ground” for cities and industrial districts is repeatedly pointed out. Explicitly, Frankfurt set itself apart from the “mass development of French art and industry” in the World’s Fairs and set out to combine the usual industrial exhibition with questions of power supply and urban development.²⁸

Thus, the Frankfurt exhibition came into being primarily in reaction to the protracted and controversial discussion of the city assembly about the sponsorship of a future municipal power supply and on the initiative of the editor of the liberal *Frankfurter Zeitung* Leopold Sonnemann and in sponsorship of an electrotechnical society.²⁹ Until its annexation by Prussia in 1899, Frankfurt am Main, which had a strong middle-class character, was an independent city-state without freedom of trade and commerce, but had since developed into an expanding economic and industrial center. Electrification simultaneously negotiated how to relate to the emperor, capital, and the proletariat.

The opening of the exhibition in May 1891 is accordingly marked by the pathos of progress that characterized the world exhibitions of the nineteenth century in particular, but experiences here its electrified version: electricity appears as the “moving

²⁴ Emil Peschkau, “The Electric Exhibition in Frankfurt,” in: *On Land and Sea*, vol. 66, 1891, p. 694.

²⁵ *Ibid.*

²⁶ J. H.: “Das Jahrhundert der Elektrizität,” in: *Die Gartenlaube* 1891, pp. 283–286, here p. 283.

²⁷ Cf. Jürgen Steen, “Neue-Zeit – Vorstellungen als Kritik der Industriellen Revolution. Zu Bedeutung und Rolle von Elektrizität und Elektrotechnik in Modernisierungsstrategien des 19. Jahrhunderts” in: *Elektrizität in der Geistesgeschichte*, ed. Klaus Pitzner, Bassum: GNT-Verlag 1998, as well as: “Einleitung,” in: “Eine neue Zeit..!”, op. cit., 1991, pp. 11–46.

²⁸ Leopold Sonnemann: “Vorgeschichte der Frankfurter Internationalen Elektrotechnischen Ausstellung,” in: *Officieller Katalog*, op. cit, pp. IX–XVI, here: p. X.

²⁹ Cf. *Die Zweite Industrielle Revolution. Frankfurt und die Elektrizität 1800–1914. Bilder und Materialien zur Ausstellung im Historischen Museum* (= Kleine Schriften des Historischen Museums Bd. 13), edited by Jürgen Steen. Frankfurt a. M.: Amt für Wissenschaft und Kunst 1981, p. 31.

force” of all development. Sonnemann welcomes in the name of the exhibition boards, addresses the highly honored festive assembly and promises besides an “army show about what has been achieved” also its thorough examination and comparison. The 4684 horse powers are praised, compared to the 160 hp of the first German electricity exhibition in Munich in 1882. It is emphasized that here and now it is a question of the expedient way of “long-distance transmission and distribution” of the electric current, so that in the future large cities and whole districts could be illuminated and provided with operating power. According to Sonnemann, it is a matter of “carrying out a revolution whose influence on our entire cultural development, especially on social conditions, can hardly be imagined today”. Thus the “efficient cultural states” would meet in the “beautiful city on the Main” in order to perform “works of peace” and of “fraternization among nations.”³⁰ (As already noted above, it is of not inconsiderable significance that in this act of fraternization among peoples, those peoples who are not counted among the “efficient cultural states” are also present by proxy, namely on the opposite side of the street as exhibits).

Accordingly, following Sonnemann’s opening speech, the poet Wilhelm Jordan also celebrates in his festive greeting the peaceful power of the spirit, which appropriates the forces of nature and thus subjects the world to a benevolent and conflict-free rule.

Die Gefeierten sind der menschliche Geist	The celebrated are the human spirit
Und die wundergewaltige Urmacht,	And the miraculous elemental power,
Die, durchschaut und gelenkt, den Erdensohn	Which, seen through and directed, makes the son of earth
Mehr und mehr zum Herrn der Natur macht	More and more the lord of nature. ³¹

There follows a rhymed history of electricity in 20 stanzas, reviewing the wonders of electricity from amber (the actual ἤλεκτρον) to the dynamo, evoking the “shining deeds” of electric current, and repeatedly singing of progress in the refrain: „[W]ie weit war der Weg“ [= “[H]ow far was the way”]. The poem concludes with an invocation of the present and future omnipotence of electricity.

Schon dreht er das Rad und die Schraube des Schiffs	Already it turns the wheel and the screw of the ship
Zu beschleunigtem Fahren und Schwimmen,	To accelerated driving and swimming,
Schon erneut er vernehmlich dem Enkelgeschlecht	Already he repeats audibly to the grandchildren
Von verstorbenen Rednern die Stimmen.	The voices of deceased speakers.
Zur Arbeit zwingt er am Ufer des Mains	To work he forces on the banks of the Main
Des Neckars ferne Kaskade	The Neckar’s distant cascade
Und singt bis hinauf zum Fesselballon	And sings up to the captive balloon
Die Oper vom Isargestade.	The opera from the Isargestade. ³²

³⁰ *Electricitaet. Offizielle Zeitung*, op. cit., No. 6, pp. 137–140 (“Die feierliche Eröffnung der Ausstellung”).

³¹ Wilhelm Jordan: “Festgruss zur Eröffnung der Ausstellung”, in: *Electricitaet. Offizielle Zeitung*, op. cit., no. 5, pp. 101–102.

³² *Ibid.*

In this respect, poetic freedom does not see it so precisely in all the enthusiasm for technical progress, and so even the still completely mechanical phonograph is subordinated to electricity, perhaps because it too, like light, comes from the house of Edison, but perhaps also because all media technology in 1891 appears to be electrical. It is also known from the empress's tour on the opening evening that she was first shown the telephone transmission of the opera *Le roi l'a dit* by Delibes from the Munich Court Opera Theater, then she heard an English folk song on Edison's phonograph, and then went to see the telegraph facilities, the railroad department, the panorama, and finally the machine hall.³³

But the highlight of the exhibition, which was repeatedly invoked both in its self-representation and in historical reviews to assure itself of the importance of the event, could not yet be admired because it had not been completed at that time. It was a technical event that was to represent something unprecedented and was drastic for the development of power supply because it promised to settle the dispute between direct and alternating current: a *long-distance transmission* of high voltage current over 175 km, for which AEG and Maschinenwerke Oerlikon were responsible, and which was also sung about in the poet's celebratory greeting quoted above. In Lauffen am Neckar, the turbines of a cement plant located on the river transformed the power of the water into electrical energy to drive a 100 hp motor after the said 175 km distance, which in turn now drove a waterfall on the exhibition grounds in Frankfurt. It was this event that set the Frankfurt exhibition apart from others before it and established its claim to be the pioneer of a new era. But this new technology of power transmission found its poetic image in a waterfall, and a water-powered one at that.³⁴

5.2 Water Forces: Fountains and Rays of Light (Frankfurt 1891)

An illuminated waterfall was already an attraction of the exhibition as part of the grotto ensemble described above, and was basically absent from hardly any exhibition of the nineteenth century. This combination of cascades and illuminations harked back to a long tradition that, at the latest in the baroque garden with its water features and water organs, stood for the controlled wildness of a cultivated nature.³⁵ With

³³ Ibid.

icitat. Offizielle Zeitung, op. cit., No. 6, pp. 137–140 (“Die feierliche Eröffnung der Ausstellung”).

³⁴ Cf. *Überwindung der Distanz. 125 Jahre Gleichstromübertragung Miesbach – München*, ed. by Frank Dittmann, Berlin/Offenbach: VDE Verlag 2011.

³⁵ See, among others, Hartmut Böhme: *Kulturgeschichte des Wassers*, Frankfurt: Suhrkamp 1988; Albert Baur: *Wasser im Barock* (=Geschichte der Wasserversorgung 6), Mainz: von Zabern 2004; Albert Baur: *Wasserspiele für Götter, Fürsten und Volk*. Munich/Vienna: Oldenbourg 1992; Robert W. Berger: “Garden Cascades in Italy and France 1565–1665,” in *Journey of the Society of Architectural Historians*, vol. XXXIII, no. 1 (March 1974), pp. 304–322; Michael Brix: *Der barocke Garten. Magie und Ursprung. André Le Nôtre in Vaux-le-Vicomte*. Stuttgart: Arnoldsche 2004; Torsten Olaf Enge et al.: *Gartenkunst in Europa 1450–1800*. Cologne: Taschen 1991; Wilfried Hansmann: *Gartenkunst der Renaissance und des Barock*. Cologne: DuMont 1983.

electricity, however, there is a new connection between water and light, in which a new relationship between culture and nature is also realized. For electric light does not simply illuminate the water from above, but can be fed into the water itself. Hidden in the false rock, mirrors and prisms direct the rays of light, colored golden, red, blue or green, and transform the water itself into a luminous stream, the very image of electricity.³⁶ This is how the Frankfurt illumination test is reported in 1891:

The grotto itself shone alternately in deep blue and dark red light; at the same time, the waterfall on the left shone in yellow light and the one on the right in white light, making them appear like streams of liquid gold and silver.³⁷

Wherever the new power of electricity is exhibited before the turn of the century, it is the colored streams of such *fontaines lumineuses* that give it its image: in Paris in 1881, in Munich in 1882, in Vienna in 1883, at the World's Fairs in Paris in 1889 and Chicago in 1893; lighting for Niagara Falls was already in place in 1881.³⁸ A turn-of-the-century handbook attributes the invention to the physicist Jean-Daniel Colladon (1802–1893) and distinguishes it from the older *Kalospinthechromokrene*, a “showpiece of roving performers” in which luminous fountains also shone in colored light.³⁹ Fedor von Zobeltitz gives a retrospective impression from the Valhalla Theater in Wilhelmine Berlin:

A main attraction at the time was the ‘Kalospinthechromokrene’, a fountain illuminated with changing lights, which was considered the height of beauty, and the rarely missing living pictures in the genre of Rappos: a mass of mostly rather nasty, jersey-clad wenches posing on a revolving podium in limb-twisting postures, while the Bengal beacons irradiate them sometimes green, sometimes yellow, sometimes pink. [...] One [...] amuses oneself royally.⁴⁰

Whereas in the latter the light is cast onto the water from the outside, Artur Wilke explains, in the water jets of the *fontaines lumineuses* the light would penetrate “from their inside into the open”. The light would thus make water “appear as *self-luminous*” and therefore has “an even more powerful effect on the senses, because here one sees the water jets lying openly in front of the spectator seemingly transformed into liquid light” (Fig. 5.4).⁴¹

It is in flowing water, apart from the body of the dancers, that electricity preferably manifests itself at the end of the nineteenth century. Because the bundled light refracts in the water and is tossed back and forth between the drops, what otherwise

³⁶ Cf. „Eine neue Zeit...!“, op. cit., 1991, p. 229 ff.

³⁷ *Electricitaet. Offizielle Zeitung*, op. cit., No. 8, June 6, 1891, p. 210.

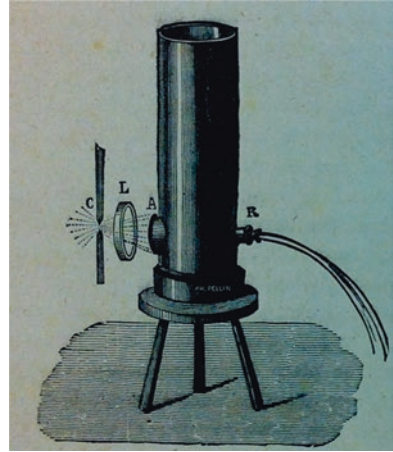
³⁸ Cf. David Nye: *Electrifying America: social meanings of a new technology 1880–1940*. Cambridge: MIT Press 1990, pp. 58 ff.

³⁹ Artur Wilke: *Die Elektrizität. Ihre Erzeugung und ihre Anwendung in Industrie und Gewerbe allgemein verständlich dargestellt*. Leipzig: Otto Spamer 1895, p. 263.

⁴⁰ Feodor von Zobeltitz: *Chronik der Gesellschaft unter dem letzten Kaiserreich*. Hamburg: Alster-Verlag 1922, vol. 1, 1894–1901, p. 240 f.

⁴¹ Wilke: *Die Elektrizität*, op. cit., 1884, p. 263.

Fig. 5.4 “Principe des fontaines lumineuses”. (Julien Lefèvre: *L'électricité au théâtre*, 1894)



cannot be grasped can become real here, namely as an *immaterial play of colors* in a liquid in motion, which with its “tumbling”, “roaring”, “splashing” traditionally provides the image for everything electrical. After all, flowing water, its current, has remained the most prominent term for electricity itself to this day. This allows electricity to dive into a reservoir of meanings (to stay with the image) in which the purifying power of water, as still found in the hygienic standards of urban supply systems, is combined with its driving power, which extends to the water mill, the ancestor of all mechanical machines.

But what is missing from this scene if not the fact that the force that drives these colored streams is itself nothing other than a waterfall, 175 km away, in Lauffen am Neckar. Thanks to it, as the *Gartenlaube* observed in 1891, the “pretty ornament” became a miracle of circulation.

Thus, in fact, a wonderful cycle is created! The waterfall of the Neckar, which is led to the Lauffen turbine, raises the Main water to a distance of several days’ travel, overcoming the wide space in an instant, and forces it to repeat the Lauffen waterfall in Frankfurt, as it were, and to produce it anew.⁴²

The transmission of electricity thus creates a scene of repetition, with which spatial distance is overcome and temporal proximity is created, as was otherwise only possible with telegraph and telephone. Only that here it is not messages or sounds that are sent from afar into the here and now in the voltage fluctuations of weak currents, but pure *power*, something that seems much more abstract and at the same time much more powerful, something that can not only transmit the command to compel, but can lift the waters themselves into the air. In this respect, the “miraculous circuit” of the electric waterfall also seems to represent the imperialist economic

⁴²*Die Gartenlaube* 1891, p. 682, quoted by Helmut Lindner: *Strom. Erzeugung, Verteilung und Anwendung der Elektrizität*, Reinbeck bei Hamburg: Rowohlt 1985, p. 208 f.

model of the time, which uses natural forces from the periphery to set the masses in motion at the center. Since the Académie des sciences in 1775 declared the *perpetual* motion impossible, no one has come closer to it than here. For even if this scene of repetition does not itself generate energy, it does make immense energies available from afar, apparently frictionlessly through a few copper wires “lying as quietly on the telegraph poles as if the whole story were none of their business at all.”⁴³ Even if de facto 25% is lost on the way, the cycle is closed by an unmoved technology, which as a pure mediator makes nature appear in the middle of culture and in this appearance promises a loss-free, side-effect-free availability of the forces of nature.⁴⁴

In this respect, the electrified waterfall is the antithesis of the “smokestack industry enveloping the cities in thick clouds of smoke and soot” that had until then constituted the face of industrialization.⁴⁵ For this “smokestack industry” had indeed brought material improvements to large population groups in the cities, but in the same breath had led to multiple social and political upheavals. With the harnessing of fossil energies through coal mining on a large scale and the generation of power with the steam engine, entirely new possibilities had emerged after centuries of limitation to mainly animal and human forces, but at the same time the massive effects on the social and ecological environment became visible at the end of the century. As early as 1884, Ruskin, in *The Storm Cloud of the Nineteenth Century*, had described the United Kingdom, until the end of the nineteenth century the forerunner of industrialization, as a country where the sun no longer rose because of coal soot.⁴⁶ A bourgeois critique of industrialization emerged that was less concerned with social misery and inequality than with the (concomitant) cultural and aesthetic dislocations of that mass culture that increasingly displaced older crafts.

All this seemed to be cancelled out by the waterfall generated by waterpower. In the shining flow of the water masses lay the promise of an industry of the future that would pacify the bourgeois centers of the cities and relocate the noise, the dirt, the misery of the factories and power plants to the urban fringes. But this was ultimately made possible by the fact that, as a contemporary reporter observed, “the generation and supply work in secret.”⁴⁷ In this respect, clean energy is primarily a magic trick and scenery hoax, based on the fact that the invisible long-distance pipeline also hides the origin of the electricity, and in the end no one really notices when the coal-fired power plant is connected at the end instead of the waterfall, as was also the case in the 1890s. The soot is not gone then, it is just somewhere else, you cannot see it, so it is an *aesthetic* operation on which second-order industrialization is based.

⁴³Ibid.

⁴⁴Cf. Emil Rathenau on September 14, 1891 in Lauffen, cited in. „Eine neue Zeit ...!“ op. cit., 1991, p. 289.

⁴⁵Roman Sandgruber: *Strom der Zeit. Das Jahrhundert der Elektrizität*, Linz: Veritas 1992, p. 11.

⁴⁶Ruskin: *The storm cloud of the nineteenth century. Two lectures delivered at the London Institution. February 4th and 11th 1884*, Orpington: George Allen 1884; cf. Sandgruber: *Strom der Zeit*, op. cit., 1992.

⁴⁷Sandgruber, op. cit., 1992, p. 11.

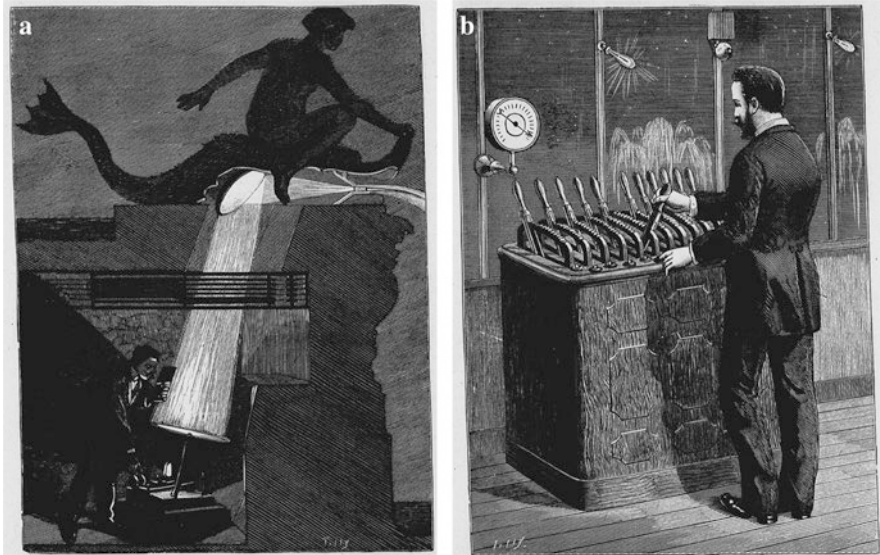


Fig. 5.5 (a) “Disposition des projecteurs éclairant les jets horizontaux,” (b) “Intérieur du kiosque d’observation”. (*La Science Illustrée*, 1889)

Falling out of the framework of Romantic imagery and instead enclosed by a fence in the exhibition area, the motorized waterfall, a postcard turned sculpture, therefore becomes the prototypical scene of the aesthetics of industrialized modernity. Just as the fountain represents the *classical* scene of the mechanical unity of a cultivated nature, the water-driven waterfall is the *modern* counterpart of an industrially divided world: following Romantic pictorial traditions, it cites the technical harnessing of natural forces as the image of a regained unity, at the center of which is the aesthetic replication and symbolic exaltation of nature. The only difference is that this romantic theater of equipment appears here at the same time as an urban spectacle, in which the shimmering and shining of the water masses, transformed into colored light carriers, detaches itself from the scenery and gains a new aesthetic, in which the immaterial energy currents that are to dominate the following centuries are given one of their most effective images. Here, in a colorful, weightless image, the unleashed forces of fossil energies are banished, which the century experienced as the heavy gray of the waste products of combustion and which, above all, symbolically displace from perception the materialistic underworld spectacle of the machine halls with their monstrosities of iron, steel, and metal shrouded in steam and noise (cf. Fig. 5.5a). And like the electrified theater, this attraction is also based on a new control technology that makes the flowing change controllable (cf. Fig. 5.5b).

In the center of a trade exhibition, electricity is thus encountered here primarily not as a useful invention for which mankind has been waiting, but as a spectacular *attraction*, aesthetically pleasurable but completely useless: the symbolic core of

this attraction, however, is a vision of the future, the *science fiction* of a purified modernity. The fluorescent waterfall is a futuristic monument to an industrial progress that promises not only to relieve from the toils of labor, but also to beautify life, giving visibility not so much to a new invisible force as to make hitherto visible forces invisible. The dirt, noise and misery of the steam engines and coal-fired power plants disappear in a large-scale *escamotage* of production, which is the industrial utopia of a *slavery without slaves* become reality, at least aesthetically, i.e., perceptually, and could be included in a history of the aesthetics of occidental outsourcing.

5.3 Arts and Crafts: Upholstery and Total Works of Art (Munich 1882 and Frankfurt 1891)

Already in 1882 at the Munich *Elektrizitäts-Ausstellung*⁴⁸ from September 16 to October 15, 1882, at the Krystallpalast (the first in Germany and the second in Europe), one of the main attractions had been a waterfall (cf. Fig. 5.6), which, on the initiative of Oskar von Miller (1855–1934), was also intended to illustrate the long-distance transmission of a direct current of 1500 V generated in Miesbach, 55 km away (but which, with its 35% efficiency, had little impact on industrial or technical developments, in contrast to the 75% in Frankfurt).⁴⁹

Here, too, as mayor Widenmeyer records “in an enthusiastic, incendiary” speech at the end of the exhibition, “a new message, a new time was to be proclaimed with loud language.”⁵⁰ The new message was “that the electric force is about to dominate all areas of human life”; and the loud language with which this message was to be “brought to the consciousness of even the simplest man” was the *miracle*. Even at

⁴⁸ Cf. *Catalog für die Internationale Elektrizitäts-Ausstellung verbunden mit Elektro-Technischen Versuchen im Königl. Glaspalaste zu München, mit einem Führer von Ph. Carl*, München: Knorr & Hirth 1882; W. H. Preece: “The Munich Electrical Exhibition 1882,” in: *Journal of the Society of Telegraph Engineers* 11 (1882), pp. 517–545; Georg Dreikorn: *Elektrische Studien mit Bezug auf die Münchener Elektrizitäts-Ausstellung 1882*, Leipzig: Teubner 1883; In addition to the daily reports in the *Münchener Neueste Nachrichten*, cf. representative of the coverage: Karl Albrecht Regnet: “Aus der Elektrizitäts-Ausstellung in München,” in: *Über Land und Meer. Allgemeine Illustrierte Zeitung* 4 (1883), p. 77 as well as 5 (1883), p. 94; H. W. Vogel: “Erinnerung an die Münchener elektrotechnische Ausstellung,” in: *Vom Fels zum Meer, Spemann’s illustrierte Zeitschrift für das deutsche Haus* Berlin: 1882, pp. 409–412; “Plaudereien aus der elektrischen Ausstellung,” in: *Unterhaltungs-Beilage zum Münchener Fremdenblatt* 1 (1882), pp. 243–246, 251–252, 255–256; “Die Elektrizitätsausstellung im Münchener Glaspalast,” in: *Illustrierte Welt* 31 (1883), no. 14, pp. 163–164.

⁴⁹ Cf. “Deprez’ Transmission with Direct Current,” in: *The Electrician*, No. 10 (1885), p. 40.

⁵⁰ *Offizieller Bericht über die im Königlichen Glaspalaste zu München 1882 unter dem Protektorate Sr. Majestät des Königs Ludwig II. von Bayern stattgehabte Internationale Elektrizitäts-Ausstellung verbunden mit elektrotechnischen Versuchen*, Th. 1: Führer durch die Ausstellung, edited by Wilhelm von Beetz. Munich: Autotypie-Verlag 1883.



Fig. 5.6 Waterfall in the Glass Palace of the Munich Electricity Exhibition, 1882. (Oskar von Miller: *Erinnerungen an die Internationale Elektrizitätsausstellung*, 1932)

the first presentation of the project to the Architects' and Engineers' Association, Oskar von Miller, according to his own retrospective statement, "does not speak of difficult technical problems, but only of the wonders of electrical engineering."⁵¹ and these "wonder[s] of the Crystal Palace" will be talked about until the end of the exhibition. His Excellency the k. Regierungspräsident von Oberbayern, Royal President of the Government of Upper Bavaria, Freiherr von Pfeifer, only knows how to use the alliterative language of the master of all German wonders, Richard Wagner, to express his state of "highest amazement and admiration" and sees himself as "an ignorant knower". He sums up the paradoxical character of this secular wonder when he invokes the Enlightenment, of all things, to capture this miracle of

⁵¹ Oskar von Miller: *Erinnerungen an die Internationale Elektrizitäts-Ausstellung im Glaspalast zu München im Jahr 1882* (Deutsches Museum Abhandlungen und Berichte 4. Jg. H. 6). Berlin: VDI-Verlag 1932. p. 3/155.

technical modernity: “with me, gentlemen, thousands called for light and enlightenment, and this enlightenment took place.”⁵²

The Frankfurt exhibition also remains embedded in this discourse on miracles, wanting to present a “miracle world of electricity”⁵³ and give a “gala performance” of industry to provide the “astonished eyes of the present generation” a “glimpse behind the scenes” of a technology “which in its details brings many marvels.”⁵⁴ But even the wonders of the Enlightenment need a little coaching when it comes to their appearance, and just as the theater-hostile church was always happy to turn a blind eye when it came to its own staging, so too the otherwise sober engineering science likes to resort to art where it is a matter of asserting market shares. “One may think what one likes about the switching and working of the imagination in man,” wrote Leopold Sonnemann on the occasion of the Frankfurt exhibition, but one would have to concede “that its assistance is of inestimable value in designs where it is necessary to speak to the people in gripping fracture, clearly marking the significance of cultural factors with one stroke.”⁵⁵ Even if the period after 1870 in Germany was characterized by a “hysteria of sobriety” and a “penetrating obsession with facts,” which, as Sonnemann’s tone makes clear, was also rather skeptical of art, “design” was still valued when it was necessary to speak to the people “grippingly” and “with a punch,” i.e., when it was a matter of propaganda or advertising.⁵⁶

And this was precisely the idea behind the Munich Electricity Exhibition. Here, too, there was already a pronounced awareness of the need for the aesthetic design of the industrial exhibition, or rather for its necessary *spectacular* character. Thus, the “Chronicle” of the *Offiziellen Berichts* of the Munich Exhibition speaks of a “staging of electrotechnical experiments on a large scale”,⁵⁷ the purpose of which was to “demonstrate to the largest part of our German audience [...] things unknown to them from their own experience”.⁵⁸ Decisive for this was the “combination of science and art, the work of the intellect and the imagination”,⁵⁹ as is emphasized again and again, mostly in dissociation from French and English models. Oskar von Miller is accordingly described as an “staging engineer”,⁶⁰ and the committee of the exhibition includes government directors, professors of technical colleges and electrical engineers as well as Baron Karl von Perfall, royal treasurer and general director of the royal theaters, who is also a member of the “XI. Department for Artistic

⁵² *Offizieller Bericht*, op. cit., p. 26.

⁵³ Leopold Sonnemann’s speech, cited in “Die feierliche Eröffnung der Ausstellung.” *Offizielle Zeitung*, op. cit. no. 6, pp. 137–140.

⁵⁴ Leopold Sonnemann, “Die Entstehung der Internationalen Elektrischen Ausstellung,” in: *Elektrizität. Offizielle Zeitung*, op. cit. p. 1.

⁵⁵ *Ibid.*

⁵⁶ Cf. also Thomas Kuchenbuch: *Die Welt um 1900. Unterhaltungs- und Technikkultur*. Stuttgart: J. B. Metzler 1992.

⁵⁷ *Offizieller Bericht*, op. cit., p. 1.

⁵⁸ Op. cit., p. 1 f.

⁵⁹ Op. cit., p. 23.

⁶⁰ Op. cit., p. 17.

Evaluation of Electric Lighting etc.”. Carl Lautenschläger, the royal court theater’s chief mechanical engineer, is a member of the construction and decoration committee and in addition holds the office of chairman of the inspection committee of the “VII Department for Fire Alarms, Control Apparatus, Chiming Mechanisms and Electric Clocks”.⁶¹

The task was: to present great, promising achievements of science and technology to a large audience in a way that would leave no visitor in doubt about their great importance and the possibility of their further development.⁶²

Neither the technical exchange was the first sense and purpose of the exhibition, nor was the advertising of individual products in the foreground, but rather it was primarily a matter of eliminating the possible *doubts* of a “large audience”, namely doubts about the *significance* of technology, a significance that seemed to lie primarily in the “promising possibilities of further development”, in short, in its *future*. The aim was not so much to convince people of what technology could do at present as to leave no doubt that a better future would be possible with it, so that finally, as §1 of the program states, it could be “promoted in an energetic and effective manner” for “application [of] it.”⁶³

If the World’s Fair, as the triumph of industrialization and imperialism, for the first time completely aestheticized the commodity, removed it as an unsaleable object from the commerce of the marketplace, gave it a show value, and approximated it to the status of the relic, here almost the inverse process takes place. Instead of giving a material thing an immaterial meaning, the task here is to give an immaterial force and its only future triumph a material form and a use value. The “large public” must be convinced of the significance of electrical engineering, which, however, lies in the future. Precisely for this reason, the “artistic design of the company” is considered essential.⁶⁴ For, as stated retrospectively by the exhibition organizers:

If [...] only the bare technical facts, which have led to such an unimagined exploitation of powerful natural forces in this field, had been allowed to speak, by simply displaying dynamo machines, arc and incandescent lights, telephones, etc., that undoubted effect of popularizing our modern electrical technology, which in fact must be called one of the main benefits of the exhibition, would not have been half achieved.⁶⁵

But popularization here does not mean to open an access to the layman, but rather to dispel any doubt about the meaning of what is shown, and for this the “bare facts” are not sufficient. What is needed is their aesthetic dressing, which around 1880 becomes the basis of a new business model, or better yet, a new way of doing

⁶¹ Op. cit., p. 4.

⁶² Op. cit., p. 4.

⁶³ Op. cit., p. 7.

⁶⁴ Cf. also *Zeitschrift für angewandte Elektrizitätslehre* 1882, p. 313.

⁶⁵ Op. cit., p. 13.

business, namely the sale of technical promises of the future, which until then were by no means self-evident. Nowhere is this better demonstrated than in the refusal of an old-school company to take part in the Munich exhibition, a company whose name had until then been almost identical with electrical engineering in Germany: Siemens & Halske, which had grown up in the middle of the century as a telegraph construction company and had also entered the business of high voltage current in a big way with the development of the dynamo machine, publicly announced their non-participation in 1882 and offensively set themselves apart from the new spectacularity of the industry.

We declined to participate in the Munich exhibition because we could not see any scientific or technical need for an electrical exhibition almost immediately following the Paris one, and the nature of our business precluded the need for advertising. In the future, too, we never intend to submit ourselves to exhibition constraints orchestrated by individual private persons or interested parties.⁶⁶

The obligation to exhibit, however, which Siemens & Halske still believed they could refuse in 1882 because their telegraph business, which until then had been based on large government orders, did not yet need advertising, was precisely what would become decisive for the new business with electricity. Alongside Oskar von Miller, the “staging engineer” of the Munich Exhibition and the most important lobbyist for electricity, it is Emil Rathenau, more than anyone else, who introduces this new business, based entirely on popularization, to Germany. In retrospect, the idea looks simple, it comes from America, from Thomas Edison, and yet it is new for electricity: what is being sold is *consumption*, no longer the device that produces something, initially of light, later of electricity; the model is provided by the municipal gas companies.⁶⁷ The basis of the power industry is a system that not only generates and consumes electricity, but can also distribute and measure it. The last piece of this system, which Edison worked on in the 1870s, is found in 1880 in an incandescent bulb whose high resistance makes the mass division of light possible for the first time. Like many others, Edison exhibited his light bulb in Paris in 1881, but he was the only one to develop the system, which, because it was based on direct current, could not yet supply cities, but could supply blocks. Rathenau licensed the patents in 1883 and first founded an experimental company, which in the same year became the Deutsche Edison-Gesellschaft and 4 years later the Allgemeine Elektrizitäts-Gesellschaft, supplemented in 1887 by the Berliner Elektrizitäts-Werke.

Thus, if the electrical industry is seen as “prototypical of a new stage of industrial capitalism” in which “anonymous market relations between producers and consumers” prevail⁶⁸ and the incandescent light bulb becomes a key element of advertising,

⁶⁶ *Münchener Neueste Nachrichten*, Oct. 11, 1882, p. 2, see also “Die Firma Siemens & Halske und die internationale Elektrizitätsausstellung in München”, in: *Münchener Neueste Nachrichten*, Oct. 17, 1882, p. 9.

⁶⁷ Cf. Hughes, op. cit., 1983.

⁶⁸ Beate Binder: *Elektrifizierung als Vision. Zur Symbolgeschichte einer Technik im Alltag*. Tübingen: Tübingen Association for Folklore 1999, p. 26.

then this is also due to its technical ‘nature’.⁶⁹ On the one hand, only the light bulb allows the mass “division of light” that makes it possible to distribute a mass and win over the masses as consumers. On the other hand, this expensive imitation of gas light is a luxury, of which one must be convinced that one needs it (in everyday life), for which it is therefore necessary to create a need, because it initially goes far beyond any ‘natural’ need. The artificial need, however, that subsequently makes electricity desirable and thus marketable, is the desire to participate in progress and thus ultimately in society, as the following example illustrates.

Quasi accompanying the Munich exhibition, a history of the light bulb was published in the *Münchener Neuesten Nachrichten*, which illustrates the concept of the exhibition organizers so ideally that one could assume it was a commissioned work. It begins with the narrator’s first person encountering a lady at the Paris exhibition who does not know what to do with all the exhibits and can be instructed by the author on behalf of the large audience.⁷⁰

‘We have here,’ she exclaimed, ‘an electricity exhibition, which is supposed to be something quite unique and unprecedented, and they tell wonders about it. You have to have seen that, too, if you don’t want to be taken for a Hottentot.’⁷¹

As a fictional representative of the audience, she fears that failing to see the technical wonders might reduce herself to the status of a colonial and folkloric object. Whoever does not want to become the target of the looking-down gaze of progress must turn the gaze toward progress. Only he who has himself witnessed the miracle of technology, has attended its high mass, can be part of the society of civilization and is protected from becoming the object of research and conquest.

Only the “lady” in Nordau’s story finds this very witnessing difficult because the wonders turn out to be closed boxes, inside of which invisible forces are measured or controlled. In view of the “anemometers; dynamometers; integrometers; manometers” on the one hand and the “commutators; compensators; regulators; distributors” on the other, the audience finds itself “mystified”, in other words: excluded from participation in the miracle. Therefore, the author offers to lead her to a place where “the actual curious apparatuses [...] are in general use”, because there precisely “the miraculous force of nature has left the laboratory” and has taken possession “of all public service[s]” and “housekeeping”.

The story of Nordau then travels to “*Elektropolis*”, which is supposed to lie in the future, not far from “*Hygienopolis*”, and which could also have been designed by Jules Verne. Here there are airships for public transport, stun guns and video surveillance in police use, typewriters, telephones and the telegraphed handshake for electrical communication. Electric sewing machines, egg stoves and toys simplify everyday life. The museum offers galvanoplastic replicas of all world sculptures and

⁶⁹Cf. Peter Berz/H. Höge/M. Krajewski (eds.): *Das Glühbirnenbuch*. Vienna: Edition Selen 2001.

⁷⁰*Münchener Neueste Nachrichten* of Sept. 15, 1882, p. 1 and of Sept. 16, p. 1 (ibid. 1881 in *Frankfurter Zeitung* published).

⁷¹Ibid.

world art is completely accessible in empty picture frames through “telephoty”. An “odoroscope” ensures perfectly disinfected hospitals, and “electric sun burners” that “pour out their mild, white, day-bright and even light over the city” from light-houses have virtually abolished the alternation of day and night.

Only here, then, in the future application, can the “lady” participate in the miracle of electricity, when the dynamometers and commutators, the measuring and control technology have disappeared behind their effects and can be sold as useful products. So it is not the understanding of technology that leads to participation in progress, but rather consumption. Only as a consumer can the woman participate in the miracle, join the electrified community and set herself apart from the “Hottentot”, whom she can then look at after the exhibition tour in the colonial exhibition directly opposite as an example of all those “primitive” peoples that progress demonstrates in order to prove its superiority. Except that, besides perhaps the electric sewing machine, all the other promises of electricity are at least questionable, i.e., they do not so much solve the problems of the day as promise a new world. Instead of medicines for existing diseases, the completely disinfected hospital is promised; instead of the spread of inexpensive lamps so that working-class children can educate themselves in the evening, the whole world is said to shine at night. Instead of basal relief in the hardest work of industry, there are electric egg stoves; instead of rooms to bring society into conversation with each other, there are telegraphed handshakes; instead of an art that is in discussion and exchange with its surroundings, a museum is created in which the masterpieces of all times are gathered.

Nothing other than this *Electropolis*, however, is what the Munich Electricity Exhibition wants to be (in distinction from the, from its point of view, inartistic one in Paris), namely by designing itself as a unity in diversity. The “image that is to be created” should be “lent rich variety and every monotony kept at bay”⁷² is what the program says. Therefore, “different tasks should be assigned to different forces within a common framework,” because “if one wanted to let everything appear by means of the more or less pronounced characteristics of a single artistic individuality,” a “certain conventional boredom would be unavoidable.” But in doing so, the overarching unity threatens to be lost. “One has only one thing to keep in mind, that those who are to work together creatively understand each other and voluntarily and consciously subordinate themselves to the purpose of the whole. Then originality and diversity can be achieved without disturbing uniformity, and thus gripping effect.”⁷³ Synthesis, as with other *Gesamtkunstwerke*, is primarily concerned with the effect on the audience that is to be achieved through the unity of diversity in the design.

In order to create such a *uniform variety*, the light architecture of the Glass Palace, modeled on the London example, was crammed with upholstery, carpets, and statuettes of all the junk for which the bourgeois nineteenth century was so notorious (cf. Fig. 5.7). Divided into a number of darkened examples of use, the exhibition consisted primarily of showcases of bourgeois lifestyle designed to

⁷² *Catalog für die Internationale Elektrizitäts-Ausstellung*, op. cit., p. 14.

⁷³ *Ibid.*

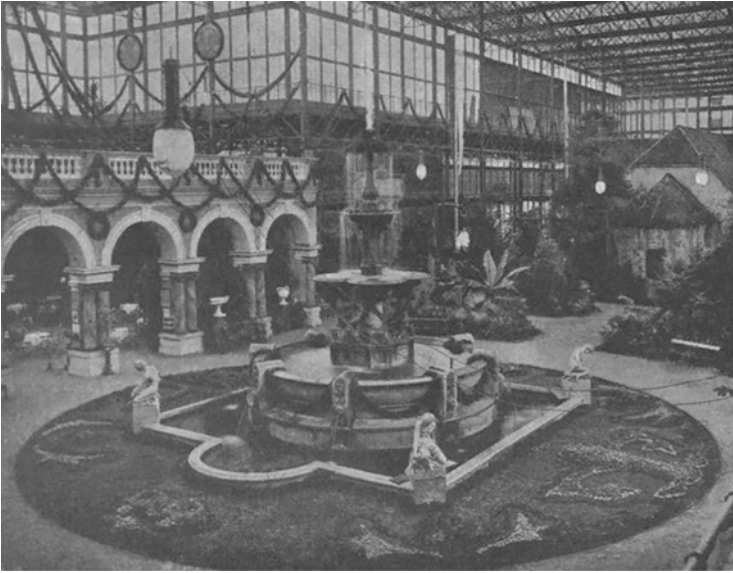


Fig. 5.7 Central hall of the glass palace of the Munich Electricity Exhibition, 1882. (Oskar von Miller: *Erinnerungen an die Internationale Elektrizitätsausstellung*, 1932)

demonstrate the individual possibilities of electric lighting. It was important, writes the correspondent of the French trade journal *La Lumière Électrique*, to show the whole range of different effects that are possible with electric light, if it is used tastefully and according to the circumstances.

Each of these small chambers offers a special appearance thanks to the variety of styles and furnishings; the finest taste had guided their arrangement, and the skillfully distributed arrangement of lamps varied from one chamber to another.⁷⁴

The established Munich artists, however, were responsible for the refined taste: The portrait painter Franz von Lenbach, known as the “Munich painter prince,” the decorative arts sculptor Lorenz Gedon, who had already decorated the German Salon at the 1878 World’s Fair in Paris, and Friedrich August von Kaulbach, who was best known for his caricatures of the Munich artistic scene, – all founding members of the artists’ society *Allotria*, who had rebelled against the established artists’

⁷⁴P. Clémenceau: “Exposition internationale d’Electricité de Munich. L’éclairage électrique au point de vue décoratif,” in: *La Lumière électrique. Journal universel d’électricité* 10, no. 45 (Nov. 10, 1883), pp. 341–348, here: P. 344 (translation by author), in the original: “Chacune de ces petites chambres offrait un aspect spécial, grâce à la variété des styles et de l’ameublement; le goût le plus délicat avait présidé à leur aménagement, et la disposition des lampes habilement réparties, variait d’un box à l’autre”.

cooperative in 1873 and had not exhibited in the established Glass Palace since then, to which they now returned on the occasion of electricity.

Also the publisher Georg Hirth, later co-publisher of the *Münchener Jugend*, designed a “polychrome interior decoration” for one of the chambers with “alt[en], stoffliche[n] und farbig ächte[n] Gegenstände[n]” [= “old, material and color genuine objects”] from his collection, which were “tuned together to form a harmonious ensemble of delightful effect.”⁷⁵ The description in the exhibition’s catalog gives a good idea of the prevailing aesthetic.

Without being bound to a certain historical style – besides old Persian and Turkish fabrics, a new Japanese bronze wallpaper was used, etc. – the solid structure, ceiling, wainscoting, cupboards, chests, furniture consisted of German works from the end of the 16th and beginning of the 17th century; besides, it was the intention to recommend the South German wood inlay of that time, one of the most grateful elements of stylish polychrome surface decoration, to general attention.⁷⁶

On display is a material arrangement of exotic fabrics and decorative wooden surfaces, assembled into a stylish structure, in the center of which sparkles a crystal chandelier, particularly decorative thanks to electricity.

This room had special charm due to an old mountain crystal chandelier, which just in the electric lighting unfolded all its decorative charm.⁷⁷

But besides this enhanced decorative effect of the chandelier, electricity has a second appearance in this “harmonious ensemble”.

An almost poetic contrast was formed by the moonlight-like arched light coming in through the bay window from the outside.⁷⁸

The light becomes poetry when it appears like the moonlight coming through the window, contrasting coldly and flatly with the warm glitter of the chandelier. Even in the nineteenth century, this was a scenic classic, which is still suitable today as a popular film motif and clearly shows how close advertising and equipment theater are here, how theatricall (in the sense of the nineteenth century) electricity appears here at the trade exhibition. In this Hirth room, in the moonlight between crystalline chandeliers and old German wooden inlays, a Faust could well have appeared.

Another example that illustrates the thoroughly theatrical character of this exhibition event is the chapel, surrounded by all manner of greenery, that was built into the western end of the Glass Palace in order to “make an attempt as to the manner in which such a room could be illuminated with electric arc light, without prejudice

⁷⁵ *Offizieller Bericht über die im Königlichen Glaspalaste zu München 1882 unter dem Protektorate Sr. Majestät des Königs Ludwig II. von Bayern stattgehabte Internationale Elektrizitäts-Ausstellung verbunden mit elektrotechnischen Versuchen*, op. cit., 1883, p. 40.

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

to its mystical, everyday-displacing effect.”⁷⁹ The sculptor Lorenz Gedon, who had been given this task, “set the experiment in scene in such a way,” it says in the *Offizieller Bericht* of the exhibition, “that he allowed the light source to come into its own only where glaring effects were artistically justified.” As a result, the room was “enveloped in a certain semi-darkness,” which extraordinarily stimulated “that inward gathering of the spirit” which is “a basic condition for the awakening of religious atmospheres.” Here, too, the *atmosphäre* is set with light and, first and foremost, a religious atmosphere is created by throwing light and shadow into a room covered up to the ceiling with wooden inlays à la Rembrandt (the model for all bourgeois theatrical lighting visions that have never been achieved since 1800). The most important aspect of electric church lighting, however, remains the burning votive candle, so “that the liturgical use of the wax light should not suffer any loss despite the electric lighting.”⁸⁰ However prominent the electric shadows turn out to be, the new light here remains a clandestine one, making itself visible unseen and camouflaging itself as a chandelier or moonlight, and to that extent acting as a ‘natural’ light camouflaged from the backdrops.

The popularization of electricity aimed at by the Munich exhibition, which in 1882 evoked the wonders of progress, practiced in this respect a far-reaching dressing up of the technical in plush and plasticine, which took care not to disturb the church candlelight in its devotion and only to brighten it up with false moonlight. And in view of this theatrical character of the exhibition, it is hardly surprising that it is once again the *theater*, of all places, the setting for the most important innovation of the exhibition (cf. Fig. 5.8). “The most important thing appeared to be the illumination of theaters”,⁸¹ Miller writes in retrospect, and a look into the *Elektrotechnische Zeitschrift* of the exhibition year confirms this impression *ex negativo*:

Even if the overall impression of the exhibition is not yet complete, it can already be said that even in its completion, compared to its two predecessors, with the possible exception of the model of a complete electric theater lighting, it will not present much that is essentially new to the electrical world.⁸²

5.4 Festivals of Light: Enlightenment and Orientalism (London 1851–Paris 1900)

The appearance of the electricity in the exhibition theater takes place, anno 1891, in the evening. The Frankfurt Electricity Exhibition advertises itself as the first to be open at night, and closes its doors only at 11 o’clock. Because it is only when it gets dark that one can adequately observe what has become the hallmark of electricity, those proverbial *city lights*, which, even before they turn cities such as Paris,

⁷⁹Op. cit., p. 42.

⁸⁰Ibid.

⁸¹Von Miller: *Erinnerungen an die Internationale Elektrizitäts-Ausstellung*, op. cit., 1932, p. 162.

⁸²*Elektrotechnische Zeitung* 3 (1882), pp. 321–326 and pp. 353–362, (“Internationale Elektrizitäts-Ausstellung verbunden mit elektrischen Versuchen in München [Eröffnung und Rundgang]”), here p. 326.

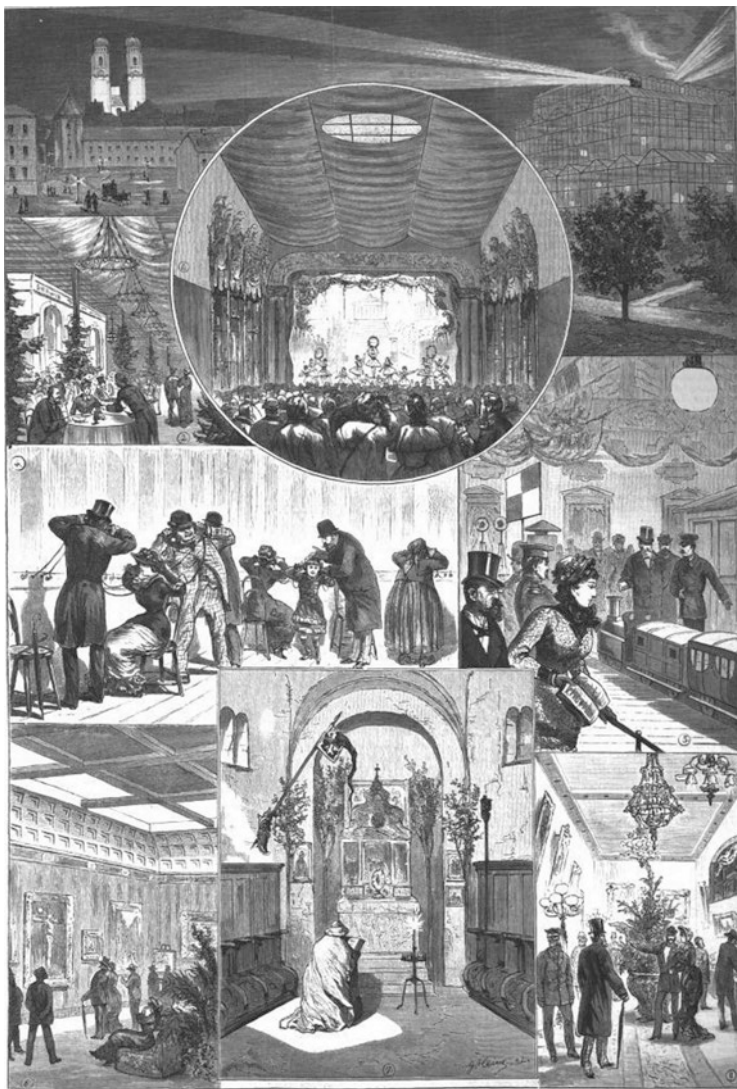


Fig. 5.8 Panorama of the Munich Electricity Exhibition, 1882. (*Illustrirte Zeitung*, 1882)

New York and Hong Kong into Cities of Light, make their grand entrance and lighting rehearsals in exhibition culture around 1900 and shape its iconography for a long time.⁸³ It is the glow of these lights, as well as their shadow, in which the theater and the dancers appear at the Exposition, giving shape to the invisible power of electricity.

⁸³Cf. David Nye, *Electrifying America. Social Meanings of a New Technology 1880–1940*. Cambridge: MIT Press 1990, and the same author's *America as Second Creation*. Cambridge: MIT Press 2003.

An “illumination,” that is, at the end of the eighteenth century in Zedlers dictionary (and similarly in Kruenitz)⁸⁴ “a solemn display of joy, by lights ablaze, when either a number of torches and lamps, at a house or on a square, are arranged and lighted in a certain order”; or else when “certain frames are covered with fine papers, linen or silk witnesses, painted with elaborate meaning-pictures and writings, and presented translucently by lamps placed behind them.”⁸⁵ However, before the backlit frames, i.e. the more domestic illuminations, came into fashion, it was always houses and squares that appeared in light for the festive occasion; the urban space became an event in the celebration and was transformed into a light space in which nothing else appeared but the glow itself. Such a *festive* light, reserved the exception and the exceptional, also characterizes the courtly feast, that first turns night into day, until finally, at the court of Louis XIV, the nobility goes to the theater when the citizens go to bed. “The theater of the Baroque is the first large room without daylight”,⁸⁶ is what Thomas Römhild notes in his history of artificial light. Here, torch and fireworks, which traditionally accompany the entrance of the ruler, are incorporated into an arrangement set in perpetuity. In this way, however, the personalized light of power, which in the Roman theater as a candle guaranteed the presence of the ruler or since the Middle Ages as incident sunlight the presence of the Christian God, acquires a spatial and thus a reified form.⁸⁷ The celebration in the hall, which takes the place of the procession through the city, must rely on candles and chandeliers instead of torches and fireworks and thereby transfers the religious connotations to secular power. It thus closes itself off from the outside world, both spatially and temporally, and settles into a windowless room in which an artificial light is cultivated that barely penetrates to the outside.

It is therefore important to remember that the exhibition culture of the nineteenth century begins with a greenhouse that is completely devoid of artificial lighting: a Crystal Palace, erected in London in 1851 from glass plates on steel girders, whose unknown abundance of light comes from the fact that it lets in sunlight, and which is accordingly intended for daytime use. (In this it is similar to the *panorama*, that other nineteenth century mass medium and building). Even before electric light and quite independently of all gas or electrical technology, aesthetics emerge here that are fed by a new abundance of light. And even if this abundance of light certainly does not yet indicate a need for light that would then lead to new lighting technologies such as gas and electricity, this observation at least suggests that the reverse conclusion is wrong, that it is by no means the new technologies of gas and electric light that are responsible for new lighting aesthetics. After all, a new way of dealing with light existed here even before the availability of artificial light masses, and it

⁸⁴ Johann Georg Kruenitz, *Illuminiren*, *Oeconomische Encyclopädie* 29 (1783/1792), p. 445 f.

⁸⁵ Johann Heinrich Zedler: “Illumination,” in: *Großes vollständiges Universal-Lexicon aller Wissenschaften und Künste* (1732–1754), p. 549.

⁸⁶ Thomas Römhild: *Kunstlicht. Über die Symbolik künstlicher Beleuchtung*. Frankfurt a. M.,: P. Lang 1992, p. 72.

⁸⁷ Cf. Reinhard Büll: “Zur Geschichte der Kerzenlichtsymbolik”, in: *Vom Wachs*, vol. 1, contribution 9/11, Frankfurt 1970, p. 920 ff.

was only slowly that electric light gained attention at the world exhibitions, which were still open for a long time during the day.

It was not until 1862, at the World's Fair in London, that electric lighting gained a foothold with the demonstration of *arc lamps* and *lime light* for the first time, but it remains a singular event.⁸⁸ Then in 1878, after a more stable power supply became possible with the Grammé machine, the illumination of the Avenue and the Place de l'Opera in Paris with Jablochhoff candles from the Edison Company became possible for a continuous period.⁸⁹ But the exhibition itself continues to take place during the day and is illuminated by gaslight where necessary. It was not until the special electric exhibitions, which boomed at the beginning of the 1880s and became superfluous by the end of the 1890s, that electric light and the night were conquered, and even then only gradually: From exhibition to exhibition, the amounts of light increase and, at the same time, the generators responsible for this increase become an attraction themselves.⁹⁰ With the Paris exhibition in 1881, with its 200 arc lamps and 2220 incandescent lamps, light and power consumption grow until in Chicago in 1893, some 8000 arc lamps and 130,000 incandescent bulbs shine and spotlights cover the grounds. Paris in 1889 with the illuminated Eiffel Tower, according to the first drawings a *pylône*, basically an electricity pylon that won out in the competition against, among other things, a giant lighthouse that would have illuminated all of Paris from above by means of a huge arc lamp, is then the first World's Fair to open regularly in the evening and to focus on electricity. Here, for the first time, we find architecture that is (also) built for the night, because it only develops its charm through the light that sets off its facades.

After the Paris Exposition of 1889, it was the International Columbian Exposition of 1893 in Chicago that invoked the 400-year "discovery" of America and presented a *White City* built as a fantastic city of light in which the technical utopia of Puritan colonists takes shape, celebrating the dawn of a new age with relief from all toil through the mastery of benign electrical power.⁹¹ More than 120,000 incandescent lamps are used, 16 generators with 9480 KW produce 13,000 hp. The first *Ferris Wheel alone* is adorned with 2900 incandescent lights to give an impression of the colorful electric city that stood in radical contrast to the gray cities of the present day in 1893, which were marked by industrial capitalism and labor struggles, disease and poverty, overpopulation and class antagonism.

⁸⁸ Cf. Charles Singer et al. (eds.): *A History of Technology. Volume 5: The Late Nineteenth Century c. 1850-c. 1900*. Oxford: Oxford University Press 1958, p. 181.

⁸⁹ Kenneth George Beauchamp: *Exhibiting Electricity* (=IEE History of Technology Series 21). London: Institution of Electrical Engineers 1997, p. 132.

⁹⁰ Cf. op. cit., pp. 130–136.

⁹¹ Cf. Judith A. Adams, "The promotion of new technology through fun and spectacle: Electricity at the World's Columbian Exposition," in: *Journal of American Culture* 18/2 (1995), pp. 45 ff; Stanley Appelbaum: *Spectacle in the White City. The Chicago 1893 World's Fair*; Mineola: Calla Editions 2009.

But this new illumination of urban space received its most powerful image in Europe at the Paris World's Fair of 1900. Here, for the first time, electricity did not appear at a World's Fair in the Palais de l'Industrie or the Galerie des Machines, but had its own *Palais de l'Électricité*, a mighty construction of glass and iron with a historicist façade, some 158 m wide and up to 71 m high, overlooking the Champs de Mars. To the right and left of this Palace of Electricity, which also housed the power plant of the entire exhibition and thus represents the badge of progress and the engine of development, placed alongside it and flanking it, are the buildings of the various sciences and technologies, which drop widely in size.⁹²

The electricity resides at the end of the Field of Mars. There it has its palace and its factory, the latter masked by the former. In an extraordinarily happy and symbolic arrangement, the temples of science and industry form a huge green boulevard whose perspective runs toward the Palace of Electricity. They seem to line up like subjects before this triumphant ruler. They lead towards her. In the end, they are only the decoration of this apotheosis.⁹³

But this *apotheosis*, in which the factory appears masked as a palace, can only really take place when the lights come on at night and the energy generated inside also envelops the outside. Then the historicist façade becomes transparent, it transforms into “shining illumination” what “appears by day like a fine lace trimming,” and joins with the fairy-like figuration on the summit ridge and the fronting *Chateau d'Eau*, a gigantic *fontaine lumineuse*, into a “décor magique, qui sera une véritable apothéose de la lumière électrique” [= “a magical décor that will be a veritable apotheosis of electric light”].⁹⁴ Thanks to the factory inside, the exterior of the palace dissolves into nothingness and the palace wall becomes seemingly permeable. The German exhibition traveler Julius Meier-Graefe also witnesses how the “colorful tinsel of past centuries” that still clings to the “iron body of modern architecture” dissolves into light at night, how the plaster of the Chateau d'Eau becomes a “crystal shining in all colors,” “beautiful and grand like the buildings that fairy tales tell of.”⁹⁵

⁹²Damien Kuntz: *L'électricité et les expositions universelles* (Mémoire Université de Haute-Alsace), Sept. 2000, p. 32.

⁹³Michel Corday: “La force à l'Exposition,” in: *Encyclopédie du siècle: l'exposition de Paris (1900)*. Paris: Montgredien et Cie, p. 274, translation by author, in the original: “C'est au fond du Camp de Mars que l'Électricité réside. Elle y possède son palais et son usine, l'un masquant l'autre. Par une disposition extrêmement heureuse, symbolique, les temples de science et d'industrie, qui bordent les jardins, dessinent une sorte d'immense avenue verte, dont le Palais de l'Électricité ferme la perspective. Ils semblent se ranger comme des sujets devant cette souveraine triomphante. Ils conduisent vers elle. C'est bien, en effet, le fond de décor d'une apothéose”.

⁹⁴Edouard Hospitalier: *L'Électricité à l'Exposition de 1900*. Paris: Dunod 1902, vol. 1, h. 1, p. 72.

⁹⁵Julius Meier-Graefe: *Die Weltausstellung in Paris 1900*. Paris/Leipzig: Krüger 1900, p. 40.

Then the little angels and consuls, all the small, petty ornaments, fade ghostly into the darkness; what remains are the great outlines, the monstrous massiveness of this creation. Then, all by itself, the night accomplishes what we expect from the new architecture, concentration, grandeur.⁹⁶

It is the darkness of the night that makes the “opulence” of a “royal past” disappear; and a “sober future,” which has neither time nor money for it, appears as a luminous vision of a new world.

Behind and above [the entrance gate to the exhibition, author’s note] a new world shines in festive nights, a new exhibition, which one gazes at speechlessly with delight, which one does not dare to approach for fear that it might all be deception and the image of the day might reappear. All the palaces are transformed into light-bearers [...].⁹⁷

In this new world, which flickers in the dark like a dream (or film) image, the palaces dissolve into light. In place of that old opulence of royal past, which, according to Meier-Graefe, has its say here for the last time, even if it has long since been recognized as a small and petty adornment, a new grandeur takes its place, a sober opulence that reveals itself in the outlines of masses. It is the factories, or rather dynamo machines, hidden in the palaces that now reside there instead of the kings, whose power manifests itself in precisely this festive transformation of the petty adornment into a flickering dream image.

The event of this play of light, which takes place on the façade of the palace and transforms the surrounding world into a dream of light and color, is found condensed inside it: in the *Palais des Illusions* (cf. Fig. 5.9), a huge hexagonal room, decorated in the “Moorish” style, whose six walls are covered with mirrors and which is entirely hung out with chandeliers, deep darkness reigns as long as the audience enters. Louis Figuier, the great nineteenth century French popularizer of science, describes the experience as follows.

There was almost complete darkness. But suddenly from the vault of the building there fell a thin and slightly bluish glow of light, these were the stars that emitted their light and gently illuminated the hall, allowing the astonished visitors to perceive with all their senses the long row of magnificently decorated portals, as well as the columns of alabaster, of porphyry and of marble, supported by extremely elegant capitals. But soon the colors changed, the azure was followed by a bloody red, then the hues mixed, the translucent columns were speckled green, grained red or yellow, turned blue and became glazed stone, while the arches were illuminated or the chandeliers brightened and finally the white light sprayed everywhere,

⁹⁶Ibid.

⁹⁷Ibid.



Fig. 5.9 The “Palais des Illusions” at the 1900 Paris World’s Fair. (Wikimedia Commons)

flashing so magnificently and truly fairy-like sparkling the wonderful palace. Suddenly everything disappeared like in 1001 nights, tearing the spectators abruptly from their dreams.⁹⁸

The dream of colored light, electrical control technology and “Moorish” columned arches from which one can awaken in Paris anno 1900 is then compared to the fairy tale from the Orient: “Jamais palais des Mille et Une Nuits comparable n’a germé dans l’imagination des conteurs orientaux.” – “Never did a comparable palace of 1001 Nights germinate in the imagination of oriental storytellers.”⁹⁹ Still in 1909 at

⁹⁸Louis Figuier: *L’année scientifique et industrielle 1900*. Paris: Hachette 1901, pp. 368–369 (translation by the author), in the original: “L’obscurité y régnait presque complète. Tout à coup, de la voûte de l’édifice tombait une lueur légère et d’un bleu tendre; c’étaient des étoiles qui, irradiant leur lumière, éclairaient discrètement la salle et permettaient aux visiteurs étonnés d’apercevoir en tous sens de longues enfilades de portiques magnifiquement décorés, des colonnes d’albâtre, de porphyre et de marbre supportant des chapiteaux d’une extrême élégance. Mais bientôt les colorations changeaient: à l’azur succédait le rouge sanglant; puis les nuances se mêlaient, les colonnes translucides se jaspèrent de vert, se veinèrent de rouge ou de jaune, bleuissaient et devenaient des lapis-lazuli, tandis que les cintres s’illuminaient, que les lustres s’allumaient, et que de partout enfin jaillissait la lumière blanche qui faisait étinceler de façon splendide et vraiment féérique le palais merveilleux. Soudainement, enfin, tout disparaissait comme dans les Mille et une Nuits, laissant les spectateurs arrachés subitement à leur rêve”.

⁹⁹Albert Quantin: *L’exposition du siècle*. Paris 1900, p. 215.

the reopening of the *Palais des Illusions* aka. *Palais des Mirages* at the Musée Grevin, the journal *La Nature* reports of an “authentic staging of 1001 Nights.”¹⁰⁰ What seems to be in dispute is only the result of the comparison, but by no means the magnitude of the comparison; electricity appears in both cases as Orientalism by other means, a counterpart to that colonial exhibition located directly opposite the Palais d’Électricité, if one extends the axis described above further through the Eiffel Tower and translates it to the other bank of the Seine.

This very colonial exhibition thus seems to be not only a program of contrasts, but at the same time an inspiration for the dream of the electric new world: In the electric, the orientalist fairy tale is to become Western reality. As Damien Kuntz has noted, at the Paris Electricity Exhibition of 1881, electricity had already appeared as a modern *féerie* appeared.¹⁰¹ Louis Figuier felt transported into a fairy palace from the dreams of poets – “on se serait cru transporté dans un de ces palais féériques que rêve l’imagination des poètes”.¹⁰² And Henri de Parville also wrote about the exhibition of 1881, one feels transported into a fairy tale land: “Le coup d’œil était singulier et l’on se serait cru volontiers transporté dans un pays de féerie”.¹⁰³ But here, too, it is an orientalist fairy tale in which an occult force prevails – “force occulte” – as in a palace from the Thousand and One Nights – “comme dans un palais des Mille et une Nuits”.¹⁰⁴ Not only in this respect does the World’s Fair seem like a continuation of the opera by other means.

5.5 Dynamos: Epiphany and Energy (Paris 1900)

In 1900, Henry Adams (1838–1918), American chronicler and presidential grandson, also found himself disappointed by Parisian art in the Electricity Palace of the World’s Fair, finally arriving after much pondering at that message which the electrical industry spares no effort to send consistently on all channels.

It is a new century, and what we used to call electricity is its God.¹⁰⁵

What preceded this epiphany, as Adams describes in his letters, was a long devotion before that incarnation of the new deity called the *dynamo* – that beginning of all industrial power generation which, with the lifting of the limitations of the battery, turned a scientific curiosity into an industrial product and everyday consumer

¹⁰⁰ *La Nature*, 17 Apr. 1909, p. 312.

¹⁰¹ Damien Kuntz, “Etonner pour séduire: l’électricité dans les grandes expositions du XIX^e siècle,” in: *Annales historiques de l’électricité* No. 9 (2011), pp. 81–106.

¹⁰² Louis Figuier: *Les nouvelles conquêtes de la science, vol. 1: L’électricité*. Paris: Librairie Illustrée 1884, p. 568.

¹⁰³ Henri de Paville: *L’électricité et ses applications. Exposition de Paris*. Paris 1882, pp. 4–5.

¹⁰⁴ Op. cit., pp. 8–9.

¹⁰⁵ “Henry Adams an John Hay am 7. Nov. 1900,” reprinted in: *Letters Of Henry Adams 1892–1918*, ed. v Worthington Chauncey Ford. Boston. New York: Houghton Mifflin Company 1938, p. 301.

good.¹⁰⁶ On January 17, 1867 (2 years before the founding of social democracy and the introduction of freedom of trade for theaters in Prussia, and 4 years before the founding of the German Reich by Wilhelm I and Bismarck), Werner von Siemens demonstrates before the Prussian Academy of Sciences the dynamo machine, which is capable of “converting manpower into electric current without permanent magnets”.¹⁰⁷ Since the late 1860s, through mechanical engineering improvement of the “self-excitation” in the electromagnetic generator, this dynamo becomes calculable and thus also mass producible from 1880 onwards through what establishes itself as the subject of electrical engineering between theoretical physics and engineering practice and, with its electromagnetic wire windings, ultimately represents the technical proof of Maxwell’s electrodynamics.¹⁰⁸ In 1900, Adams knelt down in front of such a machine, not unlike the first one made by Edison, which was also used in the Munich Residence Theater.

I [...] go down to the Champ de Mars and sit by the hour over the great dynamos, watching them run as noiselessly and as smoothly as the planets, and asking them – with infinite courtesy – where in Hell they are going. They are marvelous. [...] The charm of the show, to me, is that no one pretends to understand even in a remote degree, what these weird things are that they call electricity, Roentgen rays, and what not. [...] I prostrate myself before the Major and the dynamos, and wait for the day of judgment [...].¹⁰⁹

Like all metaphysics, electricity is based on a miracle that, like the motion of celestial bodies, cannot be explained but only contemplated, and ultimately demands unconditional submission. The dynamo, as Adams writes in the third person of his educational account, is more than an “ingenious channel for conveying the heat of a few tons of poor coals hidden in a dirty engine-house,” but a “symbol of infinity”¹¹⁰ which in its moral power could only be compared with the Cross.

As he grew accustomed to the great gallery of machines, he began to feel the forty-foot dynamos as a moral force, much as the early Christians felt the Cross. The planet itself seemed less impressive, in its old-fashioned, deliberate, annual or daily revolution, than this huge wheel, revolving within arm’s length at some vertiginous speed, and barely murmuring-scarcely humming an audible warning to stand a hair’s-breadth further for respect of power-while it would not wake the baby lying close against its frame. Before the end, one began to pray to it; inherited instinct taught the natural expression of man before silent and infinite force. Among the thousand symbols of ultimate energy the dynamo was not so human as some, but it was the most expressive.¹¹¹

¹⁰⁶ Cf. *Le Monde Illustré*, Numero Special, 1881, p. 11: “tant que les machines dynamo ou magneto-électrique n’ont pas existé, la lumière n’est pas sortie du laboratoire ou de quelques points spéciaux, tels que théâtres ou chantiers”.

¹⁰⁷ Werner Siemens: *Wissenschaftliche und technische Arbeiten, Bd. 1: Wissenschaftliche Abhandlungen und Vorträge*. Berlin: Springer 1889, p. 208 ff.

¹⁰⁸ Cf. Werner Siemens: *Lebenserinnerungen*. Munich: Prestel¹⁷¹⁹⁶⁶, p. 269 f.

¹⁰⁹ Henry Adams to John Hay on Nov. 7, 1900, op. cit. p. 301.

¹¹⁰ Cf. Henry Adams: *The Education of Henry Adams*. Boston: Houghton Mifflin 1918, p. 379.

¹¹¹ Op. cit., p. 380.

As a symbol of an overpowering *energy*, in the face of which only silence and prayer remain, the dynamo represents for Adams, like the Cross and the cathedral, a supersensible power that has no ground, but is so powerful that it overturns all previously valid standards.

[M]an had translated himself into a new universe which had no common scale of measurement with the old. He had entered a supersensual world, in which he could measure nothing except by chance collisions of movements imperceptible to his senses, perhaps even imperceptible to his instruments, but perceptible to each other, and so to some known ray at the end of the scale.¹¹²

In this new world of the dynamo and its energies, however, it is hardly possible for Adams to construct a meaningful sequence of events ordered according to human and social standards. Instead, it is the invisible forces banished in the dynamo that appear to Adams as historically powerful and break his much-quoted historical neck.

Satisfied that the sequence of men led to nothing and that the sequence of their society could lead no further, while the mere sequence of time was artificial, and the sequence of thought was chaos, he turned at last to the sequence of force; and thus it happened that, after ten years' pursuit, he found himself lying in the Gallery of Machines at the Great Exposition of 1900, his historical neck broken by the sudden irruption of totally new forces.¹¹³

Out of this historical neck-breaking, however, Adams devises a “dynamic theory of history” that divides the development of Western civilization from the Virgin Mary to Siemens' dynamo machine on the basis of energetic stages: Until 1600, the religious energies bundled in the Virgin Mary prevailed, followed by the mechanical energies of the steam engine until 1900, and finally by the age of electrical energy, which, according to Adams, will last until 1917.¹¹⁴ At the bottom of these history-driving, because attracting energies stands with Adams interestingly sexuality, as is shown in his reflection of the Virgin Mary and the difference between Europe and America.

The Woman had once been supreme; in France she still seemed potent, not merely as a sentiment, but as a force. [...] In any previous age, sex was strength. Neither art nor beauty was needed. Every one, even among Puritans, knew that neither Diana of the Ephesians nor any of the oriental goddesses was worshipped for her beauty. She was a goddess because of her force; she was the animated dynamo; she was reproduction—the greatest and most mysterious of all energies; all she needed was to be fecund.¹¹⁵

Thus “woman” appears as dynamo to Adams precisely because she symbolizes for him that *fertility* that characterizes traditional forms of life until they lose their significance with the industrial mode of production. What is most interesting, however, is that Adams associates this transition from an agrarian to an industrial society with an aesthetic upheaval. If the goddess is admired for her beauty in the industrial

¹¹²Op. cit., p. 381 f.

¹¹³Op. cit., p. 382.

¹¹⁴Cf. Henry Adams: op. cit., 1918, ch. 25: “The dynamo and the virgin (1900)”, pp. 379–390 and ch. 33: “A dynamic theory of history (1904)”, pp. 474–488.

¹¹⁵Op. cit. p. 384.

context, until then it is fertility that makes her attractive. Only with industrial production do art and beauty become significant and effective, as disempowered and desexualized forces of attraction and powerless beauty, because they are no longer in the context of organic reproduction. In place of an open worship of sexuality as a force, Adams sees, on the one hand, an art that is powerless to the extent that it is puritanical, and, on the other hand, the cult of the machine, in which the worship of force and, it might be assumed, also of sexuality find their continuation. Agricultural fertility is replaced by industrial productivity, and in parallel, the open celebration of fertility and sexuality gives way to a disguised worship expressed in the sexual charging of the new power machines.¹¹⁶

This dialectic of virgin and dynamo is not least reminiscent of Sigmund Freud's theory of sublimation:¹¹⁷ But whereas in Freud the diversion of sexual energies results quite generally in intellectual productivity and cultural achievement, Adams links this compensation very specifically to a historical mode of production.

Both thoughts, however, Adams' dynamic theory of history and Freud's model of displacements, are entirely *thermodynamically* designed. For according to the first law of thermodynamics, energy is conserved in a closed system, is neither lost nor added, and only transforms. According to the second, however, there is a natural tendency for this energy to be evenly distributed, which increasingly limits its utilization and which can only be counteracted by ordering and bundling it. In this respect, what happens to sexual energies in Adams's theory of history and in Freud's model of the psyche is strongly reminiscent of these two principles of conservation of energy and entropy, which have decisively shaped how energy (work and force) are thought of, and also how society is viewed, since the 1850s.¹¹⁸

For *energy* (derived from the Greek *ἔργον* for "work"), in its simplest conception, is the capacity to do work, and is conceived between 1847 and 1852 as that non-lost and infinitely changeable force which underlies all natural processes and is supposed to link them together.¹¹⁹ It is *abstract* (because there is no picture of what energy could look like) and *universal* (because everything should be describable as transformation of energies), but above all it describes *constancy in change*.¹²⁰

All change in nature consists in the fact that labor power changes its form and place without changing its quantity. The universe possesses once for all a treasure of labor power which cannot be changed, increased or diminished by any change of phenomena.¹²¹

¹¹⁶ Cf. Jürgen Martschukat, "The Art of Killing by Electricity: The Sublime and the Electric Chair," *The Journal of American History* 89/3 (2002), pp. 900–921.

¹¹⁷ Cf. Siegmund Freud: "Das Unbehagen in der Kultur" [1930], in *Gesammelte Werke, chronologisch geordnet*, vol. 14, ed. by A. Freud, Imago: London 1948, pp. 421–516.

¹¹⁸ Cf. David Nye: *America as Second Creation. Technology and narratives of new beginnings*. Cambridge: MIT Press 2003, p. 265.

¹¹⁹ Cf. Herbert Breger: *Die Natur als arbeitende Maschine. Zur Entstehung des Energiebegriffs in der Physik 1840–50*. Frankfurt a. M./New York 1982.

¹²⁰ Cf. R. Bruce Lindsay: *Energy. Historical Development of the Concept*, Stroudsburg (PA): Dowden, Hutchinson & Ross 1975.

¹²¹ Hermann von Helmholtz: "Ueber die Erhaltung von Kraft", in: *Reden und Vorträge*, vol. 1. Hamburg: Severus 2010 (original Braunschweig 1884), p. 187.

In terms of cultural history, it emerges from the thermodynamics of steam engines, which convert heat into motion in order to generate power, which in turn is capable of performing work, and replaces the mechanical worldview of the clockwork. No longer do man and nature appear as purposeful fine-mechanical wheelwork,¹²² rather than working machines. From an energetic perspective, the world is a storehouse of labor power; and human existence, long subordinated to the good, beautiful, and wise life, also appears justified under energetic auspices primarily in terms of labor.¹²³

For, as an energetic machine, man is also, first, a potential to perform work and, accordingly, to produce commodities, and, second, a being who must try to satisfy an endless neediness with just such commodities. And this endless neediness, that is the great thermodynamic hope, can be fulfilled (at least temporarily) by the exploitation of natural energies. In the concept of energy, the logic of industrial commodity production, the idea of man as a deficient being and of progress through technology are intimately connected.¹²⁴ Accordingly, since the nineteenth century, the increase in the production and consumption of energy has been equated with advancing civilization. For Wilhelm Ostwald, who in 1909 developed an *Energetics*, on which Adams also builds, the transformation of “raw energy” into “useful energy” is the basis of all social change and the foundation of all culture.¹²⁵ “Don’t waste energy, use it!” is Ostwald’s energetic imperative,¹²⁶ in a world which, according to the second law of thermodynamics, can only temporarily resist entropy and the ineluctable death of heat, which is judged by its ability to perform work and is constantly threatened by fatigue and exhaustion.¹²⁷

But insofar as electricity is able to conduct these energies, it also seems to bring social progress. The German middle class expects electricity to save small businesses,¹²⁸ the USA an unlimited prosperity,¹²⁹ Lenin the success of

¹²² Cf. Otto Mayr: *Authority, Liberty and Automatic Machinery in Early Modern Europe*. Baltimore: Johns Hopkins University Press 1986.

¹²³ Cf. Wolfgang Sachs: „Energie als Weltbild. Ein Kapitel aus der Kulturgeschichte des Produktivismus“, in: *Technik und Gesellschaft*, Yearbook 3, ed. by W. Rammert/G. Bechmann/H. Nowotny, Frankfurt/New York: Campus 1985, pp. 36–57.

¹²⁴ Cf. Sachs: “Energie als Weltbild”, op. cit.

¹²⁵ Wilhelm Ostwald: *Energetische Grundlagen der Kulturwissenschaft*. Leipzig: Klinkhardt 1909.

¹²⁶ Wilhelm Ostwald: *Der energetische Imperativ*. Leipzig: Akademische Verlags-Gesellschaft 1912; cf.: Max Weber: “Energetische Kulturtheorien,” in *Gesammelte Aufsätze zur Wissenschaftslehre*. Tübingen: Mohr 1968, pp. 400–426. George Basalle: “Energy and Civilization,” in *Science, Technology and the Human Prospect: Proceedings of the Edison Centennial Symposium*. New York: Pergamon 1980, pp. 39–53; Michael Gamper, “Masse als Kraft. Energetische Konzepte des Sozialen,” in *Szenarien der Energie. Zur Ästhetik und Wissenschaft des Immateriellen*, ed. by B. Gronau. Bielefeld: transcript 2013, pp. 25–43.

¹²⁷ Cf. Frederick Soddy: *Matter and Energy*. London: Williams and Norgate 1912.

¹²⁸ Cf. Ulrich Wengenroth, “Motoren für den Kleinbetrieb,” in: *Prekäre Selbständigkeit: zur Standortbestimmung von Handwerk, Hausindustrie und Kleingewerbe im Industrialisierungsprozess*. Stuttgart: F. Steiner 1989, pp. 177–205.

¹²⁹ Cf. Thomas P. Hughes: *American Genesis. A century of invention and technological enthusiasm 1870–1970*. New York: Viking 1989, pp. 353–381; Nye: *Electrifying America*, op. cit., 1990, pp. 304–335.

communism¹³⁰ and August Bebel the emancipation of women.¹³¹ A 1917 General Electric ad promotes “electric servants” who take over household chores.¹³² Behind the shimmering white with which the energy machines have been clothed since the end of the nineteenth century lies the hope that sweat and toil will disappear at the push of a button, the utopia of the abolition of work through slavery without slaves, which can henceforth be experienced as consumption.

When Adams therefore conceives of energy as the driving force of history, this is to be understood less as an unusual historiographical perspective than as a reflection of a contemporary commonplace that, moreover, has largely persisted to this day. Progress through technology, that is the secular belief of modernity, which promises an earthly increase in goods and a decrease in labor through energy and determines the materialistic measure that has united liberals and socialists since 1789. Henceforth, according to Adam Smith and Karl Marx, productive labor can be distinguished from nonproductive labor in the subsistence economy, in the household, or on the opera stage, because it produces things that are not only marketable but reify labor and energy.¹³³ Progress is just always already the omitted waste of energy, the accumulation of force in the thing and thus at least a temporary denial of entropy. But since in the framework of thermodynamics energy is conserved in closed systems and entropy inevitably increases, this progress, which creates a higher order by the accumulation of energies, is necessarily an asymmetrical project. The higher order of the center is possible only through a periphery which acts as a source of energy and work and in which, accordingly, entropy itself increasingly grows.

The basis of the industrial use of energy and, in this respect, the beginning of all modern technology is what Charles Babbage understands by a *machine*: “the union [of] tools set in motion by a single engine.”¹³⁴ The precondition of such a machine, in turn, is mechanization, the simplification of the steps and division of labor, what Hegel called the “abstraction of producing,” and which implies both that man increasingly removes himself from labor and that machines gain independence.¹³⁵ The consequence is, on the one hand, an unprecedented increase in productivity

¹³⁰Cf. Jonathan Coopersmith: *The Electrification of Russia 1880–1926*, Ithaca (NY): Cornell University Press 1992.

¹³¹August Bebel: *Die Frau und der Sozialismus*. Zurich 1879.

¹³²Cf. Sachs: “Energie als Weltbild,” op. cit., p. 45.

¹³³Cf. Immanuel Wallerstein: *Historical Capitalism*. London: Verso 1983.

¹³⁴Charles Babbage: *On the Economy of Machinery and Manufacture*. London: Charles Knight 1832, p. 192.

¹³⁵Cf. Georg Wilhelm Friedrich Hegel: *Grundlinien der Philosophie des Rechts* [1820]. Hamburg: Felix Meiner 1999, § 198, p. 351 f.: „Die Abstraktion des Produzierens macht das Arbeiten ferner immer mehr mechanisch und damit am Ende fähig, daß der Mensch davon wegtreten und an seine Stelle die Maschine eintreten lassen kann“ (= “The abstraction of producing furthermore makes working more and more mechanical and thus in the end capable of man stepping away from it and letting the machine take its place”).

and, on the other hand, the removal of man from the order of the soil and its politics, which from a progressive point of view appears as emancipation and from a conservative one as loss. He is doubly free, as Marx puts it, welcoming industrialization and denouncing only the distribution of profits as a historical injustice: freed from the serfdom of the feudal order and free to sell his labor power to the highest bidder.

This abstraction of production is presented differently by Martin Heidegger. In the middle of the twentieth century, industrial modernity is described here as a fatal detachment from the poetic interaction with nature, in which nature is nothing other than a supplier of energy: “The unconcealment that prevails in modern technology is a challenge that makes to nature the demand to supply energy that can be extracted and stored as such.”¹³⁶ One example of such a challenging unhiding is the “ordering” of electrical energy by a hydroelectric plant in the Rhine, which fundamentally changes what the river was before. “It is what it is now as a stream, namely a supplier of water pressure, from the essence of the power plant”. The power plant changes “monstrosities,” for the Rhine in the power plant is no longer the Rhine in Hölderlin’s poetry; what remains of the former landscape is an attraction for tourist society and vacation industry.¹³⁷ The production and representation of the poesis becomes a technical *Bestellen* (= ordering), which allows the world to become a stock and contains a fundamental loss. Behind this altered relation to the world, however, stands for Heidegger (and here the conservative diagnosis of decay tends to become a reactionary conspiracy theory) the essence of modern technology, that ominous *Ge-stell* (rack, framework), which instead of Marx’s productive forces and class struggles is supposed to move a history, which here tends to become again a history of nations.

But what Heidegger fails to consider is that not only does modern technology change what the river had been, but with the installation of the power plant in the Rhine, Hölderlin’s poetry is also reflected in technology: This is the case of the luminous fountains, the waterfall powered by water, the Rhine landscape in the exhibition area. Here it becomes clear that the energy that is recovered from the river is never just the sober, physical quantity that technicians and cultural pessimists like to make it out to be, but always a construct charged with hopes and desires, for which a very concrete politics and not an ominous essence of technology is responsible.

This energy is released at the electrical exhibitions in light installations, sound transmissions and rides, makes light appear as an *attraction*, transmits sounds and sets masses in motion, and at the same time is staged in a pacified manner in the plush interior or imagined as a vision of the future. However, insofar as it is associated with a worldview in which opera singers are unproductive in contrast to factory workers, energy also shifts what art is: a modern understanding of aesthetics as *aisthesis*, which focuses art on perception and excludes it from material production contexts, seems closely related to a modern energetics.

¹³⁶Martin Heidegger: *Die Technik und die Kehre* [1953]. Tübingen: Günther Neske ⁸1991, p. 14.

¹³⁷*Ibid.*, p. 15 f.



Thus, if on the one hand the theater of electricity has its place in the topography of the exhibition site and on the other hand already enters the streams of an emerging news network, it is furthermore found in the media representations of the exhibition and participates in a popular discourse that interweaves technical developments with literary traditions and colonial ambitions. Section 6.1 “Newspaper Reports” shows how the exhibition ballet is presented in media representations as a continuation of the idealistic project that is supposed to undertake the legitimization of progress in the poetic exaggeration of the profane materialism of the machines. Sect. 6.2 “Twilight of the Gods” describes the narrative and staging of the exhibition ballet *Pandora oder Götterfunken*. Starting from the conflict of the engineer Prometheus with feudal Olympus, bourgeois emancipation appears to be made possible by technical competence and finally ends in a “victory of culture” in which the trinity of industrial domination of nature, imperialist subjugation of the world and bourgeois emancipation is staged as the apotheosis of electric light. Following this, Sect. 6.3 “Dances of Progres” deals with the models of this production, in particular Manzotti’s *Excelsior*, which a few years earlier had caused a furor as a pan-European success with kaleidoscopic aesthetics of overwhelmingness and choreographic mechanization. Here we see paradigmatically how the belief in progress as a continuation of the Enlightenment is represented by technical means and clothed in an orientalist universalism that simultaneously veils and defends the imperialist project. Following the aesthetics of glitter and shine in the corresponding genre of *féerie*, Sect. 6.4 “Luminous Jewels” describes the staging of women’s bodies as sparkling luminous objects, equipped with batteries and incandescent lamps, which was in vogue long before a radiant pig-light aesthetic. Finally, Sect. 6.5 “Luminoclasts” returns to the electrotheology of Italian Futurism and suggests that the avant-garde project should be understood less as a break than in continuity with, or even as a macho heightening of, the spectacular aesthetics of the nineteenth century.

6.1 Newspaper Reports: Poetry and Technology

In No. 4 of the *Officiellen Zeitung* (=official newspaper) of the exhibition the ballet performance *Pandora* is announced in the “Miscellaneous” category, framed by reports of experiments with high-tension alternating currents, the provision of extra trains to the Exposition, the meeting of the German Metalworkers’ Congress, an electric tramway in North America, a luminous fountain in Geneva, and the founding of the Theatrophon Society in Paris, as well as the announcement that Goethe’s electric apparatuses from Weimar would soon arrive.¹

It is poetry, as the steward of the spirit, whose blessing seems indispensable when it comes to building a new world in German lands based on machines and suspect of materialism. Again and again Goethe has to serve as a liaison between art and technology. “What has the poet to do in the confusion of machines?” asks the

¹ Cf. *Electricität. Officielle Zeitung*, op. cit., no. 4, p. 82.

exhibition newspaper, “Would he turn away shuddering from this triumph of a materialistic age, in which inanimate iron reigns instead of the living spirit?”² And answers with exclamation marks: “Some other poet perhaps, Goethe not!” For Goethe, as is explained elsewhere, spirit and nature had never been opposites, he had cultivated direct relations to the science of electricity and had taken a lively part in the invention of such important electrical things as the electrophorus and the electroscopes, galvanism and electromagnetism, he had experienced electrolysis and electrochemistry. Already in his childhood memories he had told of the blissful, though futile, attempts to build an electrifying machine. And so then no less than a (not proven) Goethe quote serves to undertake the final, because spiritual justification of electricity. “Electricity is the continuous omnipresent element that accompanies all material existence,” Goethe is supposed to have said, “one can think of it impartially as the world soul.”³ The exhibition newspaper does not mention the fact that Goethe is not very pleased with the electrifying machine elsewhere, and even sees it as representative of the technical culture that stands in the way of a direct knowledge of nature.

Machine-Apparatus. Reluctance to do so. One imagines the effects of nature under mechanical forms. The view remains dispersed. The insight is hindered. Poetic silence. At night we would have already seen the light. Would have heard the crackling with some attention. For us, the machine is only there to make the appearances more conspicuous.⁴

The attention, which would have been attracted at night even without the machine, is restricted by the “making it more conspicuous”, it hinders insight, presents nature in a mechanical form and creates aversion.

Quite differently in the reading of the exhibition newspaper. Here, the spirit not only affirms electricity, but takes away its material nimbus, assigns it spiritual significance, as it were, itself, and even more: sets it up as a successor to the project of idealism. New *world soul*, that which then dialectically unfolds in world reality, becomes 50 years after Hegel’s and Goethe’s demise no longer spirit, but electricity. This continuity of the world soul, the survival of the spirit in electricity has not least the advantage that it provides an alternative for the upside-down-setting of the Hegelian dialectic, as Marx had undertaken. In a world where the powers of industry and its material effects are as palpable and as impossible to ignore as in nineteenth-century Europe, nothing is better than to save spirit in matter, to let the power of spirit live on in technology; and this is precisely what the exhibition and its newspaper undertake here, with Goethe’s unsolicited help.

² *Electricität. Offizielle Zeitung*, op. cit., No. 2, pp. 39–45 and 82 (Dr. Heuer, librarian of the Goethehaus. Frankfurt a. M.: “Goethe’s elektrische Studien”).

³ *Ibid.*

⁴ Johann Wolfgang von Goethe: “Maschinen-Apparat (Kapitel Electricität)“, in: *Goethe’s Works. II. Abt. Naturwissenschaftliche Schriften*, Vol. 11. Weimar 1887–1919, p. 195 f.

But if poetry has now passed the baton to technology, it seems only logical that what remains of poetry should be used to elevate industry. Accordingly, Emil Peschkau raves in the *Gartenlaube* about the “poetry” of an exhibition that, unlike other exhibitions, instead of flowers and fruits (horticulture) had only a “sober and dry smorgasbord of large and small machines” to offer: “whirring wheels, iron monstrosities that puff, groan and whirr, all kinds of strange apparatus made of brass, wood and glass, and finally wires, wires and wires again.”⁵ And yet, according to Peschkau, the Frankfurt exhibition has its poetry: “a poetry that even condenses here and there into small, eye-pleasing images, and which, moreover, is – danced in the theater of the exhibition.” An imaginary round trip follows, which first leads the reader in “deep silence” of the early morning to the observation tower and from there gives insight into the bodies of the machines and their lines, which extend from the city into the distant nature to capture the power from there.

We look down into the depths and it is as if a wonderful dream were enveloping our senses. The workshop of nature seems to have opened up to us, we see matter, how it, animated by force, joins itself to forms, and how through the interaction of these forms again forces are released and new forms arise.⁶

In this vision, electricity is like a rush and a spell, reminiscent of Art Nouveau, in the way force joins to form and forms release, nudge, and repel forces that turn into work heat, light, and sound, and are nothing other than the already named but still unknown electricity: “that peculiar state of excitation of matter,” the oscillation “out of its rest disturbed” “fine particles of ether” which “envelop and permeate the electrified body”; and which “propagates on the wire into the distance” until the balance takes place, the rest is restored. In this endless movement of the immaterial, however, everything material transforms as if by magic.

In this hall it now turns the magnetic iron that drives machines and little engines, in that one it rages at the resistance that is put up against him in the form of coal, and makes the coal glow and shine, and again in other places he dissolves the chemical connection of matter or it glides down into the dark night in which the secret of life rests – it separates metals from the ores, it bleaches, tans and dyes, it heals the sick nerves and the sick brain.⁷

And it is precisely this miracle of technology that the exhibition poetry evokes as a fairy tale come true.

We see all this in the clear ether blue of the morning and it is not a fairy tale, it is reality. And what surrounds us is nothing other than the poetry of science, which, of course, does not speak to the sensory nerves, which cannot be received through the eye and ear, but primarily through the receptive mind.⁸

⁵Emil Peschkau, “Die Poesie der Elektrotechnischen Ausstellung,” in: *Die Gartenlaube* H. 37 (1891), pp. 619–622.

⁶Ibid.

⁷Ibid.

⁸Ibid.

But having returned from this visionary poetry of the electric, the reporter embarks on a further examination of poetic effects in the everyday life of the exhibition: “Leaf and flower tendrils, galvanized formations, flower tendrils again, but now they glow, then finally we hear a distant, soft music through the telephone. Admittedly, “it lacks fullness and euphony,” “but that is replaced by the thought that it comes from the opera house in Munich – we have poetry again.” And after the back and forth between the colorful tangle of gables, domes, and turrets, Peschkau finally takes the reader to the little theater in the evening at sunset: “and here the hardened one, who still has not felt the poetry of electricity, is assailed by graceful girlish figures until the magic finally softens his heart.”⁹

6.2 Twilight of the Gods: Electrical Engineering and the Process of Civilization

According to the libretto *Pandora oder Götterfunken* had two acts and an interlude.¹⁰ It begins with the enraged Zeus, who hurls lightning and makes the sky tremble because he is angry with Prometheus. For he has called his omnipotence into question by standing up for the rights of mankind, or as a contemporary reporter pointedly puts it:

The Titanomachy is finished. [...] Zeus is autocrat of all gods and could now rule in peace and without any parliamentary control, but there is a [...] certain Prometheus, apparently a democrat, who pleases himself in all kinds of oppositional utterances [...], [...] presumably bribed by France [...] and of Jewish origin.¹¹

The Titans, who in this respect only have an advisory function, can, however, appease Zeus with “encouraging thoughts”. The sky clears and a pink breeze blows through the air, cymbals and shawms sound. Led by Eros, the ballet ensemble appears as a procession of Greek goddesses: Hera, Aphrodite, Demeter, the Bacchae, the Graces, etc. – to open the legal battle against man.

Prometheus pleads for giving to the mortals also the spirit, so far reserved only for the gods, what Hera and her sisters reject, however, already so that it remains clear who belongs where: “How may you measure men equal to the gods? To the earth remain what is to the earth – As immortality is reserved for us, so be the spirit, only the part of the Godhead!”¹² Prometheus argues that this is not only wrong, since man has already been deprived of immortality, but above all that it is regressive. Because with men there is already word and deed on earth, but women are missing, and therefore all thoughts and desires are directed only to the work. This eagerness to work, however, must be promoted and for this man also needs spirit,

⁹Ibid.

¹⁰Wilhelm Hock: *Pandora oder Götter-Funken*. Frankfurt a. M.: C. Adelmann 21,891.

¹¹*Frankfurter Zeitung*, 2nd morning paper, of May 31, 1891 (“Victoria Theater”).

¹²Hock, op. cit., 21,891, p. 5.

because spirit brings research and research improves working power. But Zeus wants to know nothing of it and challenges Prometheus to the choice. The election, however, is not an election at all (how would that be possible in a monarchy), but rather a bet, which Prometheus wins, because Zeus is deceived by appearances. Zeus proves to be a bad loser and orders to take away fire and light from mankind. A tussle ensues between Zeus and Prometheus, the latter grabs a spark of the divine lightning and flees towards earth, uncatchable because at the speed of light.

Zeus, however, wants revenge, and Hephaistos, the dirty old man of the pantheon, proposes the creation of woman to excite the baser instincts of men and thus distract them from all higher mental activities such as research. A lewd laugh resounds through Olympus and Zeus orders the creation of the “corruptible woman” from moist earth, so that she may bring mischief upon mankind as a provocative, attractive “image of seduction”.

From the jagged crown he takes shining stars, which are to form the eyes as flashing piercing rays, so that the spiritual sense disappears from the man, if he looked deeply into the eye of the woman. In golden beauty, he commands the sun to rise, so that it illuminates and warms this celestial structure – it shall turn out to be a festival of the gods, since the so versatile and rich all-gifted one is sent down to earth and is called ‘Pandora’ there by the people.¹³

Thus the first act culminates in a great ballet in which the Muses, Hores, Lares, Sirens, Satyrs, and Nymphs celebrate the “creation of woman.” Pandora is endowed by the gods with everything she needs, in addition to “ravishing beauty” and “lavish endowment with charms” for her dominion over the human race: “rich and splendid garments,” “golden jewels,” “the sweet trifling of oratory,” “languishing looks and yearning desire.” The elements play crazy for the celebration of the occasion: “there ‘the water’ floods in – ‘the globe’ whirls in circles – ‘the fire’ flames in great leaps, the ‘air’ floats gracefully along” – but not by means of modern electrical stage technology, but in the form of ballerinas.

The second act then begins with a cut that bridges millennia, joins myth and history and – much like Stanley Kubrick’s groundbreaking cut from bone to spaceship in *2001: A Space Odyssey* – into a science fiction scenario.

The universe emerges before the gaze – times are noisy – a new thinking sex has arisen – the woman is not only the loving companion of the man – she has become for him the blissful patroness of his restless work.¹⁴

The scene zooms in on “enchanting” Italy, Lake Como, the home of Alessandro Volta, who is hard at work conducting experiments with his neighbor Luigi Galvani. What follows is bourgeois comedy. The man-eating myth has now become Galvani’s wife, who wants to invite the scientists for tea, but is expelled from the laboratory because of her femininity. She teasingly reveals that she has been spying on her

¹³Op. cit., p. 9.

¹⁴Op. cit., p. 11.

husband's work for a long time and has already made a discovery. To find out more, the men have to go out for tea after all, and a pastoral painting unfolds on the stage with farmers and fishermen offering agricultural produce and carrying an oversized dead frog in their midst. The wife now attaches the famous wires to it, the frog begins to twitch, jump and finally dance, until the gentlemen returning from tea can appropriately theorize and explain the discovery, which is of course made purely by chance. Peasants and fishermen continue to celebrate with a tarantella, when suddenly a delegation from the Austrian Emperor and the French Ambassador arrives, bringing certificates and gifts of honor and giving rise to another great procession.

For the grand finale, the stage is transformed into a ballroom: the five continents are enthroned on a terrace with the minerals (gold, silver, iron, tin, copper, coal) at their feet. Europe rises to show her sisters America and Asia the wonders of the world, inviting them to help her awaken the treasures sleeping in her womb in the service of science and for the greater good of the universe. Mining releases the metals with powerful blows, and the industrialization that begins with the lifting of the mineral resources brings forth so much glory that finally even the sleepy sisters, Australia and Africa, wake up.

At the zenith of this celebration of productivity, *Culture* now enters the world and the stage, embodied by the very dancer who has just danced Galvani's wife and, before that, Zeus' Revenge (cf. Fig. 6.1). "Conscious of her task to be benevolent to humanity" and "endowed with a scientific eye that penetrates to the deepest abysses



Fig. 6.1 Telephony, photography, phonography, telegraphy, from the ballet *Pandora*. (*Die Gartenlaube*, 1891)

and the highest peaks,” she examines some pieces of old-fashioned lighting equipment that strut ulcerously before her eyes. But “lively sparks” push these aside and declare that it is now up to them to present the highest achievements to Culture: Telegraphy, telephony, photography and phonography leap to their side (cf. Fig. 6.1). Culture invokes the bright light bulbs and proclaims to the present and the future that the love of heaven has bestowed light upon the earth as a gift from the gods. “High above all, Culture wields the radiant torch to glorify in its luminous brilliance the victory of light.”¹⁵ And “in honor of all researchers in the field of electrical engineering,” Volta and Galvani are presented with the “eternal green wreath of thanks and fame”. Emil Peschkau describes the scene in the *Gartenlaube*:

The final image of the ballet again shows a tall female figure swinging electric incandescent lights in her raised right hand. But this time it is not Signora Galvani, as the garb already reveals, nor is it ‘Pandora’, that treacherous gift of Zeus, it is the victress ‘Culture’. All the brilliant figures of the ballet pay homage to her in the colorful intertwining of the dance, one sees again the elements, the metals, the black coal and the brightly shimmering crystal, then the achievements of culture such as mining, telegraphy, telephony, phonography and others. The culture, starting from Europe, which lies at its feet, has now conquered the other parts of the earth, and so they all pay homage to it, Asia and Africa, America and Australia, the two former in the foreground, the two latter in the background of our picture on the right and left outstanding. Finally, the column on which the culture stands opens like a fan, a parquet of bright flowers shines up from them, and the curtain falls under the jubilant sounds of music.¹⁶

What began with the plea of the bourgeois entrepreneur Prometheus for productivity gains through research thus ends with the subjugation of world and nature, the apotheosis of electricity alias Culture, and the glorification of the electrical engineer. Electricity, as the ballet teaches us, is the power with which bourgeois technology can stand up to feudal gods, because with it one can not only make frogs dance and conquer worlds, but also accelerate communication, destroy unproductivity and thus release undreamed-of energies. It is that force behind which a new community of believers in electricity is gathering, for in the belief in progress is found the continuation of the Enlightenment by electro-technical means. An electrical engineer who was there sums up his life in retrospect:

I think I can be satisfied with what I have achieved in my life so far. And what I hope for from the new century that is now dawning is nothing less than the possibility of continuing to put all my strength into the service of technical progress. I especially hope that I may be granted the opportunity to realize my many plans in the field of electrical engineering and to cooperate in the final victory of culture over all the forces of darkness, as shown in the picture I recently saw and kept. I can hope for nothing more beautiful. And so I look forward with confidence.¹⁷

¹⁵Op. cit. p. 15.

¹⁶Conrad Wuest: “Elektrische Ausstellung in Frankfurt a. M.,” in: *Programm der Städtischen Schulen Aarau 1892*, pp. 33–45, quoted in David Gugerli: “Modernität-Elektrotechnik-Fortschritt. Zur soziotechnischen Semantik moderner Erwartungshorizonte in der Schweiz,” in: *Elektrizität in der Geistesgeschichte*, op. cit., 1998, pp. 51–63, here: S. 2.

¹⁷Alois Zettler: *Notizen und Gedanken zur Electro-Technik 1877–1899*. Munich: Meissner 1960, p. 61.

With its plot, the ballet only repeats a myth of electricity that runs through and weaves around the entire exhibition and has its echo in the newly founded technical associations, journals and universities. Here, electricity appears as a mysterious power made available to a bourgeois emancipation through scientific-technical mastery. In a poem published parallel to the exhibition in the *Frankfurter Zeitung*, the power itself is summarized as follows.

<p>Ich bin die Kraft, [...] die alles Finstre tilgt und scheucht; ich bin die Kraft Die Zeit und Raum besiegt, den fernsten Laut erhascht Und selbst der Gräber Schweigen löst; ich bin die Kraft, Die leichter als der Glaube Berg um Berg versetzt; Ich bin die Kraft, die Euren Arm zu Thaten stählt, Wie kein Poetraum sie sah, so kühn er sei; Das Dunkel ist der Kerker und die Ruhe Tod, Bewegung wird zur Freiheit und die Nacht zum Licht!</p>	<p>I am the power [...] that eradicates and shuns all that is dark; I am the force That conquers time and space, catches the most distant sound And even solves the silence of the graves; I am the power, That moves mountain after mountain more easily than faith; I am the power that steels your arm for deeds, As no poet's dream has seen, however bold it may be; Darkness is the dungeon and rest is death, Movement becomes freedom and night becomes light!¹⁸</p>
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It is no coincidence that not only Mephistopheles' first appearance in Goethe's *Faust* is quoted here, it also reminds a little of the greeting of the Jedi Knights ("May the Force be with you") and the energetic power of the lightsaber. For nowhere does the myth of electricity live on better than in *Star Wars*, and nowhere is it easier to see how this myth cleverly combines industrial mastery of nature with imperialist world subjugation and bourgeois emancipation movements, thus blending the Enlightenment project with a mystification of technology in order to perpetuate it as an ideology of progress. In the name of rational technology, a rather white, rather male, and rather bourgeois form of the human race will gain strength and subjugate the world for its own good. It is a decidedly anti-feudalist and liberal, even democratic, program that opposes the feudal rulers, as in the Frankfurt Exposition, and the dictators in *Star Wars*; and it is a project that has embraced romanticism and has always aimed at reconciliation with a world alienated by industrialization.

On the sacred ground of the festival premises, where technology is translated into aesthetic experience, the myth of Pandora is re-enacted as part of a modern ritual that makes flesh the invisible forces in a goddess, giving her form in the first place. By buying a ticket and watching her dance, the audience participates in her creation, forming the community of believers and crowning the engineers with laurels as their high priests. It is a ritual because, like any ceremony, it is at its core a spectacle of light – of enlightenment. It is a modern ritual because the appearance

¹⁸ *Frankfurter Zeitung*, 1st morning paper, May 16, 1891 ("Mehr Licht!").

of electricity as a body politic on the stage of the Victoria Theater, unlike that of Louis XIV in the garden of Versailles, is less an incarnation than a projection. Power is not with her whose body appears on stage, but with those who can make her body appear for their own pleasure and empowerment. Born more through lighting technology than metaphorical disguise, she emerges at the intersection of light and gazes, both of which are directed at her, and is thus apparition rather than appearance on stage. By embodying the power of what is actually disembodied representation, the ballet inaugurates a new configuration of theatricality that establishes a new construction between the girl's body and the technician's gaze. Thirty years before Futurism unleashes the aesthetic violence of machines, shows *Pandora* the primal scene of the seizure of power by a new technical rationality that permeates all of society and, when experienced in the theater, provides a new view of reality.

We leave the theater and step out into the open air. A glorious summer evening, mild and fragrant – the fantastic lines of the gables, domes and turrets blur in the shadows of the night. The poetry of this hour, the soft murmur of the water in the distance, the sounds of music that reach our ears in a muffled way, all this conjures up a mood that soon makes us forget where we are. Science, technology, electricity – they are far behind us and before us is only the night with its mysterious lines and sounds, with its twilight and mild waving. Then suddenly there is a flash of light – the exhibition site lies before us in a dazzling glow; and there a grotto becomes bright in electric light, a woman's body, surrounded by silver light, rises out of the luminous flood, the water rolls down over rocks like red-hot lava, a dragon's monstrosity shimmers out of a dark height in all colors, and the zigzag of the gables and ridges stands out sharply against the fabulously illuminated air. We stand still and the sensations of the morning awaken anew. All this wondrous glow is only the vibration of molecules, the power that has become light. And seized by the poetry of this thought, we stare into the electric fairy tale until the bell of the exhibition reminds us to set off.¹⁹

6.3 Dances of Progress: Culture Industry and Colonialism

The model for *Pandora* is easily identified as Manzotti's ballet *Excelsior*,²⁰ which had its German premiere at Berlin's Victoria Theater, and its premiere at the Frankfurt Opera on July 1, 1891, at the same time as the exhibition. Apart from *Excelsior*, the Frankfurt theaters showed Macagni's opera *Cavalleria rusticana* to accompany the exhibition, as well as the second part of the *Faust* and *Antigone* with choruses by Mendelssohn, and had a lot of Wagner's music dramas in its repertoire.²¹ However, the highlight of the opera event was by far *Excelsior*. The "ballo grande italiano,"

¹⁹Conrad Wuest: "Elektrische Ausstellung in Frankfurt a. M.," in: *Programm der Städtischen Schulen Aarau 1892*, pp. 33–45, quoted in Gugerli, op. cit., 1998, here: S. 2.

²⁰*Excelsior, Ballo grande italiano*, ballet in 6 parts and 12 scenes, libretto: Luigi Manzotti, composition: Romualdo Marengo, scenery and costumes: Afredo Edel, choreography: Luigi Manzotti, premiere on Jan. 11, 1881 at the Teatro alla Scala (Milan), imprint in the program book of the Teatro Regio 2000–2001; see Nicola Guerra: *Tersicoreide. Schizzi e racconti teatrali (dal vero)*. Milan: Casa Editrice Baldini, Castoldi 1899; Luigi Rossi: *Il ballo alla Scala 1778–1970*. Milan: Edizioni della Scala 1972, pp. 119–133.

²¹Cf. *Offizielle Zeitung*, op. cit., 1891, no. 3, p. 59.

subtitled as “azione coreografica, storica, allegorica in 6 parti e 11 quadri,” had come out in Milan in 1881 and was one of the greatest stage successes of the late nineteenth century ever.²² The monumental ballet made it in the Milan production with 15 *principale ballerini* and *pantomimi*, 28 female *ballerine di mezzo carratere*, 24 male *secondi ballerini*, 48 female *corifée* and male *tramagnini* (=dancer acrobats), 32 female children and countless extras to over 500 performers. After 103 performances in 1881, there were revivals in Milan in 1883, 1888, 1894 and 1909, 1916; almost all Italian theaters and European metropolises followed with their own productions: Paris in 1883 with 300 performances in the Éden-Théâtre, New York with 100 performances in Niblo’s Garden, Vienna 1885–1914 with 329 performances,²³ It was also performed in Berlin, Brussels, London, Madrid, Prague, Warsaw, Budapest, St. Petersburg, Moscow, Marseille, Geneva and Odessa, Barcelona, San Francisco, Buenos Aires, Montevideo, Rio de Janeiro. In 1913 a first film version was made.

Also *Excelsior* a few years before *Pandora* tells of the victory of progress, represented by *Luce* (Light) and *Civiltà* (civilization), over the *Oscurantismo*, “nemico del Progreso”, and is described by the *Corriere della Sera* as a “paradise,” the “triumph of a civilized humanity, a feast of thought, rich and beautiful.” And to make this triumph all the more convincing, to make progress travel as far as possible, the play begins in what is probably the darkest place the contemporary imagination can conceive: in a Spanish village at the time of the Inquisition, when the ringing of bells is about to announce the imminent burning of heretics. One reviewer’s description is as follows:

First image: a ruined town. Terror reigns everywhere, the spirit of darkness rejoices, at his feet lies defeated a bound woman – the goddess of light. And the spirit of darkness says to the goddess of light: ‘Once you were the glory, the progress, the civilization of the whole world, see what my power has made of it! What has become of the splendor of the former centuries. I rule, and from now on I shall always rule. [...]’²⁴

Oscar Blumenthal’s 1882 German adaptation varies this opening by introducing a Faustian ‘spirit of science’ who debates the defeat of light in dialogue with a Mephistophelian Nocturnus.

Trotz aller Siegstrophä’n und Lorbeerreiser –	Despite all the trophies of victory and laurels –.
Die Menschheit war nicht besser und nicht	Mankind was not better and not wiser
weiser	I see it – to the night belongs the throne of the
Ich seh’s – der Nacht gehört der Thron der	world;
Welt;	It is the madness that holds the scepter ²⁵
Der Irrwahn ist es, der das Zepter hält	

²² Cf. Cyril W Beaumont: *Complete Book of Ballets. A guide to the principal ballets of the nineteenth and twentieth centuries*. New York: G. P. Putnam’s Sons 1938.

²³ Cf. Debra Craine/M. Judith: *Oxford Dictionary of Dance*. Oxford: Oxford University Press 2010.

²⁴ Review of the Vienna performance of May 18, 1883, no date or source given (author: ‘W. Fr.’), Kritikenarchiv, Theaterwissenschaftliche Sammlung, University of Cologne.

²⁵ Oscar Blumenthal: *Excelsior. Textdichtung zu Manzotti’s Ballet*. Berlin: R. Boll 1882, p. 8.



Fig. 6.2 Fourth scene from the film *Excelsior* (1913, version of 1908/1909), Telegraphy, Spark and Telephone. (Cineteca Nazionale – Centro Sperimentale di Cinematografia)

But the light frees itself from the shackles of darkness, teaches hope and faith, overcomes the forces of darkness, and sets out on an apotheosis of technique, which all further images vary and which the play basically is.

But the Enlightenment rises up, it conquers the darkness, and in the second picture we see how Enlightenment and culture unite in a magnificent palace. Steam power, the telegraph, the Suez Canal, the Arlberg Tunnel, science and love, property, fame, trade and agriculture, in short, everything comes together symbolically in this magnificent room, a grandiose tableau!²⁶

A third picture follows, which shows the realm of “genius and science”: a temple shining in “fairy-tale splendor”, in which the “mental images of great scientific conquerors” shine.

The whole room is filled with luminous geniuses, who consecrate their fruitful gifts to the race of men: [...] With a dance of homage they first welcome the re-entry of the *civilization*, which now – embodied in the form of a radiant genius, in whose golden robe one recognizes the symbols of language and of the calendar – floats into the ranks of the light comrades.²⁷

And in this temple of science, which at the same time is supposed to be a sanctuary of light, the dancers’ bodies undulate and sway up and down in ever new ornaments, finally allowing the goddess of light to appear in their midst (cf. Fig. 6.2).

²⁶Review of the Vienna performance of May 18, 1883.

²⁷Blumenthal, op. cit., 1882, p. 8.

The rows unite in rhythmically animated, ever-changing intertwining [...]. On the side of the spirits of light one sees the genii of *bravery* and *strength* [...]. To them the female genii flee in winged run, which then, as it were intertwined to a lively bouquet, sway and swing in teasing up and down. Soon, however, they rise from their cheerful flower dream; it is a matter of greeting the victorious *Goddess of Light* and to pay her homage anew. Adoringly, they all sink down before her; in blissful transfiguration they express the desire to breathe in these spheres consecrated to light, and while the genius of civilization and the goddess of light tenderly embrace each other with her raised torch, the curtain falls.²⁸

The subsequent sequence of images shows the destruction of a steamboat by boatmen misguided by Nocturnus, and a train passing over the Brooklyn Bridge while a steamboat crosses beneath it; it is followed by Nocturnus's attempt to prevent the discovery of electricity in Volta's laboratory, and then with it the emanating *mes-sager boys* of the Central Telegraph Office in New York (cf. Fig. 6.3).

Fig. 6.3 Figurine for the costume of the electric light. (Caramba, 1908)



²⁸Op. cit., p. 10 f.

Und tragen wird es durch die Welt	And carry it through the world
Den Menschengest auf Blitzesschwingen.	The human spirit on lightning wings.
Bis in die fernste Einsamkeit	Even in the most distant loneliness
Wird es die Lebensfunken werfen	It will throw the sparks of life
Und zucken wird der Geist der Zeit	And the spirit of time will twitch
Durch ein Geflecht von Eisen-Nerven.	Through a network of iron nerves.
Der Strom, der durch die Drähte quillt,	The current that flows through the wires,
Kennt keine Grenze noch Bezirkung –	Knows no limit nor boundary -
Sich hier in diesem Zukunftsbild	Here in this future picture
Von Volta's Werk die Zauberwirkung.	Of Volta's work the magic effect. ²⁹

There follows a caravan threatened by desert storm and desert robbers and the opening of the Suez Canal, the tunnel breakthrough through Mount Cenis between France and Italy and the final victory over Nocturnus. Finally, the latter takes refuge in a lonely wooded area of the Sierra Nevada, “in the jungle’s barren grottoes,” where the last “untamed forces” are said to “mock” the “owlishness” of darkness. In alternating speech, *Oscurantismo* and *Luce* evoke the future.

„Durch diese wildesten Reviere “(Nocturnus)	“Through these wildest precincts” (Nocturnus)
„Ziehn einst des Lichtes Pioniere “(Geist des Lichts),	“Go once of the light pioneers” (Spirit of Light),
„Des Urwalds nie betrete Schollen...“	“The virgin forest’s never trodden clods...”
„... Wird einst das Flügelrad durchrollen.“	“... Will once the winged wheel roll through.” ³⁰

The foliage grids part, the mountains appear “in the flaming illumination” of the soaring morning sun. The Pacific railroad passes over a boldly arched viaduct and the veil of clouds rises and falls to reveal a view of “a colorful, cosmopolitan throng of people” (New York in the original).

A fantastic, changing celebration of exotic colorfulness and liveliness begins. In an allegorical dance, it is first depicted how the genius of civilization is courted by four peoples: An Englishman, a Chinese, a Turk and a Mexican vie for her favor. But she does not want to give herself to any of them alone. In mischievous twists and turns, she flees from one to the other in order to finally unite them all. In the midst of the happy crowd, an Indian woman enters, accompanied by sixteen Negro children, who accompany the strange dance with drum beats and wistful sounds.³¹

But that is still not all. In the following scene, a persecuted slave is rescued by Civilization and Humanism, and a folk festival is celebrated with “Moorish boys, Arab women, Indian women, Greek women with their flashing Oriental-colored garments,” in which “the fairy-tale richness of the old world embellishes the festive joy of the new.” *Oscurantism* takes refuge in war as its last shelter, but “the canon workshop disappears.” A temple of peace opens and in “colorful procession” one

²⁹Op. cit., p. 28.

³⁰Op. cit., p. 29.

³¹Op. cit., p. 33.

sees the inhabitants of all countries of the earth united in fraternal unity to a flag-waving “peace harmony”. When the whole stage space is filled with the “representatives of all peoples and races”, the background opens and, depending on the place of performance, there appear either as in Italy “l’apoteosi del Genio Umana”, fame and glory of the present and the future: “Scienza, Progreso, Fratellanza, Amore”³²; or in Germany: the “Niederwald monument [...] in magical illumination, and before the victorious Germania the peoples of the earth lower their flags in homage. (Curtain falls.)”³³ – and all this in less than 85 minutes of playing time.

Coming from the tradition of Italian action ballet and influenced by the living pictures in the tradition of Noverre and by Guiseppe Rota (1823–1865), like Flavia Pappacena³⁴ has established *Excelsior*, in addition to the pantomimic scenes, much space for character dances in exotic settings (Mazurka, March of the Postillions, Indienne, Concordia March), bravura pieces – *ballabile* – and large-scale mass choreographies. An Austrian critic wrote of the Viennese performance that the “execution appeared not as dances but as maneuvers of 450 persons” and “in precision, in the unity of the movement of heads, arms, legs” exceeded everything “that has ever been seen in Berlin.”³⁵

Pauses for rest [...] do not occur; the masses are in continuous motion. The spectator sits before a kaleidoscope; the surprised eye does not know which way to turn first. A hundred dancers rush from the background to the ramp with the same pas, with the same movement, a second, a third troupe in the same rhythm displaces them; now all bend, and one sees on the whole stage only a hundred moving arms and heads.³⁶

The Paris performance at Éden is described as a “living mosaic” in which each dancer appears as a “cube of Venetian glass”.³⁷ This visual synthesis of the arts, which combines the bodies into a spectacular mosaic by means of military discipline, is also subordinated to the music, which is unanimously described as rather mediocre, and which “only in a few numbers rises above the level of ordinariness” and is often in an acousmatic form.³⁸ and was often laid down in the meticulous notation of the movement figures. An article cited by Flavia Pappacena in a special issue of the *Corriere della Serra* describes the collaboration of choreography and music with a correspondingly clear distribution of power.

³² Play reprinted in the program book of the Teatro Regio 2000–2001.

³³ Blumenthal, op. cit., 1882, p. 40.

³⁴ Flavia Pappacena, “Analysis and Reconstruction of the Pas de deux in the Third Scene of Luigi Manzotti’s ‘Gran Ballo’ *Excelsior* (1881),” in: *Die Beziehung von Musik und Choreographie im Ballett. Bericht vom internationalen Symposium an der Hochschule für Musik und Theater Leipzig* 23.–25. März 2006, ed. by M. Malkiewicz. Berlin: Vorwerk 82,007, pp. 171–186.

³⁵ Review of Nov. 6, 1883, no source given, Kritikenarchiv, Theaterwissenschaftliche Sammlung, Universität Köln.

³⁶ Ibid.

³⁷ Dai Giornalli, “L’Excelsior e la stampa francese,” in: *Gazetta dei Teatri. Milano*, Jan. 18, 1883, no. 3, pp. 7–8, cited in Pappacena, op. cit., 2007, p. 176.

³⁸ Review of 17 May 1883, no source given (author: ‘Dr. K. St.’), Kritikenarchiv, Theaterwissenschaftliche Sammlung, University of Cologne.

In choreography [...] the musician is not entitled to intervene, even to satisfy the aesthetic essentials of this art – he is not independent with regard to rhythm, development or idea. [...] He is forced to sacrifice his own fantasy and follow step by step the capricious course of the choreographer's.³⁹

When Manzotti goes to Marengo, the composer, it is further reported, he brings the elaborated choreographic scenario and asks for appropriate orchestral accompaniment.

'I wish to this and that', he says, 'I have so many people on stage, arranged like this. The extras must act thus, the mimes this, the female dancers thus and thus – and all this in so many beats of the waltz or polka or mazurka. Write me the music!'⁴⁰

Accordingly, the composer's task was to hit the picture, to suggest motifs that remained without any musical development in the overall composition. Manzotti returns a few days later, has Marengo's ideas played to him on the piano, and introduces strappate and interruptions according to scenic needs.

He likes to stop the masses suddenly in their kaleidoscopic combination of lines and colors, surprising the spectator's eyes and confusing it with a rapid succession of effects, with the instantaneous immobility of a picture.⁴¹

Depending on the changes in the choreography during the scenic rehearsals, the music would also be adapted dozens of times to the changed scenic needs.

While this visual spectacle is a gigantic success with the audience, it is less well received by critics. When Manzotti died in 1905, a German obituary recalled that choreographer who had become known "for his monstrous mass ballets," "in which common sense had to pay the piper," and "which, with their soulless exteriority and the overgrowth of a self-important technique, have done so much to withdraw the participation of more genteel elements from ballet and to discredit the genre itself."⁴² Contemporary reviewers are somewhat milder, seeking to justify the spectacle in part as an educational event; one reviewer speaks of a "actually pedagogical ballet" intended to replace "school desk" and "dry lecture." But the real attraction seems to be best summed up by a Dr. Alois Mahner: "Who would visit Excelsior if that night which lies over the Roman plain were not suddenly transformed into a sea of light which dazzles the eyes."⁴³ Decisive influence, however, are also the new costume

³⁹G. P.: "Come si fa la Musica d'un ballo", in: *Amor*, special issue of the *Corriere della sera*, supplement to the *Gazzetta Musicale di Milano* (Feb. 1886), p. 1, cited in Pappacena, op. cit., 2007, p. 185.

⁴⁰Ibid.

⁴¹Ibid.

⁴²*Signale*, March 23, 1905.

⁴³Review of the Vienna performance of May 18, 1883, without date or source given (author: 'Dr. Alois Mayer'), *Kritikenarchiv, Theaterwissenschaftliche Sammlung*, University of Cologne.

materials and means of lighting, as Michael Booth has basically noted for the spectacular theater aesthetics of the nineteenth century.

The proliferation of light-reflecting substances and highly colored costume material on the person of the actor, together with a new brilliancy of illumination that could penetrate all corners of the stage, enabled managers to employ large groups of attractive young women attired in this way as extensions of the scenery, ranging around the back and sides of the stage.⁴⁴

As a sea of luminous impressions, an overwhelming glow of light, and a variety of lush impressions, the *Excelsior* is precisely what theater in the nineteenth century predominantly is: Michael Booth speaks of “mass” and “color,” who assumes that the (occidental) nineteenth century had a taste for the spectacular that transcended all classes, which after 1820 showed itself in the exteriors as well as the interiors of the imperial metropolises and also determined their theaters. Such spectacular theater, as Booth describes it, presents itself as a succession of images tending toward ever more pronounced elaboration. *Pictorialism* on the one hand and *Accuratism* on the other hand (to avoid the easily misunderstood terms realism or naturalism) are what characterize the theater of the nineteenth century across genres and genres. The images are supposed to be accurate in a twofold sense: First, it is about a correspondence of what is depicted on stage with the factuality of a newly emerging historical and geographical knowledge; Shakespeare’s Romans, although they actually come from London, as Heiner Müller later states, are now supposed to be clothed according to the latest archaeological findings. Second, the new accuracy of the nineteenth century is about things becoming tangible, materially concrete, and gaining plasticity in extensive detail. Thus, in the nineteenth century, the only thing being discussed is whether and how much art the theater can tolerate, how much condensation and aestheticization is permissible, how much deviation from the model is allowed and, conversely, how much science art can tolerate. However, it is unquestionably presupposed that what is to be seen on stage must be an illustration of the location of the action, and that a performance is to be understood as a sequence of such artificial locations and their artful transformation. The theater is no longer primarily the place of the rhetor, where the spoken word determines what place and role one is in; in the practice of time, it is much more like the visual illustration of a book. The image of the other place takes the place of words, the theater increasingly shows things happening as changes of landscapes rather than dialogic actions.

Mostly, this development is described in theater studies as a process of decay, in which the imagination, on which every classic is still built, is lost and displaced by an illustrative process of representation. But this perspective overlooks the productive element inherent in the spatial and local re-functioning of the stage in an era before photography. With the nineteenth century, something else is increasingly depicted in the theater; another knowledge makes its way into the theater, and

⁴⁴Michael R. Booth: *Victorian Spectacular Theatre 1850–1910*. London et al.: Routledge & Kegan Paul 1981, p. 25.

theater takes part in constituting a new knowledge of the world. It shows other places in a twofold sense; on the one hand, it is new places that take the place of the classical triad of aristocratic court, urban street, and pastoral landscape: Port facilities, warehouses, bridges, factories, gasworks, train stations, hotels, banks, department stores, offices, government buildings, insurance offices, exhibition halls⁴⁵; on the other hand, it is these places that do not provide more or less timeless and stylized backgrounds for scenic action in abstraction, but claim to show what it looks like elsewhere. And it is this specificity of place that, in comparison to the central-perspective scenic stage, makes theater an optical medium of a new quality, opening up a theatrical tourism that allows one to be where one is not. In this respect, the fairy-tale and dream-like is always already inscribed in Accuratism. It is precisely the scientific accuracy with which alien worlds are reconstructed on stage that in the same breath gives them the character of those fairy tales from 1001 Nights that are so popular; realism and fantasy are the two sides of the same coin.⁴⁶

6.4 Luminous Jewels: Féerie and Industry

The genre in which this ambivalence is perhaps most strikingly expressed, however, is the féerie, which transports the audience into wonderful worlds and whose most famous example is certainly Jules Verne's *Voyage à travers l'impossible*, a "féerie en 23 tableaux."⁴⁷ Emile Zola understands the féerie as compensation for scientific modernity: "Dans notre enquête moderne, après nos dissections de la journée, les Féeries seraient, le soir, le rêve éveillé de toutes les grandeurs et de toutes les beautés humaines."⁴⁸ Nothing is more banal than the subject of a féerie, he writes, the tableaux taking the least possible pretext to reach apotheosis.⁴⁹ Jörg Dünne and Gesine Hindemith describe the discontinuous change from catastrophe to apotheosis through the effect as characteristic for the dramaturgy of the féerie, which is the central attraction of the genre and makes it comparable to optical apparatuses.

Féeries are, one might suggest, the leap tropes of a specific experience of modernity, constantly turning back and forth between the miraculous and the catastrophic: In them, the catastrophic and the miraculous come together, as in the optical apparatus called thaumatrope.⁵⁰

⁴⁵ Cf. Booth, op. cit., 1981.

⁴⁶ Cf. op. cit., esp. pp. 26–39.

⁴⁷ Cf. Hélène Laplace-Clavierie: *Modernes féeries: le théâtre français du XXe siècle entre réenchantement et désenchantement*. Paris: Honoré Champion 2007.

⁴⁸ Émile Zola, "La féerie et l'opérette," in: *Oeuvres Complètes*, vol. 10, *La critique naturaliste 1881*, ed. by H. Mittereand. Paris: Nouveau Monde Editions 2004, pp. 179–186, here: S. 183.

⁴⁹ Op. cit., p. 179.

⁵⁰ Jörg Dünne/G. Hindemith: "Katastrophische Féerie und thaumatrope Moderne," introduction to the opening event of the DFG project 'Die katastrophische Feerie' on May 2, 2012 (Erfurt), available online at: http://www.uni-erfurt.de/fileadmin/user-docs/Feerie/Katastrophische_Feerie_Einfuehrung_Mai12.pdf (last accessed 20 Apr. 2016).

The *thaumatrope*, a nineteenth-century optical toy that exploits the afterimage effect that later becomes crucial to cinema, consists of a disc with an image on each side of the disc. Set into rapid rotation by two threads, the two images mix in the viewer's perception to produce a third, composite image. As a thaumatrope of modernity, féeries in this respect provided a composite yet ultimately unstable image of miraculous futures whose two sides are apotheosis and catastrophe.⁵¹

Even more than an optical toy, the technical féerie, like *Excelsior* and *Pandora*, resemble that industrial spectacle of illuminations, rotations, and attractions that is rehearsed at the exhibitions and becomes part of the emerging electropolis. They celebrate a progress that has its most striking manifestation in a female luminous body, around which are arranged the massive material forces such as steamboats and railroads, canal and bridge buildings. These luminaries as messengers of electrical progress, however, also appear in the 1880s outside of industrial ballet in the narrower sense.

Since the 1882/83 season, in the last scene of *Iolanthe* (Gilbert and Sullivan) at the Savoy in London, dancers were equipped with incandescent lamps and accumulators, "self-lighting fairies" became established on the stage and were reflected a short time later in corresponding electrical accessories in the auditorium.⁵² At first, it is only the fairy queen and three of her companions who, in *Iolanthe* wears an electric star in her hair, but soon it is the whole chorus that wears this ornament.⁵³ Also in Germany the *Elektrotechnische Zeitschrift* reported on these electric fairies (cf. Fig. 6.4).

[Electric stars for theater fairies.] At the Savoy Theater in London, the fairies recently appear with a small light bulb in their coiffure, thus legitimizing themselves simply and convincingly as representatives of the spirit world. The fairy in question carries on her back, concealed by her wings, a small box containing two planté accumulators which, after being charged for an hour with a current of about 2 amperes, can keep an incandescent lamp of two candles burning for an hour. The lead wires to the lamp are flexible. This fairy paraphernalia unfortunately weighs down the ethereal being by a good four pounds.⁵⁴

But *Iolanthe* does not remain the only piece to be outfitted with luminous fairies; between 1883 and 1890, the "electric scene" becomes a standard feature of the outfit (cf. Fig. 6.5a), even if fundamental safety concerns initially arose in England.

It is no secret that more than one theatrical manager has in contemplation, or has already decided, to employ the electric light in the coming Christmas pantomimes or extravaganzas as a personal ornament for their hobgoblins and fairies. This can only be done by means of some form of accumulator carried by or attached to the individual, and whether the star

⁵¹ Cf. Rhonda Garelick: "Bayaderes, Stereorama and Vahat-Loukoum: Technological Realism in the Age of Empire," in: *Cultural Politics* 10 (1995), pp. 294–319.

⁵² *The Theatre* 1 (1883), p. 28; cf. *The Times*, 17 Feb. 1883 ("Savoy Theater"); "The Electric Light at the Savoy Theater," in *Nature* 27, 1 March 1883, pp. 418–19.

⁵³ Cf. *London Morning Advertiser*, Nov. 27, 1882, p. 5, and *The Times*, Apr. 7, 1883; see also *The Builder* 44 (1883), p. 241.

⁵⁴ *Elektrotechnische Zeitung* (June 1883), p. 272.

Fig. 6.4 Dancer with electric jewels. (Albert A. Hopkins: *Magic. Stage Illusions and Scientific Diversions*, 1897)



light is to form an ornament for the head, or to glisten at the end of a wall, the constant danger is patent. There is no need to be an electrician to understand this. A grave responsibility will be incurred by those managers who permit it – a still graver one by those who force it on their employés. The life of even a super at 20s a week ought not to be placed in jeopardy by that autocratic production of our time, the theatrical manager, even if both are willing to run the risk.⁵⁵

But the concerns do not prevail against the effect. In 1883, the Paris Opéra presented *La Farandole*, a ballet by Théodore Dubois (1837–1924), with *bijoux électrique* by M. Scrivanow (cf. Figure 6.5b).⁵⁶

⁵⁵ *The Times* of Nov. 13, 1882 (“Danger from Exposed Electric Light Wire”), p. 260 ff.

⁵⁶ Édouard Hospitalier: *La Physique moderne. L'électricité dans la maison*. Paris: G. Masson 1885, p. 261 (transl. by the author).

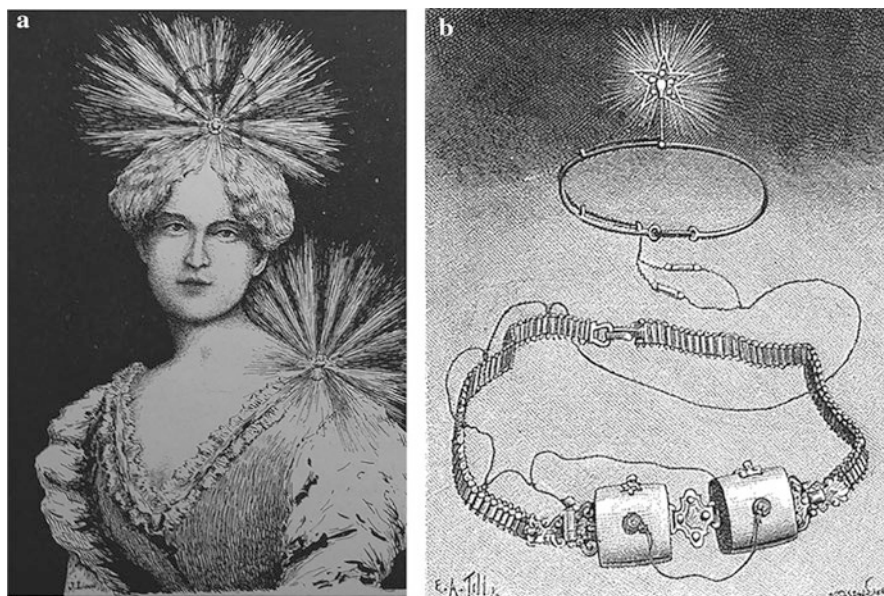


Fig. 6.5 (a) “Danseuse parée de fleurs lumineuses (Ballet des fleurs)” (Albert A. Hopkins: *Magic. Stage Illusions and Scientific Diversions*, 1897). (b) “Diadème électrique et ceinture, avec deux éléments de pile, employés dans le ballet de l’Opéra: la Farandole”. (Edouard Hospitalier: *L’Électricité dans la Maison*, 1885)

La pile [...] est contenue dans une auge de gutta-percha; les deux électrodes sont constituées par une lame d’argent recouverte de chlorure d’argent, enfermé dans un sachet de papier parcheminé. Le sachet est entouré de la lame de zinc repliée sur elle-même, et de laquelle il se trouve isolé par une lame de gutta-percha ajourée. La coupe de la pile représentée à droite de la figure en montre la disposition; la lame de zinc est figurée en Zn et le sachet de chlorure d’argent en Ag Cl. Le liquide contenu est une solution alcaline, formée de potasse très étendue. L’auge de gutta-percha, avec les électrodes qui passent en dehors à droite et à gauche, est hermétiquement close par une lame supérieure de gutta-percha, dans laquelle un trou est ménagé pour introduire et renouveler le liquide. Ce trou est lui-même bouché par une rondelle. Nous avons supposé dans notre dessin, que ces pièces avaient été enlevées, afin de mieux en faire comprendre les détails et les dispositions.

The battery [...] is contained in a well of gutta-percha, the two electrodes consist of a silver blade coated with silver chloride, sealed in a parchment-like paper bag. The pouch is surrounded and encapsulated by a blade of zinc, from which it is found isolated by a cutting edge of perforated gutta-percha. The cross-section of the battery shown to the right of the figure shows its arrangement; the zinc blade is shown as Zn and the bag of silver chloride in Ag Cl. The containing liquid is an alkaline solution, made of very common potassium. The well of gutta-percha, with the electrodes passing outside on the right and left, is hermetically closed by a projecting cutting edge of gutta-percha, in which a hole is made to allow the liquid to be poured in and renewed. This hole itself is sealed by a round disk. We have assumed in our drawing that these parts have been removed to make the details and arrangements easier to understand.

The technical specification is also followed by a description of the application.⁵⁷

Voici comment sont équipées les coryphées. Elles passent autour de leur taille la ceinture en métal argenté, contenant les deux piles enfermées dans des cassolettes (Fig. 138), elles placent leur diadème sur la tête, et quelques préparateurs de physique attachent au milieu de leurs cheveux les fils conducteurs qui relient les piles montées en tension, avec la lampe incandescente. Cela fait, des habilleuses aident chaque coryphée à ajuster autour de la ceinture d'argent une écharpe de mousseline, qui cache presque entièrement l'appareil. La lampe à incandescence du diadème est montée devant une étoile métallique couverte des pierres vertes imitant l'émeraude et formant réflecteur. Sur la ceinture, à coté des piles, est fixé un petit commutateur qui permet au coryphée de fermer ou d'ouvrir le circuit pour allumer ou éteindre à volonté la lampe de son diadème; ce commutateur est très simple, il est formé d'un petit cylindre de la grosseur d'un crayon, que l'on abaisse ou que l'on relève dans un étui où il glisse à frottement doux.

Here is the equipment of the luminaries. They place around their waist a belt of silver, containing two batteries sealed in pans (Fig. 138), they place their tiara on their head, and some physics preparators fix in the middle of their hair the wires that connect the shown energized batteries to the light bulb. Once this is done, the dressers help each luminary adjust around her belt of silver a sash of muslin that almost completely hides the apparatus. The bulb of the tiara is placed behind a metal star, set with green stones imitating the emerald and forming the reflector. Attached to the belt, next to the batteries, is a small switch that allows the luminary to open or close the circuit to willfully illuminate or extinguish the lamp of her tiara, this switch is very simple, it consists of a small cylinder the size of a pen that you lower or raise in a case where it slides with a slight friction.

While an increase in brightness would be quite desirable, the reviewer sums up, he is otherwise very taken with the theater management's "happy invention," and suggests a future application in ballerinas' skirts, which could give rise to entirely new (movement) figures.⁵⁸

At the Theatre Royal in Manchester, a *pantomime* even connects the fairies to the main power supply in 1884 to bypass the limited power of the batteries, and at the crucial moment turns off the electric lights, which until then had only been installed in the auditorium, and turns on the light bulb wearers on stage.

In front is a heartbreaking fairy with distended glittering wings, the borders of which account for 20 [lamps], while another 5 form a 'glory' around her head. On either side of the central fairy, but slightly behind, are two minor goddesses, each having a five light tiara. Behind these is a semicircle of 30 lights, then two fairies, and behind these five others, each with five lamps for headdress. These last five fairies are mounted upon revolving drums, to improve the effect and increase the difficulty. Above and beyond all the rest is an encompassing semicircle of 90 lamps. When the scene is just being completed, the spectacle, without the electric lights, the existence of which is unknown to the audience, is, even then magnificent, but the effect when the sunlight is suddenly turned out and these 200 lamps as suddenly and simultaneously start into life, is startling and superb, and never fails to 'bring down the house'.⁵⁹

⁵⁷Ibid. (Transl. by author).

⁵⁸Cf. the theatrical ornaments of Schwabe & Co, *Zeitschrift für Beleuchtungswesen* iss. 24 (1897), p. 242.

⁵⁹*Mechanical World and Steam Users' Journal* 16 (1884), p. 70.

Fig. 6.6 “Apothéose électrique à l’Alhambra de Londres”. (Georges Moynet: *Trucs et décors*, 1893)



And even the opening of the London Empire, one of the city’s most important music halls, in 1884 cannot do without electric ballet (cf. Fig. 6.6).

When was anything seen to equal the electric ballet of Amazons in the last act? Fifty beautiful ladies, arrayed in armour of exquisite design, after performing various brilliant evolutions with a precision and grace worthy of the utmost commendation, halted, and suddenly from their shields, their helmets, their glittering breastplates, even from their spears there was seen a dazzling electrical illumination of the most enchanting kind it is possible to imagine. The colors were varied and intensely brilliant, and the effect, contrasted as it was with the shadowy foliage of the distant forest was absolutely startling in its novelty and splendour. All London will talk of it when all London has seen it. Nothing to compare with it of its kind has been witnessed on the modern stage.⁶⁰

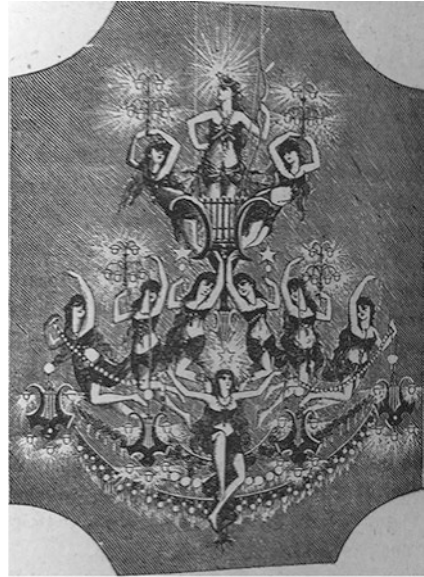
The Victoria Theater in Berlin, finally, composes a ‘living chandelier’ from the illuminated ballerinas, reminiscent of the apotheoses of the gods in Baroque theater (cf. Fig. 6.7).

However, electric incandescent tiaras (offered in France by Trouvé, Scrivanow, and Aboilard) also became successful as jewelry in the 1880s⁶¹; and Mrs. Cornelius Vanderbilt, the wife of the eponymous *Railroad Tycoons*, appears on March 26,

⁶⁰ *The Era*, 19 Apr. 1884, p. 11.

⁶¹ Cf. *Scientific American*, Oct. 25, 1879 (“Electric Jewelry”), p. 263; *Electrical Review*, Jan. 24, 1884 (“Luminous Jewels”), p. 3; “Electric Jewelry,” in *Electrical World* 1, Aug. 4, 1883, pp. 488 f.; *Illustrierte Zeitung* No. 2120 (1884), p. 139; cf. *The Times*, Feb. 17, 1883 (“Savoy Theater”); “The Electric Light at the Savoy Theater,” in *Nature* 27, March 1, 1883, pp. 418–19; cf. Graeme Gooday, *Domesticating Electricity. Technology, Uncertainty and Gender*. London: Pickering & Chatto 2008; the same, “Electricity and the Sociable Circulation of Fears,” in *Geographies of Nineteenth-Century Science*, ed. by D. N. Livingstone & Charles W. J. Withers. Chicago: University of Chicago Press 2011, pp. 217 ff.

Fig. 6.7 “Lustre vivant of the Victoria Theater”. (Julien Lefèvre: *L’électricité au théâtre*, 1894)



1883, at the annual Vanderbilt Ball as *Electric Light* (other costumes depict China, Indians, fire, ice, and comets).⁶²

A year later, the *New York Times* writes about the foundation of an *Electric Girl Lighting Company*, drawing on the theatrical tradition of electrified ballet dancers.⁶³

The introduction of illuminated ballet girls has greatly added to the attractions of the spectacular stage. Girls with electric lights on their foreheads and batteries concealed in their clothing first made their appearance a year ago, but as yet the use of illuminated girls has not spread beyond the stage.⁶⁴

But this is only the foretaste of a real business, which proposes the illumination by electric girls on a large scale.

There is, however, a great future awaiting the grand idea of incandescent girls, and there is reason to believe that in a very short time booses will be lighted by girls instead of stationary electric lights. The formation of the Electric Girl Lighting Company is an even second in importance only to the invention of electric lights. This company proposes to supply girls, of fifty-candle power each, in quantities to suit householders. The girls are to be fed and clothed by the company, and customers will, of course, be permitted to select, at the company's warehouse whatever style of girl may please their fancy.⁶⁵

⁶²Cf. Arden Holt: *Fancy Dresses Described, or What to Wear at Fancy Balls* [1879], London: Debenham and Freebody. ^{61.896}; Marvin Trachtenberg: *The Statue of Liberty*. London: Lane 1976, Fig p. 105.

⁶³*New York Times*, 26 Apr. 1884; cf. Beauchamp, op. cit., 1997, pp. 173 and 194; Marvin, op. cit., 1976, pp. 137–138.

⁶⁴Ibid.

⁶⁵Ibid.

The economic advantage is obvious, the argument goes: the light is always on in the vestibule, even when no one is there, and a servant has to be hired to operate the bell anyway. The high costs could therefore be offset by an *electric girl*, which is both a lamp and a door opener.

Thus there is a double expense, the cost of the light and the cost of the servant. The Electric Girl Lighting Company will furnish a beautiful girl of fifty or a hundred candle power, who will be on duty from dusk till midnight- or as much inter as may be desired. The girl will remain seated in the hall until someone rings the front door-bell. She will then turn on her light, open the door, admit the visitor and light him into the reception-room. One girl thus performs the duties of lighting the front hall and answering the bell, and her annual cost is much less than that of a servant and a gas light.⁶⁶

But even where economic reasons are not decisive, the aesthetic advantages remain.

If, however, any householder should prefer to keep the electric girl constantly burning and to employ another servant to answer the bell, there can be no doubt that the electric girl, posing in a picturesque attitude, will add much to the decoration of the house.⁶⁷

Above all, the mobility of the human lamps is emphasized compared to conventional lighting systems.

Under the present system electric lamps or gasburners are fixtures, and cannot be moved from place to place. The electric girls, on the contrary, are movable. One girl can be made to give as much light as a large-sized drawing-room chandelier, and then can be moved from one room to another, leading the way to supper. There can be no comparison between a beautifully designed and chastely executed electric girl and a massive chandelier that instantly threatens to fall on somebody's head and every householder of esthetic instincts will be glad to exchange his chandeliers for girls.⁶⁸

Instead of the massive material chandelier, the spherical electric girl lights the way, and for the poor student there is also a budget offer.

An inexpensive electric girl of one or two candle power will be of great use when a person desires to go from one room to another in a dark house. Instead of having to carry a candle in his hand and incur the risk of dropping it or having it blown out by a draught of air, the happy possessor of an electric girl can turn her on and send her before him to light the way. The student who is now troubled by the flicker of his gas light, or his inability to move the electric light from one part of his desk to another, can be made perfectly happy by an electric girl with a ground-glass shade, who will take any position that the student may desire in order to throw light on his book or paper. No one who becomes accustomed to such a girl will think of returning to old-fashioned methods of lighting.⁶⁹

So while with the *electric girl* the electrically adorned ballerina has become a dancing lamp, conversely in the 1880s lamps are designed as ballerinas. As early as the

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

Paris exhibition, the *Gartenlaube* reported on “statues of two nobly shaped nymphs holding up a powerful electric light source in their hands.”⁷⁰ Such statues quickly became decorative arts.

However, the extent to which danced light bulbs must have been considered theatrical lighting of the future from a contemporary perspective is evident from the seriousness with which it is explained in retrospect why they did not catch on. In sources from the 1890s, when people were already distancing themselves from these electric féeries and judging them in retrospect from a time when electricity was losing its status as a curiosity and beginning to assert itself as an industry, the danced light bulbs are suddenly recognized as ornamental and fantastic in comparison to the light that was now used in an entirely utilitarian way.⁷¹

In the apprentice days – or nights [...] of electricity in stage-land, its duties were more ornamental or fantastic than severely utilitarian. Corps de ballet were equipped with belts of now obsolete primary or secondary cells, lighting lamp-tipped magic walls [...]⁷²

For, as the author goes on to write, a different kind of electric light had prevailed on the stage.⁷³ This other light, which prevails not only on the stage but also in society, is a harsher, colder light than that of the incandescent bulbs, and it usually comes without a female body. The Futurists sing of it as a new power.

6.5 Luminoclasts: Machismo and Avant-Garde

It is not by chance that an all-night vigil marks the beginning of Futurism: “Nous avions veillé toute la nuit, mes amis et moi” – “we have been up all night, my friends and I,” Marinetti begins on February 20, 1909, on the front page of the *Figaro* his *Manifeste du Futurisme*, “under the lamps of the mosque whose copper domes were also pierced so that our soul still had electric hearts” – “sous des lampes de mosquée dont les coupoles de cuivre aussi ajourées que notre âme avaient pourtant des cœurs électriques.”⁷⁴ One will sing of the crowds excited by work, pleasure, and turmoil, “the multicolored, polyphonic tide of revolutions”; “we will sing of the nocturnal, vibrating glow of arsenals and shipyards illuminated by glaring electric moons; [...].”⁷⁵

⁷⁰ *Die Gartenlaube* No. 43 (1881), p. 114 (“Die erste elektrische Weltausstellung”).

⁷¹ Cf. also Trudelle, op. cit., 1914, p. 60 f.

⁷² *Electrician* 42 (1898), pp. 336–337 (“Electricity in Stageland”).

⁷³ *Ibid.*: “Despite the many seemingly insurmountable difficulties, and the lamentable failures which met the efforts of those who endeavoured to supersede with electricity older methods of lighting theatres, this form of illuminant has gradually come to be recognized by theatrical managers as the only safe and satisfactory one both for general lighting and for artistic stage effects”.

⁷⁴ *Le Figaro*, 20 Feb. 1909, p. 1.

⁷⁵ *Ibid.*

Futurism, perhaps the avant-garde in general, begins with this hymn to the electrified city, to Elektropolis. Elektropolis, however, emerges at the exhibitions of the late twentieth century in Paris in 1889, Chicago in 1893, or Frankfurt in 1891. They are the *fontaines lumineuses*, the telegraph theater and those dynamo machines before which Henry Adams finally knelt in 1900, which came before the art of Futurism. The latter's manifestos read like a continuation of *Excelsior* and *Pandora*. The Futurists are engineers, too, and fight for a new combination of machismo and technology that wants to overcome the old-fashioned posturing of the bourgeois dignitaries through technical progress and the accompanying acceleration of all life processes by releasing hitherto undreamed-of energies. They are the balladeers of an industrial international which, like themselves, sees a golden future shining in the brutal release of all attainable energies and which gets its first damper in the trenches of the First World War.

When, two years after Marinetti's first manifesto, the *Manifesto of the Futurist Stage Poets* appears, this song to the modern, because electrified, metropolis is supplemented by the concept for a new drama.

The modern drama must reflect a part of the great futurist dream that springs from our contemporary life, spurred by the speed of earth, water, air, and dominated by steam and electricity.⁷⁶

But if drama is part of the futurist dream of accelerating and unleashing energies, then theater must also become a new form of machine.

It is necessary to introduce the reign of the machine in the theater, the great shudders by which the crowd is shaken, the new currents of ideas and the great discoveries of science that have completely changed our sensibility and the way people think in the twentieth century.⁷⁷

With the entry of machine and science into the theater, however, comes the expulsion of its traditions and conventions. With a vehemence hitherto unknown, the Futurists, as self-declared and self-convinced "avant-gardists", break with that long tradition of attempted reform of and in the theater which (along with the rise of popular theater) had constituted the greater part of the nineteenth century, and fundamentally question the institution. The radical break occurs rhetorically first, in relation to the idea of a mapping of reality, i.e., the "historical reconstructions" and

⁷⁶Filippo Tommaso Marinetti: "Manifesto dei drammaturgi futuristi," Milano, Jan. 11, 1911, Engl. as "Manifesto of the Futurist Stage Poets," in: *Es gibt keinen Hund: Das futuristische Theater. 61 theatralische Synthesen*, transl. and ed. by B. Landes. Munich: Text + Kritik 1989, pp. 7–9, here p. 8 (transl. by author, in the original: "Il dramma moderno deve riflettere qualche parte del gran sogno futurista che sorge dalla nostra vita odierna, esasperata dalle velocità terrestri, marine e aeree, e dominata dal vapore e dall'elettricità").

⁷⁷*Ibid.*, in the original: "Bisogna introdurre nel teatro la sensazione del dominio della Macchina, i grandi brividi che agitano le folle, le nuove correnti d'idee e le grandi scoperte della scienza, che hanno completamente trasformato la nostra sensibilità e la nostra mentalità d'uomini del ventesimo secolo".

“psychological photographs,” the historicist and naturalist aesthetics that constituted the bourgeois theater of their time as seen by the Futurists.

Contemporary theater, Marinetti writes in *Il Teatro de Varietà* in 1913, disgusted them because it vacillated between reconstruction of the lived and reproduction of the everyday.⁷⁸ It was long-winded and outdated, stagnant and repetitive, a theater at best befitting the “age of the kerosene lamp.” As is usually the case with manifestos of avant-gardes, what is rejected stands out more clearly than what is wanted instead; and such a manifesto becomes all the more effective the less it could disappoint by its realization. Nevertheless, the basic features of the Futurist anti-theater can already be read in this early manifesto, which was still only varied by all later avant-gardes. This synthetic aesthetic of the avant-gardes – to take up a key term of the Futurists – is composed of two complementary tendencies: first, the dissolution of the linear dramaturgical order in favor of an associative synthesis of fragmentary elements, i.e., action-bearing processes are to become self-referential actions; second, the dissolution of the distanced observation of image sequences in favor of a sensually expanded and heightened spatial experience, i.e., empathetic looking is to become immediate experience. Thus, direct effect strategies, as they have been tried and tested in comedy, eroticism or shock, take care of the generation of an *atmosphere* by which the audience is to be captured and which relieves them of their everyday reality. In this respect, the Futurists are linked to the Symbolists such as Evreinov and Tairov, Copeau, or Reinhardt and Hofmannsthal by their turning away from the acculturation of bourgeois theater and their search for a more sensual, creative, and independent theater. But Futurism and what it still allows as theater breaks with that separation of hall and stage, on the basis of which another place can appear. The atmosphere, which in Reinhardt’s and others’ work is created on the stage and flows out from there into the audience, is constituted here in the first place in the dynamics of hall and stage.

Futurism wants to make those machines, whose effect in the theater was always only cushioned and of which only the effects (of a social, psychological or aesthetic nature) were visible and which were experienced indirectly, mediated through figures, directly perceptible. In other words, the incandescent bulbs and indirect horizon lighting are to be replaced by the glaring lights of spotlights, which have been deliberately avoided in the theater up to now. Futurism, like vaudeville, arose from electricity and, like vaudeville, lives from topicality, Marinetti wrote in 1913, again evoking the nocturnal light of the big city, but this time in the context of the urban spectacle.

⁷⁸ Marinetti: “Il Teatro de Varietà,” Oct. 1, 1913, german as “Das Varieté,” in: *Manifeste und Proklamationen der europäischen Avantgarde, 1909–1938*, ed. by W. Asholt/W. Fähnders. Stuttgart/Weimar: Metzler 1995, pp. 60–63.

The outdoor cabaret performances on the terraces of the casinos offer a most pleasurable battle between the spasmodic moonshine, terribly tormented and desperate, and the electric light [...]. Of course, the energetic electric light is victorious, and the soft and decadent moonshine is defeated.⁷⁹

But this idea that Futurism (or the theatrical avant-garde in general) and vaudeville, as it were two sides of the same coin, emerged from electricity, or rather electrification, must perhaps be taken more seriously than it sounds at first. It has been repeatedly shown that the Futurists and Dadaists in particular made extensive use of the means of vaudeville and other popular forms; but perhaps one must locate the connection on a deeper level and start from a common aesthetic foundation, a shared aesthetic order, on which vaudeville and the avant-garde are based – an order that is electric in a way yet to be determined.

To understand this order, one must look at that performance in which avant-garde, electricity, and vaudeville prototypically meet: the serpentine dance of Loïe Fuller, first performed in Paris in 1892.

As Patrizia Veroli has shown, Fuller is a crucial orientation figure for Futurism because she showed the possibility of a plastic drama that is both abstract and synthetic, deriving its power from the logic and necessity of an “illuminating machine”.⁸⁰ Both Bruno Corra and Arnaldo Ginna, the founders of futurist film, invoke them, as does Enrico Prampolini in his *Scenografia e coreografia futurista*. Marinetti himself proclaimed in 1917: “Nous autres futuristes préférons Loïe Fuller et le cake walk des nègres (utilisation de la lumière électrique et de la mécanique).”⁸¹ Thus it almost seems as if Fuller were taking for Futurism the place occupied in classical art by the Nike of Samothrace, whom Marinetti already rhetorically knocked off her pedestal in his first manifesto. At the same time, Fuller is also the abstract counter-model of the pointillist glitter of the illuminated ballerinas; in their serpentines, light and energy dissolve into those waves with which reality begins to fill around 1900. But to understand Fuller’s performance, it is necessary to return once again to the embodiment of electricity and locate it in the context of allegorical equipment programs and salacious entertainment culture.

⁷⁹Ibid., in the original: “Il Teatro di Varietà dà invece il senso e il gusto degli amori facili, leggeri e ironici. Gli spettacoli di caffè-concerto all’aria aperta sulle terrazze dei Casinos offrono una divertentissima battaglia tra il chiaro di luna spasmodico, tormentato da infinite disperazioni, e la luce elettrica che rimbalza violentemente sui gioielli falsi, le carni imbellettate, i gonnellini multicolori, i velluti, i lustrini e il sangue falso delle labbra. Naturalmente l’energica luce elettrica trionfa, e il molle e decadente chiaro di luna è sconfitto”.

⁸⁰Cf. Patrizia Veroli, “Loïe Fuller’s Serpentine Dance and Futurism: Electricity, Technological Imagination and the Myth of the Machine,” in *Futurism and the Technological Imagination*, ed. by G. Berghaus, Amsterdam: Rodopi 2009, pp. 125–147, here: P. 142 f. (“Fuller’s example was destined to inspire not so much dance, but fields such as Futurist cinema and stage design.”, In addition to Marinetti, *Arte dell’avvenire, Paradosse* (1911) and the film *L’arcobaleno* (1912) by the Corradini brothers are also mentioned).

⁸¹Filippo Tommaso Marinetti: “La Danse Futuriste” [1917], in *Futurisme. Manifestes, Proclamations, Documents*, ed. by Giovanni Lista, Lausanne: L’Age d’Homme 1973, p. 268.

Luminous Bodies

7

Figuration and Projection



If the appearance of electricity in the exhibition ballet was examined in the previous chapter in the context of newspaper reports, ballet actions, and progress narratives with regard to its discursive grounding, the present chapter focuses on the practice of allegorical embodiment. Starting with exhibition posters and representations in advertisements, Sect. 7.1 “Allegories” recapitulates the industry’s foundation on myth in popular allegories of the nineteenth century and traces a combination of aestheticization and decontextualization that ultimately amounts to an invisibilization of production contexts. Taking up the view of the electrical allegories, Sect. 7.2 “Dispositives” asks about the reception situation and its cultural as well as technical character. A theoretical detour via psychoanalytical film theory and the cinema of attractions leads to the characterization of an aesthetic regime that, by making use of new light technologies, discovers the nakedness of a female white body as a projection surface and makes it shine. Following this, Sect. 7.3 “Specialties” locates the dance of allegory in the context of vaudeville theater, i.e., a theater of attractions situated in the urban economic context and having an ambivalent relationship to the surrounding bourgeois culture. It is argued that the attractiveness of the new “beauties” staged here was that they cast their gaze back and could not see the viewer after all (due to the lighting conditions) and startle him out of his voyeuristic attitude. Section 7.4 “Salomania” builds on these considerations and examines the staging of nudity around 1900 in the context of the construction of a natural “person” imagined as free of social roles and traditional techniques but emerging from an (exotized) locality. Variety scenes are used to show how the particularity of the person emerges from a primal scene of projection in which light, gazes, and desire are synchronized to construct sexotic strangeness. Finally, Sect. 7.5 “Maenads” examines how the “exotic” dance popularized at world’s fairs is placed at the center of a physiologically inspired aesthetics of energy in the interpretation of an ancient philologist and the writers who followed him, and how in Freudian drive theory the psychic mechanism is conceived as an electric machine.

7.1 Allegories: Trademarks and Women’s Bodies

That electricity appears as an allegory in the exhibition ballet of the nineteenth century does not seem particularly surprising, if one thinks of the facades of late nineteenth century buildings; and that it is a female body also does not seem surprising, given the traditional equation of nature and woman in occidental tradition.¹ Nevertheless, both deserve detailed study in order to better understand the practice of embodiment at play here.

¹Cf. Christina von Braun: *Die schamlose Schönheit des Vergangenen. Zum Verhältnis von Geschlecht und Geschichte*. Frankfurt a. M.: Verlag Neue Kritik 1989; Elisabeth Bronfen: “Die schöne Leiche. Weiblicher Tod als motivische Konstante von der Mitte des 18. Jahrhunderts bis in die Moderne”, in: *Weiblichkeit und Tod in der Literatur*, ed. by R. Berger/I. Stephan. Köln/Wien: Böhlau 1987, pp. 87–116; this: *Nur über ihre Leiche. Tod, Weiblichkeit und Ästhetik*. Munich: Kunstmann 1994; Sigrid Weigel: *Topographien der Geschlechter*, Reinbeck b. Hamburg: Rowohlt 1990; Klaus Theweleit: *Buch der Könige*, Basel/Frankfurt a. M.: Stroemfeld/Roter Stern 1988.

For at the end of the nineteenth century, electricity almost universally appears as a female personification – Helios or Apollo are rare exceptions, Zeus himself interestingly hardly appears despite ancient lightning power, and Prometheus appears if then as the inventor of electricity.² The case is different, on the other hand, with steam power, most of which has extremely virile connotations and is often represented by the masculine mastery of an animalistic force. In Martin Gerlach's collection of allegories, for example, steam is a three-headed dragon set in reins and ridden by an upright man.³ Yet this gesture of domination seems to conceal a larger uncertainty about the new forces. Steam might be "personified" when spoken of, writes a contemporary of railroad construction, "but no one will stroke its neck or speak encouragingly to it."⁴ It was different with that power which had previously been available as a decisive non-human productive and transporting force, the horses: "He who handles them and owns them is proud of them and loves them; [...] the rider's nerves come into tension, his senses sharpen; eye, hand and ear are equally enlivened; the blood gets into a flush, and all faculties are activated." Steam, on the other hand, is "a mere laborer, a slave," performing his work "mute and expressionless, with dogged perseverance but without any expression of feeling." The lack of feeling in dealing with the new power and the alienation from one's own body that initially characterized the relationship to steam power contrasted with those depictions of steam power that come across as physical fantasies of violence and power. Wilhelm Kaulbach's *Erzeugung des Dampfes* in 1859 is certainly the best example in this respect (cf. Fig. 7.1). The unleashing of those explosive forces to which the nineteenth century owes much of its upheaval is depicted here as a male act of sexualized violence on a nature conceived as female. The violent triumph in the representation seems not least to compensate for the expression of a lifeworldly insecurity.⁵

Electricity is depicted quite differently on the poster of the Frankfurt exhibition. Here, the male body lies in chains and is in a precarious position, looking up transfixed at a sovereign and steadfast female body holding its chain and triumphantly holding up the light. Only with difficulty does the unbalanced male body seem to hold the lightning bolts in his fist, the power of which then emerges from the head and hand of the female figure by means of the chain as a powerful beam. If it is a Prometheus who crawls here at the feet of the electricity, then this is not an

²Cf. Monika Wagner: *Allegorie und Geschichte. Ausstattungsprogramme öffentlicher Gebäude des 19. Jahrhunderts in Deutschland* (= Tübinger Studien zur Archäologie und Kunstgeschichte 9), Tübingen: Wasmuth 1989, p. 247.

³Cf. Martin Gerlach: *Allegorien und Embleme*. Vienna: Gerlach & Schenk 1884.

⁴William B. Adams: *English Pleasure Carriages*. London: C. Knight & Co. 1837, pp. 198–99, cited in Wolfgang Schivelbusch: *Geschichte der Eisenbahnreise. Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert*. Munich: Hanser 1977, p. 19.

⁵Cf. Lynn White, "What accelerated technological process in the western middle ages," in: *Scientific Change. Historical studies in the intellectual, social, and technical conditions for scientific discovery and technical invention from antiquity to the present*, ed. by A. C. Crombie. New York: Basic Books 1963, pp. 272–291, here: S. 283.



Fig. 7.1 Wilhelm von Kaulbach: *Die Erzeugung des Dampfes*, ca. 1859

unleashed, but a recaptured Prometheus who is allowed to deliver here still that power which then completely passes over into the sphere of a new, female imagined and represented power.⁶

Obviously, it is not only a different representation, it is also a different energy that is depicted here, and this new energy appears at the end of the nineteenth century preferably as a female personification (cf. Fig. 7.2). But this feminized gender assignment compared to steam should not be misunderstood as a break with a patriarchal order or even as an increase in the importance of historical women. Rather, the opposite is the case. The female embodiment of the indeterminate and incomprehensible essence of this immediate and invisible force of electricity, which sells itself as the antithesis of the noisy and dirty but predictable and transparent forces of the old industries, goes hand in hand with a media aestheticization of the female body that must rather be understood as the flip side of a continued exclusion from social positions of power.⁷

In any case, Pandora's appearance in Frankfurt in 1891, the female personification of electricity in the exhibition theater, is in this respect not an isolated case, nor

⁶Cf. also the representation in Albert Robida: *La Vie électrique*, Paris 1890 (in German as. *Das elektrische Jahrhundert*. Berlin/Eisenach/Leipzig: H. Hillger 1899 published) or the *Electricität als Statue* by Norbert Zeidler on the cover of the *Illustrierte Zeitung* of April 1892.

⁷Cf. Maria Osietzki, "Weiblichkeitsallegorien der Elektrizität als ‚Wunschmaschinen‘" in: *Technik-Geschichte. Zeitschrift der Verein Deutscher Ingenieure* 63/1 (1996), pp. 47–70 as well as this: "Die ‚elektrisierende Weiblichkeit‘. Geschlechtskonstruktionen im Umfeld der Elektrotechnik," in: *Konstruktionen zur Weiblichkeit – Blicke auf das Fremde* (=Bochumer Beiträge zur Geschlechterforschung), ed. by G. Schäfer/R. Wecker, Pfaffenweiler: Centaurus-Verlagsgesellschaft 1997, pp. 11–38.



Fig. 7.2 Title page to August Kemmann's: *Die Berliner Elektrizitätswerke bis Ende 1896, 1897*

is it limited to the stage, but rather a variation on a personification ubiquitous from the early 1880s to the turn of the century in an era already embellished with allegories. On the exhibition grounds alone, it was flanked by a multitude of equivalents on posters, in catalogs and newspapers, or as sculpture.

For while allegory had been exposed to increasing criticism in aesthetic discourses since the middle of the eighteenth century and, at the latest with the Romantic concept of symbol, appeared to belong to a different time, it played a prominent role in the public space of the nineteenth century.⁸ Especially in, with and

⁸As Silke Wenk has pointed out, the monuments of "bourgeois men in the open air" (instead of aristocratic busts in enclosed spaces) stand in the context of the formation of bourgeois forms of rule and, not coincidentally, allow women only as mothers, soldiers' wives, and nurses of the sick, and then usually only on the pedestal, the position traditionally assigned to subjugated bodies, cf. Silke Wenk: *Versteinerte Weiblichkeit. Studien zur Allegorie und ihrem Status in der Skulptur der Moderne* (= Literatur – Kultur – Geschlecht 5). Cologne: Böhlau 1996, p. 89.

around architecture, as facade decorations, sculptures or history paintings, especially on official buildings,⁹ but also at festivals and in living pictures¹⁰ female allegories embodied the bourgeois orders of the time, preferably with a triumphal gesture as a *Viktoria*, *Nike*, *Liberté* or with a national character as *Borussia*, *Germania*, *Marianne*.¹¹

These allegorical female bodies occupied the position that had long been reserved for the equestrian statue of the ruler or commander. With them, a community takes shape that can no longer be represented in the individual body of a great man because, as Silke Wenk has explained, it was built on the competing particular interests of many *small* men. Only the female body, which is largely excluded from the male-dominated public sphere, can still represent what is supposed to connect and hold together the equal men of a bourgeois society without an authoritarian leader: something ideal like the nation, which can be imagined as a nurturing mother or as a bride to be won. Allegory intimate, familiarize, and sexualize the ideal to which the community appeals, and in turn idealize the sensual desire that rages within it.

The allegory, brought 'to eternity' in enduring materials, is raptured, transcended, and monumentalized as an image of the imaginary – the Other of the patriarchal order for which the feminine figures.¹²

Insofar as the potential for embodying a historically powerful symbolic force and the exclusion from real political power were mutually conditional, the female allegory thus represented precisely the opposite of female life worlds. Only because they are themselves largely excluded from the sphere of power can women's bodies embody the power of bourgeois society; or, turned culturally, it is precisely the embodiment of power that makes both the concrete women's body and the life-world of gender disappear.

In contrast to medieval and baroque allegoresis with its conventionalized systems of reference, allegory in the historicist and positivist nineteenth century is concerned with giving "the spirit of history an ideal body"¹³ to confer. As Monika Wagner has shown in reference to monumental painting in nineteenth-century public buildings, here allegory reassembles a history that has disintegrated into

⁹ Cf. Monika Wagner: *Allegorie und Geschichte. Ausstattungsprogramme öffentlicher Gebäude des 19. Jahrhunderts in Deutschland* (=Tübingen Studies in Archaeology and Art History 9). Tübingen: Ernst Wasmuth 1989.

¹⁰ Cf. Dagmar von Hoff/H. Meise, "Tableaux Vivants. Die Kunst- und Kultform der Attitüden und lebenden Bilder," in Berger/Stephan, op. cit., 1987, pp. 69–87; Gisold Lammel: "Lebende Bilder – Tableaux Vivants im Berlin des 19. Jahrhunderts," in: *Studien zur Berliner Kunstgeschichte*, ed. by K.-H. Klingenburg. Leipzig: E. A. Seemann 1986, pp. 221–243.

¹¹ Cf. Wenk, op. cit., 1996, et al. p. 10.

¹² Op. cit. p. 119.

¹³ Moritz Carriere: *Aesthetik* [1859], 1, vol., 1886, p. 483, cited in Wenk, op. cit., 1996, p. 36.

individual events and scenes in historicism into a meaningful and purposeful whole, driven by an immaterial force that appears as personification.¹⁴ In allegorical personification, a naturalized history appears that, analogous to the *Bildungsroman*, understands the past as the “sprouting root of present existence”¹⁵ and appears as a symbol of a nature that speaks for itself.¹⁶

In this respect, the allegorical personification of the nineteenth century does not really want to be one anymore and, in its exuberant nakedness, aims at sensual presence, which, as Silke Wenk has pointed out, is not necessarily in contradiction to the abandonment of allegory in art.¹⁷ For the aesthetic critique of Baroque allegorism in the mid-eighteenth century was directed primarily against a traditional and codified system of references that was supported by the church and absolutism and derived its legitimacy from the ancient rhetoric of humanist tradition. The concept of the symbol, on the other hand, was intended to establish an autonomous art that would replace the arbitrary reference context of the feudal order with a *natural* connection between image and meaning and its immediate effect.

Now there are also works of art that shine through intellect, wit, gallantry, to which we also count all allegorical ones; from these the least good can be expected, because they likewise destroy the interest in the representation itself and drive the mind, as it were, back into itself and deprive its eyes of what is really represented. The allegorical differs from the symbolic in that the former denotes indirectly, the latter directly.¹⁸

In demarcation from the prevailing semiotic conventions of the courtly and clerical systems of reference, the symbol as a natural sign was to speak directly out of itself, for itself, and to make nature, instead of making it rationally accessible, immediately tangible to the senses in a henceforth autonomous work of art. The symbol therefore found its preferred place in the expression of the body as a natural language of the nature of the soul, be it in drama or in sculpture, in which an immediate encounter between man and a divine nature became most possible.¹⁹

The allegorizing personifications of the nineteenth century also claim a very similar natural sign-like quality. They lack what is actually allegorical, because they can no longer generate semiotic depth due to their lack of integration into a

¹⁴Wagner, op. cit., 1989, p. 265.

¹⁵Heinrich von Sybel: *Über den Stand der neueren deutschen Geschichtsschreibung*. Marburg 1856, pp. 4–5, cited in Wagner, op. cit., 1989, p. 264.

¹⁶Cf. Reinhart Koselleck: *Vergangene Zukunft. Zur Semantik geschichtlicher Zeiten*. Frankfurt a. M.: Suhrkamp 21,984, p. 155.

¹⁷Cf. Wenk, op. cit., 1996, p. 9 f.

¹⁸Johann Wolfgang von Goethe: “Über die Gegenstände der bildenden Kunst,” in: *Goethes Werke. I. Abt. Werke im engeren Sinne*, vol. 47. Weimar 1887–1919, p. 94 f.; cf. also ders: “Maximen und Reflexionen,” nos. 1112 and 1113: allegory transforms the “appearance into a concept” and “the concept into an image,” symbolism, on the other hand, transforms the “appearance into idea” and the “idea into an image” (op. cit., p. 48).

¹⁹Cf. Heinz-Toni Wappenschmidt: *Allegorie, Symbol und Historienbild im späten 19. Jahrhundert*. Munich: Wilhelm Fink 1984, p. 13.

traditional system of references. But to reduce them to a superficial occasion for decorative nudity and its sensuality, as a sign of decay of commodity aesthetics, as Hess has done, falls short.²⁰ For not unlike the symbol, they aim at an (imagined) naturalness that attempts to establish a bourgeois community and history in an aesthetic of direct sensual effect after the ideological rupture that the French Revolution had accomplished. Martin Gerlach, who in 1884 published a collection of allegories and emblems for the applied arts, notes in the preface to this collection that the allegories became indispensable in “the days of speculation, the philosophical worldview [...]. Their beings are an unequal but inevitable substitute for the figures of faith and rotten ideals”.²¹

If, now *La fée d'électricité* gains an allegorical reality and appear on posters and brochures, as company and brand logos, on lettering and catalogs, on billboards and in weekly newspapers (and next to *Marianne* and *Germania*),²² this is more than an advertising strategy. It is a thoroughly successful attempt to base industry on myth, to erect the first icons of consumer culture, to inaugurate technology in allegorical embodiment as a meaning-creating, community-forming, and history-driving force.²³ “For nothing has the industrial mastery of nature, with its corporate and brand logos, its posters and brochures, invoked more emphatically than precisely its mythological precursors.”²⁴ Technology also appears here in an aesthetic that relies on natural expression with the invention of a tradition as an imagined community.

The most prominent manifestation of this electrical allegory in Germany since 1894 was the AEG trademark (cf. Fig. 7.3), which borrowed heavily from a painting by Ludwig Kandler (1856–1927), which in turn was commissioned by Schuckert-Werke and inspired by the electrotechnical exhibition in Munich. Kandler's *Das elektrische Licht* (1883) shows a giant female figure hovering above the surface of the earth, raising a light bulb high above her head and lightly touching the sea with one toe, much as if she were walking on water. Like the parousia, the return of Christ at the end of salvation history, electricity occurs as a reflection of a primary light, a second ‘let there be’ that once again, and this time definitively, separates light from darkness. The victory over the powers of darkness, which was promised for the end of history, seems to be redeemed by technical means. Because electric

²⁰Cf. Günther Hess, “Allegorie und Historismus. Zum ‘Bildgedächtnis’ des späten 19. Jahrhunderts,” in: *Verbum et signum*, ed. by F. Ohly et al. Stuttgart: Fink 1975, pp. 555–591.

²¹Gerlach, op. cit., 1884; cf. also ders: *Allegorien. Neue Folge. Originalentwürfe von namhaften modernen Künstlern*. Vienna: Gerlach and Schenk 1896.

²²Cf. Tilmann Buddensieg: *Industriekultur. Peter Behrens und die AEG*. Berlin: Mann 1979, p. 21 ff.

²³Cf. David E. Nye: *Image Worlds. Corporate Identities at General Electric 1890–1930*. Cambridge, Mass.: MIT Press 1985.

²⁴Cf. Peter-Klaus Schuster: “Schön und kolossal: Industrie-Ikonen,” in: *Industriekultur in Nürnberg. Eine deutsche Stadt im Maschinenzeitalter*, ed. by H. Glaser/W. Ruppert/N. Neudecker. Munich: C. H. Beck 1980, pp. 294–299, here: S. 294.

Fig. 7.3 AEG company poster, color lithograph by Louis Schmidt, Königliches Hof-Kunst-Institut Otto Troitzsch, Berlin o. J. (1888)



light can be used to turn night into day, it can be used to combine illumination and enlightenment and also to banish the last spooky creatures from the corners and shadows of the European Enlightenment.²⁵

With the allegorical representation, an invisible force is made visible here, and its appearance is both heightened and tamed. In the tangible form of the female body, the fears triggered by technology are banished and transformed into desires.²⁶

²⁵ Cf. Vilém Flusser: "Mehr Licht. Gedanken für eine Ausstellung," in: *Das Glühbirnenbuch*, ed. by P. Berz/H. Höge/M. Krajewski. Vienna: Edition Selene 2001.

²⁶ Cf. Maria Osietzki, op. cit., 1996, pp. 47–70 as well as this, op. cit., 1997, pp. 11–38; "Das Geschlecht der Energie", in: *Auf den Spuren der Frauen in der technologischen Zivilisation*, ed. by Christine Wächter. Munich/Vienna/Graz 2000, pp. 139–159; "Die allegorischen Geschlechter der Energie," in: *Wenn die Weltseele aus der Steckdose kommt. Aspekte einer Kulturgeschichte der Elektrizität um 1900*, exhibition catalog Museum Industriekultur Osnabrück, ed. v. R. Spiker. Osnabrück 2001, pp.12–25.

The divinely kitschy configuration gives electricity what batteries and dynamos fundamentally lack: a traditional feel, a sensual appearance, and a tangible meaning. Technical complexity is translated into aesthetic experience. What otherwise appears as blinding light, shocking the body and irritating the nerves, here confronts us as a freely available object of desire.²⁷

However, in order for the female body to absorb such a surplus of meaning, to be able to charge it symbolically in such a way, it must be detached from its historical and cultural situation. To this end, the figure is deprived of concreteness: Suspended above the ground, she is removed from any contact with her environment; the antiqued costume insinuates timelessness and placelessness, and is complemented by a nudity that refers to naturalness. Her expression is meaningless and is supported by a distanced and static posture that allows no inference of inner movement. Only the things she holds in her hands and proudly stretches out to us – things she neither uses nor makes – give the figure its meaning. She herself is pure presentation and makes every effort to step back behind what she presents; she shows her body, and that only in order to show something else.

Only in this way, in the radical removal, because she falls out of time and refers to an eternal feminine and a naïve state of nature, can her body represent a force of nature and thus become the bearer of an idealized abstraction.²⁸ But where the female body is needed for the presentation of supernatural powers, any concrete female body runs the risk of disrupting this idealization; and therefore the allegorical staging in turn conditions the exclusion of women from the festive assembly at whose center the allegory stands, as for example in the Frankfurt Electricity Exhibition.

The female sex has been completely excluded from participation in the board, in the committees [...]. One has therefore had to compensate them in other ways. The well-known 'delicate hand', which virginal and dressed in white hands the laurel to the returning victor, which writes fragrant billet doux and embroiders the most precious Vielliebchen, she has also become on all exhibition vignettes the allegorical light giver, which shines ahead of the exhibition [...].²⁹

The symbolic compensation for the real exclusion is that rhetorical feint behind which the actual dialectic of the allegorical operation is hidden: Where the female body becomes the (ideal) representative of male community, the (concrete) women not only have to give way from the representation, they also no longer have a place in the audience. This realpolitik exclusion, here dressed up as allegorical compensation, finds its iconographic equivalent in a pictorial pattern that frames the nameless

²⁷ Cf. inter alia: Ulrike Gall: *Weibliche Personifikationen in Allegorien des Industriezeitalters. Motivhistorische Studien zu Kontinuität und Wandel bildlicher Verkörperungen 1870–1912*. Konstanz: Hartung-Gorre 1999.

²⁸ Cäcilia Rentmeister: "Berufsverbot für die Musen," in *Ästhetik und Kommunikation* 25 (1976), pp. 92–112, here: S. 92; cf. Alexandra Karentzos: *Kunstgöttinnen. Mythische Weiblichkeit zwischen Historismus und Secessionen*. Marburg: Jonas 2005; Silvia Eiblmayr: *Die Frau als Bild. Der weibliche Körper in der Kunst des 20. Jahrhunderts*. Berlin: Reimer 1993.

²⁹ *Offizielle Zeitung*, op. cit., No. 1, 1891, p. 16 (Fritz Murner: "Skizzen vom Festplatz").

allegorical female body with engineers' heads and their great names (cf. Fig. 7.5). The abstract ideal *personification* - female, passive, natural - is opposed to the *personality* - male, active, technical - as a particular individuality that empowers itself as such precisely in the mastery of the former. Through the symbolic distribution of technology between male heads and female bodies, the supposedly timeless power is legitimized by an equally timeless creation myth.³⁰ This empowerment, however, is based, as shown here, on a disembodied gaze directed at a dis-individualized body. Constitutive here is also a masculine gaze, as Laura Mulvey has described it for mainstream Hollywood cinema. The image offers the male viewer a double identification with the protagonist (engineer) on the one hand and the camera's gaze (technology) on the desirable female body on the other (Fig. 7.4).³¹

Fig. 7.4 Portraits of Oscar von Miller, (Leopold Sonnemann, and Oscar Sommer in *Elektrizität. Offizielle Zeitung*, 1891



³⁰ Howard Eilberg-Schwartz/W. Doniger (eds.): *Off with Her Head! The Denial of Woman's Identity in Myth, Religion, and Culture*. Berkeley et al.: University of California Press 1995.

³¹ Cf. Laura Mulvey, "Visual Pleasure and Narrative Cinema," in: *Screen* 16/3 (1975), pp. 6–18.



Fig. 7.5 Postcard for the Frankfurt International Electricity Exhibition, 1891 (Historisches Museum Frankfurt am Main)

The male counterpart to the body of electricity is not only the engineers like Siemens and Schuckert, who can be seen as portrait heads on postcards, or in the ballet as Volta and Galvani, who have the laurel wreath hung around their necks, but an honorable exhibition audience that looks under the skirts of electricity in the name of progress (cf. Fig. 7.5). To the very extent that electricity appears as a dancer, engineers become an audience. The embodiment of electricity is juxtaposed with the gazes of engineering reason. Just as the engineer looks at nature as something not so much to be read or understood as to be optimized in productive ways, so too does he look at what is happening in the theater.

“Für Männer alle Balletteusen
Bekannt sind als magnetische Wesen.
Wenns sie nun noch elektrisch werden
Wird's klar vor allen Dingen
Dass sie mit spöttischen Geberden
Uns auf dem Kopf rumspringen”

“For men all ballet dancers
Are known as magnetic beings.
If they now become electric
It becomes clear above all
That they with mocking gestures
Jump on our heads”

With the embodiment, the power becomes sensually tangible and thus enjoyable, but the connections of its generation are also made uncertain. For what completely escapes visibility in this spectacular triangle of technical allegory, just as combustion has departed from the light bulb, are the concrete bodies of the sexes – what technology does to them, the effects on the fullness of life in which both are involved. The female body disappears behind the ideal of allegory, the male is cut off in favor of its own head. “Electricity has thus at the same time become a

personification of human reason, commanding the raw elements, fire and unformed vapors, sublimating them."³²

But that which separates electricity from *Borussia*, *Bavaria* or *Germania* is not so much its world-spanning claim (which is by all means also inherent to the imperialist nations of the nineteenth century) but rather the claim to establish "a new time" that breaks with the past.³³ From the beginning, electricity wants to establish that for which it will later become a signum: a modernity that sees itself as the dawn of the century. The triumphant gestures of this electricity alias modernity are obviously related to the *Liberté*, as erected, for example, by Bartoldy in 1886 in the harbor of New York³⁴ and whose model, which comes across as less stiff and puritanical, is by Delacroix from 1830: *La Liberté guidant le peuple*. Here, too, the victory of light over darkness is celebrated in the triumphant striding forward with bared breast, thus providing the basic motif for the allegory of history, which later Benjamin's *Angel of History* or Heiner Müller's *Hure der Revolution* only vary. Beyond that, there is certainly a further kinship with *Victoria*, the goddess of victory, who usually depicted imperial military successes in the form of *Nike* to celebrate imperial military successes or to guarantee business successes on the letterheads of founding-era companies.

Even clearer, however, is the descent from *Vérité*: Kandler's model is Philipp Otto Runge's *Der kleine Morgen* (1808), on which the putti still scatter flowers instead of making telephone connections. For Runge's aurora rising to heaven, in turn, Botticelli's depiction of naked truth in *La Calunnia di Apelle* (1494/1495)³⁵ seems to have served as a model. For what truth and electricity have in common and what distinguishes the latter from other allegories is, on the one hand, their nakedness and, on the other, their turning to the light.³⁶ In the case of truth, both can be traced back to baroque iconology. While freedom, like most female allegories in general, in Cesare Ripa's *Iconologia* of 1593 is clothed, there is a figure whose nudity is precisely not decorative but significant. One foot is placed on the globe, a sun shines in one hand, and she holds a book and quill in the other.

³² Klaus-Peter Schuster, op. cit., 1980, here: S. 297.

³³ Cf. David Gugerli, "Modernität–Elektrotechnik–Fortschritt. Zur soziotechnischen Semantik moderner Erwartungshorizonte in der Schweiz", in: *Elektrizität in der Geistesgeschichte*, op. cit., 1998, p. 6.

³⁴ Cf. Martha Banta: *Imaging American women. Idea and ideals in cultural history*. New York: Columbia University Press 1987, p. 530 ff.

³⁵ Cf. Hermann Glaser: *Maschinenwelt und Alltagsleben. Industriekultur in Deutschland vom Biedermeier bis zur Weimarer Republik*. Frankfurt a. M.: Krüger 1981, p. 61.

³⁶ Cf. Marina Warner: *Monuments and Maidens. The Allegory of the Female Form*. London: Weidenfeld and Nicolson 1985.

Una bellissima donna ignuda, tiene nella destra mano alta il Sole, il quale rimira, & con l'altra vn libro aperto, con vn ramo di palma, & fotto al destro piede, il globo del mondo. [...] Ignuda si rappresenta, per dinotare, che la simplicità gli è naturale; [...] si fà nuda, come habbiamo detto, & non deue hauere adornamento alcuno. Tiene il sole, per significare, che la verità è amica della luce, anzi ella è luce chiarissima, che dimostra quel che è. [...] Il libro aperto, accenna, che ne i libri si suona la verità delle cose, & per ciò è lo studio delle scienze. Il ramo della palma, ne può significare la sua forza, percioche si come è noto, che la palma nó cede al peso, così la verità nó cede alle cose còtrarie, & ben che molti le impugnano, nondimento si solleva, & cresce in alto. Il mondo sotto il piè, denota, che ella è superiore à tutte le cose del mondo, & di loro più pretiosa, anzi che è cosa diuina, onde Menandro in nannis, dice che la verità è cittadina del cielo, & che gode solo stare tra'Dei.³⁷

A very beautiful woman, naked, holds up in her right hand the sun, which she contemplates, and in the other (hand) an open book, with a palm frond and under her right foot, the globe. [...] Naked she presents herself to show that simplicity is simple; [...] she makes herself naked, as we have said, and she must have no adornments. It holds the sun to show that the truth is a friend of the light; it is, better said, the very brightest light that shows that which is. [...] The open book indicates that in the books the truth of the things resounds, and therefore there is the study of the sciences. The palm frond can stand for its strength, because it is known that the palm does not yield to the load, as the truth does not yield to the contrary things; and even though many dispute it, it nevertheless rises and grows in height. [...] The world under the foot indicates that it is superior to all the things of the world and more valuable than these, better still that it is a divine thing, so Menander says in Nannis that truth is citizen of heaven and that it only delights in being between the gods.

But at the end of the nineteenth century it is no longer divine truth that is above all things; a new naked beauty has taken its place, and this one no longer carries in her raised right hand a divine sun, a torch of enlightenment, or a flag of the nation, but a *light bulb* that unites them all. For in the electro-parousia that it proclaims, the divine, the rational and the state unite in order to henceforth control the distortions of the industrialized world by technical means, and to do so at an affordable price. The allegory has become a *trademark*, an “armature of modernity,” as Benjamin writes, and where, accordingly, emblems recur as commodities, even the light of truth becomes purchasable, as Monika Wagner states following Benjamin.³⁸ The New *Veritas* no longer triumphantly places one foot on the globe, but balances on the advertised commodity.

³⁷ Cesare Ripa: *Iconologia Overo Descrizione Di Diverse Imagini cauate dall'antichità, & di propria inuentione*. Rome: Faeii 1603, p. 499 ff.

³⁸ Walter Benjamin: *Gesammelte Schriften*, vol. 1, 2 Abhandlungen, ed. by R. Tiedemann. Frankfurt a. M.: Suhrkamp 1980, p. 681.

But the body of this new truth, as can be seen in an advertising poster by Franz von Stuck, at the end of the nineteenth century has become different and resembles that of electricity. As in Jules-Joseph Lefebvre's *La Vérité*, Franz von Stuck's model of 1870, the body of truth is here hardly *butch* and quite *femme*, it has lost its baroque androgyny: given larger breasts and a narrower waist than the baroque model, less strength in arms, shoulders, and legs, but longer head hair that can slip through the fingers. A secure wide-legged stance has given way to a balance in which the playing leg delicately plays around the standing leg. What is left of veiling drapery serves less to hide the shame and cover the nakedness than to point out the temptations underneath, to highlight breasts and legs, even the triangle between the legs. Nudity is no longer a sign of an undisguised show of truth,³⁹ but only a pretext for the allure of exposed skin. The whole body seems to have dissolved into this smooth white skin, it has become entirely a shining and glossy surface. As if standing in the spotlight, it is detached from an environment that has completely fallen into darkness, making it seem as if there were nothing but it, nothing to which the gaze could still turn. The light that this truth raises seems to be less a symbol of a supreme truth than that means that stages a body that has become all charm and hardly any sign (namely, trademark) – even if the light that makes this body shine comes from beyond the edge of the picture, from the portal bridge and the portal towers.

7.2 Dispositives: Bodies on Display and Unidirectional Glances

Above all, however, it is the gaze of this new truth that has changed strikingly in comparison to the baroque and classical model. Ripa's *Veritàs* looks at the sun in her hand. Botticelli's *Veritas* looks up at the sky and hardly cares about her counterpart. Delacroix's *Liberté* looks behind her at the followers, and Bartoldis' *Liberty*, like so many monumental statues, stares into an indefinite distance. Kandler's *Electricity*, like Levebvre's *New Truth*, fixes the viewer of the painting with her gaze.

This distinguishes it from the common harem fantasies of the nineteenth century, in which the languishing *Odalisques* seem completely unaware of the gazes resting on their bodies. In contrast, the new truths, like the allegorical trademarks, seem to know that they are being seen. And this knowledge of the gazes that lie upon them does not (any longer) lead to the bashful striking down of one's own gaze, as was (still) essential for bourgeois eroticism. The female does not (any longer) seem to be obliged to pretend that she does not know about the glances of desire directed at her, in order to contribute accordingly to the concealment of the exhibition situation and to enable the viewer a harmless voyeurism. Like Manet's *Olympia* (1863), which

³⁹Cf. Martine Vasselin, "Le corps dénudé de la Vérité," in: *Rives Méditerranéennes* 30/2 (2008), pp. 77–91.

becomes the scandal of the salon, the object of desire does not bashfully turn away to let the (clothed) viewer enjoy the objecthood undisturbed, but holds the gaze, thus revealing its professionalism, the businesslike nature of eroticism.

But while Olympia's gaze, which looks the suitor in the eye, falls in a private setting, and the scandal this causes also and primarily takes place because a hidden part of bourgeois life is thus placed in the public sphere of the salon, the allegorical marks with their prancing stance are singled out and confronted by a larger audience. The female bodies depicted here look back, returning the viewer's gaze and focusing the painting's opposite, thus also offensively highlighting the theatricality of the situation. For either these figures are aware of being only part of a picture, or they represent figures who are aware that the gaze is on them, which ultimately amounts to the same thing. For the gaze directed into the audience turns the representation of the naked body into the presentation of that very body. Electricity and truth are not only depicted in these representations, they appear in the knowledge of the appeal that the presentation of exposed skin has on its audience. They are offensively theatrical in the sense of an unconcealed display that does not deny the knowledge of being seen and rather emphasizes the theatrical situation of showing and looking.

This look back is also potentially scandalous because it questions a theatrical order that had characterized the bourgeois theater of the eighteenth century. The most prominent protagonists of this order are Voltaire and the fourth wall, which forbid, better, which ensure that it is forbidden to let one's gaze wander from the theater into the auditorium.

As Günther Heeg has worked out on the basis of theatrical theoretical writings of the time, at the center of this aesthetic is the construction of a (phantasmatic) natural figure in a private theater of shame: the play of "naïve innocence," who pretends to know nothing of the desiring gazes that are upon her, is juxtaposed with a (male) spectator whose voyeuristic pleasure results from the supposed glimpse into a non-public intimacy.⁴⁰ With this bourgeois ordering of the theater, the theatrical distribution of power changes fundamentally. Instead of the authoritarian appearances of the few, to whom all gazes are directed, and the power of the many to refuse recognition of this authority, there appears with the gazes of the many a power committed to the norm, which is left only with the manipulative play within the regime of these very gazes. Accordingly, theater in its bourgeois order is no longer attacked as something reprehensible in itself, but only when it deviates from the standard that henceforth regulates and controls it better than any censor: naturalness.

Only where the natural signs of the face run the risk of falling back into artificial masquerade through exaggerated "preening," innocence also threatens to turn into prostitution. Anyone who attracts attention on the street or stage by being too

⁴⁰Cf. Günther Heeg: *Das Phantasma der natürlichen Gestalt. Körper, Sprache und Bild im Theater des 18. Jahrhunderts*. Frankfurt a. M.: Stroemfeld 2000, inbes. pp. 73–97.

dressed up, wearing too much makeup, who allows a representation to emerge that should not and may not be a representation, and who allows a repressed public sphere to become visible behind the fiction of the private, always exposes herself to the accusation that she has only faked the emotion shown, that she is therefore a prostitute.

Precisely because actresses act – because ostensibly unlike housewives, they pretend and display themselves in public – the promise of nature could, for many observers, be transformed into the threat of artifice.⁴¹

Every female appearance in public is accordingly under suspicion and can only be legitimized by a not inconsiderable theatrical effort that negates the very publicity of that appearance. Even more decisive than the renunciation of any ‘adornment’, however, is the omitted gaze towards the viewer, which establishes contact and opens up a communication between hall and stage that makes it impossible to pretend that the theater is not theater.

Such (back) glances have a history that does not necessarily have to coincide with that of seeing (and perception). For glances are essentially *situational*, i.e. firstly: they are bound to circumstances, in the theater different glances are cast than those in the factory or on the street; secondly, glances – unlike perception, which is mostly subjective or thematized in relation to subjects – take place between eye and dress, in the exchange of glances collectives are constituted. Glances seldom come alone, usually encounter each other, are reciprocated, are always already in an interplay, are attracted and repelled, are thus something in which the looked at has its share. They evoke behavior, move things and are changed by objects, are always also physical behavior.

A theoretical heuristic of the gaze can be developed from the etymology of the word. Derived from the Old High German *blic*, lightning, i.e., from the oldest manifestation of electric light, in Middle High German, *blick* means “[...] ‘bright ray’; ray is used transmitted from the eye as from lightning”.⁴² In the development of the German language it is the sky that gazes first, then it is the swords in Luther,⁴³ shortly thereafter one encounters “cruel sparks” that “gaze out of the eyes”.⁴⁴ With Schiller and Goethe, love, understanding and peace are added, so that, finally, it is vice versa possible to *gaze into* the hearts and the future or, in Kant, people and

⁴¹Lynn Voskuil: *Acting Naturally. Victorian Theatricality and Authenticity*. Charlottesville/London: University of Virginia Press 1995, p. 417.

⁴²Friedrich Kluge: *Etymologisches Wörterbuch der deutschen Sprache*, Strassburg: Trübner 1899, p. 48.

⁴³Cf. *Deutsches Wörterbuch* by Jacob and Wilhelm Grimm, 16 vols. in 32 parts. Leipzig 1854–1961, list of sources Leipzig 1971, online version Feb. 18, 2016, entry “blicken” vol. 2, sp. 113 to 188 (http://woerterbuchnetz.de/cgi-bin/WBNetz/wbgui_py?sigle=DWB&mode=Vernetzung&lemid=GB08430#XGB08430, last accessed Dec. 15, 2019).

⁴⁴“Buch der Weisheit Salomos, Kapitel 11, Vers 19 (in späteren Ausgaben Vers 18)“in: *Biblia. Das ist: die ganze heilige Schrift, Deutsch durch Dr. Martin Luther*. Leipzig: Meyer Wigand 1842.

feelings now *let themselves be* gazed at. Thus, etymologically, a gaze is a from of seeing that actively radiates and transmits, in which more can be seen than is seen. Whoever gazes, gives something, even if it is only attention, or, in times of bourgeois inwardness, also something of oneself; she and also he lets herself or something of themselves being seen. And this gazing does not leave the looked at untouched (like the evil eye), it rather does something with it. It can strike like a bolt of lightning; and its opposite at the end of the nineteenth century is a passive looking that determines the criticism of bourgeois culture and theater from the Futurists to the Situationists.

Especially in the classical cinema of Hollywood, in which the gaze is institutionalized between 1909 and 1917, the gaze into the camera becomes taboo, because it is assumed to destroy the “illusion”. Behind this illusion, however, as Christian Metz’s and Jean Louis Baudry’s psychoanalytic film theory and Laura Mulvey’s feminist continuation have pointed out, is a complex arrangement of gazes that aims less to create a fiction than to produce a seeing subject. Building on art historical research on the construction of an ideal viewing subject in central perspective on the one hand⁴⁵ and psychoanalytical theories of early childhood subject formation on the other hand, (classical) cinema seems to cultivate a regressive identification. Shrouded in darkness and isolated from the audience and lifted out of the (show) situation, it allows for a double identification with the camera and its omnipotent mobility as well as the male protagonist of the classical narrative. A body that experiences itself as deficient discovers in the visual counterpart of the mirror an image of itself that is clearly delimited from the environment, forms a wholeness, and seems to be subject to subjective control. Thus, according to Lacan, through an initial identification of the inadequate body with an ideal image, an imaginary self first emerges, which in a second step acquires symbolic representation through socialization in and through language.⁴⁶ Cinema, according to Metz and Baudry, repeats precisely this primal scene, provides for the now culture-industrially repeated misrecognition of the self, and in this respect has an ideological effect. Following on from these reflections, Laura Mulvey has emphasized that the gaze produced by this technical-aesthetic configuration of cinema is a specifically *male* gaze which is doubly directed at the female body and emerges from a twofold identification: first with the camera and second with the protagonist.⁴⁷

⁴⁵Cf. Erwin Panofsky, “Die Perspektive als ‚symbolische Form‘“, in: *Vorträge der Bibliothek Warburg 1924/1925*, Leipzig/Berlin 1927.

⁴⁶Cf. Terry Eagleton: *Literary Theory. An Introduction*. Minneapolis: University of Minnesota Press 1983, p. 164 f.

⁴⁷Cf. Mary Ann Doane: *Femmes fatales. Feminism, film theory, psychoanalysis*. New York: Routledge 1991.

Classical cinema, understood in terms of psychoanalytic film theory as such a phantasmatic arrangement that cultivates an insatiable desire through regressive identification, is constituted in the taboo of looking into the camera. For any look back, whether from the male subject or female object of desire, would call into question the identification with the male hero or the female object of desire.

But while looking into the camera is taboo in classical cinema, it becomes paradigmatic for a fundamentally different cinema, which Tom Gunning has named the *cinema of attractions*,⁴⁸ and which lies before and below the classical one. Following an aesthetic of presentation rather than representation, and closer to exhibitionism than voyeurism, this cinema thrives on the offensive display of attractions of which it is itself a part. Accordingly, the gaze into the camera is a common means, in which, as Miriam Hansen points out, the ambivalence of early film becomes apparent. For the gaze into the camera addresses a (collective) audience, bridges the separation of performer space and spectator space, and refers to the spectacular and public framework of the performance. Because this separation nevertheless remains and the address, like that of a letter, is always addressed to individuals and everyone feels addressed, viewing in the cinema is already less collective and public than private and individual. While classical cinema was theorized for a long time precisely in contrast to theater because the actors there could not see their audience, the *cinema of attractions* moves close to theater because, as Miriam Hansen has explained, it builds on the reciprocity of seeing and being seen, because it is self-consciously exhibitionist, the act of exhibiting in its presence on site and its publicity is decisive.⁴⁹

However, the comparison of theater and *cinema of attractions* is problematic, since it assumes that there is only *one* theater, and since, while it de-ontologizes and historically contextualizes film, it continues to ascribe essentialist qualities to theater. Against this, however, it is to be objected that already the bourgeois theater traditionally denies precisely that theatricality which puts the cinema of attractions in the vicinity of the theater. The cinema of attractions, in other words, is close to a theater of attractions, while another line of tradition leads from bourgeois theater through the popular melodrama of the nineteenth century to Hollywood. The actresses in vaudeville, writes Susan Glenn, looked the spectator directly in the face and challenged his gaze: "Look at me! I am going to astonish you!"⁵⁰

In this respect, looking back to the spectator seems to be precisely what also distinguishes a theater of *attraction* from scenic *narration* in the classical sense. But of course, the fourth wall is rather the exception in the history of theater, and a

⁴⁸Tom Gunning, "Cinema of Attractions. Early Film, Its Spectator and the Avant-Garde," in: *Wide Angle* 8/3-4 (1986), pp. 63-70.

⁴⁹Miriam Hansen: *Babel and Babylon. Spectatorship in American Silent Film*. Cambridge, Mass. v. Harvard University Press 1991.

⁵⁰Susan Glenn: *Female Spectacle: The Theatrical Roots of Modern Feminism*. Cambridge: Harvard University Press 2000, p. 7.

change of gaze, but also of words and roles, is a rarely absent component of theatrical communication that can only be prevented with considerable theoretical and practical effort. It is therefore only the specific historical location of this review that makes it significant: First, the fact that it occurs in a culture that, for over a 100 years, attempted to banish this very gaze from any form of legitimate culture by means of a fourth wall; second, the fact that the gaze occurs out of the light, that it responds to the spotlights that envelop the body from which it emanates in an aura previously reserved for the saints. This spotlighting allows the gaze into the audience to become rhetorical, because contrary to the focused front lighting that began to prevail in vaudeville towards the end of the nineteenth century, it is hardly possible to see anything from the stage in the darkened auditorium. Similar to looking into the camera, the audience has to be more guessed at.

What is striking about the glances of the *luminous bodies* that we are dealing with here is that, in historical comparison, they *only* have bodies (or are bodies). Their nakedness is therefore not a lack of clothes, but a surplus of skin. They lack nothing; the abandonment of the clothes and the (social) order that comes with them is what essentially makes them what they are. What is exhibited (by themselves and others) is the body in its corporeality, and that means on the one hand its (a-cultural) physiology, on the other hand its making available. Removed from the context of life, withdrawn from use, this body is a thing that only serves to be desired, the gaze is deprived of any interaction. The commodity smiles at you.

7.3 Specialties: Attraction and Scandal

Following on from the film, one could perhaps speak of a *theater of attractions* in relation to the popular theater of the nineteenth century, if this did not suggest a unity that hardly seems to have existed. For what in the nineteenth century was known as the *Café Concert* (France), *Musical Hall* (England), *Vaudeville & Burlesque* (USA) becomes successful (in Germany there are *Singspielhallen* and *Tingeltangel*, but the most familiar today is probably *Variété*), has many names, which by no means all mean the same thing.

The diversity not only characterizes the aesthetic program of this theater, but it is also so diverse itself that it is quite questionable whether and on the basis of which commonalities it can be meaningfully summarized into a conceptual whole. More than anything else, it necessarily remains a mishmash that lacks a center and that inevitably remains blurred, if only because of the sources. Above all, however, this theater remains *symptom* (instead of ideal, as it determines classical theater); no poetics are written for it, but laws that are supposed to limit it, pamphlets that condemn it or delimit it, manifestos that declare it a model. Only *ex negativo* and *a posteriori* does the multiplicity become a unity. On the one hand, there are trade regulations that, during the nineteenth century, define what this theater is not allowed to do (mostly: high genres, more than two characters, spoken words, costumes and

scenery),⁵¹ and which, towards the end of the century, determine what this theater does not have, namely a higher interest in art and science.⁵² On the other hand, with the beginning of the twentieth century, theater histories emerge that relate the disparate historical phenomena to a late institution, into which they are placed both historically as precursors and theoretically as aesthetic components. Thus, in combining numbers neatly divided into song, dance, acrobatics, comedy, and magic into a full-length program, the discursive construction of an artistic “unity of multiplicity” gives rise to vaudeville.⁵³ Mostly it is the upscale establishments in the last third of the nineteenth century, which were influential on the literary as well as visual arts, such as the Alhambra (London 1864), the Folies Bergère (Paris, since 1885), the Moulin Rouge (1889) or the Berlin Wintergarten (since 1897), which are the godfathers of this construction.⁵⁴

In contrast to this, I would like to advocate for the (historical) concept of *specialty theater* (Spezialitätentheater) in order to describe precisely that unfinished and fuzzy diversity of a theater that is hardly held together by institutional, architectural, or dramaturgical brackets, but rather constitutes itself in ever more *special* performances, which are fundamentally more important than the general framework of this performance. It is the individual ventriloquists, strongmen, children’s ballets, the magicians, floor acrobats, puppeteers, tightrope walkers, monkey and dog theaters, smoke screens, soubrettes, piston-blowers, pickpockets, illusionists, contortionists, ventriloquists, and lady impersonators that form the substance of this

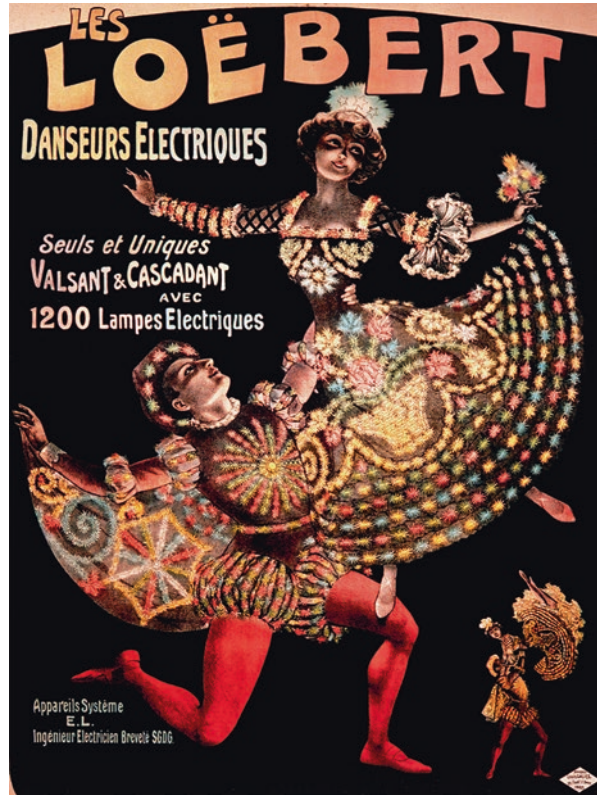
⁵¹ Cf. e.g., the Prussian police regulation of 1878, reproduced in: *STENO-BERICHTTE Deutscher Reichstag* 6/4 (1883), p. 1695.

⁵² After the *Gewerbeordnung für den Norddeutschen Bund* (Trade Regulations for the North German Confederation) of June 21, 1869, regulates in §32 that “acting entrepreneurs” may not have restrictions imposed on “certain categories of theatrical representations” and according to §33 “Gast- und Schankwirthschaften”, are to be refused if they could be misused for “gluttony” or “immorality”. It is adopted for the German Empire in 1872. A first tightening of this “theater freedom” in §32 comes into force in 1880, in that it prohibits the granting of concessions to those “who have no financial basis, who are morally unfit and who are also insufficiently trained artistically”. The final separation comes in 1883 with the introduction of a §33a that separates precisely the artless from the drama: “Whoever wants to publicly organize commercial singing plays, singing and declamatory lectures, shows of persons or theatrical performances, without a higher interest of art or science being involved, in his public or other rooms or have his rooms used for their public organization, requires permission for the contribution of this trade without regard to any permission already obtained for the operation of the trade as a theater entrepreneur” (*Deutsches Reichsgesetzblatt Band 1883, Nr. 15, Seite 159–176 vom 1. Juli 1883*) Henceforth, there are theaters with higher interest and landlords who have professors issue them an “art certificate.” (Op. cit., pp. 1695 ff.), cf. also *Reichstagsprotokolle* of March 17, 1880, pp. 452–465 and Apr. 26, 1880, pp. 926–933, and the *Verhandlungen des Reichstages des Norddeutschen Bundes* of Apr. 13, 1869, pp. 351–353; June 17, 1868, p. 530, p. 527, Apr. 14, 1869.

⁵³ Cf. Ernst Günther: *Geschichte des Varietés*. Berlin: Henschel 1978.

⁵⁴ Cf. Wolfgang Jansen: *Das Variété. Die glanzvolle Geschichte einer unterhaltenden Kunst* (= Beiträge zu Theater, Film und Fernsehen aus dem Institut für Theaterwissenschaft der Freien Universität Berlin 5). Berlin: Hentrich 1990.

Fig. 7.6 “Les Loebert. Danseurs Electriques,” poster. (Musée EDF Electropolis archive)



theater, which is hardly reducible to form, and which appears in the most diverse programs alongside the cinematograph and the bulletproof vests (cf. Fig. 7.6).⁵⁵

Secondly, it is crucial that these performances take place in the context of the convivial consumption of food and the consumption of alcohol and tobacco. It is not the form but the situation of the performances that is decisive, and this is determined by their origin in the tavern trade. At the end of the nineteenth century, saloons emerge in pubs in England and *café chantants* as a business of urban conviviality in France. By the end of the nineteenth century, operators of specialty stages have concessions as innkeepers or *cafetiers*. Accordingly, the specialty stage has always been part of a hall with which it is in lively exchange. Not only does the performance take place at the eye level of the audience, the boundary to conviviality is fluid. Jokes, songs or dances move from the street via the hall to the stage and from the stage via the hall back to the street.

⁵⁵ Cf. Robert M. Isherwood: *Farce and Fantasy. Popular Entertainment in Eighteenth-Century Paris*. New York: Oxford University Press 1986.

Finally *thirdly*, it should be mentioned that these specialty stages occupy a deeply ambivalent position in bourgeois culture. For on the one hand, much of the fair-ground theaters of the touring theater groups, whose banishment the bourgeois theater vehemently advocated, lives on in them: the closeness to the body, the crudely obscene and insanely grotesque, the drastically erotic and a satirical-commentary and grotesque-comic examination of the present, time and again also the satirizing of the ruling high culture – in large parts, the specialty stages live precisely from the vulgarized and satirized fragments of bourgeois culture. On the other hand, however, specialty theater, with its integration into the catering establishment, has always been exposed to a more or less pronounced process of cultivation that works both on refining the program and displacing the vulgar in order to attract bourgeois classes, and on organizational and economic professionalization that reduces the improvised element in favor of the standardized program. Both developments are largely driven by the waves of economic and social liberalization in the nineteenth century.

After 1848, with the *Café Concerts*⁵⁶ and *Music Halls*⁵⁷ a bourgeois attention regime is increasingly introduced in the specialty theater, accompanied by a withdrawal of vulgar allusions to interactions with the audience and local references. Railroads and telegraphy create opportunities for planning and staging tours, turning traveling showmen into booked acts in large companies. A second wave of professionalization takes place in the late 1860s with the liberal French theatrical legislation of 1867 and the appearance of professional journals such as *The Comet* and *The Artist* take place. The colorful sequence of number dramaturgy emerges as a standard of urban entertainment culture. Nevertheless, the ambivalence remains, the respectability of the former specialty theater remains something that has to be fought for again and again, especially in the exclusion and demarcation of the non-respectable, and at the same time its appeal continues to be fed by its proximity to the disreputable. The journalist August Heinrich Kober, who worked for many years as advertising manager for the Renz Circus and knew the industry accordingly, sums up this ambivalent status of specialty theater in retrospect in a catchy formula:

Harmony of beer, cigar and adventure [...], that was the main thing of the vaudeville around 1900: with the cigar in the mouth and the beer stein next to one to look the danger (artistic tricks), the piquancy, the adventure, the satire fearlessly-comfortably in the eye.⁵⁸

Decisive for the specialty theater is the specific *attitude* of the spectator (an attitude, incidentally, that Brecht later intends to make useful elsewhere for his epic theater): “fearlessly comfortable,” well-satiated and lightly sprinkled, one confronts the

⁵⁶Alain Weill François Caradec: *Le café-concert (1848–1914)*. Paris: Fayard 2007.

⁵⁷Cf. Raymond Mander/J. Mitchenson: *British Music Hall*. London: Gentry 1974; Jacques Feschotte: *Histoire du music-hall*. Paris: Presses universitaires 1965.

⁵⁸August Heinrich Kober, magazine article from 1930, quoted after Günther, op. cit., 1978, p. 10, without references.

dangers of a world gone wild and wide. All the unleashed, unpredictable and explosive energies of the nineteenth century, be they physiological (artistry), erotic (piquancy), social or political (satire) in nature, appear dressed as specialties and serve themselves for consumption. Here one can *look* these very dangers fearlessly and comfortably *in the eye*. So again it is the gaze that is thrown back by the object of looking. Here in the specialty theater, the place to look danger in the eye is where the dancer no longer bashfully casts her eyes down – and that is because she remains on stage. Only because she does not interact, the specialty (as well as the dancer) can look back. Or in other words – the look back here shows, on the one hand, a new (cultivated) way of dealing with the (seemingly banished) dangers to which the bourgeois world is exposed. On the other hand, this view is only made possible by a number of aesthetic security systems: The beer and the cigar are among them, but also the devaluation of the performers, the separation of stage and hall. But the spotlight turns out to be the decisive instrument of this safeguard. It not only highlights the actors, but also blinds them to the same extent; and blinded danger, as already demonstrated by the use of the spotlight in the Colonial War, is easier to look into the eye.

A specialty for which the gazes should stand out most strikingly is that which, at the end of the nineteenth century, is explicitly named as *beauty*. For example, the contemporary press said of the Berlin Wintergarten that “the cult of female beauty” formed an “outstanding specialty” of this theater.⁵⁹ This refers not only to “prize-winning beauties” who are said to have first appeared here in Berlin, but also to the performances of female artists such as the Five Sisters Barrison, Anna Held, Cleo de Merode, Saharet, La Belle Otéro, Fritzi Massary, Minstinguett, Madge Lessing, Annie Dirkens, Lilian Russel, Titi Sidney, Olga Desmond, Anita Berber, the Tillergirls, Yvette Guilbert, with whom ballroom dances became solo dances.⁶⁰ What distinguishes the beauty of these specialties from the classical beauties (of ballet) are, on the one hand, the ‘special’ movements, which were so very different from antigrave ballet and whose position at the beginning of dance modernism has been described many times. But on the other hand, it was the looks that these beauties cast into the auditorium that were scandalous and revolutionary, for these looks were outrageous in the original sense of the word.

Olive Logan, for example, an American actress and writer who sees herself as a “medium” in which religion rebels against the “nude woman world,” and who, as early as the mid-1860s, waged a campaign against the “leg performers” because they showed off only the person in a completely artless manner, clearly lets it be known in her pamphlets that it is precisely this lewd look that represents the actual impudence of these dancers.⁶¹ It started with the success of the indecent March of the Amazons at the Black Crook in Niblo’s Garden on September 12, 1866, a

⁵⁹ Moritz von Reymond: *Berliner Pflaster. Illustrierte Schilderungen aus dem Berliner Leben*, vol. 4. Berlin: W. Pauli 1891, p. 47.

⁶⁰ Cf. Jansen, op. cit., 1990, p. 124.

⁶¹ Olive Logan, “The Nude Woman Question,” in: *Galaxy Magazine* (Summer 1867), here: S. 572.

performance that – and this seems to distinguish it as a specialty, as explained above – was respectable enough for the middle class and at the same time scandalous enough to get into the press. But it did not stop there, Logan explains, and the British Blondes and their vulgar songs with English accents became fashionable.

But as time passed on, and the young noodles of New York fast life began to shower them with bouquets, and take them to drive in Central Park. [...] They grew brazen and saucy, leered at men in the boxes, and generally exhibited a disrespectful regard for the audience, or what it might think of them.⁶²

The bare legs, if they had been presented bashfully and modestly, or if they had remained entirely in the evil taverns, had they not conquered the great stage and had they not gone to the dancers' heads, would have been tolerable. What makes a guardian of morals like Logan go into battle is the impertinent look, the sexually self-confident demeanor; the real scandal is the disrespectful, because insinuating, look into the audience, which knows about the desire directed at one's own body. It is not the object status of the female body that horrifies Logan but rather the self-confident handling of this objecthood, the self-empowerment through the conscious play with the male gaze.

What makes the look back in the historical constellation around 1900 scandalous and successful is that it suddenly takes place within the bourgeois theater regime and not there, where such a look back represented nothing new, but had remained normality. In the bourgeois theater, however, it violated a convention that had only its most superficial layer in the fourth wall and concealed beneath it a complex constellation of male gazes and female bodies that had to stand up for a theatrical order that was also a social order. Here an ostracized vulgarity (from lat. *vulgus* the "common" people), an unadorned and unsublimated eroticism unusual for bourgeois culture broke into bourgeois aesthetics, contradicted good taste and, above all, initiated a new theatrical constellation that was contested and disputed because its meaning was not exhausted in the agency of the performers or the nudity.

As early as 1853, the Spanish dancer Pepita de Oliva performed in Berlin⁶³ and it can be concluded from the testimonies of contemporaries that there was a similar constellation. Because what is interesting about the legs protruding from under the skirt is the person. "Pepita electrified everything by her dancing art", opens an article in the professional journal. The journal *The Artist*, in retrospect, describes the phenomenon, only to correct itself: "i.e. more correctly by her beautiful body and

⁶²Op. cit., p. 564.

⁶³*Pierer's Universal-Lexikon* 1861, vol. 12, p. 275; cf. Stephan Kekule von Stradonitz: "Über Pepitas Ruh und die Pepita," in: *Mitteilungen des Vereins für die Geschichte Berlins* 42 (1925), pp. 17–19.

by the sensual glow of her dance.” It is body and glow, basically forces of nature, that convince, for “as a mimic artist she was insignificant.” If, on the one hand, the article emphasizes the importance of the dancer, it returns at the end to disqualify her entirely and ultimately to negate the fascination previously exalted: “But she was the first Spanish dancer who did not content herself with raising her skirt as high as possible, and therein, in the end, rested the secret of her success.”⁶⁴ In the emphasis on the purely corporeal and the “skirt” in the diminutive that is lifted, the actual “electrifying” glow of the corporeal seems to be defused. A more accurate (and contemporary) impression is given by Franz Dingelstedt:

Senora Pepita de Oliva! As I write it down, the name so often mentioned then, so loudly whooped, now long lost, she stands before me in the flesh, the wonderfully beautiful Spanish woman, I hear – but how clearly! – the dry, sharp rattling of the castanets, with which, still in the coulisse, the rattlesnake announces its appearance. Now she shoots out, poses motionless for a full minute, hunched up from her voluptuous hips, bent far backwards so that her thick black hair almost sweeps the floor, and then plunges away, her vampire eyes boring into the brains of every single spectator, biting firmly with the small, pointed, white teeth of her half-open mouth into all the men’s hearts that beat towards her in the highest sensual flush.⁶⁵

Similar to the sudden appearance of the dancer in the memory, her appearance on the stage also takes place in the memory. The dancer announces herself with a rattle, shoots out, remains motionless, and rushes away again. What remains is only a look, and it is the hypnotic look of a vampire, which bores into the brain, switches off reason and, addressing each one individually, leaves behind a heap of individual physiologies, which at that very moment dissolve into sensual surges. Such an effect must, of course, be artless, because it could not be explained otherwise and would be too dangerous, Dingelstedt also states this. However, in his arrangement of the artistic value of the performance, it is precisely that which actually has an effect that gains a more precise contour. It is not the bare legs, but the “person”.

What she danced, her Madrilena, her Ole, her Linda Gitana, that was all secondary; the person alone was effective, valid, attractive. These street dances, performed as solos, actually made no sense at all, quite apart from their artistic value, insofar as every national dance requires at least a couple, if not a group. But Pepita danced alone; her partner was the audience. Therein lay the attraction, therein the success.⁶⁶

What Dingelstedt gets to grasp here is the real paradox of the dancer and perhaps of specialty theater in general. The specialty emerges as a solo, as an isolated figure torn from the social context of the national dance, it individualizes a collective,

⁶⁴ *The Artist*, No. 383, June 12, 1892.

⁶⁵ Franz von Dingelstedt: *Münchener Bilderbogen*. Berlin: Paetel 1979, p. 151 f.

⁶⁶ *Ibid.*

separates individuals from the larger context of the hall and places them on the stage. As a speciality, the dance is doubly detached from its context: from the dance context and the cultural context, and thus it tends to become meaningless and artless. Removed from the *locality*, dance as a specialty loses, to use Marx's term, its use value in favor of an exchange value, for without its anchoring in the social context it becomes marketable as an attraction. The partner of this specialty dance no longer dances himself, neither has to know the steps nor understand the meaning. He only watches, an audience consisting of consumers who allow themselves to be electrified. But what electrifies, what suddenly confronts the audience here, is no longer a (learned) art – the dance practice – and also not only the bare leg, but a person. It is she alone, Dingelstedt notes, who acts, applies, pulls.

7.4 Salomania: Exoticism and Projection

That which acts, applies, attracts in the specialty theater is, as Franz von Dingelstedt puts it, the *person*, i.e. a *monistic* figure, which is identical with itself and cannot be divided into two, into a played on stage and a player behind it, as Diderot suggests in his paradox about the actor. However, such an appearance as a self is only made possible by the fact that the scenic appearance of this self, like that of the film star later on, is only part of a larger, i.e., *public* appearance, which continues on the boulevard and takes place essentially in the media: on postcards and posters, in newspaper reports and illustrated weekly magazines. It is only with the newspaper notes that the scenic performance generates that the character becomes a public person and, in turn, the scenic performance gets its impact and attraction from this publicity of the person. What she portrays on stage appears as a realization of what she is also in front of and behind the stage. Unlike actresses, who transform themselves and whose private persona corresponds to the bourgeois *comme-il-faut* according to the public, specialties and stars reveal themselves, their naked bodies and thus their 'private' person, therefore they are always already wicked. Whereby the physical nudity breaks the smaller taboo here compared to the appearance of the private person.

Zola has made a significant breakthrough with *Nana*, the ninth title of his Social History of the Family in the Second Empire, described this birth of the public person from the specialty theater. It is the performance as 'blonde Venus' at the Théâtre des Variétés that paves the way for the courtesan Nana's rise to the higher social circles, because it brings her attention and publicity by creating scandal. Scandal this performance makes because it is impudent, and impudent it is because it presents nudity without shame.

<p>Un frisson remua la salle. Nana était nue. Elle était nue avec une tranquille audace, certaine de la toute-puissance de sa chair. Une simple gaze l'enveloppait (...) – Fichtre! dit simplement Fauchery à la Faloise.⁶⁷</p>	<p>A shiver rippled through the auditorium. Nana was naked. She was completely naked and wore her nakedness with calm boldness, secure in the self-assurance of the omnipotence of her carnal splendor. Only thin veils enveloped her: [...] “Golly!” said Fauchery to La Faloise, nothing else.</p>
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Nana is naked, however, in a multiple sense: she is both without clothing and without skill; no artistic technique behind which she could conceal herself offers her protection. She appears unashamedly through her unprepossessing nudity *and* her unusual amateurishness: “Never before had a singer sung so outrageously wrong, dared to perform with such an untrained voice!” comments Zola. The audience does not come for the singing or even for the spectacle but rather for the *nudity* of the courtesan, who promises to perform without textile and technique, and in a third sense naked, namely without a role. Her nudity encompasses the threefold absence of that which is *clothing* once was in the sense of class orders: a covering of the body, the proof of an acquired skill, and the marking of a social position.

Nana no longer has any of these things, her existence is therefore precarious, and her appearance is not in itself justified in anything. For she lacks the very clothing that traditionally gives both kings and comedians the position that gives them the right to perform. And yet Nana appears, confronts the nobly dressed audience, thus identified as highly placed – and does so with an attitude that, like Olympia’s serene gaze, reveals nothing of servility, as if she were the bearer of a new power of the (unclothed) body that seems capable of undermining the bourgeois (dress) order, the power of the old men. On the one hand, with the (venal) courtesan, the female body appears as a commodity and as jewelry, as the highest incarnation of luxury and proof of the infinite reach of the power of money.⁶⁸ On the other hand, however, this infinitely desirable commodity, because it is itself capable of developing a desire that can now in turn increase the cost of maintenance to infinity, represents a threat to the very bourgeois values on which the accumulation of wealth is based and which make luxury possible. Simone de Beauvoir describes this in *Le Deuxième Sexe*.

The woman must ‘distinguish herself’ by her reputation. [...] ‘launched’ she is only when the man has made her value public in the world. In the last century, the palace, the equipage, the pearls testify to the influence that a ‘coquette’ had acquired over her protector, elevating her to the rank of demi-mondaine.⁶⁹

⁶⁷Émile Zola: *Nana*, Paris: Charpentier 1880, p. 31 f.

⁶⁸Cf. Dorothea Mey, “Courtisane oder ménagère? Zwei Pole des bürgerlichen Frauenbildes. Männliche Liebesideologie in der Mitte des 19. Jahrhunderts in Frankreich,” in: *Die ungeschriebene Geschichte. Historische Frauenforschung.* (= Dokumentation des 5. Historikerinnentreffens in Wien 16.–19.04.1984). Himberg: Wiener Frauenverlag 1984, pp. 187–198.

⁶⁹Simone de Beauvoir: *Das andere Geschlecht. Sitte und Sexus der Frau.* [*Le Deuxième Sexe*] Reinbek b. Hamburg: Rowohlt 1990, pp. 543–544.

Because the coquette, in the double freedom of the market economy, acts as a seller of herself as a service, she always allows herself to be temporarily owned, and this guarantees her a hitherto rare independence: “The money she accumulates, the name she ‘launches,’ as one ‘launches’ a commodity, secure her an economic independence,” Beauvoir writes further, “apart from their sex, which they deliver to men as objects, they have become subjects.”⁷⁰ Behind this independence, which corresponds to the financial ruin into which literary courtesans like Nana drive countless notables around 1900, lies the fatality of the capitalist libido: that desire which the commodity promises to fulfill is in itself unfulfillable, and that production, increased to infinity, ultimately comes no closer to the goal. The gaze that, thrown back from the (naked) object, encounters the gaze of desire, knows about this logic and the power that arises from it. The provocation of Nana’s performance, which is only hidden behind prudery, Zola lets slip, consists in the fact that a body that can do nothing and is nothing except itself is capable of undermining the (patriarchal) bourgeois order – this is the real scandal of the Tingeltangel and the reason why *Nana*, like all her literary sisters, must die at the end of the story.

The *vaudeville*, along with the café and the boulevard, thus becomes the place where the courtesan performs, where the mark is made, and where, at the same time, those men who *cannot* afford her, can experience her from a middle distance in a “fearless-comfortable” way, i.e. without the danger of financial ruin, at an affordable price.⁷¹ Like the department store at the beginning of the twentieth century, the palace of goods that stages all the things one does not need and cannot yet afford, and perhaps never will be able to afford, as objects of a desire that can most safely be experienced as the desire of another, the courtesan is also desired primarily by proxy and as an imago of herself. The fact that all female dancers become courtesans in the public’s perception is not only to be understood as a prejudiced act of devaluation, but at the same time as an articulation of a desire.⁷²

The stereotype in which this anxiety is negotiated is the *femme fatale*.⁷³ A woman who is the undoing of men precisely because she knows how to soberly and calculatingly use the desire shown to her in the interest of her own desire. As a primordial creature endowed with an abundance of sexual charms, the *femme fatale* rises from the margins of society to its central spheres of power, awakens the sensualities

⁷⁰ Ibid.

⁷¹ Cf. Brygida Ochaim/C. Balk: *Variété-Tänzerinnen um 1900. Vom Sinnenrausch zur Tanzmoderne*. Frankfurt a. M.: Stroemfeld 1998.

⁷² See also Randy Martin, “Dance Ethnography and the Limits of Representation,” in: *Social Text* 33 (1992), pp. 102–123, here: P 108. “If nineteenth-century ballet tended to displace women’s labor onstage onto the prior image of an exotic Other that could not carry the weight of intention and hence could not work, the women who inaugurated modern dance could restore this relation of act and meaning. The work of Fuller, Duncan, St. Denis, Allen provides an image of agency that had previously been denied women on the stage”.

⁷³ Cf. Bram Dijkstra, *Idols of Perversity. Fantasies of Feminine Evil in Fin-de-Siècle Culture*. New York: Oxford University Press 1986; Elizabeth K. Menon: *Evil by Design: The Creation and Marketing of the Femme Fatale*, Urbana: University of Illinois Press 2006; Nina Auerbach: *Women and the Demon: The Life of a Victorian Myth*. Cambridge, Mass.: Harvard University Press 1982.

repressed there, and thus upsets the bourgeois order, for which she must finally die, sinking into the gutter from which she came. Wedekind's *Lulu* (1895 and 1902) was intended, according to the author, to be "a splendid specimen of woman" that "arises when a creature richly gifted by nature, be it born of yeast, achieves unrestrained development in an environment of men to whom it is far superior in mother wit." Taken off the streets by newspaper publishers, medical councillors and painters, she finally falls victim to Jack the Ripper.⁷⁴ What with the *femmes fatales* who appear are new male fantasies rather than "new women," but male fantasies who know about the gaze that is upon them, who endure it and return it.

What appears in the performance of the courtesan, what is 'launched' as a commodity, is thus by no means a pure carnal splendor, which would be confronted by an animalistic drive in the audience, but rather a 'small a' in Lacan's sense, an object of desire that must be special. And therefore charm, beauty, or sex appeal are not enough for success; it is, as Simone de Beauvoir observed, a matter of "recognition of their particularity."⁷⁵ And this particularity, as shown above, is based precisely not on being or being able, but is found precisely in the opposite, in the essential artlessness of the performance, i.e., to return once again to Dingelstedt, in the fact that here a *person* emerges. It is this person who acts, applies, draws, and guarantees the identity of the appearance.

What is special about the *femme fatale* is the person, but the person gains it from the more or less exotic or mysterious place from which it springs and which, in the construction of an effective origin story, conceals the person identity of its self-identical appearance. Thus, the speciality of those exotic dances that conquer the stages at the end of the nineteenth century is always traced back to that place where they supposedly originate, to that place, in other words, where the respective dance, now detached from its context as an exotic attraction in the Western metropolises, would still have made social sense (had it ever existed in that way). It is this foreign place in the distance that the person and the dance carry with them and that gives them that exotic identity in the here and now from which they draw their strength. Already Fanny Elßler is praised by Théophile Gautier because of her *Cachucha* and the "tempestuous strength" and "southern blood" demonstrated therein, she is categorized as a pagan ballerina – "ballerine païenne," – in contrast to the Christian one.⁷⁶ That which Olive Logan still reproaches the Barrison Sisters with in 1867, that they can do nothing, becomes a badge of quality in all their successors. La Belle Otéro pretended to be a Spanish gypsy who had dancing in her blood; Mata Hari claimed to have been initiated into the sacred dances of the god as a small child in an underground grotto of the Shiva Pagoda.⁷⁷ Hugo von Hoffmannstahl wrote of

⁷⁴ Frank Wedekind: *Die Büchse der Pandora*. Berlin: Cassirer 1902.

⁷⁵ Beauvoir, op. cit., 1990, pp. 543–544.

⁷⁶ Cf. Ochaim/Balk, op. cit., 1998, pp. 7–68, here: S. 33.

⁷⁷ Cf. op. cit., p. 48.

Ruth St. Denis that she “saw these things of the East, and not with ordinary eyes.”⁷⁸ Isadora Duncan, who first gave modern dance a theory, according to her memoirs “stood alone for hours in the cold, unfriendly studio and waited for the moment when an inspiration would give her the expression of movement – in a flash, enlightenment often came.”⁷⁹ Thus, the nothingness is countered by an inner inspiration that owes itself to an exotic origin, a connection with a foreign land that the dancer has not come to know, but has in her blood. In this respect, the scandalous look back that the exotic dancer throws at the viewer at the end of the nineteenth century comes not only from a special person, but also from an exotic place. Only out of an imagined foreignness and the fictitious identity it confers can one withstand the male gaze. Disguised only as colonial goods, the patriarchy allows itself to be led around by the nose.

The prototypical figuration of the exotic dancer as a *femme fatale* is that of *Salome*, which is based on Flaubert’s *Salammbô* (1862), Mallarmé’s *Hérodiade* (1864), the paintings of Gustave Moreau (1876), and the ecphrasis of these images in Huysman’s *A Rebours* (1884) triggered a veritable “salomania” at the end of the century, crossing all genre and art boundaries and appearing on the stages of nightclubs, artists’ theaters, and department stores.⁸⁰ Oscar Wilde’s drama text, Strauss’s opera, and Ruth St. Denis’s solo dance are only the best known of these.

The biblical Salome is Herod’s stepdaughter. She dances before him at an evening party, he promises to grant her every wish in return, and she wishes for John the Baptist’s head at the request of her mother Herodias, which is then also handed to her on a platter.⁸¹ But unlike the nameless Salome of the Bible, and that of the fifth century Church Fathers, Salome and her dance at the end of the nineteenth century are more than just a warning against female lust and sensual pleasure. They fill that void in the narrative that revolves around Salome’s motivation with powerful images of flesh and blood and a complex dialectic of desire.⁸² Then at the end of the nineteenth century, for example in Oscar’s Wilde’s variant, society has largely disappeared, Herod is dripping with desire for Salome, and she now knows how to use the patriarch’s desire to satisfy her own. She herself desires the prophet Jochanaan, and because he resists her seduction, she asks for his head as the price of the dance and, when it is handed to her on a platter, takes that kiss that was denied her while he was alive.

⁷⁸Hugo von Hofmannsthal: “Die unvergleichliche Tänzerin,” in: *Sämtliche Werke (kritische Ausgabe)*, XXXIII Reden und Aufsätze 2, ed. by K. Heumann/E. Ritter. Frankfurt a. M.: S. Fischer 2009, pp. 116–120, here: S. 116.

⁷⁹Isadora Duncan: *Memoiren*. Zurich/Leipzig/Vienna: Amalthea Verlag 1928, p. 85.

⁸⁰Cf. Françoise Meltzer/H. G. Zagona/B. Dijkstra/N. Auerbach, *Salome and the Dance of Writing. Portraits of Mimesis in Literature*. Chicago: University of Chicago Press 1987; Helen Grace Zagona: *The Legend of Salome and the Principle of Art for Art’s Sake*. Geneva: Droz 1960; Clair Rowden: *Performing Salome, Revealing Stories*. Surrey/Burlington: Ashgate 2013.

⁸¹Matthäus 14:3–12 and Markus 6:17–29; cf. René Girard, “Scandal and the Dance: Salome in the Gospel of Mark,” in: *New Literary History* 15/2 (1984), pp. 311–324.

⁸²Carmen Trammell Skaggs: “Modernity’s Revision of the Dancing Daughter: The Salome Narrative of Wilde and Strauss,” in *College Literature* 29/3, Literature and the Visual Arts (Summer 2002), pp. 124–139.

Salome is like *Undine*, Fouqué's beautiful mermaid, endowed with the "mythological status of an elemental spirit" that denies her the "civil rights of the human community" and consigns her to an "irredeemable exoticism."⁸³ Huysmans describes her as "la déité symbolique de l'indestructible Luxure, la déesse de l'immortelle Hystérie, la Beauté maudite [...] la Bête monstrueuse," a timeless being with no precise indication of country or period, who had moved from the Bible to the theogonies of the Far East.⁸⁴ (The standardized costume consisted of a brassiere made of two round metal plates, pearl necklaces, a diaphanous dress, and tight-fitting white pants underneath.) Unlike Nana, Salome was in this respect no longer a secular courtesan, but in her highly stylized otherness a radically imaginary and sacralized form of femininity, which certainly does not coincide with the real and profane emancipation of women in the world of work.

Salome thus stands in the tradition of orientalist fantasies of the harem, which, since Napoleon's Egyptian campaign, conceived of an Orient that had fallen out of time as an eroticized counterworld to the Occident. An Occident making itself history and spreading enlightenment designs in the essentialized Orient a passively feminine Other that seems to have fallen out of time, is mysterious, sensual, and despotic – and is just waiting to surrender to conquest.⁸⁵ In the conquest of such an imaginarily charged Orient, the sensuality displaced from one's own identity and outsourced to the Occident is to be reincorporated, visualized in the representation of the dark-skinned woman as a wild creature, more animal than human by nature. Because of this animal nature from the social *decorum* liberated, she offers an ideal projection surface to which any sexually repressed desire can be assigned, and at the same time can be imagined without respect as a slave and a sexual object to be ruthlessly dominated.⁸⁶ This is the aesthetic and erotic core of the colonial project, which conquers the world not only to enrich itself from it or to bring it progress, but rather to satisfy its own desire for an imagined Other. Exoticism compensates for the failures that have been necessary to successfully subjugate the world. As modernization progresses, so does the escapist longing of the ego to escape the constricting reality of modernity to mysterious places threatened by that modernization. Exoticism is based on the inclination to the terrible-beautiful and the promise of happiness of a mysterious distance, the overcoming of the same and the intense sensual experiences triggered by it. Gautier distinguishes, in addition to the

⁸³ Cf. Gerd Stein: *Femme fatale, Vamp, Blaustrumpf. Sexualität und Herrschaft* (= Kultfiguren und Sozialcharaktere des 19. und 20. Jahrhunderts 3). Frankfurt a. M.: Fischer 1985, 'Preface', pp. 11–20, here: S. 11.

⁸⁴ Joris Karl Huysmans: *A Rebours*. Paris: Georges Cres 1922, p. 74.

⁸⁵ Cf. Edward W. Said: *Orientalism*. Frankfurt a. M.: S. Fischer 2009.

⁸⁶ Cf. Anne Fausto-Sterling, "Gender, Race and Nation. The Comparative Anatomy of 'Hottentot' women, 1815–1817," in *Deviant Bodies*, ed. by J. Terry/J. Urla. Bloomington: Indiana University Press 1995; E. Savarese/G. Boetsch, "Le Corps de l'Africaine. Erotisation et Inversion," in *Cahiers d'Études Africaines* 39/153 (1999); A. Roquebert: *La Sculpture Ethnographique. De la Vénus Hottentote à la Tehura de Gauguin*, exhibition catalog. Paris: RMN 1994.

exoticism of space and time, that of narcotica.⁸⁷ As Edward Said has noted, the Western project of a new sensuality is an effect of imperialism.

Salome is nothing other than the final incarnation of this exoticism, an imaginary Orient that no longer just lies there passively surrendered, but itself drops its covers and stares the desire of the occidental viewer in the eye. The parable of Salome, as Wilde sketches it, describes a web of gazes of desire stretched out between the individual actors, revealing a complex analysis of contemporary desire, at the center of which are the desiring gazes arranged around the dance: Herod's gaze falling on Salome, which in turn intersects with Herodia's suspicious gaze, and finally the gaze of Salome herself, which attaches itself to the lips of John the Baptist. The sight here is not so much something that happens to one as something that is done to someone; it is an active seeing that is always also a desiring and that both threatens and gives power to the object of the gaze. Against this power of desiring looks, the ancient powers hidden in the body of the king and in the language of the prophet look pale.⁸⁸

Using Gustave Moreau's Salome paintings, Linda and Michael Hutcheon have described this dialectic of gazes as a scene of projection. If the first picture shows only a luminous body that radiantly detaches itself from its surroundings, but whose gestures and facial expressions remain incomprehensible (cf. Fig. 7.7), the context suddenly appears in Moreau's second image, and with it the source of the light that falls on Salome and makes her shine out of her surroundings (cf. Fig. 7.8). This is the severed head of the prophet himself.

We see now that the light which seemed to emanate from Salome in the first painting comes from the gaze itself, represented here by the severed head of John.⁸⁹

The glowing body is only the effect of a light emanating from a gaze without a body. Salome's seeing, as explained above about the gaze, is not a passive seeing that happens to one, but an active gazing in which the light emanates from the gazer, in other words, what is gazed at is always already seen in the light that the gazer himself casts. Moreau's depiction of Salome negotiates the emergence of a male gaze that pays for the sacralization of the female body as the eternal object of desire with the loss of its own body.

Unconsciously, it seems, the voyeur/viewer has slipped into the representation, revealing its own processes of disembodiment in the moment of projection of the 'eternal' forms of 'Woman'.⁹⁰

⁸⁷Cf. Carlos Rincón: "Exotisch/Exotismus", in: *Ästhetische Grundbegriffe. Historisches Wörterbuch in sieben Bänden*, vol. 2, ed. by K. H. Barck. Stuttgart: Metzler 2001, pp. 338–366.

⁸⁸Cf. Brad Bucknell, "On 'Seeing' Salome," in: *ELH* 60/2 (Summer 1993), pp. 503–526, here p. 505.

⁸⁹Op. cit., p. 514; cf. also Linda Hutcheon/M. Hutcheon, "'Here's Lookin' at You, Kid': The Empowering Gaze in 'Salome,'" in: *Profession* (1998), pp. 11–22, here: P. 12 f.

⁹⁰Ibid.



Fig. 7.7 Gustave Moreau: *Salomé tatouée*, 1871. (Musée Gustave Moreau, Paris)

An idealized body is thus juxtaposed with an individual gaze trapped in the head. The power and pleasure that such a gaze gains over the object of its desire it pays for with the loss of the body and the ability to *juissance*.

In this respect, the image could also be understood as a primal scene of *projection*: In the beginning there is a light that falls from where is seen, a gaze that shines on what is seen, puts its own imaginary on the other person and thus makes it its object. – In the optical sense, projection throws a light image onto the wall, in the geometric sense it maps the body onto the surface, and in the psychoanalytical sense it transfers the affects that are forbidden to oneself onto the opposite. As it is presented here, it presupposes distance, interrupts the interaction and renounces touch, constructs in the opposite something alien, which, isolated from the environment,



Fig. 7.8 Gustave Moreau: *L'Apparition*, 1876. (Musée Gustave Moreau, Paris)

lifts itself out of the darkness. What is forbidden to the self is imposed on this stranger; and because it thus becomes the ideal object of desire, it is thereby granted a fearsome power over the self. However, the object itself can hardly use this power because it must remain within the boundaries of the projected phantasm. The intense increase of desire, however, is paid for by a loss of one's own bodily acting and experiencing.

Projection is closely related to casting light, to making an object stand out, to making it shine, to giving it a glow and casting images on it. It needs spotlights and projection devices, without them a representation like Moreau's would hardly be conceivable, because such a light, which highlights an object in this strength from the darkness, does not exist before. Psychic projection and optical projection are, in other words, very close to each other. Although it is difficult to bring a clear

causality into play here, the proximity seems remarkable and justifies a psychoanalytic reading of the spotlight as a device that constructs an object of desire, creating an exotic strangeness and curtailing the physicality of the sighted. The spotlight and veil dance belong closely together; in them, the close connection between electro-technical illuminants, a modern fluorescent exoticism, and an engineering male gaze emerges.

The new nudity around 1900 is also a technical product. As dance theorist Frank Thiess wrote in 1923, the naked body brings with it a “bliss” that “the most beautiful costume can never give the body”; but this bliss, as will become clear in what follows, owes itself to the interplay of muscle contractions and light waves (soul is, in fact, an old word for filament).

As much as a costume may be attuned to dance and background, as confidently the dancer may know how to wear it, the play of muscles under the skin, the subtle nuances of shadow and light on the naked body, the connection of all gestures through the smooth surface, the thousandfold changing, shimmering, fleeting undulations of the living flesh, which can be brought to unheard-of effects by light and spotlights, create a costume which adapts itself to the dance and the dancer to an extent like no dress in the world.⁹¹

This new nakedness of radiant, shining bodies could not be provided by oil lamps and gas lights; it owes itself to electric spotlight technology (or vice versa, the spotlight owes itself to the new bodies or both arise from a new desire). But however the causalities are constructed, nudity is always something that is constructed not only discursively but also technically and politically (Figs. 7.9 and 7.10).

A young woman appears upon a darkened stage, her movements picket out by a colored spotlight. She is fully clothed, usually in an evening gown. Moving with a curiously characteristic undulation, swaying hips and shoulders to slow jazz rhythm, she walks back and forth across the stage. Hesitantly, her hands go to one shoulder to undo a strap. It falls, she catches it. Suddenly she is off the stage and the stage is dark. The beat of the music increases and she is back in her colored spot, the shoulder strap now hanging undefended.⁹²

Conversely, in this new nudity created by the light beams of the projection devices, there is a desire directed toward technology. With the desire of the radiantly naked body, this light itself, the technology, and the electrical energies they release also become desirable. Modern desire is always also a technical desire, technology makes desirable and becomes desirable. It finds its perfect embodiment in *Pandora*, the danced allegorical electricity, the veil dance of electricity on the exhibition grounds. This performance of Pandora before the assembled engineers, like that of Salome, is also such a performance of projection (psychic and optical), creating a female body charged with desire and leaving a male viewer reduced to his head.

⁹¹ Frank Thiess: *Der Tanz als Kunstwerk. Studien zu einer Ästhetik der Tanzkunst*. Munich: Delphin 1923, p. 87.

⁹²“The Business of Burlesque, 1935 A.D.,” in: *Fortune*, February 1935, p. 67.

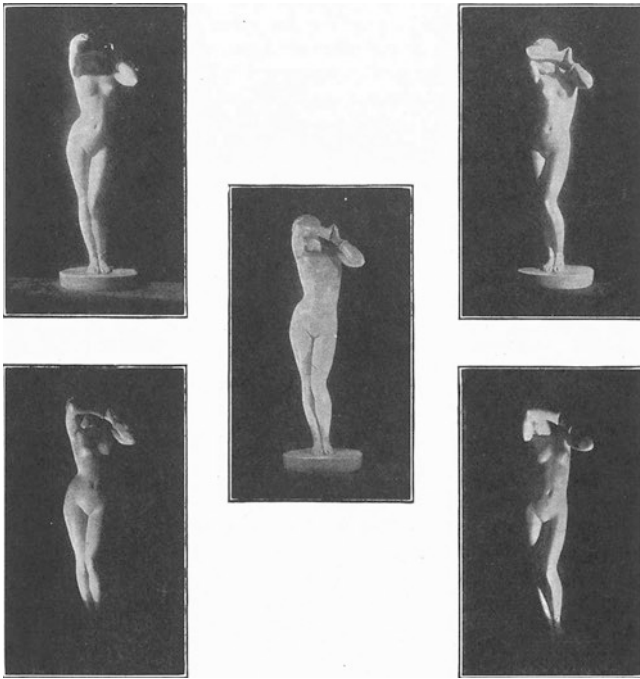


Fig. 7.9 The human body illuminated from different directions, illustration based on a female statue. (Theodore Fuchs: *Stage lighting*, 1929)

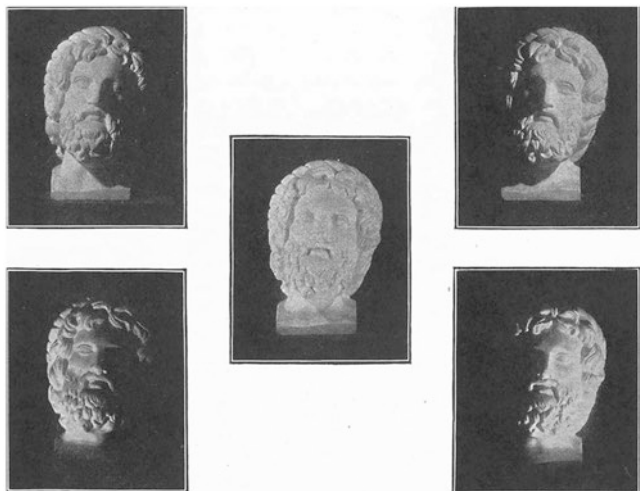


Fig. 7.10 The face illuminated from different directions, illustration based on a male bust. (Theodore Fuchs: *Stage lighting*, 1929)

This shining of the exotic body in the spotlight takes place in the modern triangle of sexoticism, belief in technology, and commodity fetish. It is still evident where the shining light and the naked body are domesticated, such as in the 1920s advertisement for the Mazda light bulb, which is contemplated as a fetish on the divan by the meanwhile clothed exotic woman with obvious erotic connotations.

In this respect, what Roland Barthes wrote in the late 1950s in his *Mythologies* about the striptease: that in this form of exposure, undressing is essentially accompanied by dressing.⁹³ While the body seems to be stripped bare, it is only more transposed into the fabulous, into an unapproachable distance. The exotic and luxurious adornment of the figure “raptures at every moment the unveiled body,” her dance itself is a mask of gestures and “[h]er technique surrounds her like a garment.” Thus, the naked woman herself remains “unreal, smooth and closed like a beautiful shining object, which precisely by its extravagance is withdrawn from human grasp.” What at first glance looks like a more permissive sexuality thus, according to Barthes, rather serves to cast a spell on sexuality, has an immunizing effect against any (real) eroticism. What is encountered in projection is just a phantasm (of one’s own) that remains desirable because it is not attainable.

7.5 Maenads: Classical Philology and Psychoanalysis

But the medium in which this figure of Salome can emerge is dance, the place where gazes cross, a literary void where dialogue is silent and the body speaks, and about which Oscar Wilde’s drama, the most effective and ambivalent variation on the motif, says only: “Salome dances the dance of the seven evils.”⁹⁴ This has its parallel in modern dance in general, which, as in Wilde’s *Salome* is the void around which the arts rearrange themselves around 1900. The “barbarian dancers” are the event of an aesthetics of the body that, like the medicine of the time, is interested in psychophysical interactions and was usually associated with a skepticism of language, the devaluation of the written and printed word by new (graphic) media, and a liberation from the corset of conventions.

The mastermind is the classical philologist Friedrich Nietzsche, who since the *Birth of Tragedy* has been developing a physiological philosophy centered on the body and its pathologies as the pre-linguistic and de-subjectified site of a purifying art. It is precisely those ecstatic states of exception of intoxicating ego-centeredness, heightened irritability and latent exhaustion, which the medicine of the time understands as hysteria of a dysfunctional body machine and seeks to treat with electric shocks and hypnosis, that Nietzsche revalues and upgrades to the nature of the

⁹³ Roland Barthes: “Strip-Tease,” in *Mythologies*. Paris: Editions du Seuil 1957, here quoted from the German edition “Strip-tease,” in: *Mythen des Alltags*, transl. by Helmut Scheffel. Frankfurt a. M.: Suhrkamp 1964, pp. 68–72, here: S. 69.

⁹⁴ Oscar Wilde: *Salome. Drame en un acte*. Paris: Libraire de l’art independant 1893.

artist.⁹⁵ The *Tarantism*, the nervous disease that is meant to incite artistic revolt against a culture in which there is widespread unease, is celebrated as a liberation from the social constraints of nineteenth-century bourgeois culture, which still lives on in Ibsen's naturalism when Nora underscores her departure from an obsessive marriage with a *Tarantella*. According to Nietzsche, art is therefore transmission without meaning, a physiological induction of states of tension, i.e., an energetic event that can be subjected to contemporary exhaustion and *décadence* by acting on a symptomatic (hysterical) body, and instead of 'romantic reveries' hopes for the "abandonment of the individual by entering into an alien nature."⁹⁶ And of course this abandonment of the individual takes place in the Orient, namely with the daughters of the desert, of whom Zarathustra raves, because here no low-hanging clouds and thoughts disturb him.

For with them there was equally good bright morning air; there I was farthest away from the cloudy damp melancholy of Old Europe! At that time, I loved such girls from the Orient and other blue heavenly realms, over which no clouds and no thoughts hang. You wouldn't believe how nicely they sat there, if they didn't dance, deep, but without thoughts, like little secrets, like banded riddles, like dessert nuts – colorful and strange indeed!⁹⁷

In the Orient, the mustachied classical scholar escapes the clouds hanging over the Occident in the arms of the thoughtless but dance-loving desert daughters, who appear to him "colorful and strange" and offer him a sensual (and erotic) experience that is able to free him from the heaviness of his thoughts.

Diese schönste Luft athmend,
mit Nüstern geschwellt gleich Bechern,
ohne Zukunft, ohne Erinnerungen,
so sitze ich hier, ihr
allerliebsten Freundinnen,
und sehe der Palme zu,
wie sie, einer Tänzerin gleich,
sich biegt und schmiegt und in der Hüfte
wiegt
– man thut es mit, sieht man lange zu...

Breathing this most beautiful air
with nostrils swollen like cups,
without future, without memories,
I sit here, my
dearest friends,
and watch the palm tree
as it, like a dancer,
bending and swaying in the hips...
– one does it with, one watches for a long
time....⁹⁸

⁹⁵ Cf. Hans-Christian von Herrmann: *Das Archiv der Bühne. Eine Archäologie des Theaters und seiner Wissenschaft*. Munich: W. Fink 2005, chapter III.

⁹⁶ Friedrich Nietzsche: *Also sprach Zarathustra*, IV: „Unter Töchtern der Wüste,“ §2, in: the same: *Sämtliche Werke. Kritische Studienausgabe in 15 Bänden*, vol. 4, ed. by Giorgio Colli/M. Montinari. Munich: Dt. Taschenbuch-Verl. 1999, p. 52.

⁹⁷ *Ibid.*

⁹⁸ *Ibid.*

Walter Benjamin already drew attention to the fact that these Nietzschean desert daughters, like Wagner's flower girls, are not only reminiscent of Art Nouveau, but that their sitting there, "deep, but without thought," is also reminiscent of the depiction of the "whores" in Guys.⁹⁹ Above all, they remind us of those first modern dancers who first appeared in the Algerian village at the Paris Exposition universelle in 1889 and then on the Cairo street at the Columbian Exposition in 1893 as *Little Egypt* with a *danse du ventre* and from there popularized the exotic dance to the provinces.¹⁰⁰ What was invented at the World's Fairs eventually finds its way to the Middle East with tourism. And when Maud Allen appears in London with her late Salome, she is praised for her "Eastern spirit" because she does without those vulgarities familiar to the tourist from Cairo or Tangier. It is precisely this lascivious *exotic dance*¹⁰¹ that is quoted in Wilde's *Veil Dance*. As the history of reception and the history of illustration clearly suggest, this dance-like play with textiles is primarily about letting one's clothes down.

In the projection of continental literati, however, the vulgar show of peoples at the World's Fairs becomes the ritual excess of 'primitive' cultures, and *Little Egypt* an ecstatic maenad: a construction of physicians, philologists, artists, and philosophers, at the center of which was a hypersensitive body of desire, whose signum, as Gabriele Brandstetter has shown, was the head thrown back: at the end of the play, Hofmannsthal's *Elektra* has risen.

She strides down from the threshold. She has thrown back her head like a maenad. She throws her knees, she stretches out her arms, it is a nameless dance [...].¹⁰²

However, this maenad makes its most prominent appearance in the German-speaking world in Madeleine G., who is presented by Schrenck-Notzing in 1904 at the Munich Schauspielhaus as a "dream dancer": a *hysteric under hypnosis*,¹⁰³ who is transformed on stage by male psychotechnics into a highly sensitive "somnambulistic reflex automaton", which is transformed by music into *Vibration*. As in a spiritualistic séance, the body is only a medium in which invisible forces become visible as uncontrolled twitches through scientific control techniques.¹⁰⁴

⁹⁹ Walter Benjamin: *Passagenwerk* (p 9a, 1), in: *Gesammelte Schriften*, op. cit., 1972, p. 694.

¹⁰⁰ Charles A. Kennedy, "When Cairo Met Main Street: Little Egypt, Salome Dancers, and the World's Fairs of 1893 and 1904," in: *Music and Culture in America, 1861–1918*, ed. by M. Saffle. New York et al.: Garland 1998, pp. 271–298.

¹⁰¹ Cf. Robert C. Allen: *Horrible Prettiness. Burlesque and American culture*. Chapel Hill: University of North Carolina Press 1991; Rachel Shteir: *Sriptease. The Untold History of the Girlie Show*. Oxford: Oxford University Press 2004.

¹⁰² Hugo von Hofmannsthal: *Elektra*, in: *Gesammelte Werke in Einzelausgaben*, Dramen II, ed. by H. Steiner. Frankfurt a. M.: S. Fischer 1966, pp. 7–76, here: S. 74.

¹⁰³ Manfred Schneider: "Hysterie als Gesamtkunstwerk. Aufstieg und Verfall einer Semiotik der Weiblichkeit", in: *Merkur. Deutsche Zeitschrift für europäisches Denken* 39/439 (September 1985), pp. 879–895.

¹⁰⁴ Cf. Wolfgang Hagen (in conversation with Martina Leeker), "Der Schock der Elektrizität als Technikgeschichte des modernen Tanzes oder Technik als Überforderung und die Möglichkeit der Kunst", in: *Tanz und Technologie. Auf dem Weg zu medialen Inszenierungen*, ed. by S. Dinkla/M. Leeker. Berlin: Alexander 2002, pp. 118–133.

But in contrast to *Little Egypt*, the maenad can no longer return the gaze; as a highly sensitive body, but blind in its ecstasy, it is subjected to the (psycho)technical control of the performing doctor; that ambivalence of the erotic dancer in the specialty theater, in which optical objectification simultaneously gains a subjective scope, is here taken back in a highly culturally mediated way. The price for the experience of pleasure granted to the female body is its powerlessness, which should be associated with Nietzsche's thoughtless profundity as well as with the social situation of the dancers. It is precisely her subaltern existence, social dependence and subjugation that makes the dancer the ideal vessel and medium for the deeper truth of the literati. That cult of Dionysus which Nietzsche and his followers oppose to a rationalistic reason as an apparently subversive corporeality is always already a phantasm of female desire dominated and projected by engineering science, which is above all concerned with its own desire in a world after writing. The appearance of these maenads from Nietzsche to Hofmansthal and beyond is primarily about a construction of a new masculinity.

For behind the maenad, which emerges at the intersection of exoticism and electrical engineering, lurks, in other words, that middle-class *Unease in Culture*, which Freud identified in the 1930s as the downside of technical progress and which it is supposed to be the annulment of. According to Freud, the success of culture, or as Weber puts it more precisely in relation to Protestant ethics: of Western industrial capitalism, is built on libidinal sacrifices. Crucial for all culture therefore seems to be sublimation, the transformation of the drives from animal lusts to intellectual pleasures. It is precisely this sublimation, however, that affirms the bourgeois difference between the sexes, for women are said not to be "up to it," consequently suffer from men consuming their not "unlimited quantities of psychic energy" for culture, and therefore stand (as re-embodied nature) in a "hostile relationship" to culture.¹⁰⁵

This hostile relationship between women and culture has been called hysteria since the last third of the nineteenth century.¹⁰⁶ It emerges from theatrical situations in which acting female bodies, subject to suspicion of merely pretending, are read by doctors and questioned as symptoms. They are unreasonable signs, like hieroglyphics from an exotic foreign land, at first glance meaningless and incomprehensible, and at second glance in their reading uncovering a *deeper* truth. By diagnosing hysteria through reading the symptoms, a femininity is constructed that basically only serves to give expression to a bourgeois (male) discomfort. In the hysterical woman like the dancing maenad, the (male) cultural man discovers himself as a drive renouncer and gives fire to the drive – so one could say, if the drive itself were not a construction and the actual object of desire. If one understands the drive in this respect not as that which drives, causally, as Freud imagined it, but as something

¹⁰⁵ Sigmund Freud: *Das Unbehagen in der Kultur*. Vienna: Internationaler psychoanalytischer Verlag 1930, here quoted after *Abriss der Psychoanalyse*. Frankfurt a. M.: Fischer 1972, p. 96.

¹⁰⁶ Cf. Georges Didi-Hubermann: *Erfindung der Hysterie. Die photographische Klinik von Jean-Martin Charcot*. Munich: Fink 1997.

that is desired, then it becomes recognizable as an imaginary that is supposed to fill a real lack, which it cannot fill, however, and finally asserts its place in the symbolic. If one understands Freud with Freud in this respect, the theory of the renunciation of drives appears ultimately as the castration anxiety of the psychoanalytic semiotician in the face of industrial capitalist powers – and the ecstatic maenad as the projection of the old philologists and neo-literates. What seems decisive here, therefore, is that this drive theory converts man to energies. The idea of the rational ego of the *cogito ergo sum* in Cartesian tradition is deceived by a driving, energetic I (it), which consists of directed, channeled, suppressed energies. The drive theory is the energy theory of man, originated from a desire to keep up with the new thermodynamic machines and to escape exhaustion.

Already the *psychic mechanism*,¹⁰⁷ which Freud and Breuer construct in 1893 to explain hysteria and which becomes an important basis of psychoanalysis, is constructed as an electrical machine. The idea behind it is that the hysterical seizure is not itself the disease, and that suggestive treatment of the seizure can accordingly have only limited success. As a *symptom* is understood, a trauma is suspected to be behind it, a psychic accident, so to speak, which was not only a trigger, but rather penetrated into the psychic organism like a foreign body, forming a “presently acting agent” that produces the symptoms in the first place.

Thus, according to Freud and Breuer it is “*reminiscences*” from which (mostly) the *female* hysteric suffers and the task is to explain why they, instead of fading away, retain such an intense effectiveness. Because they are “affect-laden,” say Freud and Breuer: an affect that could not “discharge itself” either in deed or speech clings to memory. Where there is no “energetic reaction” and neither abreactions nor associations can take place, because these are self-prohibiting, as in the case of “abstemious women” and “well-behaved children,” these affective energies remain. They formed a second (“hypnoid”) consciousness, which was dissociated from the “associative intercourse” with the “remaining content of consciousness”, which in chronic symptoms partially extended into the everyday or even temporarily took over control in acute attacks. The therapy of such a “trapped affect” must therefore at the same time enable a discharge of the affect by an affective recollection or repetition and thereby carry out an “associative rectur” which pulls it into normal consciousness and in the long run enables the discharge of the energy of affect. Therefore, for Freud, catharsis is not enough, and it needs that protracted *talking cure*, which works its way from the symptom to the trauma in a process of affective remembering by means of symbolic connecting and finally releases its pent-up energies, if all connections are correctly established, and directs them into the right channels. Instead of the physiological action of electroshock on the nerves, which is supposed to forcibly overcome dissociation, or a “direct suggestive abolition” of symptoms, Freud and Breuer propose a third way, which is supposed to bring the interrupted or misdirected circulation back into flow.

¹⁰⁷ Josef Breuer/S. Freud, “Ueber den psychischen Mechanismus hysterischer Phänomene“, in: *Studien zur Hysterie*. Leipzig: F. Deuticke 1895; cf. Günter Götde: “Physiologische und psychologische Verwendungen“, in: *Zeichen der Kraft. Wissensformationen 1800–1900*, ed. by Th. Brandstetter/C. Windgätter. Berlin: Kadmos 2008, pp. 228–248.

As Frank Sulloway has noted,¹⁰⁸ Freud refers elsewhere (to explain the defensive neuroses) directly to the “auxiliary idea” “that there is something to be distinguished in the psychic functions (amount of affect, sum of excitation) which has all the properties of a quantity.” Even if we had no means of measuring this quantity, it was something “capable of augmentation, diminution, displacement, and dissipation” and “spreads over the memory traces of ideas, somewhat like an electric charge over the surfaces of bodies.”¹⁰⁹ This hypothesis of such psychic energy could be used similarly “as physicists do with the assumption of the flowing electric fluid,” and it is provisionally justified by its usefulness in summarizing and explaining manifold psychic states. Accordingly, hysteria appears as a short-circuit in the normal flow of energies,¹¹⁰ It is necessary to restore a normal and minimal energy level by discharging. The goal of the healthy organism is to keep the excitation low; health presents itself as an energetic balance, excess energies flow into the symptoms.

But it is precisely this hysterical short-circuit (of psychoanalysis), which establishes the association of psychic and physical excitement by means of an electrical connection, that appears in the bourgeois culture of the fin-de-siècle, plagued by fears of castration, with the maenad: She is an energetic sign and literary dressing up of popular specialties, an exoticistic taming of the spotlight rays, and an ideal connection of aesthetic, sexual, and geopolitical claims to power. But this maenad experiences her climax and rupture in an electric dance, which is only an energetic sign and in which the charged excited body dissolves in a space woven through by tensions: the serpentine dance.

¹⁰⁸ Frank Sulloway: *Freud. Biologist of the mind: beyond the psychoanalytic legend*. New York: Basic Books 1979, p. 61.

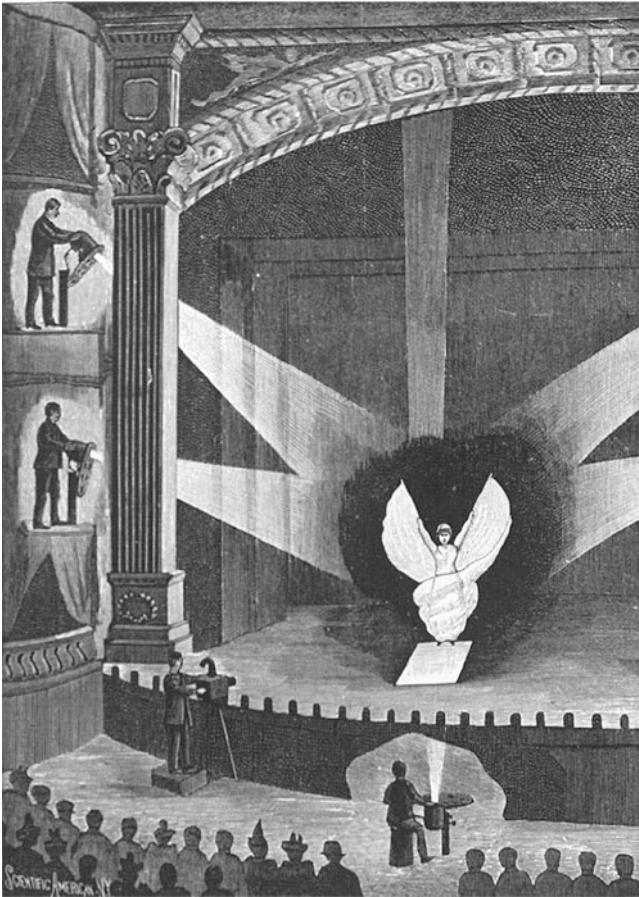
¹⁰⁹ Sigmund Freud, “Die Abwehr-Neuropsychosen. Versuch einer psychologischen Theorie der erworbenen Hysterie, vieler Phobien und Zwangsvorstellungen und gewisser hallucinatorischer Psychosen“, in: *Neurologisches Zentralblatt* 13 (1894), pp. 362–364, 402–409, citing. *Gesammelte Werke I*, ed. by A. Freud et al. Frankfurt a. M.: Fischer 1952, pp. 59–74, here: S. 74.

¹¹⁰ James Strachey: “The Emergence of Freud’s Fundamental Hypotheses, Appendix to The Neuro-Psychoses of Defence,” in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, vol. III (1893–1899): Early Psycho-Analytic Publications, ed. by dems. London: Hogarth Press 1962, pp. 62–68.

Projection Arts

8

Serpentine Dances and Effect Lights



If the previous chapter examined the appearance of electricity in exhibition theater and its corporeality at the intersection of popular allegorizing and eroticizing vaudeville culture, this chapter picks up here and examines the connection between technology and theater in a performance that was repeatedly performed in a way that was formative for this context and emerged directly from this vaudeville culture: Sect. 8.1 “Serpentines” deals with the *serpentine dance* that was characteristic of Art Nouveau and Jugendstil, made famous by the dancer Loïe Fuller, who was stylized as a “goddess of light,” and often celebrated as the hallmark of an anti-representational modernism that revived in the transitory, rejecting both ballet and vaudeville. Contrary to this assertion of aesthetic rupture, Sect. 8.2 “Textiles” emphasizes the continuities of veil dance and serpentine dance and shows that the extension of established textile techniques to include new lighting techniques amounts to whitewashing by spotlight, continuing material exoticism as abstracted universalism. Following this, Sect. 8.3 “Motors” points to the technical nature of serpentine dance, its patentability and reproducibility, and outlines the combination of dancers’ bodies, bamboo imports, and electric motors from which the medial effect of the dance emerges. Section 8.4 “Effects” examines this effect and, starting from the listing of the serpentine dance as a natural effect in a technical manual, describes the connection to artificial rainbows, dawns and clouds, but above all ghostly apparitions. The techniques of bundling light and artificial darkness, which are used in the spotlight and have their predecessors in the phantasmagorical projection arts of the nineteenth century, are characterized as techniques of transition from the real to the imaginary and traced back to the artificial sunrise by carbon arc. Finally, Sect. 8.5 “Cinema” deals with the early film copies of the serpentine dance and emphasizes the proximity of film and Fuller with reference to a new quality of movement as emphasized by Gilles Deleuze following Henri Bergson. In this respect, serpentine dance paradigmatically reveals a new energetic aesthetic of effect that is directly connected to film culture and modern dance.

8.1 Serpentine: Belly Dances and Light Shows

The serpentine dance is also a *specialty*, that is, something that sensationalizes, causes a collective stir, and individually excites the senses (cf. Fig. 8.1). However, it seems to be an attraction of a different quality than the veil dance, because body and dress deal with each other differently here. Instead of a partial and transparent cloth that hugs the forms of the body and draws the viewer’s gaze specifically to the surfaces of the skin, there is (as in the *skirt dance*) a fabric that is far larger than the body and is swirled through the space in flowing movements, absorbing light and color and allowing the body to disappear in its center.

It is a veil dance, and yet it is no longer a veil dance, because the cloth is not dropped and no body is revealed. Rather, something else appears, of which one does not really know what to call it at first in New York: It is a fleeting *apparition* – “unique, ethereal, delicious” – that emerges from the darkness, floats through the room like a cloud and can hardly be grasped by the senses and words. One can hardly believe that what appears and disappears there again and again like in a

Fig. 8.1 “La Danse Serpentine/La Loïe Fuller”. (Georges Moynet: *Trucs et décors*, 1893)



fort-da (= gone-here) play, is really a woman, and therefore wants to see her face: “Again she emerges from the darkness, [...] and again the audience rise at her and insist on seeing her pretty, piquant face before they can believe that the lovely apparition is really a woman.”¹ Only the face testifies to the gender of the apparition that danced there, because it allows that *personalization* that establishes the identity of the dancer in the first place.

The face that must be seen to witness the Serpentine Dance, which in the 1890s became *the* face of serpentine dance in general, is that of Loïe Fuller (1862–1928), a North American dancer and singer in vaudeville and burlesque.² With Fuller, according to her autobiography (as well as the research largely relying on it), the serpentine dance comes largely unnoticed from New York to a music hall in Berlin, a beer garden in Altona, and a circus in Cologne, where it has to hold its own alongside an educated donkey and an organ-playing elephant, and finally to Paris to the

¹ Quoted in Marcia Ewing Current: *Loïe Fuller: Goddess of Light*. Boston: Northeastern University Press 1997, p. 35.

² Cf. Julie Townsend: *The Choreography of Modernism in France: La Danseuse, 1830–1930* (=Research Monographs in French Studies 28). Oxford: Legenda 2010.

Folies-Bergère.³ Once there, so the story goes, Fuller finds, however, that “her” serpentine dance is already on the program, so the copy has already arrived before the original, but is able to convince the *directeur* of the établissement of herself and becomes the sensation of the season with her performance on November 5, 1892.⁴ Henceforth as “Goddess of Light”⁵ and “Queen of the Night”⁶ Fuller is celebrated for the *Belle Époque* to the *fée d’électricité* in a *ville lumière* and the subject of countless pictorial representations of Art Nouveau and Jugendstil.

Even more than Fuller, however, it is the serpentine dance itself, an ornament of light that, precisely through its countless imitations, becomes the hallmark of a modernism that is *transitory* and *contingent* (Baudelaire) and takes the liberty of no longer wanting to represent anything (van der Felde). For just as Fuller emerges from apparition at the end of her dance, it can also be argued that it was not so much Fuller who invented serpentine dance as that serpentine dance invented Loïe Fuller. Even if Fuller in the following years with dances of the clouds, the fire and the lily of the Nile – *La Danse des Nuages*, *La Danse du Feu*, *Le Lys du Nil* (1883–1895) – follows up on the forms and success of the debut, it remains the serpentine dance that establishes her myth; and it is Fuller, conversely, who lends the face to the serpentine dances that are heralded everywhere – as can easily be shown by the many illustrations erroneously attributed to her.

In particular, Symbolism, above all Mallarmé (1842–1898), celebrates the serpentine dance for what he had also already seen in *Salome*: a *poésie pure* on the theater, in which sensual surfaces unite with symbolic depth to create new artistic energy.⁷ In the flying of the garments of the serpentine dance, he sees the dancer (“la figurante”) dissolving in the “cold and radiant bath of fabrics” – “[a]u bain terrible des étoffes se pâme, radieuse, froide” – and transforming into a “fantasmagorie oxyhydrique,” a phantasmagoria of lime light, which, with its expansion into infinity, produced nothing less than spiritual effect, an “effet spirituel.”⁸ Thus Mallarmé’s description of the serpentine dance is often directly related to the metaphorization of the dancer in his often cited Axiom for the Ballet.⁹

³Loïe Fuller: *Fifteen Years of a Dancer’s Life*. London: Herbert Jenkins 1913 [reprint: New York: Dance Books 1977], pp. 47–50.

⁴Op. cit., p. 53.

⁵Cf. Current, op. cit., 1997.

⁶*Moderne Kunst in Meisterholzschnitten* (no year), cf. Gabriele Brandstetter/B. Ochaim: *Loïe Fuller. Tanz, Licht-Spiel, Art Nouveau*, op. cit., 1989, p. 18.

⁷Cf. André Levinson, “Stéphane Mallarmé. Métaphysicien du Ballet,” in: *La Revue Musicale* 5/1 (November 1923), pp. 29 f.; Brandstetter/Ochaim, op. cit., 1989, p. 119.

⁸Stéphane Mallarmé, “Divagations. Autre étude de danse, les fonds dans le Ballet d’après une indication récente,” in: *Œuvres complètes II*, ed. by B. Marchal. Paris: Gallimard 2003, pp. 174–178, here: P. 174 f.

⁹Stéphane Mallarmé: “Divagations. Ballets,” in: op. cit., 2003, here: P. 171, in translation cited after: Brandstetter/Ochaim: op. cit., 1989, p. 205.

À savoir que la danseuse n'est pas Une femme qui danse, pour ces motifs juxtaposés qu'elle n'est pas Une femme, mais Une métaphore résumant un des aspects élémentaires de notre forme, glaive, coupe, fleur, etc., et qu'elle ne danse pas, suggérant, par le prodige de raccourcis ou d'élan, avec Une écriture corporelle ce qu'il faudrait des paragraphes en prose dialoguée autant que descriptive, pour exprimer, dans la rédaction: poème dégagé de tout appareil du scribe.

Namely, that the dancer is not a woman who dances, for the equated reasons that she is not a woman, but a metaphor in which a basic aspect of our experience of form is condensed: As sword, chalice, flower, etc., and that she does not dance, but in the miracle of ruffles and sweeps conveys through bodily writing what, put down in writing, would require whole paragraphs of prose, whether dialogic or descriptive: a poem detached from any intervention of the scribe.

A dance, however, that detaches images and movement from (dancers') bodies, that becomes *poésie pur*, is contrasted by a correspondingly disembodied seeing, a "*regard absolut*", which is exactly the opposite of the *scopophilia* of the ballet spectator with his opera glasses. This absolute gaze, impersonal and sparkling, "impersonnel ou fulgurant regard absolu," which "like the light that for a few years, envelops the dancer of Eden, melts in its electric rawness onto the extra-fleshy whiteness of the make-up and makes of her a shining being, enraptured from all possible life"¹⁰ is associated with an electric light that takes away her view of the audience and leaves her powerless to its gaze.¹¹ In Mallarmé, Fuller's serpentine thus function precisely as a counter-image to Elena Cornalba's classically academic embodiment of electricity in Mazotti's *Excelsior*, which opened the Paris Eden in 1883. Summarizing Mallarmé, Gabriele Brandstetter describes in the *Tanz-Lektüren* the Serpentine Dance as an arabesque.

From the circling of the veil ornament around an empty center, the play of the imaginary is released. [...] This movement around a hidden center, which stands 'empty', without 'meaning' only for itself, brings forth the absolute arabesque, which continues from itself, without referential reference to a signified. [...] In this pulsation of pure movement, of color and light around a physical center, which dissolves in this process, disappears into nothingness and leaves behind the absolute work of art, Mallarmé recognizes the actual creative dynamic of Loïe Fuller's dance.¹²

Taking Mallarmé as a starting point, the serpentine dance (and Fuller) often appears in dance research as something that could be described somewhat casually as belly dancing without a belly: a dance in which the center not only eludes meaning, but also subverts the objectified body of the dancer. It was emphasized, among other things, that the dance precisely undermines the erotic-exotic promise and hysterical iconography of the feminine that is staged on posters and in Loïe Fuller's

¹⁰Op. cit. p. 173.

¹¹Cf. Felicia McCarren, "The 'Symptomatic Act' Circa 1900: Hysteria, Hypnosis, Electricity, Dance," in: *Critical Inquiry* 21/4 (1995), pp. 748–774.

¹²Cf. Gabrielle Brandstetter: *Tanz-Lektüren. Körperbilder und Raumfiguren der Avantgarde*. Frankfurt a. M.: Fischer 1995, p. 375.

self-narrative (and also corresponds to the location of the performances).¹³ Delimited from both the disciplined bodies of classical ballet and the commodified bodies of erotic vaudeville dance, Fuller thus becomes (alongside Isadora Duncan and Ruth St. Denis) the central founding figure of modern dance, which seeks to be neither image nor commodity.¹⁴

This juxtaposition fits all too well with the common narratives of aesthetic modernism, including those written by theater historians until recently: The dusty and kitschy nineteenth century, with its naïve recreations of supposed realities, was being stripped away by an anti-naturalist avant-garde, which, in reflecting on its own means and its own worlds of experience, was really bringing art to itself. *Excelsior* was art off the rack and for the masses, vulgar visualization, the popular veil dance an expression of a vulgar sale of the female body to a male gaze, the serpentine dance, however, an emancipative expression of a time in which a new, modern understanding of art was developing that no longer had anything to do with commercial and representative theater.

With regard to Loïe Fuller and the serpentine dance, however, considerable doubts can be raised about this narrative (or another narrative can be placed alongside it). For unlike Isadora Duncan's bare foot, which peeks out from under the Greek chiton in 1902 and causes a scandal because it stands pars pro toto for the naturalized body of life reform and expressive dance (and with which, in a certain sense, dance science begins, because here, for the first time, dance is no longer a part of music and theater, but an art of movement in its own right), Fuller's technical serpentines do not stand at the beginning of something, but rather continue something, namely a spectacle culture that is still very much theater and media history. The serpentine dance is perhaps that last moment at which it is not yet possible to separate what only a short time later differentiates into dance, theater, and media, but now, anno 1890, is still simply spectacle, a hybrid mixture of movements, performances, and techniques of mediation; and it is perhaps that last moment of spectacle because it is the moment when spectacle is electrified.

¹³Cf. Gabriele Brandstetter, "Loïe Fuller. Mythos einer Tänzerin," in: Brandstetter/Ochaim: op. cit., 1989, pp. 86–146, here: S. 88.

¹⁴Cf. Elizabeth Coffman, "Women in Motion: Loïe Fuller and the 'Interpenetration' of Art and Science," in: *Camera Obscura* 17/1 (2002), pp. 73–105; Julie Townsend: "Alchemical Visions and Technological Advances: Sexual Morphology in Loïe Fuller's Dance," in: *Dancing Desires: Choreographing Sexualities On and Off the Stage*, ed. by J. Desmond. Wisconsin: University of Wisconsin Press 2001, pp. 73–96.

8.2 Textiles: Fabric Webs and Whitewashing

For Fuller also dances *Salome*, first performed in 1895 (before the great aesthetic *Salomania*, which only began after 1900) as the first full-length work at the Théâtre de l'Athénée,¹⁵ then another time with quite greater success. For all her abstraction, she is no stranger to exoticism and its opulence. Already the Serpentine Dance was created in 1887 in New York in the context of an orientalist spectacle: *The Arabian Nights, or Aladdin's Wonderful Lamp* at the Standard Theatre, "a production that contained [...] the exotic visual effects of crystal caves, grottos, and 'The Veil of Vapor, or Steam Curtain.'"¹⁶ Even in 1914, when she herself appears primarily as a teacher, she seeks inspiration in ancient Egypt, staging herself there as a sphinx.

Similarly, there is eroticism in Fuller's dances. As Ann Cooper Albright has shown, research tends to overemphasize the dissolution of the body and the technical aspects. While Rhonda Garelick assumes Fuller was simply "too old, too heavy, too plain, and too much known as a lesbian" to rely on the motif of heterosexual seduction as it traditionally characterized orientalist vaudeville dances, the techniques of veiling and unveiling the body, which originated in exotic dance, are present throughout Fuller's works.¹⁷ The attraction of Fuller's performances seems to have consisted precisely in the fact that this unspectacular everyday female body could be transformed into a seductive spectacle every evening with technical assistance.¹⁸ From one rehearsal to the second *Salome* reports a female observer:

There, on that evening when I saw her rehearse *Salome* in everyday clothes, without costume, her glasses over her eyes, measuring her steps, outlining in her dark robe the seductive and suggestive movements, which she will produce tomorrow in her brilliant costume, I seemed to be watching a wonderful impresaria, manager of her troupe as well as mistress of the audience, giving her directions to the orchestra, to the mechanics, with an exquisite politeness, smiling in face of the inevitable nerve-racking circumstances, always good-natured and making herself obeyed, as all real leaders do, by giving orders in a tone that sounds like asking a favor.¹⁹

There is little doubt here about the salaciousness of the dancer's movements; only their absence in the rehearsal seems remarkable. Fuller is encountered in the description as an engineer of her own performance, wearing glasses and everyday clothes,

¹⁵Libretto: Armand Silvestre and Charles Henry Meltzer, composition: Gabriel Pierné; a second *Tragédie de Salomé* presented by Fuller in 1907 at the Théâtre des Arts; cf. Gabriele Brandstetter's entry in: *Pipers Enzyklopädie des Musiktheaters*, ed. by C. Dalhaus and the Research Institute for Music Theater at the University of Bayreuth, 6 vols. and an index volume, vol. 2. Munich: Piper 1987, pp. 295–297.

¹⁶Sally R. Sommer, "Loïe Fuller," in *TDR* 19/1 (March 1975), pp. 53–67, here: S. 55.

¹⁷Ann Cooper Albright: *Traces of Light. Absence and presence in the work of Loïe Fuller*, Middletown: Wesleyan University Press 2007, pp. 130–138.

¹⁸Cf. Elizabeth Coffman, "Women in Motion: Loïe Fuller and the 'Interpenetration' of Art and Science," in: *Camera Obscura* 49, 1/12002, pp. 73–105.

¹⁹Interview with Loïe Fuller: 'The Serpentine Dancer behind the scene', April 1896, in: Fuller, op. cit., 1913, p. 283 f.

whose sovereign mastery of the technical apparatus is achieved without raising her voice, that is, without classically patriarchal gestures of sovereignty. This seemingly unfamiliar silent domination of the aesthetic apparatus is described as American on the one hand, and specifically feminine on the other: “these two women with their little hands fashioned for command were managing the rehearsal as an expert Amazon drives a restive horse.”²⁰ But what these theatrical Amazons command is the light, or rather, it is the spotlights. For in 1890, each spotlight, which as I said does not yet exist by name, is a carbon arc that must be individually controlled and directed, namely at the figure of Loïe Fuller, which it must follow throughout the evening. The prerequisite of the Serpentine Dance is thus already behind the scenes a male gaze that follows every movement of the female body. When Fuller lets herself be put in the light by men, whom she teaches in a low voice to turn the spotlights on her, she can build on techniques from the veil dance: There, too, the men are already required to follow the dancer’s individual movements with their gazes, and there, too, the body repeatedly teases with the interplay of revelation and withdrawal.

The deprivation of the body in dance goes back to a longer tradition, also the *exotic dance* of the world exhibitions does not only present the bare flesh to the gaze. As Roland Barthes explained in his reflections on the striptease mentioned above, there are already techniques (of dance) that work on the withdrawal of the body. Already in the veil dance the object of desire withdraws itself in the unveiling (with Lacan one would have to assume that it is constituted in this withdrawal in the first place); and the serpentine dance dissolving the body into a light event only continues this tradition. The play with the material continues in the light event, the light of the spotlights has its predecessors in the sparkling diadems of orientalist dancers. Both create a look that can only pant behind, as Julius Meier-Graefe described it. The serpentine dance adds light techniques to the well-known textile techniques and provides for the technical perfection of the seduction of the gaze. Thus, serpentine dance presents itself less as a break with the sexotic traditions of veil dance than as a transformation of those very traditions, amounting to a transformation of scenic sexotism itself.

Rhonda Garelick describes Fuller’s serpentines accordingly as a version of the veil dance that has been technically purified of its eroticism, an exoticism stripped of its salaciousness, Loïe Fuller as a “whitewashed version of the colonial bay-adère” that owes its origins to the puritanical pragmatism of a *Yankee*. Her appeal was closer (from a French perspective) to that of Thomas Edison than to that of Josephine Baker.²¹ “After all, the glory goes to the electrician,” she quotes Huysman’s reaction to Fuller’s performance.²² But this performance is not only purified in the

²⁰ Ibid.

²¹ Garelick, *op. cit.*, 1995, p. 95.

²² *Chicago Tribune*, Jan. 8, 1918, quoted in *ibid.*

erotic sense, for it is not only the vulgar salaciousness, but also the decor, the materiality of the scene in general, that is in conflict with its resolving through Fuller's spotlight-technical *whitewashing*. As Garelick shows with reference to Dorfman, Fuller's transformation of the bayadère into the serpentine can also be understood as a desexualization of Orientalism, corresponding with the transition from the Empire of French (and English) provenance to a (U.S.) American model of morally clean and prudish imperialism. The former is fed not least by an (old European) desire for the incorporation of foreign worlds and the appropriation of cultural differences, the latter is characterized by the desire for a dissolution of all differences and materialities in a timeless New Jerusalem that finds its salvation through technology.²³

This anti-materialism is best shown where the ephemeral dance becomes a building that is similarly ephemeral in a pavilion (from Latin *papillio* = butterfly), the *Théâtre Loïe Fuller* at the Exposition Universelle 1900 in Paris, not far from the Colonial Exposition and the Palace of Electricity (cf. Fig. 8.2). There, *danses lumineuses* were shown in a *double bill*, the first half of which was performed by Kawakami Otijirô's troupe and Sada Yacco's kabuki adapted to European taste, presenting two jealousy dramas ending in harakiri. It was precisely this combination of Fuller and Yacco that constituted the meaning of the evening for the Symbolist

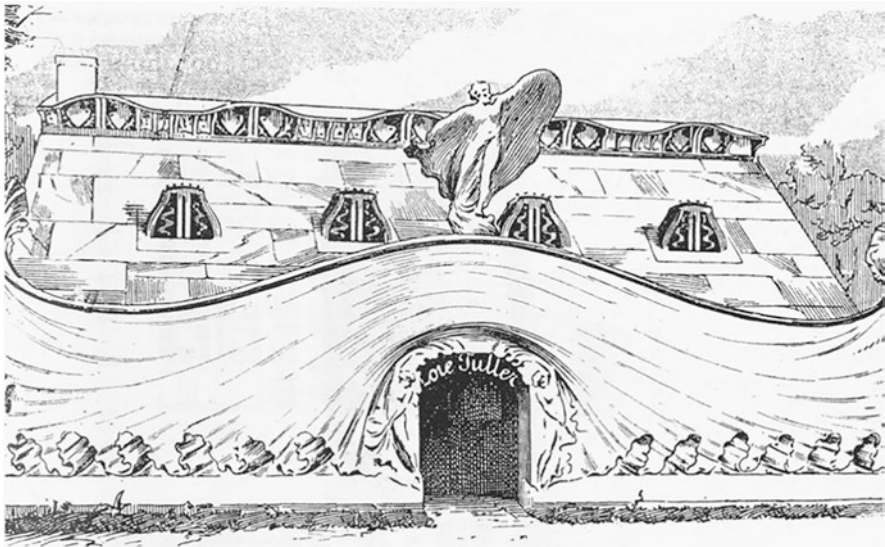


Fig. 8.2 Théâtre de Loïe Fuller, design by Henri Sauvage, 1900. (*Revue des arts décoratifs*, 1900)

²³Ariel Dorfman: *The Empire's Old Clothes. What the Lone Ranger, Babar, and other innocent heroes do to our minds*. New York: Pantheon 1983.

theorist Camille Mauclair, because it combined the physically immediate with technical mediation.²⁴ In the encounter of “races” and styles (“de races et des styles”) a distinctly improbable, boldly daring and stridently intense combination of the highest art of realism, the traditional civilizations of the Orient and the highest art of the Occident emerged, animated by an all-embracing idealism – “l’art du réalisme extrême, l’art traditionnel des vieilles civilisations orientales exténuées de science, et l’art occidental extrême, vivifié d’un idéalisme absolu.”²⁵ The dance of lights is described as a sequence of purifying dream images that liberated from the conflicts and cruelties of everyday life.

C’est l’essor lui-même de la poésie couvrant les crimes terrestres de son manteau de lumière, et le lent pèlerinage accompli par la fée autour de la scène qu’elle exorcise, c’est le pèlerinage de la métaphysique à travers les passions et les douleurs de l’humanité.²⁶

This is the elevation of poetry itself, covering earthly crimes with its cloak of light, and the slow pilgrimage achieved by the fairy around the scene expelling it, it is the pilgrimage of metaphysics through the passions and sufferings of humanity.

It is precisely the connection of a traditional (i.e. timeless, past and distant) Orient with the modern (i.e. developed, future and near) world of the Occident, the suspension of Japonistic passions in technicist light games, the step from Sada Yacco to Loïe Fuller, that is supposed to bring metaphysical reconciliation – with a world out of joint one wants to add.

Following Yacco, however, Fuller only achieves this removal from earthly misery – this is the decisive point of the Serpentine Dance – because her electric light abolishes *the scene as scenery*, i.e. that place of geographical and ethnographic indicators, the *couleur locale*, which in the *verism* of the nineteenth century, is replaced by an all-encompassing *darkness*. It is this darkness, hitherto little known on the theatrical stage, of the *spectacles d’optique* that appears at the beginning of the performance, spreads into the auditorium, and is more important than the light that makes the appearance, i.e. Fuller’s appearance and transformation, possible. Scenery walls are replaced by black velvet, costume parts by white silk. Textile becomes an empty surface, devoid of motif and pattern, chosen primarily for its reflective properties. One fabric reflects the light, the other swallows it. Only this darkness makes something like impressionism in the theater possible at all, makes it possible to experience theater as something fleeting²⁷ and creates the movement of an ornament, a gaze that is directed, at first still distracted and unable to keep up with its desire. In the darkness, the heavy boards of the stage floor dissolve into the movement of lights; and the mechanical forces of the scenery machinery can be replaced by the movement of light and energy in space, whose origin cannot be

²⁴ Cf. Coffman, op. cit., 2002.

²⁵ Cited in Garelick, op. cit., 1995, p. 94.

²⁶ Cited in op. cit., p. 106.

²⁷ Cf. Ochaim/Brandstetter, op. cit., 1989, p. 105.

seen. The installations of glass and mirrors that occupy Fuller's later stages continue this play with darkness, making the proximity of Fuller's work to earlier *spectacles d'optique* and later Kinotops clear and pointing to the industrial and technical nature this theater shared with film.

What Walter Benjamin said about *Art Nouveau* could thus be applied to the serpentine dance. It represents progress, Benjamin writes, because with it the bourgeoisie approaches the "technical foundations of its mastery of nature," and at the same time it is a step backward, because "it loses the power to even look everyday life in the eye."²⁸ Behind this is a pressure against the threshold of consciousness that mysticism attempts to intercept. The ideal of Art Nouveau, however, is the "frigid woman": "(Art Nouveau does not see Helena, but Olympia in every woman.)" The "liquidation of fertility" corresponds to a "technical world arrangement" of Art Nouveau.²⁹ Here, then, we already find Garelick's puritanical imperialism (or Henry Adam's dynamo-theology), based on faith in the virtue of technology, producing the desexualization and dematerialization of the Orientalist scene. Yet Benjamin's Marxist-influenced narrative, in which the technical foundations of society are simply "base" and can only come to consciousness or be repressed, leaves out the question of their epistemic foundations and interactions with politics and aesthetics. It seems too simplistic, however, to understand veil dancing and Jugendstil only as effects or symptoms of social change. Rather, they must be understood as events that create possibilities of perception, as productive aesthetics that make visible and make invisible, that design a relationship to (technical) things in the first place. But what appears in and with this darkness – in the development from veil to serpentine dance – is a new aesthetic in the political sense: that purified imperialism of postcolonial character that relies entirely on the positivity of technology.

8.3 Motors: Patented Art and Extensions of the Body

This abstracted exoticism, in which technology becomes both an object of desire and a means of seduction, also entails a new relationship between art and technology. Like other *industrial* arts (film has been the paradigmatic example since Benjamin), the serpentine dance is an original that lives from its copies, and at the same time a high art aimed at the masses. In other words, it is the original and the reproduction, popular and elitist at the same time. This is due to the fact that it goes back to an *invention* that can be protected and marketed. It is patents (and not manifestos) that are supposed to design Loïe Fuller's art and at the same time protect it from imitators. However, this art only needs to be protected because it is

²⁸ Walter Benjamin: *Passagenwerk* (S 9,4 and S9a,4), in: *Gesammelte Schriften*, vol. 5, op. cit., 1982, pp. 694 f.

²⁹ *Ibid.*

reproducible per se, i.e. it is not tied to any extraordinary abilities or personalities, because it can be easily executed if only the technique is mastered. Not only are there correspondingly innumerable imitators of the serpentine and that above-mentioned beginning that begins with the copy; Fuller himself temporarily hires a double for the World's Fair in 1900 due to other commitments.³⁰

In contrast to pre-industrial arts, the serpentine dance is therefore to a large extent not a work, but an invention, and the description of this invention can be read not only in dance sheets, but also in *La Science Illustrée*.

Le truc est des plus simples [...]. La nuit est faite dans la salle et sur la scène; celle-ci est tendue de velours noir, et le plancher est recouvert d'un tapis noir. Soudain, dans cette obscurité profonde, apparaît une femme vêtue de longues draperies, en gaze de soie transparente. Ces longues draperies, formant une jupe très ample, que la danseuse saisit de ses deux mains, reçoivent des mouvements giratoires; elles ondulent en spirales régulières; elles forment des hélices qui serpentent. A peine l'œil peut-il suivre ces enroulements d'étoffes qui décrivent les plus capricieuses arabesques, mais en conservant dans la succession des volutes une régularité, une symétrie presque géométriques.³¹

It is the simplest thing [...]. Night falls in the hall and on the stage, which is covered with black curtains, and the floor is covered with a black carpet. Suddenly, in the deep darkness, a woman appears, dressed in long draperies of transparent silk gauze. These long draperies, which form a wide skirt and which the dancer grasps with her two hands, receive circular movements; they undulate in even spirals; they form meandering propellers. The eye can hardly follow the windings of the fabric, which describe the most erratic arabesques, but the succession of swirls retains a regularity, an almost geometric symmetry.

The patent on a “Garment for Dancers,” granted to Marie Louise Fuller in France and England in 1893, and in the United States a year later, refers to “theatrical dancing,” in particular “that class of dancing known as ‘the serpentine dance’” (see Fig. 8.3).³² It is understood as an improvement of the dance dress, materially helping the dancer pose and to produce *waves* – “to materially assist the dancer in posing, and, in causing, by movements of the body, the folds of the garment to assume variegated and fanciful waves of great beauty and grace.” For this purpose, it consists of a cloak composed of triangles, a crown and two rods, as light as possible, made of aluminum or bamboo, to which the fabric is attached in order to “create[e] waving motion,” “perform[...] statuesque poses” and to “imitate[e] different styles

³⁰ Cf. Gabriele Brandstetter: “Loïe Fuller – Mythos einer Tänzerin,” in: dies./Ochaim, op. cit., 1989, pp. 86–146, here: S. 133.

³¹ Moynet, op. cit., 1893, p. 295.

³² U.S. Patent 513,102, Jan. 23, 1894, “Mechanism for the Production of Stage Effects” (Apr. 08, 1893 F, May 25, 1893 GB) and U.S. Patent 533,167, Jan. 29, 1895, “Theatrical Stage Mechanism,” corresponds to: German Patent No. 115893, Nov. 10, 1899, “Spiegelvorrichtung für Bühnenzwecke”.

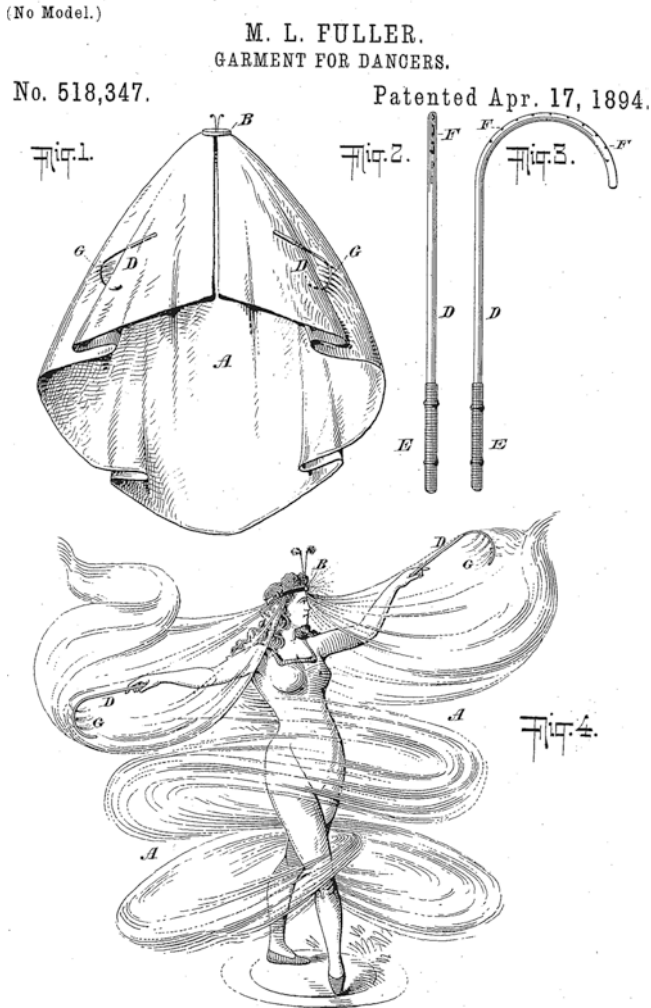


Fig. 8.3 “Garment for Dancers,” (Patented in 1894 by Marie Louise Fuller (detail))

of winds”. Thus, the garment acts as a full-body veil that envelops the entire body, which also still allows the body to be seen and open to the front.

Crucial, however, is the fixation of the fabric at the head, instead of at the hip as usual, because only this allows a radial expansion of the fabric – “much more radial latitude” and the rounded and elegant movements of the dress – “more rounded out and graceful evolutions to the garment.”³³ The body, which no longer dances properly and hardly performs itself, unlike the maenad dancers, no longer throws its

³³Ibid.

head back, but holds it rigidly upright so that the body can form an axis whose rotational movements create those waves that can spread into space. In the hidden center of the “absolute arabesque” of the serpentine dance, of which Gabriele Brandstetter writes that it is “‘empty’, without ‘meaning’” and stands only for itself, there is in this respect nothing other than an engine. And this engine inside the vortex of light and color is responsible for the movements of a projection surface that was once its dress and which it whirls around in centrifugal waves like the driving machine in a factory or a motor vehicle.

The technique of the serpentine dance is in this respect a bodily technique that is significantly involved in a fabric of *thinghoods*. Only with the aluminum crown in the hair, with the weightless silk fabric, the *Crêpe de Chine*, and in connection with the limbs extended into bendable bamboo sticks (those “extensions of woman,” as one might say in allusion to McLuhan’s understanding of media as “extensions of man”), those waves and eddies emerge from the movement of the body that are the serpentine dance. The material basis of the dematerialization of the body and the abstraction of Orientalism are, first, Chinese silk, for centuries the fabric of the Orient in general; second, bamboo, foreign to Europe and introduced only at the beginning of the nineteenth century (and used in charred form in Edison’s light bulbs); third, aluminum, a metal discovered only at the beginning of the nineteenth century, and which at its end is produced industrially by electrolysis. Only these colonial and industrial materials make the serpentine dance possible, give it its lightness, determine how its movements look. With the feminine motor rotating at its center, they form a collective, a complex configuration that includes not only the silk industry and bamboo cultivation, but also the viewer sitting in the dark and the electrician standing by the spotlight.

8.4 Effects: Spotlights and Ghostly Apparitions

Also in Theodor Weil’s 1904 published *Handbuch der Bühnenbeleuchtung* (*Handbook of Stage Lighting*), the Serpentine Dance is found (without specific mention of Fuller), classified as an “effect” that was of special interest “because it could only be made so effective with the aid of modern lighting technology.”³⁴ Of all stage effects, it probably requires the strongest light effect on the surface unit of the illuminated object.

The configuration Weil describes assumes a darkened stage and backdrops suspended with black velvet. Removed from view from the auditorium, there are two projection lamps in each proscenium box, shining from the front, two shining from the backdrops to the side, and one shining from the lighting gallery from above. In front of each lens is an additional rotating disk with colored glass plates in white, blue, red, green, yellow, and violet (cf. Fig. 8.4).

³⁴Weil, op. cit., 1904, p. 240.

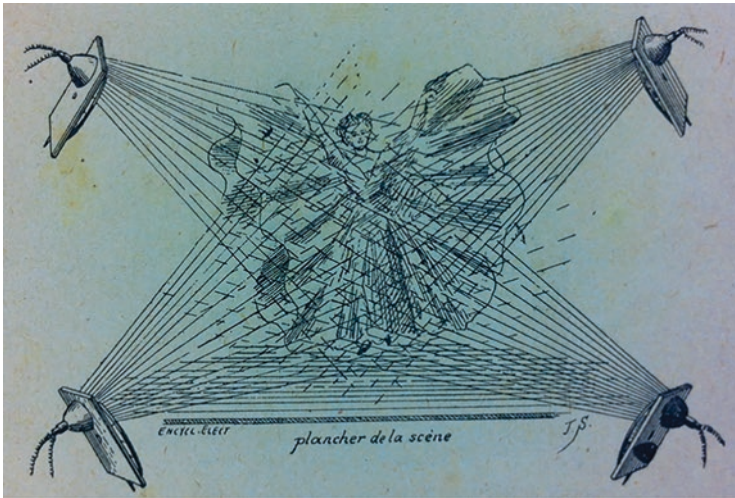


Fig. 8.4 “Eclairage des danses serpentine” (Julien Lefèvre: *L’électricité au théâtre*, 1894)

When the dancer moves on the stage and makes her serpentine with the garment, the latter catches the most different colors, the folds of the dress shimmer in all colors, depending on whether the dancer comes into the beam area of one projection apparatus or the other or two at the same time or finally all together.³⁵

Thus, in the technical description, the dancer’s body literally becomes a projection surface; and it is not surprising that from the perspective of Weil, the engineer and factory owner, the serpentine dance and Loïe Fuller are to be classified in the chapter on “natural effects”. Here the dancer is found on an equal footing with those apparatuses that Jules Duboscq had been building for the Grand Opera in Paris since the 1850s, that Hugo Bähr then tailored in many cases in the 1870s and 1880s, especially for Wagner, and that were manufactured at the end of the century by the major electricity companies such as Schwabe & Co, Siemens, and AEG: Apparatus for *clouds* (Valkyrie Ride) and *rainbows* (*Moïse*, *Wilhelm Tell*), *fire and smoke*, *rain and snow*, *lightning* (*Wilhelm Tell*) and *northern lights* and *waves of water* (*Rheingold*). Later, projection attachments for hearth fires were added and finally Weil mentions as the latest achievement the *Johanniswürmchen*, which would be produced by means of induction current in so-called Geisler tubes made of uranium oxide glass.³⁶

Now it is interesting that Weil admits that also *moonshine* and *Morgenrot* (red sky at sunrise), i.e. essential components of the traditional “day and night making”, are strictly speaking also to be counted among these effect illuminations, because he defines an effect simply as “the production of sensory illusions with the aid of suitable lighting apparatuses”.³⁷ But only strictly speaking, because its “real” origin,

³⁵Op. cit., p. 241.

³⁶Op. cit., p. 251.

³⁷Op. cit., p. 157.

Weil argues, was in the creation of *ghostly apparitions*, in the tradition of magic lanterns and the optical illusions created by mirrors, lenses and lights by legendary magicians such as Professor Pepper and Robert Houdini. It is thus in the tradition of magic *lanterns* and the optical illusions created by legendary magicians using mirrors, lenses and lights. What at the end of the nineteenth century was preparing to establish a specifically modern art by undertaking a far-reaching *dematerialization*, has its origins in a popular practice that was all about letting the purely spiritual *materialize*.

For, like only serpentine dancers elsewhere, the ghost actors depend on focused light for their appearance; they “must be intensely illuminated in order to appear as sharp mirror images.”³⁸ According to Weil, however, this requires an “intense beam of light,” i.e., bundled light from parallel rays, the generation of which depends not only on concave mirrors and convex lenses but also on a light source with a focal point that is as small and bright as possible. In other words, it requires the very device that was still known at the beginning of the nineteenth century, above all from the navy, and which only occasionally served on the stage “for the intensive illumination of objects and persons”:³⁹ the spotlight; Theodor Weil elaborates on the effect of these devices, which obviously cannot be assumed.

If the ghost actors are intensively illuminated by means of such spotlights, the same appear as luminous figures and thus provide sufficiently sharp mirror images.⁴⁰

The focused light turns bodies that can be seen into those that themselves shine (planets become suns), for only such produce (mirror) images of themselves that can be captured in media and thus become ghosts. But in order for this to happen, an artificial darkness is needed, which is the very prerequisite of spotlighting.

The auditorium must be kept completely dark, including the ceiling. It is very important to cover the projection screen. It is best placed at the back of a small stage; at first it is covered by a dark curtain and drapery. When the audience is fully assembled, the gloomy burning light is extinguished. Darkness reigns for a few seconds. Meanwhile, the apparatus already casts the image on the wall. Now the curtain is raised silently. The effect is perfect: the audience has no idea where the apparition is. The light fabric is not visible, because even behind the wall (except for the light of the apparatus) everything is kept pitch-black. The figure seems to float freely in the air.⁴¹

Like Loïe Fuller later, the ghosts float through the air thanks to a light fabric. The spotlight, however, which makes luminous figures appear on mirrored surfaces in dark rooms, is, as Weil logically states, only a “part of projection lamps” and was already included in the *Laterna Magica*.⁴² Accordingly, early spotlight models from

³⁸Op. cit., p. 184.

³⁹Op. cit., p. 164.

⁴⁰Ibid.

⁴¹Op. cit., p. 175.

⁴²Op. cit., p. 187.

Siemens & Halske “can be used both as a spotlight and as a projection lamp”,⁴³ i.e., they can be used on both sides; one side contains a projection attachment, the other lets out the focused light without a preceding image.

What is new about this spotlight, which is then to become so proverbial for the stage, is thus not the *projection*, the casting of focused light, but the absence of an image projected in the process. So there is not first a spotlight, which would be a natural continuation of the stage lighting, which would then be used in a second step for the projection of images. On the contrary, the projections are there first, looking back on a long history, when all of a sudden devices appear that only cast light and color. And they do that too, as the tradition of phantasmagorias with their images produced by mirrors shows, first of all only to produce projections again. Because there is an arrangement in which the image can appear without an image plate, the light can be projected without an image. Only to the extent that bodies become self-luminous can the physical initially be transformed into the image. A spotlight, one might therefore say, is a device that projects something that is already there (a body on stage or, in the case of the ghost performer, under the stage), a device that transforms space into image, transforms the real into the imaginary, that intervenes in the space with the strength of the light beam and picks out selected things there, highlights them, puts them in a supernatural light, transforms the profane into the sacred, and makes the real spooky (instead of the ghostly real, as phantasmagoria does). What is separate in the magic lantern, the world of the imaginary and the real, comes together in the spotlight. It is the point where the sacred and the profane touch. With the light of the spotlight, the ghostly invades the real, and that is exactly what an *effect* is.

The first appearance of such an *effect* in the theater bears witness to this metaphysics. It is a *prophetic sun* that rises for the first time in 1849 in the Opéra of the Second Republic and subsequently wanders through the theaters of Europe as a “sun appareil”. At the end of the third of the five acts of Giacomo Meyerbeer’s (1791–1864) *Le prophète*, the picture shows a flat landscape framed by trees, with the city of Münster in the distance. Jean de Leyde, the hero of the play, a revolutionary against his will who rebels against the authorities because the local comte has taken his bride, narrowly escapes the mutiny of his followers, which has earned him the accusation of being a false prophet. However, because he blames others for the recent defeat, he is able to maintain himself as a religious and military leader, and devises the coming and victorious attack on Münster, which is embattled by a religious renewal movement and church establishment. The last bars of music fade away and on the horizon, which remains a popular symbol for revolutions later on, the sun rises (cf. Fig. 8.5). As Sieghart Döhring writes, the sunrise crowns the musical tension buildup of the scene in the climax of the act finale as a musically unaccompanied and unannounced optical effect.⁴⁴ A previously unseen light, which one

⁴³ Op. cit., p. 203.

⁴⁴ Sieghart Döhring, “Multimediale Tendenzen in der französischen Oper des 19. Jahrhunderts,” in: *International Musicological Society: Report of the 12th congress Berkeley 1977*, ed. by D. Heartz/R. Wade. Kassel: Bärenreiter 1981, pp. 497–500.



Fig. 8.5 “Der Prophet, große Oper von G. Meyerbeer. III. Act letzte Scene”, illustration of the performance in Leipzig on March 23, 1850, woodcut. (*Illustrirte Zeitung*, 1850)

cannot stare at without being blinded, emerges from this revolution, reaching into the darkest corners of the back rows of the audience.⁴⁵

L’effet du lever du soleil est une des choses les plus neuves et les plus belles que l’on ait vues au théâtre: grâce à la lumière électrique, nous avons vu un vrai soleil, qu’on ne pouvait regarder fixement sans être ébloui, et dont la lumière se projetait jusqu’au fond des loges les plus reculées de la scène.

The effect of the sunrise is one of the latest and most beautiful things seen in the theater: Thanks to electric light, we saw a real sun, which could not be looked at directly without going blind, and whose light fell to the bottom of the boxes farthest from the stage.

But the revolution that this artificial sunrise proclaims is due to electric light. Even before the premiere, this prophetic sun is a technical event that promises to surpass nature itself, as Fryderyk Chopin reports to Solange Sand on April 13, 1849.⁴⁶

⁴⁵ *Le Constitutionnel*, 18 Apr. 1849 (Adolph Adam), quoted in Giacomo Meyerbeer: *Briefwechsel und Tagebücher*, vol. 4, ed. by H. Becker/G. Becker. Berlin: Walter de Gruyter 1985, p. 619.

⁴⁶ Fryderyk Chopin to Solange Clésinger in Guillery (no. 330), Friday, April 13, 1849, in *Correspondance de Frederic Chopin*, vol. III ‘La gloire 1840–1849’. Paris: Richard Masse 1960, p. 409, in German in: *Gesammelte Briefe*, ed. by A. von Guttry. Munich: Georg Müller 1928, p. 436.

[...] car une prépare un soleil à l'opéra dans le prophète qui à ce qu'il paraît est plus merveilleux que tous ceux des tropiques. Il se lève seulement et ne soutient que fort peu mais il est aussi fort qu'il donne de l'ombre a tout excepté la musique. Il est fait des gerbes de la lumière électrique.

One prepares a sun in the opera, in the 'Prophet', which is said to be more splendid than any tropical sun. It only rises, does not shine very long, but it is so strong that it eclipses everything, except the music. It is made of rays of electric light.

The electric light that here dazzles the audience in its truth, however, is not the electric light of the incandescent lamps as it characterized the twentieth century, but that arc light that was still used as public electric light in theaters and cinemas, on streets and squares, in war and in the factory until the First World War and partly beyond. This carbon arc light, which Loïe Fuller still uses and which is responsible for many ghost phenomena, was – as already explained above – until 1880 what was called electric light and yet was something quite different from incandescent light.

It is a light that radiates, not glows and shines, x times brighter than early incandescent bulbs and gas lights, which, in contrast, created a domestic, secret light that characterized the upholstered and furnished bourgeois parlors of the nineteenth century and also set the arcades in the light. Coal light, however, is far colder than incandescent and gas light and much more difficult to use, hardly usable for long periods, not to be distributed, not to be regulated, a singular event, a sovereign light, powerful and radiant, not the bureaucratic incandescent light, an effect light. This is also due to the fact that what is used here is an *arc*, which is created when a current flows through the air between two live carbon rods that are guided close to each other. The phenomenon was already demonstrated by Humphry Davy at the Royal Institution in 1808 (the same year that Volta presented his column, the prototype of the battery), but it was not so easy to get to grips with. This was because the carbon rods burned irregularly during the process, presenting any future application of the phenomenon with significant *control problems*.

The apparatus that made the sun rise in the Paris Opera House was a response to these regulatory problems. Léon Foucault had constructed the first self-acting regulator in 1844, which reacted to the voltage fluctuations that arose with distance by means of an electromagnetic control circuit and mechanically tracked the coals. The apparatus, which was used in the Paris Opera, was built according to this very principle, came, according to its own specifications, from the instrument maker Jules Duboscq (1817–1886) and was intended to make possible the application of electric light in science and the arts: “remplit la condition de conserver le point lumineux dans une situation invariable.”⁴⁷ Jules Duboscq had been apprenticed to his future

⁴⁷ Jules Duboscq: “Note sur un régulateur électrique,” in *Comptes rendus hebdomadaires des séances de l'Académie des sciences* 31 (1850), pp. 807–809; cf. also the same: “Note sur une nouvelle disposition de la lampe photoélectrique,” *Comptes Rendu de l'Académie des Sciences* 54 (1862), p. 741; and E. Saint-Edme: “Nouveau régulateur de M. Léon Foucault, construit par M. J. Duboscq,” in: *Cosmos* 24 (1864), pp. 121–126; J. A. Lissajous: “Communication sur le régulateur de lumière électrique de M. Foucault modifié par M. Duboscq,” in *Bulletin de la Société d'Encouragement pour l'Industrie nationale* (1868), pp. 59–60; cf. Paolo Brenni: “Soleil, Duboscq and Their Successors,” in *Bulletin of the Scientific Instrument Society* 51 (1996), pp. 7–16.

father-in-law Jean Baptiste Soleil (sic!), had taken over his workshop in 1849, played a decisive role in the spread of the stereoscope at the Great Exhibition in London in 1851, and in 1855 became *Chef du service de l'éclairage électrique à l'Opéra*.⁴⁸ For with the improvement of arc lamps and the Bunsen elements that supplied the electricity, arc light became popular as theatrical effect light and remained so until the World War.

In most instances M. Dubuscq places his electric lamp on one of the wooden galleries which run along the higher regions of the scenery above the stage. It is from this artificial sky that he, a new Phoebus, darts upon the nymphs of the ballet the rays of his electric sun.⁴⁹

The illustration shows the battery room in the Garnier Opera, which opened in 1875 (cf. Fig. 8.6). The front part of the room also shows the supply of the second important effect light source of the nineteenth century: The lime or sidereal light, known in French as the *lumière oxy-hydrogène*, in English proverbial as *lime light*, had been developed by the military engineer Drummond during the survey of Ireland. It made a lime sphere glow by a flame of a gas mixture of hydrogen and oxygen in a tin box. Both effect lights, arc light and lime light, were in this respect linked to combustion, which released a strong, bright and white glow in a chemical reaction, and on the



Fig. 8.6 “Vue de la salle de l'électricité”. (*La Nature*, 1875)

⁴⁸ Cf. “La Science au théâtre,” in: *Cosmos* 23 (1863), pp. 365 ff, 532 ff, and 24 (1864), pp. 103 ff.

⁴⁹ *La Nature* 11/280 (1875), pp. 369–371 (“Science at the New Paris Opera”).

other hand were also based on chemical processes which produced combustible gases in the case of the lime light, and electricity in the case of the Bunsen elements of the arc light.

If one believes the engineer and founder of technical educational institutions Wilhelm Heinrich Uhland, then the carbon arc light also owes its first application and commercial acceptance to the theater. In the 1840s, electric light was still little more than a scientific curiosity, and it was only with the opera that a commercial application was found that also gave the light the attention it needed to establish itself.

The first really practical, i.e. paid application of electric light was made in 1846 [correct is 1849, author] for a very specific purpose. When it was a matter of making the sun appear in Meyerbeer's opera 'Der Prophet', electricity was used and achieved such a brilliant success that under Duboscq's direction a permanent installation for electric lighting was made for the Grand Opera in Paris.⁵⁰

Although this seems to be a slight exaggeration (arc light was already being used before the Prophet, for example, at night, next to Westminster Bridge in London, and on the boulevards of Paris, among other places), theater lighting actually seems to have been one of the main applications of the new light because of its festive character. For many other things, the light was either too bright, too unstable, or too expensive; and accordingly, as Wilke goes on to write, "electric light had to be confined for the time being to such uses where the brilliant effect outweighed the difficulties in producing it, e.g., in theaters and in occasional illuminations."⁵¹

In this respect, it was precisely these new light sources that made something possible that had not existed in the theater before. They were the basis of new optical devices, new phenomena that took the place of the old mechanical solar apparatuses, which were also able to make the sun rise and increase the light, but could not reach the sun itself in its rays. Besides the *sun*, it was the also religiously connotated *rainbow*, which in 1860 in the Paris production of Rossini's *Moïse et Pharaon* for the first time did not have to be painted, but was projected through a prism (cf. Fig. 8.7); and in Gounod's *Faust*, illuminated holy water bubbled up like in a dramatic *fontaine lumineuse*.⁵²

In these natural phenomena, a sanctified light spread across the stage that otherwise fell only through painted church and cathedral windows.⁵³ But in order for this celestial light to become a truly spooky light, something second is needed in

⁵⁰ Wilhelm Heinrich Uhland: *Das elektrische Licht und die elektrische Beleuchtung*. Leipzig: Veit 1884.

⁵¹ Arthur Wilke: *Die Elektrizität; ihre Erzeugung und ihre Anwendung in Industrie und Gewerbe*. Leipzig: Otto Spamer ³1898, p. 2.

⁵² Cf. *Lumière Électrique* 2 (1880), p. 185.

⁵³ Cf. Rees, op. cit., 1978, p. 143.

Effekte	dekorativ								mit Licht							akust.	mit Darstellern				m.ieren			
	Gewitterwolken	Wolken zur Verwandelung	fahrendes Schiff	Seesturm	Schiffbruch	Einsturz	Vulkanausbruch	Springbrunnen	Transparenz	Sonnenaufgang	Mondlicht, Mond	Nacht	Blitz	Irrlicht	Fackeln	Flammen, Dampf	Brand, Sturm, Feuerschein	Donner	Schlüsse	Einzug, Aufzug	Tanz, Ballet	tableaux	lebte Statue	Pferde
Auber Stumme 1828			•				•		•	•	•			•		•	•	•	•	•	•	•		•
Rossini Tell 1829	•		•	•				•	•	•	•	•			•		•	•	•	•	•	•		
Hérold Zampa 1831						•			•	•	•							•	•			•		
Meyerbeer Robert 1831	•	•						•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	
Halévy Judin 1835							•								•	•			•		•			•
Meyerbeer Hugenotten 1836			•							•					•		•	•	•	•	•	•		•
Meyerbeer Prophet 1849					•				•	•				•		•			•	•				•
Meyerbeer Afrikanerin 1865			•	•	•				•										•	•				

Fig. 8.7 “ Häufigkeit verschiedener Effekte in der Grand Opéra”. (Theaterwissenschaftliche Sammlung, University of Cologne)

addition to the excessive light source, as Weil writes, which has been known for much longer: focusing by reflectors and lenses (Figs. 8.8 and 8.9).

For while in the Opéra of the *Second Empire* (1852–1870), the effect is limited to individual apparitions, in Victorian England (1837–1901) it spreads over the entire stage, transforming it into a dream by a pure radiant light (representing nothing). Thus, in the 1850s, it is Charles Kean’s (1811–1868) and Frederick Lloyd’s (1818–1894) historicist Shakespeare spectacles at the Princess’ Theatre in London that make extensive use of focused light for their historicist spectacles. In 1855 in *Henry VIII*, it is the ghosts in the dream of the ailing Queen Katherine who appear in a beam of arc light.

By an amirable contrivance in the fourth act, the Dream of Queen Katherine was realised, and a vision of angels descending, gliding on a sunbeam upon her slumber in actual presence with the most beautiful effect.⁵⁴

The light here not only no longer represents anything, as the sun or rainbow still did, it also no longer stands alone like the sun effect, where even the music had been silent. It no longer appears by itself, but lets the angels appear like in the

⁵⁴ *Illustrated London News* 26 (1855), p. 531.

Vergleiche über den Anteil von Malerei, Technik und Licht bei
„Naturerscheinungen“ auf Barock-, Illusions- und moderner Bühne

Malerei - Technik und Licht.

Nr.	Natur-Erscheinung	Barockbühne			Illusionsbühne			Moderne Bühne		
1	Brand	■	■		■	■	■		■	
2	Einsturz		■			■			■	■
3	Explosion		■			■				■
4	Eis	■						■		
5	Gewitter					■				
6	Lawine	■			■	■				
7	Meer				■	■				■
8	Mond	■	■	■		■	■		■	
9	Nebel	■			■				■	
10	Nordlicht	■			■		■			
11	Regen		■			■			■	
12	Regenbog.	■			■			■		
13	Schnee	■				■			■	
14	Sonne			■		■	■			■
15	Sterne	■			■	■	■			
16	Vulkane		■			■			■	
17	Wasser	■	■		■	■			■	
18	Wind					■			■	
19	Wolken	■	■		■	■				■

Fig. 8.8 “Vergleiche über den Anteil von Malerei, Technik und Licht bei ‘Naturerscheinungen’ auf Barock-, Illusions- und moderner Bühne” (Friedrich Kranich: *Bühnentechnik der Gegenwart*, vol. 1, 1929)

phantasmagoria the ghosts in the mirror. And as in the Serpentine Dance, this appearance is essentially due to a material and its light-refracting properties, namely in this case the semipermeable gauze which, depending on whether it is illuminated from the front or from behind, allows the view to pass through, whereby behind it – and this is the decisive thing – an invisible mechanism can operate. The spirit therefore no longer appears as an *apparition* through a mechanical device, through a lifting platform or – as was probably customary for a long time – through “rise and sink”, a horizontal screen on the backstage, but through a change of light.

The trooping of angels in the slant of light which poured in at the Gothic window of Katherine’s room in Kimbolton Castle, were, we may reasonably guess, supported on iron



Fig. 8.9 “Scene from Shakespeare’s Play of ‘Henry the Eighth’, at the Princess’ Theatre. – The Vision-Queen Katherine’s Dream,” illustration. (*Illustrated London News*, 1855)

frames or cradles, just as are the tinselled fairies in a transformation scene; but with this essential difference, that whereas we are now painfully aware of the awkward angular supports, the constrained attitudes of the supported, and the want of blended connection between figure and drapery, we could then detect no trace of mechanism or even of arrangement, all seeming so easy and inexplicable.⁵⁵

The fact that the mechanics, which must be there in order to make angels fly in 1855, are no longer visible, makes the “essential difference” and makes what is clumsy and constricted seem light and simple. But the technical reason for this dissolution of the mechanics into pleasantness is not so much that it would be hidden and concealed, as this might still have been customary in the scenery system, but rather that something else is made to appear; in other words, that what one sees is no longer where it appears.

As a matter of fact, I know on the second occasion of seeing Charles Kean’s Henry VIII. that the flood of light obliquely descending in Queen Katherine’s chamber and peopled with white-winged angels, was not where it seemed to be – not in the room at all, but behind a transparency in the panelled wall at the back.⁵⁶

⁵⁵ Godfrey Turner: “Show and its value”, *The Theatre* 3 (1884), pp. 231–232, emphasis by author.

⁵⁶ *Ibid.*

Like the ghost of Professor Pepper, who thanks to the beam appears where it is not, namely on the projection surface of the mirror, this disappearance is also due to the stage mechanics of a projection. The projection is onto a semi-transparent gauze, in which the real and the imaginary combine so closely that even the knowledge of the deception does not help against it.

Yet for all my knowledge of the contrivance, the effect of prominence was the same as at first This is the triumph of stage enchantment – to retain the admiration of those who are in on the secret; to preserve the illusion for eyes enfranchised and on the watch for trick, blemish, or failure.⁵⁷

No matter how hard you look, you cannot see the trick even if you know it. This is what distinguishes the illusionism of the optical spectacle from the voluntary *suspension of disbelief* of a romantic theater à la Coleridge: It provides *visions*. Kean also makes such a vision out of the fairies in Shakespeare's *A Midsummer Night's Dream* (1858),⁵⁸ from Banquo's Ghost in *Macbeth*⁵⁹ and Ariel in *The Tempest*. Hans-Christian Andersen reports in a mixture of admiration and disgust.

In one act we saw a bleak winter landscape, changing gradually at the outbreak of sunbeams to an aspect of the utmost luxuriance; the trees became arrayed in leaves, flowers, and fruit; the springs gushed abundantly, and water-nymphs, light as a swan's feathers upon the billows, danced down the foaming waterfalls. In another scene Olympus shone forth with all its classic beauty; the aerial background was filled hovering genii. Juno came borne along in her chariot by peacocks, whose trains glistened with radiance. The signs of the zodiac moved in procession: the entire scene was a perfect kaleidoscope phantasmagoria.⁶⁰

The performance is a single optical spectacle, comparable to kaleidoscopes, phantasmagorias and moving panoramas.

The splendour of a single act would have drawn crowded houses to witness even the poorest play, and it was lavished upon five acts of Shakespeare – it was too much! Yes! we even sailed with the Ares in the gliding boat, and saw their thoughts embodied. The whole background moved by – landscape succeeded landscape – a complete moving panorama.⁶¹

Especially the last scene, in which the spirit Ariel floats over the water, once again pulls out all the stops of optical effects.

The final scene was undeniably the most effective. It represented an open sea, rippled by the wind. Prospero, who is quitting his island, stood in the stern vessel, which moved from the background towards the foot-lights. The sails swelled, and when the parting epilogue had been spoken the ship glided slowly behind the side-scenes, and Ariel appeared, floating over the surface of the water and wafting his parting farewell. All the light fell upon him,

⁵⁷ Ibid.

⁵⁸ Cf. *Building News* 4 (1858), p. 265.

⁵⁹ Op. cit., p. 1214.

⁶⁰ Ibid.

⁶¹ Ibid.

insomuch that he, isolated by the electric ray, shed a meteoric splendour over the scene; a beautiful rainbow beamed away from him over the watery mirror. The moon that had shone brightly faded in the sunny radiance, and the rainbow glory beaming from him in the moment of departure.⁶²

But Andersen finds it too much after five and a half hour, feels tired and empty, believes Shakespeare sacrificed to the “lust of the eye” and poetry petrified in prosaic illustration, the living word evaporated. Already Schütze comments in 1800 in his satirical dictionary of the theater:

Transparent, translucent decorations, partially illuminated by the light of the lamp, create an effect. The spectator’s eye is won, much won! Therefore, the effort for the eye should be strongly recommended to the directors.⁶³

But the optical effects of and after Kean are no longer just about that opposition of word and image that was effective in the tradition of a bourgeois contempt for spectacle like that of Ben Jonson, but about a new ontology of the theater. The effect achieved with arc and lime light, with chemistry and electrics since the 1850s, makes ghosts appear, brings the celestial onto the boards in fluorescent abstraction, and in the long run transforms the stage itself into something ghostly, something spherical. And as such, the electro-chemical effect light is the necessary other of the gas light that begins to dominate the stage of the nineteenth century. In its cold radiance, it stands in the greatest possible contrast to the warm flickering of the gas burners, and yet it belongs to the same aesthetic, a component of the same configuration, which produces a theater that is as fantastic as it is realistic. In this respect, it is not surprising that all attempts to light the theater exclusively or primarily with arc light fail at the end of the nineteenth century.

The serpentine dance, however, marks that moment when natural phenomena and spirits seem to dissolve. While angels, ghosts and fairies until then gain their form from the light behind the gauze, with the effect that is the serpentine dancer herself, any solid form is completely dissolved. Fuller becomes that cloud to which she is repeatedly compared, and which elsewhere is cast by cloud-apparatuses against the round horizons of theaters. For clouds are like waves and flames, and unlike suns and rainbows, something that only the late nineteenth century cultivated in the theater. “Fuller flames” by Schwabe & Co. are used for Reinhardt’s “Mirakel” in London in 1911,⁶⁴ and already about the *Faust* of 1902, Reinhardt notes, “The representation of the earth spirit by means of illuminated and wind-moving ribbons according to the Loie Fuller system did not give the impression of a happy

⁶²Hans-Christian Andersen: “A Visit to Charles Dickens,” in: *Temple Bar. A London Magazine for Town and Country Readers* 31 (1871), pp. 38–46, here: S. 39.

⁶³Johann Friedrich Schütze: *Satyrisch-ästhetisches Hand- und Taschen-Wörterbuch für Schauspieler und Theaterfreunde beides Geschlecht*. Hamburg/Leipzig: H. Verlagsges. 1800, p. 42.

⁶⁴Cf. Friedrich Kranich, op. cit. vol. 1, 1929, p. 244; Artur Fürst: “Die Technik im Bühnenhaus,” in: *Industrie und Technik* 1 (1920), p. 349; Max Reinhardt: *Ausgewählte Briefe, Reden, Schriften und Szenen aus Regiebüchern*, ed. by F. Hadamowsky. Vienna: Georg Prachner 1963, p. 49.

solution.”⁶⁵ This may be due to the fact that the figures that appear in the serpentine around 1900 are no longer the rock-solid *earth spirits* that still peek through the windows of Faust’s study around 1800, but *uncanny* forces that have to be made visible in the first place.⁶⁶ For this, however, media are needed.

8.5 Cinema: Serpentine and Images of Movement

Like the hysteric, the hypnotised or the light-sensitive photographic plate, the serpentine dance is a medium that makes the unseen visible, helps epistemic or aesthetic things to appear.⁶⁷ What comes to view in the Serpentine Dance is light and movement – or light in movement, or perhaps even better: energy, a space that no longer rests on three coordinates, but is an energetic event.

The appearance of a bright body in an artificial darkness, the combination of light and movement that makes forces visible, recalls both the beginnings of film as chronophotographic studies of movement in Étienne-Jules Marey, Eadweard Muybridge, or Ottomar Anschütz, and the detached vaudeville bodies in the earliest film strips.

Rather than capturing a world, these images limn the outlines of highly trained bodies, accenting the play of muscles or limbs, and include the flexing of strongmen, the gyrations of acrobats, and the rhythms of dancers [...] blending the intense scrutiny of scientific observation with a spectator’s absorption in the highlighted star of the variety stage.⁶⁸

And it is therefore not surprising that a large number of serpentine dances can be found among these first films, even though early film, with its very low light sensitivity, depended on daylight and could not capture on celluloid any of the colored

⁶⁵ Cf. Heinrich Stümcke: *Vor der Rampe. Neue dramaturgische Blätter*. Oldenburg/Leipzig: Schulzesche Hof-Buchdruckerei und Verlagsbuchhandlung 1915, p. 41.

⁶⁶ Cf. Renate Flagmeier: “Loïe Fuller – Die Sichtbarmachung des Unsichtbaren,” in: *absolut modern sein. Culture technique in Frankreich 1889–1937*, exhib.cat. Neue Gesellschaft für bildende Kunst. Berlin 1986, pp. 179–189; Terry Castle: *The Female Thermometer. Eighteenth-century culture and the invention of the uncanny*. New York: Oxford University Press 1995, esp. the chapters “The Spectralization of the Other in ‘The Mysteries of Udolpho’,” “Phantasmagoria and the Metaphorics of Modern Reverie,” “Spectral Politics: Apparition Belief and the Romantic Imagination”.

⁶⁷ Wolfgang Hagen (in conversation with Martina Leeker): “Der Schock der Elektrizität als Technikgeschichte des modernen Tanzes oder Technik als Überforderung und die Möglichkeit der Kunst,” op. cit., 2002, pp. 118–133.

⁶⁸ Tom Gunning: “Loïe Fuller and the Art of Motion: Body, Light, Electricity, and the Origins of Cinema”, in: *Camera obscura, camera lucida: Essays in Honor of Annette Michelson*. Amsterdam: UP 2003, pp. 75–89, here: S. 78.

stage light on the fabric sheets.⁶⁹ The filmed Serpentine Dance is only half a Serpentine Dance, has to limit itself to the movements of the fabric and replaces the spotlights with hand coloring.

Research has also consistently placed Loïe Fuller in close proximity to film. As early as 1975, Sally Sommer, whose work brings Fuller into the discourse of dance history, describes *La Loïe* as a “moving image” that was created in the tradition of the magic lanterns and *phantasmagoria*, which projected images onto fabric, except that here the fabric was no longer static, but moving.⁷⁰ Essays by Tom Gunning, Felicia McCarren, and Erin Brannigan,⁷¹ which make a strong case for the relationship between film and Fuller, take up this idea again with regard to the turn of the millennium and relate it, among other things, to the ideas of movement and the moving image that Gilles Deleuze developed in his book on cinema, starting with Bergson.⁷²

According to Deleuze, what distinguishes the movement of the film image and sets it apart from historically preceding patterns of movement is precisely not the dissection into individual images, as suggested by the view of the filmstrip and the function of the Maltese cross, but rather a new flow of movement that has taken hold of space and time. The filmic single frame no longer showed a static tableau, no standing poses, which as a before and after of the movement had spanned the frame, between which the movement now took place as a phenomenon of transition from one stable state to the next (as it had been common for a long time in both theater and physics). Instead, movement in film now appeared as a continuous flow that no longer knew any privileged moments and could therefore only be provisionally divided into discrete moments; purposeful processes had become fluid change. The snapshots of chronophotography and cinematograph have always shown moments of dynamic figures, which are in a state of uninterrupted change similar to the fabric of the serpentine dance, dissolving individual fixed poses into dematerialized movement. The *moving image* of the twentieth century dissolves the completely different *tableau vivant* of the nineteenth century.

If Fuller’s success, as Wolfgang Hagen, among others, has emphasized, took place essentially in the medium of photography, and if the performance only achieved prominence through its images, then this is certainly due on the one hand

⁶⁹Tom Gunning cites four of Edison’s films showing ‘Annabelles’s [i.e. Annabelle Whitford Moore, author’s note] Serpentine Dance’ (Aug. 10, 1894, Feb. 1895, Apr.–Aug. 1895, May 8, 1897, performed inter alia with Edison Kinetoscope on Apr. 23, 1896 at Koster and Bial’s Music Hall in New York), one of the Skladanowsky brothers with ‘Mlle Ançon’ [d.i. presumably Emmilienne d’Alençon] (1896, shown at the first screening of Bioscope at the Winter Garden, among others), a version of Lumiere of Fregoli showing in drag, and mentions countless unnamed films by other producers (ibid.).

⁷⁰Sally R. Sommer: “Loïe Fuller,” op. cit., 1975, pp. 53–67, esp. p. 53.

⁷¹Erin Brannigan: “‘La Loïe’ as Pre-Cinematic Performance – Descriptive Continuity of Movement,” in: *Senses of Cinema* 28 (Sept.–Oct. 2003).

⁷²Henri Bergson: *L’Evolution créatrice*. Paris: Alcan 1907; transl. by Margarethe Drewsen: *Schöpferische Evolution*. Hamburg: Felix Meiner 2013; Gilles Deleuze: *Cinema 1. L’Image-Mouvement*. Paris: Les Editions de Minuit 1983; transl. by Ulrich Christians/U. Bokelmann: *Kino 1. Das Bewegungs-Bild*. Frankfurt a. M.: Suhrkamp 1996.

to the media publicity of the late nineteenth century, but on the other hand also to the character of the movement presented. In the photographs of Fuller's dance, something similar becomes visible as in the film: a phenomenon that, as Klaus-Jürgen Sembach writes, is without beginning or end, an "almost intoxicating permanent oscillation" and "the highest possibility of abstraction."⁷³ And Fuller is by no means alone in this in dance. Even when the new dancers, such as Isadora Duncan and others, go to museums to be inspired by Greek statues, this is characterized by a view that sees in them the movement that needs to be set free. In the first program of the new dance, it is precisely this movement that is the *décadence*.

The expression that the art of dance has found in modern ballet, whose actions always stop and come to an end in themselves, in which no movement, no pose, no rhythm forms in causal sequence, nor can be developed into further following action, is an expression of degeneration, of living death.⁷⁴

Hofmannsthal, who wrote an important testimony to modern dance with his hymn about Ruth St. Denis, also admires precisely the rhythmic flow of the movements: "It is the most intoxicating concatenation of gestures, not one of which even touches upon pose."⁷⁵ And it is precisely this concatenation that makes the "progress" "non-descriptive", because any description "would have to hang on to details that are quite unessential, and the picture would be distorted". The skepticism of language that led literary figures around 1900 to invoke the body as the direct expression of a new truth thus seems to be directly related to this new form of movement. As the example of Fuller shows, this form of movement in no way separates what film and theater are, but unites forms of theater and film, linking them to the luminous waterfalls at the World's Fairs, which also celebrate that dematerialized movement that has taken hold of society and introduces a new difference into the culture of the spectacle. Instead of running between word and image, as was the case with Jonson, the rift now runs between mechanical and energetic spectacle.

Such an energetic spectacle, however, which dispenses with poses altogether and makes only vibrations visible, must also have a completely different effect. As Felicia McCarren has noted, the serpentine dances not only reveal a hysterical body, as if hypnotized, but are themselves hypnotized. Accordingly, the serpentine dance not only depends on electrical energies and makes electrical energies visible, but itself acts energetically, namely directly:⁷⁶

⁷³"Loïe Fuller und der Jugendstil", in: *Loïe Fuller. Getanzter Jugendstil*, exhibition catalog, ed. by Jo-Anne Birnie Danzker. Munich: Prestel 1995, pp. 113–114.

⁷⁴Isadora Duncan: *Der Tanz der Zukunft*. Leipzig: E. Diederichs 1903, p. 30 f.

⁷⁵Hugo von Hofmannsthal: *Gesammelte Werke in zehn Einzelbänden: Reden und Aufsätze I*. Frankfurt a. M.: Fischer Taschenbuch 1979, pp. 499–501.

⁷⁶Cf. Felicia McCarren, "The 'Symptomatic Act' Circa 1900: Hysteria, Hypnosis, Electricity, Dance," in: *Critical Inquiry* 21 (Summer 1995), pp. 748–774; "Stéphane Mallarmé, Loïe Fuller, and the Theater of Femininity," in: *Bodies of the Text*, ed. by E. W. Goellner/J. S. Murphy, New Brunswick: Rutgers University Press 1995, pp. 217–230; *Dance Pathologies. Performance, Poetics, Medicine*. Stanford: Stanford University Press 1998, p. 2.

The Delicatessen man is indeed more likely than the educated man to grasp the meaning of my dances. He feels them. It is a question of temperament more than culture. My magnetism goes out over the footlights and seizes him so that he must understand – in spite of his delicatessen.⁷⁷

McCarren thus describes the serpentine dance as an electrotherapeutic treatment comparable to the medical use of electric shock. Both acted on hysterical personalities, in one case, an attempt is made to forcibly eliminate a split and establish the control of the physician through the *direct* action of electricity; in the other, to promote a plurality of the subject through an indirect action. While the electroshock is supposed to end the hysteric's misguided histrionic behavior as if by a short circuit and to restore self-identity accordingly, a fluid, ambivalent relationship to identity is experienced in the serpentine dance.

⁷⁷Loïe Fuller, quoted in Current, op. cit., 1997, p. 204.



Conclusion: Aesthetics of Electricity

9



The appearance of electricity as a battery-powered allegory in the exhibition theater celebrates the technical feasibility of the world, that industrialization which established the special path of the nineteenth century,¹ as a triumph of the Enlightenment. Technology appears as a fairy-tale creature² and thus as a historically powerful force that embodies the dream of occidental domination of nature and the world, including its imperialist and racist consequences³ and at the same time promises the healing of industrial wounds. Electricity is imagined as a white energy, generated by hydroelectric power, driving away the sooty clouds of coal burning, and, thanks to a decentralized infrastructure, re-empowering traditional crafts over factories.⁴ Thanks to this promise of reconciling the bourgeois order with the industrial world, electricity becomes the much-vaunted magic of modernity.⁵ This hope for a technological re-enchantment⁶ of the world can be linked both to the electric performances of spectacular natural philosophy⁷ as well as to romantic speculations that, thanks to electricity, Newton's mechanics and the corresponding reason could be overcome.⁸ It is only against this background of a longer history of the theatricality of electricity that the electrification of the theater around 1900 becomes truly understandable.

Following this consideration, the final chapter strives once again to classify what has been presented as well as to provide a theoretical point that outlines the consequences of the perspective sketched here. Section 9.1 "Industrial Culture" places the results in the context of the historiography of theater and technology. It is suggested that historical theatrical cultures should be described less as reactions to and

¹Cf. Jürgen Osterhammel: *Die Verwandlung der Welt. Eine Geschichte des 19. Jahrhunderts*. Munich: Beck, 2009, p. 909 ff.

²Cf. Gooday, op. cit., 2008, p. 197 ff.

³Cf. op. cit., pp. 208 f.

⁴Cf. Hughes, op. cit., 1983, p. 309.

⁵Cf. Sandgrubder, op. cit., 1992.

⁶Cf. Peter Gay, *The Bourgeois Experience. Victoria to Freud*, vol. IV: *The Naked Heart*. New York et al.: Oxford University Press 1995.

⁷Cf. Schaffer: "Natural Philosophy and Public Spectacle," op. cit., 1983; the same: "The consuming flame: Electrical showmen and Tory mystics in the world of goods," in *Consumption and the World of Goods*, ed. by J. Brewer/R. Porter. London et al.: Routledge 1993; Hochadel, op. cit., 2003; Bernadette Bensaude-Vincent: *Science and Spectacle in the European Enlightenment*. Aldershot, Hampshire et al.: Ashgate 2008; Iwan Rhys Morus: *Frankenstein's Children. Electricity, Exhibition, and Experiment in Early-Nineteenth-Century London*. Princeton: Princeton University Press 1998; the same: *Shocking Bodies. Life, Death & Electricity in Victorian England*, Stroud: The History Press 2011; thesis: "Invisible Technicians, Instrument-Makers and Artisans," in *Blackwell Companion to the History of Science*, ed. by B. Lightman. Oxford: Wiley 2016, pp. 97–110.

⁸See Gilmore, op. cit., 2009; Gamper, op. cit., 2009; Gaderer, op. cit., 2009; K. M. Murphy, "Electromagnetic thought in Balzac, Villiers de l'Isle-Adam and Joseph Breuer," in *Substance* 40/2 (2011), pp. 122–147; Jean-Pierre Sirois-Trahan, "'L'Idéal électrique'. Cinéma, électricité et automate dans L'Ève future de Villiers de l'Isle-Adam," in *L'ère électrique*, ed. by O. Asselin/S. Mariniello/A. Oberhuber. Ottawa: Les Presses de l'Université d'Ottawa 2011; Maria Tatar: *Spellbound. Studies on Mesmerism and Literature*. Princeton (N.J.): Princeton University Press 1978.

reflections of social and material developments, and instead be understood as part of them. That is, the electrification of theater would be understood as the transformation of an institution, at the end of which both theater and electricity have changed. Accordingly, the projects of modern theater appear as competing prototypes in which a redefinition of the relationship between technology and aesthetics, and thus the future of society, is negotiated both theoretically and practically. Section 9.2 “Alienation Effects” shows at the beginning and at the end how that technical-aesthetic project, which becomes established and becomes a self-evident standard of the theater, manifests itself in the functioning of a concrete device, namely the spotlight. Distinguishing itself from Brecht’s critical aesthetics, the leitmotif thesis is once again elaborated, namely that the aesthetic regime of electricity makes possible a reconciliation with industrial modernity based on the denial of the intimate connection between art and labor.

9.1 Industrial Culture

More than other technical phenomena, it is precisely electricity, which knows no ancient traditions, does not even get its name until the seventeenth century, and even then remains for a long time nothing but a curiosity, a courtly gimmick, and a fair-ground attraction, that opens up a space of imagination that remains virulent even after electric kisses have long since given way to technical infrastructures.⁹ It is true that technical development is always accompanied by utopian visions of the future,¹⁰ which not least promise to solve social problems,¹¹ but rarely do technology and science fiction seem so close as in the case of electricity. And this will also be due to the fact that electricity, even where it already powers entire cities, ultimately remains a mystery that, unlike mechanical forces, requires a sensual translation in luminous fountains or serpentine dances in order to be experienced as a phenomenon at all.

The steam engine can still be understood, writes Joachim Radkau with regard to Droysen’s hermeneutic foundation of historical science¹² and at the same time, with reference to Fernand Braudel and Conrad Matschoß, warns against transferring the understanding of the machine to history, declaring the technical driving force to be historical and making a prince out of the steam engine, “who awakened Sleeping Beauty Industry from her slumber”.¹³ In contrast to such an elevation of the machine

⁹ Cf. Vermeir, op. cit., 2015, p. 132.

¹⁰ Koen Vermeir (op. cit., p. 142) cites: Jules Verne’s *Vingt Mille Lieues sous les mers* (1869), Bulwer-Lytton’s *The Coming Race* (1871), Thiuse’s *The Diothas: or A Far Look Ahead* (1883), Bellamy’s *Looking Backward 2000–1887* (1888); cf. Gooday, op. cit., 2008; Morus, op. cit., 2016.

¹¹ Cf. Gugerli, op. cit., 1998.

¹² Joachim Radkau, *Technology in Germany. From the 18th century to the present*. Frankfurt a. M.: Suhrkamp 1989, p. 28.

¹³ Conrad Matschoß: *Geschichte der Dampfmaschine. Its cultural significance, technical development and its great men*. Berlin: Springer 1901, quoted in Radkau, op. cit., 1989, p. 29.

as the motor of history, he rather emphasizes the local contingencies of technological development as well as the diversity of the processes involved in this development: the social history of engineers, the scientification of technology, the implementation of *economies of scale*, the change of work experience and human perception. The machines manifests only what, from the historian's perspective, is a multiplicity of cross-connections between economic power structures, social mentalities, and technical modes of communication. In particular, the narrowing of the view to discourse in the narrower (i.e. textual) sense runs the risk of overlooking the power of things and infrastructures, i.e. Thomas Hughes *Networks of Power* in the double sense. Only when "the fascination with certain spectacular technologies" (such as the steam engine) is overcome does "the view of the entire breadth of technical development" open up, and the "diversity of historical reality" comes to light.¹⁴

But even if Radkau's insistence on the perfdy of objects and their interweaving in economic modes, lifeworlds, and knowledge cultures is to be unreservedly agreed with, skepticism seems appropriate, especially from the perspective of theater studies, if the spectacular is to be overcome in favor of a more real reality (of social and economic history). After all, even this spectacular, the sphere of the cultural in general, is not only very real but rather also effective. Instead of overcoming fascination, it should therefore perhaps be more a matter of finding the interconnectedness of the spectacle with social and economic developments. For the question of why the steam engine (and after it electricity) appears to modernity as a form of fate, even if it is perhaps not, seems of importance and should not be underestimated. After all, this technology has become too much of a fate for its prophetic appearance to be dismissed as naive faith and misguided misreading of the facts. Instead, the appearance of technology as a driving force of history, whether in the history book or on the theatrical stage, should be described as a very real delegation of power and an expression of a no less real world relationship. Henry Adam's genuflection to the dynamo machine, in other words, is not a metaphor.

Already Valery has noted that the conquest of the world by electricity is a good example of those remarkable phenomena that are little noticed and yet have a greater significance for the future than all political events combined. With reference to Valery, Marc Bloch has claimed these very phenomena for historical scholarship, and David Nye, in turn, quoting Bloch (who quotes Valery) points out at the beginning of his social history of electricity in America that electrification was not an abstract event, but rather was intimately tied to economic, social, and political issues and decisions. It is therefore fundamentally wrong to conceive of the city, among other things, as a passive and stable object subject to straightforward technological change. Rather, the city, like other institutions, must be thought of as a concrete terrain and social space that virtually assimilated electricity.¹⁵ This process, however, is anything but "sober" and is always experienced as "electrifying" itself. Everything electric has always been saturated with multiple energies, and the population has

¹⁴Op. cit., p. 37.

¹⁵Nye, op. cit., 1985, p. x.

been filled with admiration for “living wires,” “human dynamos,” and “electrifying performances.”¹⁶ A functionalist explanation, which bases the development of technology on its usefulness, cannot explain why electrification had its origins in the theater.¹⁷

The appearance of electricity in the exhibition theater in Frankfurt in 1891 is therefore also misunderstood as a representation of a development whose reality takes place elsewhere. Rather, it is itself a component of that technology in whose negotiation it participates and whose negotiation is always also a negotiation of society itself. In the electrified dancer’s body with its luminous jewelry, technical things and human bodies, but even more so social developments and cultural meanings are inseparably linked. For what appears there does not appear as a closed entity in an empty space, but is intimately connected, namely in the form of practices, with the lights and energies, the cables and regulators, rheostats, power plants and electrical corporations that henceforth permeate the electrified theater. The common resolution of this scene into its two sides, the negotiation of cultural meaning on stage on the one hand and the technical development backstage on the other, misses what is happening here: the incorporation of electricity by the theater (as an institution), at the end of which both electricity and the theater are no longer the same as before.¹⁸

How this incorporation plays out concretely, what its preconditions are, and what possibilities it designs, is what this book has attempted to reconstruct in the preceding chapters. In the examination of light positions and electrical installations, hygiene discourses and the development of control technology, in the use of power currents and communication techniques, the technological transformation of the theater was traced and at the same time placed in close connection with artistic phenomena. The staging of natural phenomena and catastrophe scenarios, the transformation of stage spaces and scene design, of working methods, knowledge cultures and forms of organization, the shifting of concepts and terms were located at the intersection of technical developments and aesthetic programmatic. It became apparent that society was always negotiated in these encounters between art and technology. Wagner, Appia, Fortuny, Fuller, or Behrens are thus not to be understood as by-products of a history controlled by technical driving forces, but rather as contingent, competing, and productive attempts to make *sense* out of and with electrification. And this sense, which theaters always make out of and with technology, is an aesthetic sense, i.e., a sense concerning perception, which always refers beyond technology to the question of a society that is essentially a technical society. At the end of the incorporation, however, following a phase that also negotiated competing social designs with competing electro-aesthetics, there is the imposition of a techno-aesthetic system that becomes the standard and norm and continues to shape theaters to this day.

¹⁶ Ibid.

¹⁷ Op. cit., p. 29.

¹⁸ Cf. Gooday (op. cit., 2008), who formulates a similar idea in relation to the electrification of the household.

From this perspective, therefore, the modernity of theater appears less as an aesthetic stylistic rupture in reflection of a radical transformation of world than as something itself subject to radical transformation. Theater does not so much respond to electrification as electrification changes what theater is.

In this respect, this work sets itself apart from a history of theater written as a history of performance (and to that extent a history of art and works) and orients itself to current approaches to writing a history of theater culture.¹⁹ This means first of all the understanding of theater from its cultural (social, political, economic) context, but even more the interest in the social practice of theater itself.²⁰ Theater emerges as a social space of action, permeated by discourses, practices, and actors.²¹ Peter W. Marx describes theater as a *scene of the social* in a double sense, namely in the sense of social representation and social institution, and thus brings this cultural-historical approach to the point.²²

Applied to the nineteenth century, such a theater cultural history begins by relativizing the avant-garde narrative that stages a reactionary tradition as a backdrop for its own progress. Emphasis is placed instead on the diversity of theatrical phenomena and their significance for the negotiation of world, especially a world undergoing radical changes in the nineteenth century and responding to its rational disenchantment (Max Weber) with aesthetic re-enchantment (Peter Gay).

From such a cultural-historical perspective on theater, macro-historical processes are often emphasized first, such as the influence of imperialism and nationalism, the significance of cosmopolitanism and commodification in the context of metropolitan culture, the experience of mobility and acceleration in material, social, and communicative areas, and the associated radical restructuring of space and time. Following this, the structural changes of theater as an institution are mostly described and presented as part or effect of the development outlined above: the gradual detachment of stages from courtly contexts, proliferation, diversification and dynamization of supply (genres) and demand (audiences),²³ the development towards mass media and entertainment formats in civic ownership.²⁴ Accordingly, from this perspective, it is precisely those theaters and theatrical forms that emerge as decisive for the development, which had previously been excluded from the

¹⁹In addition to the approaches already cited by Peter W. Marx, Tracy C. Davis, and Chris Balme in theater studies, which are used here as examples for a broader field in the Anglophone-speaking world, and Ute Daniel in German cultural historiography, Stefan Hulfeld's critical examination of the historical practice of theater historiography should also be mentioned in this context (*Theatergeschichtsschreibung als kulturelle Praxis. Wie Wissen über Theater entsteht*. Zurich: Chronos 2007).

²⁰Cf. Daniel, op. cit. 1995, p. 450.

²¹Cf. Lynn Hunt (ed.): *The New Cultural History*. Berkeley et al.: University of California Press 1989.

²²Peter W. Marx: "Introduction: Cartographing the Long Nineteenth Century," in *A Cultural History of Theatre in the Age of Empire* (=A Cultural History of Theatre 5), ed. by dems. London et al.: Bloomsbury 2017, pp. 1–32.

²³Cf. Daniel, op. cit., 1995, p. 152.

²⁴Cf. op. cit., p. 40.

canon and the art historically oriented considerations. The Enlightenment project of theater reform, which seeks to transform the stage into a pulpit and, especially in Germany, comes across as an endless lament about the decline of theater, consequently appears only as a footnote to a visual and media culture of the metropolises.²⁵ Instead of questions of aesthetics, questions of representation come to the fore. “Theater became a battleground for self-representation and gaining visibility,²⁶ Peter W. Marx summarizes this perspective and, with reference to Arjun Appadurai, emphasizes precisely the utopian potential of the imaginary on stage.”²⁷

If the nineteenth century can therefore be seen as a spectacular century – a “performing century”²⁸ or “theatrical age”²⁹ –, it is not only the multiplicity of theatrical pleasures that is meant, but rather the outstanding importance attributed to the practices of public performance, (self-)representation, and at the same time the manifold forms of spectatorship for a society in upheaval. Theater, writes Peter W. Marx, exemplified in the nineteenth century “the cultural strategy of coping with an accelerated, technicized, socially unstable environment – providing places of self-reflection, group consolidation, social experiments and consumerist reassurances.”³⁰ Theater understood as a scene of the social is thus precisely the place where culture ideally negotiates material change.

And it is precisely at this point that the present work introduces and proposes a different direction. For within the framework of the outlined theatrical cultural histories, technology, science, and the material remain merely givens and backgrounds against which human subjects and collectives negotiate meaning, identities, and perception. There, the scene of the social is, in a certain sense, set on the boards of the material, whereas this work rather asks what role said boards themselves play on the scene. In other words, it is a matter of including the technical (as well as epistemic) things in the concept of the social and of asking to what extent in the interplay of electrons, technicians, and dancers not only social signs are set in motion, but rather the things themselves are at stake. For in the various connections that electrical installations and aesthetic programmatics enter into, not least the position of the theatrical in a coming society is negotiated.

²⁵ Cf. Anderson, op. cit., 1991; Vanessa R. Schwartz/J. M. Przyblyski (eds.): *The Nineteenth-Century Visual Culture Reader*. New York/London: Routledge 2004; Peter Fritzsche: *Reading Berlin 1900*. Cambridge, Mass.: Harvard University Press 1996; Thorstein Veblen: *The Theory of the Leisure Class. An Economic Study of Institutions*. New York: Macmillan 1899; Tony Bennett: *The birth of the museum. History, theory, politics*. London et al.: Routledge 1995, ch. 2 “The exhibitionary complex.”

²⁶ Marx: *Introduction*, op. cit., 2017, p. 10.

²⁷ Cf. Arjun Appadurai: “Here and Now,” in *The Visual Culture Reader*, ed. by N. Mirzoeff. London et al.: Routledge 2008, pp. 173–179.

²⁸ Tracy C. Davis/P. Holland: *The performing century. Nineteenth-century theatre’s history*. Basingstoke et al.: Palgrave Macmillan 2007.

²⁹ Peter W. Marx: *Ein theatralisches Zeitalter. Bürgerliche Selbstinzenierungen um 1900*. Tübingen u. a.: Francke 2008.

³⁰ Op. cit. p. 31.

Just as the ancient theater was less a reflection of the polis than a function within it, and the courtly theater was always a component of the court, the modern theater is not so much confronted with industrialization as it is in the midst of it, as a necessary part of it. As mentioned several times, at least in Germany, it was initially the courtly theaters that were among the largest customers of the emerging electro-technical industry and accompanied its rise. And at the same time, it was the same electricity industry that was understood as a sign of an inevitable change.

We are the last of a world where God still graces majesties and madmen like me make gold. Do you hear? Look! And Chojnicki rose, went to the door, turned a switch, and lamps shone on the great chandelier. 'Look!' said Chojnicki, 'this is the time of electricity, not of alchemy.' [...] No more gold! In Franz Joseph's castle they often still burn candles! Do you understand? Through [...] electricity we will perish! It won't take much longer, not much longer!...³¹

In *Radetzkmarsch*, Joseph Roth has a count appear in 1932 who, similar to the audience at the Paris Exposition, turns the switch, turns on the light, and with electricity conjures up the end of an order that, despite all the revolutions of the nineteenth century up to that point, had managed to preserve itself.

Aesthetic modernity, Ute Daniel argues in her study of court theater, basically begins where fashion is no longer determined at court, where what precedes it, the avant-garde, becomes an extra-courtly phenomenon.³² In other words, where the hegemony of courtly culture is broken. But that which outranks the courts around 1900 is nothing other than technology, because this technology has had a "reality-structuring impact" since the railroad and the telegraph. And these consequences, one might note with Valery, are increasingly greater than the impact that the decisions of the princes can still have. For Friedrich Naumann, quoted by Ute Daniel, Kaiser Wilhelm's sovereignty can only be seen in the fact that, due to his enthusiasm for technology, he can be understood as "an embodiment of the electrical tendencies that are effective in all of us".³³ Balloon ascents, ocean flights and Eiffel Towers, but also the *technology* of the piano virtuoso Franz Liszt or the groaning but overwhelming Bayreuth theater machine of the Gesamtkunstwerker Richard Wagner displace the productions of the court as trend-setting attractions."

The modern theater, then, would be first of all the out-of-court theater. These are those places where it is no longer the theater that comes to the prince but rather the princes that come to the theater, – and not simply because these theaters have now switched from privilege to commerce, but rather because it is here that those powers are invoked that from now on make history. Not before the princes, but before the machines and their mastery by virtuosos and engineers, one kneels down reverently on exhibition grounds and in festival halls, not, of course, without always securing one's own share of power with this gesture of submission. – Certainly, the baroque

³¹ Joseph Roth: *Radetzkmarsch*. Hamburg: Rowohlt Taschenbuch Verlag 1975.

³² Daniel, op. cit., 1995, p. 365.

³³ Friedrich Naumann: *Demokratie und Kaisertum. Ein Handbuch für innere Politik*, ³1904, p. 172, quoted in Ute Daniel, op. cit., 1995, p. 368.

theater already succumbed to the fascination for technology, but this technology is always in the service of the prince and serves to project his power; it is no coincidence that the master of machinery is often the city architect and fortress builder at the same time, and the theater is only a part of the court. Only with the change from technique to technology, i.e. the transition to infrastructure and *large scale system*, the inescapable power of the supply systems is established, into which even courts and princes can only fit if they do not want to languish in candlelight. One way out, which the princes, who are also politically disempowered, choose, therefore, is to become directors, i.e. to save their own power by putting it at the service of the (theater) machine.

The appearance of self-luminous ballerinas, fluorescent waterfalls and incandescent Grail cups, however, is to be understood as a transitional phenomenon: The aesthetics here still remain entirely courtly. They are sovereign bodies of light that radiate in all directions like kings of the sun, flashing and glittering like chandeliers and fireworks, powered by pre-industrial energy sources. Only with the dynamo machines in the basement, their upstream steam engines, then later with the cable connections to block stations and finally the integration into the municipal electricity supply, are the beams of light in the theater also subordinated to a technological system. That is, they are subjected to centralized control, optimized by engineering knowledge, and directed with regard to their aesthetic effect. With the transition from the luminous body to the light projector, the theater becomes aesthetically modern.³⁴

At the end of this story, which began with the appearance of electricity, the spotlight (and the darkness it produces) therefore stands once again. For even if it is precisely not the decisive thing and is hardly as independent, unambiguous, effective or inevitable as is often assumed, it is just perhaps, like the steam engine, an apparatus in which fundamental things manifest themselves.

9.2 Alienation Effects (Brecht)

Bertolt Brecht demanded the “open showing of the lamp apparatus” for his epic theater in order to point out the “special circumstances” of the scenic situation. It was necessary to make clear that “arrangements were made” to put the things shown in the “brightest light”. In this way, an “undesired illusion” was to be prevented: the illusion of a “momentary, spontaneous, unrehearsed” and thus “real” process.³⁵

Such alienation by showing the lamp (or other effects), i.e. the exhibition of the scenic means, wants to direct the attention to the made in order to assert the *fact of representation*: Because something cannot appear as itself and always becomes itself only in the appearance, representation always precedes reality. To pretend that this is not the case, that things can be shown as they are; that is, the assertion of the

³⁴ Sandgruber, op. cit., 1992, p. 31.

³⁵ Bertolt Brecht: “Die Sichtbarkeit der Lichtquellen,” in: *Schriften zum Theater; Der Bühnenbau des epischen Theaters* 1944. Berlin/Weimar: Aufbauverlag 1964.

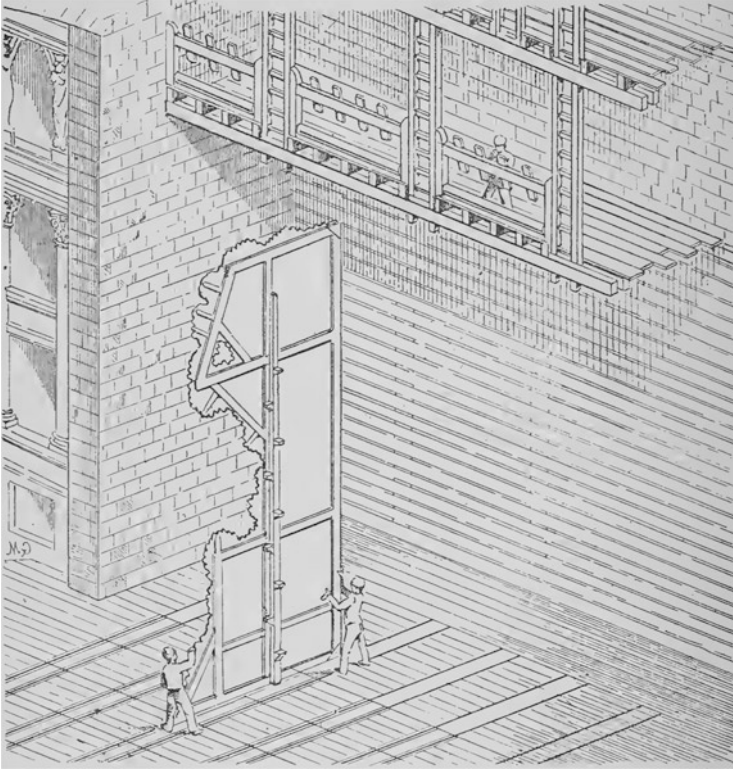


Fig. 9.1 “Premier corridor de service”. (Georges Moynet: *Trucs et décors*, 1893)

appearance of a presence in a transparent representation is correspondingly suspicious and has found its image in another, an older theater technique: the coulisses. With their central-perspective arrangement, painterly execution, and mechanical interchangeability, these movable screens powerfully feign spatial relations and serve as a screen behind which could take place what the proverb believes is capable of explaining what happens on the open stage (cf. Fig. 9.1).

The coulisse has been played with badly in this respect. Because it was in the wrong place at the wrong time, self-proclaimed avant-gardists declared it to be the root of all illusionism and henceforth fought it like Don Quixote fighting his wind-mill blades. As the bogeyman of an enlightened constructivism, the coulisse has since had to stand in as a metaphor for all those powerful machineries that, by naturalizing social conditions, are responsible for the current delusion. In the face of these tendencies towards evil cultural industries, the heirs of the avant-gardes, following Brecht and others, have since designed a theater as *art* that claims to elude the commodity form by exposing and exposing its own apparatuses and positions.

The alienating lamp-display, however, is about more than an aesthetic break in style and the constructivist pleasure in the visible blueprint; it is, at least in Brecht's case, primarily about a political project: with the reference to the apparatus, not only

the partiality of an individual representation is to be exposed, but representation in general, including one's own, is to become recognizable as something that bears witness to realities that are guided by interests. Brecht's epic theater (unlike Piscator's) relies less on agitation through counter-representation than on a critical continuation of the aesthetic education that Schiller had already suggested to the theater as an alternative to revolutionary politics. Instead of *direct action*, it exercises itself in constant de-self-evidencing, insists on the contingency of representation, and tries to take away the immanence of the stagings of politics as well as the myths of everyday life.

As such a critical enterprise, however, the gesture of alienation is ultimately measured against the answer to the question of what kind of "arrangements" were made to bring things into the light, and who actually made them: Was it a director, i.e., a somehow sovereign subject who could decide where the light should fall; or is this director, with his will to shape things, only a surface phenomenon of deep effects of whatever kind that become effective in him, be they social habitus, media dispositifs, epistemic configurations, or aesthetic regimes. Who or what, then, is responsible for the "special circumstances" of representation and whose interests are expressed there? And closely connected to this, there is the perhaps even more important question of what to do with this realization of the madeness of representation in the first place.

After all, the insight into the construction of the prevailing reality is by no means necessarily followed by an active questioning of it. As has been shown since the beginning of modernity, the gesture of alienation is equally suitable for political irritation as for intellectual edification and social distinction, and it also gladly lends the feeling of being above it all and on the right side. At an empathetic distance, with whiskey and a cigar (as Brecht liked it so much), one can not only recognize and understand the connections, but also stare at apparatuses, enjoy dazzles, and cultivate much more subtle illusionisms than any backdrop could offer. Perhaps there are times when displaying the lamp apparatus becomes a stale gesture. Criticism, Bruno Latour reflects, has its limits and its problems.

All of us made the mistake of believing that there was no effective way to criticize facts except by distancing ourselves from them and focusing attention on the conditions that made them possible.³⁶

Perhaps, then, the display of the lamp apparatus has always hidden more than it has shown. For whoever sees the lamp apparatus hanging up there in the laced floor (or stumbles with his gaze over the tone arm that juts into the picture from the right) knows, first, that what stands there in the light has been placed in it; second, suspects that there must still be something that remains hidden in the shadows, and perhaps even third, notices himself as sitting with others in the dark, following the light like a moth. But as soon as the light shines, we nevertheless look again where

³⁶ Bruno Latour: *Elend der Kritik. Vom Krieg um Fakten zu Dingen von Belang*. Berlin: diaphanes 2019, p. 21.

the light is thrown, are irresistibly attracted by its shine and do not let the shine out of our sight, are again there with our attention where one wants us to be. In relation to the light that falls from it, the device is always in shadow and, what takes place in it, remains hidden from view by its housing. The lamp apparatus can perhaps be shown, but we still cannot see it, because what we precisely do not see when we look at it is the lamp apparatus itself. What we see is always only a box from which light falls and which becomes a sign that what is happening on the stage is made. What is happening in the box and what is actually the light coming out of it, what is actually driving this apparatus, eludes visibility both from the stalls and from the rank. To see the apparatus, one would have to unscrew it and open the case; to understand it, trace its manufacture and distribution, examine the economics and science that went into it. Above all, however, the question must be asked what this very science and economy might have to do with the appearance and viewing that cultivate this very concrete lamp apparatus.

This, however, turns out to be a far from simple undertaking. A powerful tradition suggests that whoever is interested in the *art* of the lamp apparatus need not bother with its *technology* (and vice versa), that what matters in aesthetics is how the light is used, not how it is produced, and that we (who are not event technicians) have no interest in where the electricity comes from that powers the thing. It seems always already presupposed that the moods into which the device is capable of immersing things have little to do with the (dynamo) machine that provides the energies for it. This is also why the lamp apparatus is so hard to see from the stalls and balcony, no matter how much attention the director gives it. In the end, it remains a gesture that only confirms what we already thought we knew: the decisive thing about the spotlight is how we use it, and we can use it however we want, because what flows in this lamp apparatus and where it comes from does not really have any influence on what can be done with this thing.

But this is exactly what the lamp apparatus wants us to believe. It makes us think that art, technology and economy can be neatly separated from each other. And this has to do with the fact that the lamp apparatus of which Brecht speaks is not a tallow candle, an Argand lamp or a gas burner, but a *spotlight*. And in this spotlight a whole society is built in, it has an inherent aesthetic tradition as well as an economy based on fossil energies and a technological infrastructure, – and therefore it is perhaps not exaggerated to claim that this device indeed wants something from us and has possibilities to enforce it.

In early theater encyclopedias, the term appears as the equivalent of the French *réverbères*, or reflector.³⁷ From Jules Duboscq to Hugo Bähr, it is understood to mean an apparatus operated by arc lamps that produces an extraordinary effect light. What first staged a spectacular nature in the Grand opéra, later, from the turn of the century to the 1920s, is used in vaudeville and expressionism as a cone of light and, in analogy to the scream, pulls individual bodies out of the darkness. As shown, the bourgeois theater with its tradition, with its replication is skeptical about the visibility of the means, prefers the incandescent lamp to the gas light; and so the spotlight

³⁷Düringer, op. cit., 1841, p. 141.

in the theater only asserts itself when it ceases to be an effect and can be inserted into the system. The prerequisite for this is the development of the half-watt lamp in 1913,³⁸ an incandescent bulb that for the first time gives such bright light that it can compete with carbon arcs and compete for their place in spotlights (cf. Fig. 9.5). Thus, the bundled light loses the singular quality of the effect and can be comprehensively integrated into technical as well as aesthetic systems (cf. Figs. 9.2, 9.3 and 9.4).

The spotlight, which focuses light in a way long reserved for sun gods, church windows, and Enlightenment icons, and which has become proverbial in succession to the metaphorically still prominent *spotlight* for theaters, is basically a magic lantern from which the images have been taken and which casts a correspondingly pure, i.e., image-free light.

Proyector/proyector it is called in the Romanic languages, but also lighthouse (*phareffaro* from the Greek Φάρος) or *foco*, a focus derived from the Latin for fireplace, hearth, and sacrificial bowl, meeting with the spot or point light of English. It is composed of an illuminant that gives light, a combination of reflector and lens that collects, focuses and directs this light, that is, makes it *radiate*, and a housing that hides all this, often still a holder for various filters that allow, among other things, the coloring of the light that comes out. Technically decisive for the spotlight is therefore that point F which marks the light source in the drawing (cf. Fig. 9.5). For only to the extent that this point is actually one (and not a surface) can the light

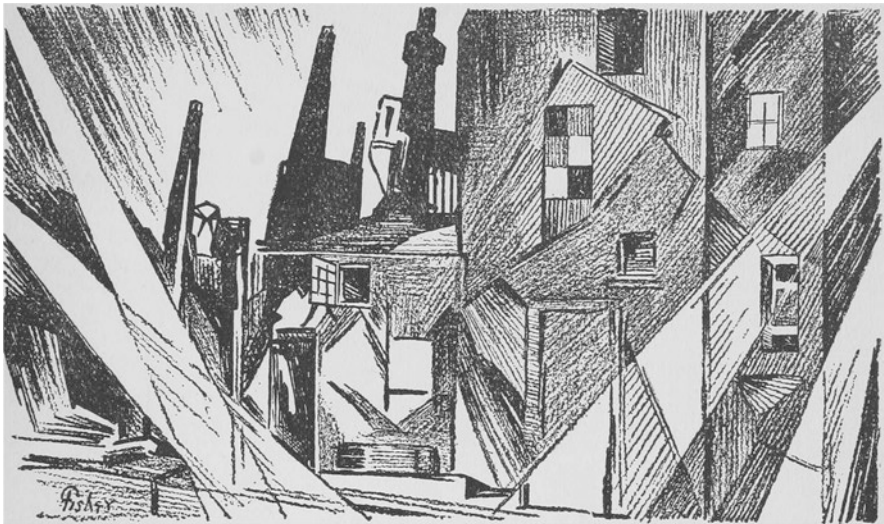


Fig. 9.2 “Futurism stimulates stage lighting,” (The Edison Electric Illuminating Company of Boston, 1929)

³⁸Cf. *BTR* 6/6 and 6/7/1920.



Fig. 9.3 “Effective Stage Lighting,” (The Edison Electric Illuminating Company of Boston, 1929)

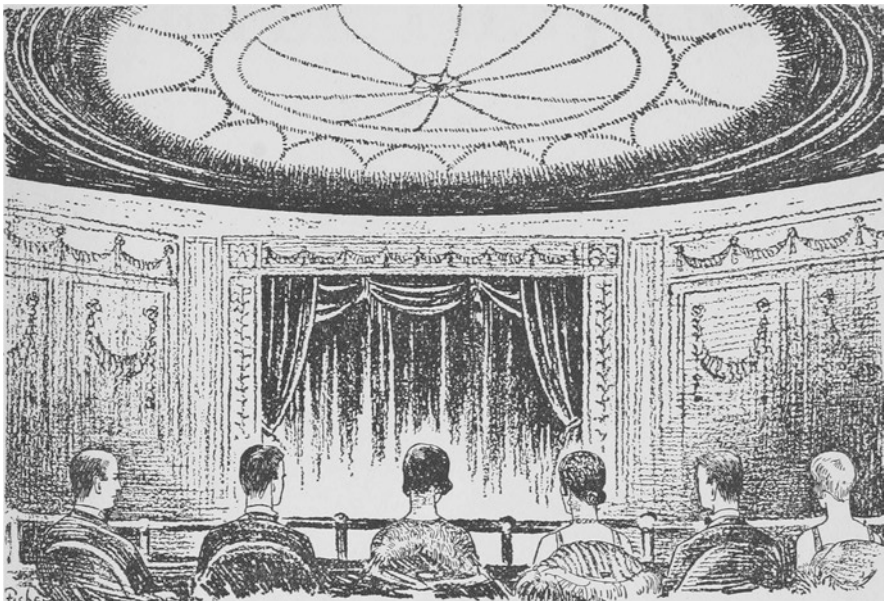


Fig. 9.4 “Diffused Theatre Lighting,” (The Edison Electric Illuminating Company of Boston, 1929)

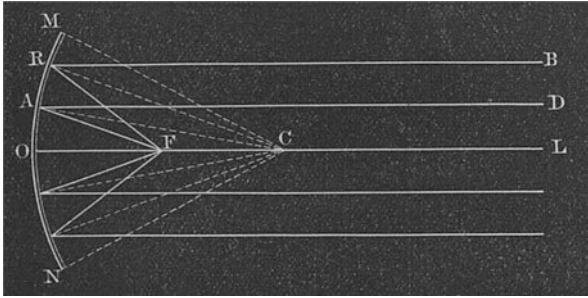


Fig. 9.5 Focusing of light by means of a concave mirror. (Theodor Weil: *Die elektrische Bühnen- und Effektbeleuchtung*, 1904)

be optically focused and become that beam which does not diffuse in all directions but can be directed specifically. This, however, has only really become possible (in spite of all previous history) since there has been electric light; and electric light has only really become established since there have been dynamos, parallel circuits and a system which regulates the generation, distribution and consumption of electricity as a sales process.³⁹

What is no longer burning in the spotlight, but only glowing, is industrially generated *electricity*, which produces a light through a small filament (or an ionized gas), which can be optically bundled with reflectors and lenses and controlled and directed as a beam. This current that flows through the device comes through a wire from the basement or a municipal power plant, but always from a distance and historically from a distance that is always farther away, where in the beginning is usually heated a steam boiler by burning coal that drives a wheel belonging to a dynamo machine that builds a grid voltage that, with the transport, also allows the sale of this new energy.

Like only steam power before it, electricity stands for progress, the belief of a human being describing itself as a species to be able to satisfy his basic neediness by a rationally controlled disposal of the non-human energies of nature, which is basically nothing else than the hope for a slavery without slaves already known by Aristotle. It is no coincidence that before its use in the theater, the searchlight is not only used for military reconnaissance and signaling, but also as a symbolic weapon, so to speak, in colonial wars, in order to blind those to whom one wants to prove one's own enormous and at the same time moral superiority with this dazzling. Accordingly, for Victor Hugo democracy becomes a hybrid of suffrage and

³⁹Cf. Hughes, op. cit., 1983.

electricity, and for Lenin communism is then synonymous with Soviet power plus electrification.⁴⁰

The development known as *electrification*, which also drives and makes possible the searchlight and which, starting in 1880, spreads from the metropolises to the provinces and from the centers to the peripheries, can be described as a technical and economic process that begins with the industrial generation of high currents and their distribution in a market economy. And subsequently, its symbolic exaggerations and social consequences can be described or, looking deeper, its epistemic foundations can be exposed. However, electrification can also be conceived, following Jacques Rancière, as an *aesthetic* event, i.e., as an event directed at *αἴσθησις*, “perception” in the broadest sense, that fundamentally changes how is seen, heard, and felt, and not only that, but also what is perceived at all and what becomes perceptible.⁴¹ Then what is initially installed in villas, hotels, and theaters, and later in entire cities and countries, could also be described as an *aesthetics of electricity*; and would include the question of how technology, especially perhaps the representation of technology, i.e. what technology represents, in full ambiguity, co-decides what we perceive as real.

Such an aesthetics of electricity, which (despite all information processing) is still essentially ours, builds on and sets itself apart from what had been released with steam and coal to hitherto unknown extents: *energy*, i.e., the latent and abstract possibility of performing *work* that is always aesthetic to the extent that it amounts to representation and produces perceptions. Thus, in the course of the first wave of the industrial revolution, this energy is experienced until the end of the nineteenth century predominantly as dirt, noise, and misery, in collisions and dissonances, as alienation of life worlds, and, especially from the bourgeois side, as a series of disturbances of the peace and disorderly conduct that had to be cushioned, padded, and muffled.

In contrast, electric energy brings nothing less than the promise of reconciling progress with the forces it unleashes and of lifting its abysses. Even in the spectacular science of the Enlightenment, electricity, as an invisible and soundless force that has a weightless and timeless effect in the distance, is accorded the status of a modern magic power. But when, at the end of the nineteenth century, the commercial use of electricity is not limited to stamping characters on paper from afar, but instead lights up and motors are set in motion at the push of a button, it fully becomes the magic of the modern age. With the industrial generation of strong currents by dynamo machines and later with long-distance conduction by voltage transformers,

⁴⁰Cf. e.g., Clemens M. Hutter: *Das tägliche Licht. Eine Salzburger Elektrizitätsgeschichte*, Salzburg: Anton Pustet 1996; Wladimir Iljitsch Lenin: “Unsere aussen- und innenpolitische Lage und die Aufgaben der Partei. Rede auf der Moskauer Gouvernementskonferenz der KPR(B) 21. November 1920,” in *Werke*, vol. 31. Berlin: Dietz 1966, p. 414; cf. Anindita Banerjee, “Electricity. Science Fiction and Modernity in Early Twentieth Century Russia,” in *Science Fiction Studies*, 30/1 (2003), pp. 49–71.

⁴¹Cf. Jacques Rancière: *Die Aufteilung des Sinnlichen. Die Politik der Kunst und ihre Paradoxien*. Berlin: b_books 2006.

a radical separation of force generation and force action becomes possible for the first time, allowing huge amounts of energy to be put into ever greater motion. This separation comes with the promise of reconciling the distortions of the steam engine and factory work through natural energies and their decentralized distribution.

With these new energies flowing from the peripheries to the centers, new immaterial spectacles emerge in the metropolises, in which the aesthetic can only be understood as something technical, and the technical, in turn, always already appears as the aesthetic. Far from the material abysses of industrial production, this immaterial aesthetics celebrates the consumption of its products and thus claims nothing less than to aesthetically reconstruct the world that has come apart at the seams through its technical re-enchantment.

What characterizes that modern *spectacle* of energy is therefore less an exuberant theatricality (“great theatre” is historically the rule rather than the exception) than a large-scale *escamotage*, the extensive disappearance of production – that is, of labor in relation to things – from the product itself and the world of its consumption, which is increasingly shaped by the circulation of immaterialities. In this process, both that unspectacular labor that creates the basis of all spectacle as the material livelihood of society and the aesthetic labor that produces the spectacle disappear – so fundamentally that even when the construction of this spectacle is exhibited, the labor on which it is based is no longer visible. Brecht’s lamp-showing would be the pertinent case, for unlike the scenery, whose machinery is easy to see through if only the light is a little brighter or the perspective shifted a few meters, with the spotlight one never sees how it works: Neither where the light comes from, nor how it got to where it shines, can be readily discerned. The *effect* of the electric light remains immediate, it works especially when you know about it, you can stare at the apparatus as long as you want. If the *deception of the scenery* dissolves as soon as one has seen through it like the emperor’s new clothes, it makes little difference to the electrified aesthetics of the society of the spectacle whether one knows that one is being dazzled.

The spotlight, which in the *immaterial movements* of light and color sets out to create moods in a space filled with shining bodies, is not only the means of choice for such a weightless aesthetic of electricity, it is itself already the expression and result of this very aesthetic. Unlike oil lamp or gas burner, it comes without combustion, without waste that can be smelled, felt and understood, it appears instead as a *pure* glow that does not sweat, does not moan, does not smoke, does not flicker and allows to cast a disembodied light into the distance. Whether it is theater avant-garde, cinema screens, shop window scenery or light architecture: The soot and noise, alienated labor and fossil fuel exploitation on which their aesthetics are based are no longer visible in them. No lamp cleaner or scenery trolley disturbs the aesthetic experience of a beam of light coming in from above, rendering all stage painting implausible and making the bodies seem to shine out of themselves, while the audience disappears into the darkness. This projection apparatus, which blanks out its own light source in favor of controlling a bright spot in the distance, which makes visible while itself becoming invisible, which combines concealing, controlling, and bundling, is precisely the device that paradigmatically embodies an aesthetic of

electricity that no longer wants to know about the mischief of production and pretends that it no longer matters where things come from.

Contrary to this rhetoric of the spotlight, however, which disregards production and suggests that everything that takes effect inside the lamp apparatus is secondary to its aesthetic use, it must be emphasized that this very spotlight, which at the beginning of the twentieth century was also to be found in the corded floor of the theaters, is of secondary importance. It is a strange hybrid being that emerges from an essential intricacy of technology and aesthetics and can only be understood from the circuits and collectives in which it is always already embedded: Be it the currents that flow through the wires from the power plants, or those currents that are channeled through the foyers, the energies that light up in the filament, or those that are released in actors and spectators, the control and regulation techniques that are supposed to control all this, or even the hopes for a purified theater that are associated with the device from the beginning. Without all this, the spotlight makes no sense and does not work.

Exhibiting the lamp apparatus and pointing out the artificiality of the representation is therefore not enough if one wants to subject the aesthetic politics of the spotlight to a critique. For more important than what it shows and does not show is what is at work in the spotlight; something that cannot be used so simply because it releases energies that are both technical and aesthetic in nature and whose effectiveness can only be understood from the larger context of their production. Only a perspective that takes up and accepts this complexity of the object as a challenge and does not reduce it to its function as an aesthetic means of sovereign directorial subjects makes a critique possible that can touch upon those questions that are connected with aesthetic technologies, because it touches upon that area of perception that helps to decide what belongs to the real.

The question that arises, therefore, is how that electrified spectacle, in which the spotlight has its place, can be described as an interplay, and how the coming into being of this interplay can be explained. What is the *configuration* of aesthetic and technical practices in which a device like the spotlight becomes effective, and from which *genealogies* does it feed? What forces enter into the device, what struggles does it emerge from, and what energies does it release? – From the perspective of cultural studies, contingency must be restored, and that means firstly: to emphasize the peculiarities of the matter against the apparent self-evidence; secondly: to mentally restore the possibility that the matter could have developed differently and that it was something completely different than it is today, against the classification in retrospect into a delimited subject area and the apparent inevitability of development; thirdly and finally: To resist the temptation to close down the historical process that has just been opened up now itself and to subject it to ineluctable forces or structures that not only subject the divergent actors to a standardization, but also obscure the incompleteness of what has been handed down and the constructive character of historical narratives.