AUTHOR

Mathilde Thouron

LRA – laboratoire d'architecture de Toulouse

Taming darkness: A new program for Paris cinema architecture between 1914 and 1921

Abstract

During the 19th C., the Industrial Revolution and technical advances from the modern era led to the massive use of glass in architectural constructions, which contributed to the transparency of volumes as well as the entrance of natural light within the built environment. By contrast, the "electricity fairy" generated a new kind of darkness. Science and stage-related artistic fields used the inherent qualities of darkness through devices that acted on the status of both the image and the observer. While it was a period in which openings were emphasized in building exteriors, architecture also had to integrate the component of darkness, spurred by the emergence of a large number of machines requiring darkness between the early 19th C. and late 20th C. Prompted by the renewal of energy, darkness quickly became a part of architectural productions designed for projecting film.

Plan of the article

→ Introduction
→ Between optical inventions and the centralizations of a lighting system
→ Cinema architecture: absorbing technical constraints and evolutions
→ The emergence of a program specific to cinemas
→ A composition still close to the theater model
→ Toward an integration of artificial light in the composition of space
→ Conclusion

INTRODUCTION

1   During the 19th C., the role of the darkness-light duo within architecture was modified through the massive industrialization of glass, as well as numerous discoveries in optics and hygiene. Roberto Casati, the philosopher of perception, made the following observation in his research on shadows: "The 19th C. did not just defeat shadows, it also created new ones."[1] While artificial light tended toward definitively eliminating shadows, as pointed out by Jun'ichirō Tanizaki in *Éloge de l'ombre,*[2] the stability of the electrical source and what it allowed in terms of plastic manipulation of the space nevertheless opened the way for new practices.

2   This shift, which was brought about by the electrification of light in the late 19th C., can be seen more specifically in the relation to nocturnal urban space than within architectural design. As artificial light took hold in the nocturnal urban space, hygienist doctors prescribed a maximal entry of its natural counterpart in architecture. This new obligation regarding the penetration of natural light within the built environment, which was more clearly imposed by hygienist decrees in Europe between the late 19th C. and the early 20th C., had a lasting influence on architectural design. The German architect and theorist Gerhard Auer had the following thought on the subject: "Blinded by their own metaphors of light and transparency, the avant-gardes of modernity chased away all deceptive shadows, and condemned any black emotion as a suspicious regression."[3] Modern architecture thus initiated, for chiefly hygienist reasons, a fight that ultimately ascribed negative connotations to darkness for designers of the period.

However, by further anticipating sunlight right from the design phase, designers had to integrate the effects produced by shadows within architectural volume. Light was thus invited by the designers to strike the volumes of structures so as to project distinct shadows that visually structure the space.[4] This approach was promoted by an increased awareness of the need for natural light. Solar projection as a factor in architectural composition was firmly present in design, but what of the relation to artificial light?

In parallel to this considerable introduction of natural light in architecture, there was a need for dark spaces associated with the appearance of projectors. In this essay we will explore the first spaces in which projection and the luminous image as a source of light came to terms with an interest for dark environments. These devices combined the technologies of the magic lantern and the *camera obscura*. A number of these devices such as Emile Reynaud's (1844-1918) praxinoscope (1877) or Thomas Edison's (1847-1931) kinetoscope tried to combine the production and projection of images, before leading to the cinematograph (1895) of the brothers Auguste (1862-1954) and Louis (1864-1948) Lumière. The creation of black boxes and later of black spaces, which were not based on the same logic of open volumes as residences oriented toward natural light, took hold at the time. These technological advances promoted the use of darkness in a context celebrating the duo of glass and natural light. How did the stage design effects enabled by the contribution of electrical light modify the role of darkness within space through means other than architectural composition?

---

[1]   Roberto Casati, *La découverte de l'ombre: de Platon à Galilée, l'histoire d'une énigme qui a fasciné les grands esprits de l'humanité* (Paris: Librairie générale française, 2003), 23.
[2]   Jun'ichirō Tanizaki, *Éloge de l'ombre* (Lagrasse: Verdier, 2011).
[3]   Personal translation of "Geblendet von den eigenen Licht-und Transparenz-Metaphern haben die Avantgarden der Moderne jeden taüschenden Schatten vertrieben, jede dunkle Emotion als finstere Regression verurteilt," *in* Gerhard Auer, "Bauen als Yersenken [Building as Sinking]," *Daidalos*, n° 48, 1993, 20-33.

[4]   Referred to as "optical architecture." See Daniel Siret, "Les sensations du soleil dans les théories architecturales et urbaines. De l'hygiénisme à la ville durable," *in* Ulrike Krampl, Robert Beck et Emmanuelle Retaillaud-Bajac (dir.), *Les cinq sens de la ville du Moyen Âge à nos jours* (Tours : Presses universitaires François-Rabelais, 2013), 105-117.

5   To explore this question, we will compare environments connected to the use of darkness within the fields of theater, art, and later auditoriums for projecting film, focusing less on the types of shows featured, than on the impact they had on the conception of space. We will pay special attention to the late 19th and early 20th C. design process for using the dark to manipulate representation through photography and film. The period under consideration is one that saw the rise of optical and later electrical inventions that affected the staging of images, and that gradually led to the more global concept of the auditorium.

6   With regard to architecture, in 1889 the European community refocused – following the international congress of hygiene – on the issue of housing. The growth of the "*bas-fonds*" (slums) in European capitals since the Industrial Revolution called for new ways of conceiving the urban environment. In fact, spaces that integrated darkness for both its plastic and optical qualities rarely appeared in modern architectural theories, which more easily sided with natural light in devising theories for modern construction. The diversity of light, successively provided by gas and electricity, had a simultaneous influence on architectural thinking from the very beginning. Initially present in the fields of theater, art, and technology, the architect was ultimately confronted with this question during the creation of the first cinemas. What emerges is a history of darkness as a tool for accentuating or eliminating the environment, one that was no longer limited to a dichotomy of shadows versus divine light.

FROM A DARKNESS THAT MANIPULATES THE IMAGE TO ONE THAT MANIPULATES THE GAZE

The elaboration of the image and the dark space: between perception and reception

7   The magic lantern, which appeared in the 17th C., is a projection device that, when positioned in a dark space, can make an image appear on a larger scale. The image is produced by a light source traveling through a lens. In order for it to function, it has to be partly isolated by a screen or a box, so that the only source of light is concentrated within the projection. This invention was notably perfected around 1797 by Étienne-Gaspard Robert (1763-1837), known as Robertson, under the name "phantasmagoria." The phantasmagoria prefigured a relation to the performance in which the appearance of the luminous image is staged by a camouflaging of the projection device, in addition to the immersion of the space in darkness. In order to make this figure appear, such performances had to create their own spatial conditions of reception, with the primary one being darkness. While the image of the phantasmagoria is not strictly speaking "animated," it can amplify the image in a dark environment, thereby giving the impression that the projection is floating in space. In Robertson's phantasmagoric performances, darkness was equal parts technical means and instrument for generating fear when combined with a macabre iconography (fig. 1).

8   Laurent Mannoni, a specialist of pre-cinema, has presented this genealogy of the magic lantern, which albeit tinged with the sensational register under Robertson, explored many other avenues.[5] Its increased use allowed this projection device and the darkness that accompanied it to leave behind its connotation with fairgrounds. With this in mind, Noam Elcott's *Artificial Darkness: An Obscure History of Modern Art and Media* endeavors to show that this darkness from the second half of the 19th C. and early 20th C. marked a turning point in relations to the dark.[6] Human vision and the physical place of the observer were integrated in the conception of visual devices such as dark rooms, cinemas, and black screens. The exploration of the image's production, manipulation, and context of reception worked hand in hand to make the most of the dark space and the black surface. The darkening of the space so that it does not reflect light created contrasts that accentuated

5   Laurent Mannoni, *Le Grand Art de la lumière et de l'ombre: archéologie du cinéma* (Paris: Nathan, 1995).
6   Noam Elcott, *Artificial Darkness: An Obscure History of Modern Art and Media* (Chicago: University of Chicago Press, 2016).
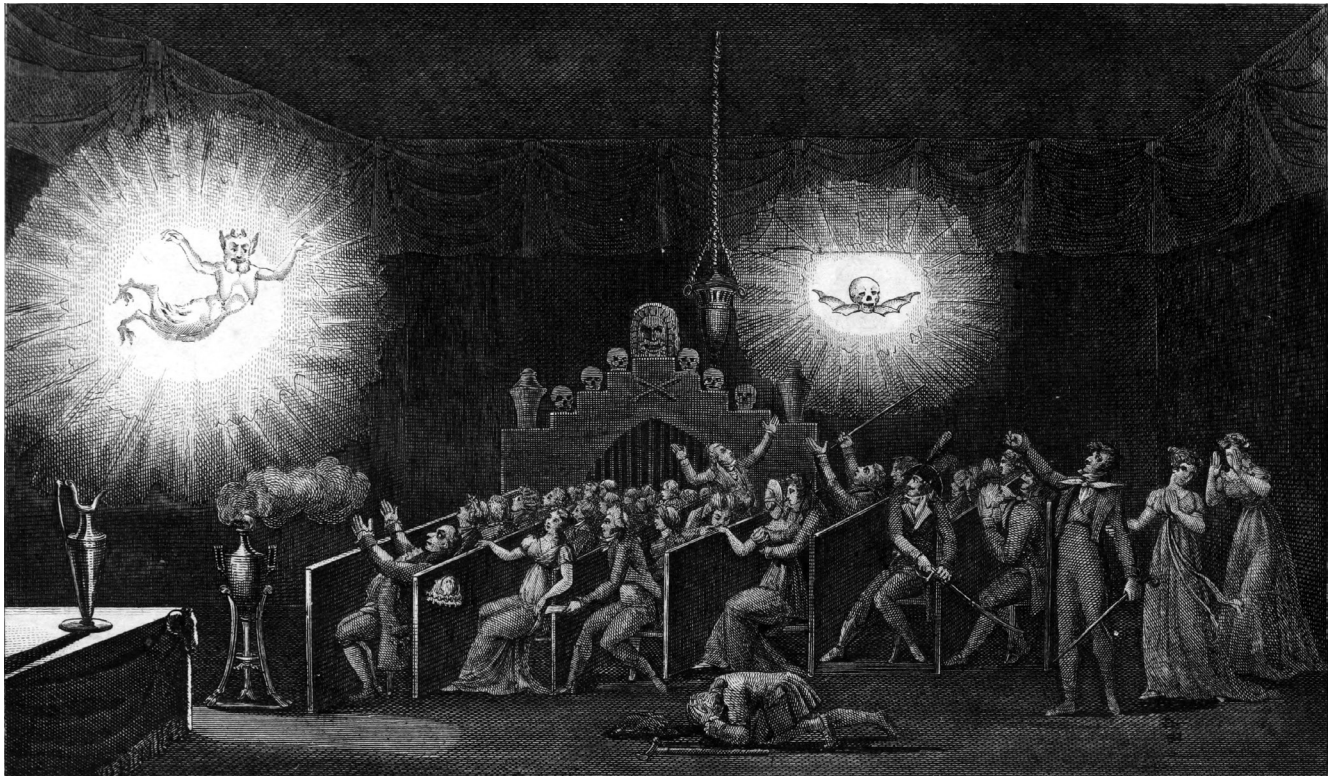
Figure 1: Étienne-Gaspard Robert (known as Robertson), taken from *Mémoires récréatifs scientifiques et anecdotiques* (vol. 1), 1831.

light-hued or illuminated elements. The use of darkness and black was no longer reduced to the simple evocation of the night or the devil. This integration made it possible to consider darkness from a plastic point of view, rather than being reduced to cultural representations. The use of darkness took on new forms thanks to the abundance of optical inventions for recording reality, combined with spatial arrangements that explored the conditions of both perception and reception.

9   The production of images generated by technologies for recording "reality" (photography and later cinema) used this darkening of the space and surface, as demonstrated by the first studio for recording film, Thomas Edison's *Black Maria* (1893), as well as the chronophotography (1885-91) of Étienne-Jules Marey (1830-1904), or the dramatizations of Oskar Schlemmers (1888-1943) in the field of live performance circa 1928.

10   Edison's studio formed a microarchitecture that depended chiefly on internal needs for darkening in order to produce images. It is interesting to note that from its very appearance, film recording did not necessarily seek to imitate real landscapes. In the first shoots at *Black Maria*, the recorded image concentrated on human bodies and their movement, rather than the retranscription of a realistic space. Unlike *L'Arrivée du train à La Ciotat* (1895), which has a documentary aspect, the film captures produced at *Black Maria* exhibited ritualized gestures (dance, the movement of laborers, playing an instrument) that give rise to quasi-abstract forms against a black ground. More so than any documentary aim, these recordings were in keeping with an attraction for plastic potential, as well as the gap that could be produced with "reality."

11   Similarly, around 1885 Étienne-Jules Marey used his physiological experimentation to reveal the continuity of movement with his chronophotography, by combining a shed painted black and the outfit of his walking model in order to emphasize some of the body's joints (fig. 2). According to the analysis of Philippe-Alain Michaud, the body's visibility was actually an obstacle for Marey; he succeeded in representing movement

Figure 2: Etienne-Jules Marey, graphic representation based on the Marche de l'homme, *in La méthode graphique dans les sciences expérimentales et principalement en physiologie et en médecine* (Paris: Masson, 1885).

only by virtually eliminating the body by covering it in black.[7] In similar fashion, the Théâtre Noir (or *Black-art*) invented in Paris by the illusionist from Lyon, Buatier de Kolta, which was patented in 1886, plays on this same polarity between the black screen and fixed light.[8] Such shows, which were especially present in fairground environments, tended to guide one's reading of the space and objects through a draping of surfaces in black, and lighting aimed toward the front of the stage. The optical effect was based on a sharp contrast that conceals anything black and unlit from the eye. In addition, as pointed out by Tabet, "the *Magie noire moderne* was based on suppressing depth perception as well as the relative indiscernibility between the cover and the

ground."[9] The optical inventions of the Théâtre Noir used the complementary of darkness and the black surface in order to accentuate the optical effects of the dark. Similarly, the first special effects in the films of Georges Méliès were created using the same methods in order to have a head, body, or arm disappear at will.

Darkness and the black surface subsequently emerge more as conditions for processing the recording of the image than as the reflection of a more plasticist attitude that distinguishes itself from the strict recording of reality. However, this desire to modify the perception of reality using contrast, here connected to the appearance of film and photography devices, arose during the 17th C. in the world of theater. [12]

From the stage to the cinema: darkening as a gradual condition of performance

Today it is common for theatrical stage design to use darkness and black as dramatic and symbolic mediums. The role of the dark in this field is nevertheless symptomatic of an evolution: from black as symbolic indication to black that becomes a condition for performance, darkness acts as a signal as much as it serves to focus the gaze toward the stage. [13]

For all that, the latter element is not a component immediately inscribed within the time of the performance. The theater's relation to the "dark" as en entity of the space is a central topic in recent research, for instance Véronique Perruchon's *Noir: lumière et théâtralité*.[10] This work notes that before the dark was more widely admitted within the auditorium, it was not the extinguishing of lights but actually their increase that signaled the beginning of the performance. Before the 19th C., alternation between light and darkness was still primarily connected to material conditions: the performance was interrupted each time the candles stopped glowing, until the "*moucheurs*" came to resupply the chandeliers; it was this temporary darkness that "brought [14]

---

7   Philippe-Alain Michaud, *Aby Warburg et l'image en mouvement* (Paris: Macula, 1998), 86.

8   Frédéric Tabet, "Entre art magique et cinématographe : un cas de circulation technique, le Théâtre Noir," 1895, n° 69, 2013.

9   *Ibid*.

10   Véronique Perruchon, *Noir : lumière et théâtralité, Arts du spectacle. Images et sons* (Villeneuve-d'Ascq: Presses universitaires du Septentrion, 2016).

spectators back to the contingencies of reality."[11] While it occurred outside the temporality of the performance, the darkness of these intermissions (inevitable at the time) was part of the performance, and the dramatic action remained dependent on the burning time of candles. The alternation between moments of lighting and half-light that punctuated the time of the performance were dictated by candles.

15   The joint use of these visual effects and increasingly substantial machinery revealed contrasts that had hitherto been pushed away. Previously, the component of darkness bore a metaphoric burden (night, devil, death) whose intervention beyond this framework was seen as a limitation of the stage's visibility. It was only during the 18th C. – which was a period of transition with respect to the use of machines in stage direction – that theaters began to use darkening.[12] This was done to heighten what could be called "special effects," which would be combined during the 19th C. with other successful immersive devices such as the panorama.

16   As effects of light and shadow were brought to the stage in accordance with the technical conditions provided by candle bulb, the space where the audience sat was not for all that dark, as "darkness extending to the edges of the theater was not welcome: people came to see and be seen. People made a spectacle of themselves."[13] This is precisely what the "Wagnerian" revolution of the darkening of the theater borrowed from the auditorium: "[...] the audience disappears from the room; it represents public life, and while it is living and breathing, life appears only in the work of art, on the stage, which appears as the world [for it]."[14] The Festival Theater at Bayreuth imagined by Richard Wagner in 1876 moved in this direction, offering a reworking of classical theater architecture. The architect who designed the plans for this new type of theater, Otto Bruchwald, proposed a configuration in which the orchestra disappears inside a pit, while the slope of the floor beneath the seats and the elimination of balconies channel the gaze toward the stage.

17   However, well before Wagner acted on the theater's architecture, Pierre Patte made similar recommendations in his *Essai sur l'architecture théâtrale* [Essay on Theater Architecture] from 1782,[15] in which the architect demonstrated that certain forms were linked to the propagation of both sound and the gaze. In the second part of his work, *Des causes qui mettent obstacle à la vision, & des moyens de la favoriser dans une salle de spectacles* [Causes that Present Obstacles to Vision, and Methods to be Promoted in an Auditorium], he proposed principles of proportion for the angles between the seats and the stage, as well as the elimination of architectural elements.[16] Richard Wagner nonetheless added the darkening of the theater to Pierre Patte's considerations, which made the arrangements for guiding the gaze toward the stage all the more efficient.

18   Adolphe Appia, a Swiss stage designer who followed in the tradition of Richard Wagner's theater, took up these stage design principles and extended them to the space where the audience was seated. For example, instead of increasing lighting effects, he used them occasionally and combined them the complete darkening of the theater. While he could not always create the total darkness ideally recommended by Wagner, which was difficult to achieve due to the gas lighting that was still dominant at the time, Appia nevertheless succeeded in creating the illusion

11   *Ibid*., 56.
12   The work of the pioneering Italian stage designer Nicola Sabbattini (1574-1654) also bears mentioning, who beginning in 1638 endeavored to invent systems of mechanical covers to modulate the light atmosphere. *Ibid*., 25-52.
13   *Ibid*., 30.
14   Richard Wagner, *Œuvres en prose de Richard Wagner : 1849-1850*, vol. 3 (Paris: Libr. Delagrave, 1913), 219.

15   Pierre Patte, *Essai sur l'architecture théâtrale, ou De l'ordonnance la plus avantageuse à une salle de spectacles, relativement aux principes de l'optique et de l'acoustique* (Paris : Libraire imprimeur Moutard, 1782).
16   These principles are the same as those presented by Eugène Vergnes dans *Cinémas. Vues extérieures et intérieures. Détails. Plans. Avec notice sur la construction et l'aménagement des cinémas* (Paris : Ch. Massin, sans date [vers 1920]).

of darkness. Gas lighting and the implementation of stage switchboards[17] made it possible to lower the light in centralized and gradual fashion, in order to produce more flexible light variations. Due to the attenuation of light in the theater and its minor presence on the stage, the sensation of darkness could spread, without actually being absolute.[18]

19   The practice of darkening the theater opened the way for integrating the audience within the performance space by seeking to generate a felling of immersion. The latter combines with the formal refining of the staging, which emphasized these contrasts with a view to drama. What resulted was a reorientation of the internal structure of the theater's architecture, which became isolated from the exterior, and streamlined within its spatial arrangement.

Between optical inventions and the centralizations of a lighting system

20   While this experiment in staging continued, the construction of cinemas did not necessarily take the Festival Theater at Bayreuth as a reference point, still preferring the architectural model of the classical theater, with its lighting that continued during the performance and its balconies. This can be explained by a number of reasons, chiefly connected to custom and equality of access to the performance: the space had to preserve the separation between different social categories, which should not encounter one another as they move about the theatre. The separation of the two worlds of the "stage" and the "auditorium" began to be challenged in the 1950s, with the coming of the happening and movements emerging from other live performances. In addition to eliminating the frontal

functioning of the stage-auditorium, these practices turned toward the public space, seeking to free themselves from these institutions, whose more materially rigid arrangement limited the very conditions of the show. Yet before freeing itself from the institution in this way, during the 19th C. it initially proceeded with a modification of space through light and darkness. These changes were dependent on a convergence between optical inventions and the centralization of lighting effects. Some companies seized upon these considerations early on, thereby quickly reaching architectural design.

21   Stage design modifications were accompanied by technological advances, which were themselves driven by companies who, from the mid-19th C. onward, turned toward optical machines and gas lighting systems. In France, the optical technician Louis-Jules Duboscq, who took over Jean-Baptiste François Soleil's company with the latter's son, produced special effects devices for the theater stage.[19] The inventions sought especially to offer a variety of proposals for special effects relating to optics, playing on color and the projection of the image.[20] These inventions were closer in spirit to magic lanterns, and allowed for varying the atmosphere in accordance with dramatic effects, which were highly focused on stage effects.[21]

22   In a somewhat different direction, the establishments of the Clémançon family, which was created in 1828, took a large part of the market for overall lighting equipment. While Duboscq's inventions preceded them by a few years, they included a broader system that was present beyond the stage, in the remainder of the auditorium. They were especially present in the market through their anticipation of electrical lighting systems, for which public authorities

17   The stage switchboard is a centralized system for modulating the general lighting of a performance hall. The first switchboards operated on gas, and were gradually replaced by ones running on electricity around 1890 in major European capitals. Still today, the term switchboard refers to the lighting component of stage management.

18   Notes for the staging of Für der Ring des Niebelungen by Adolphe Appia dans *Œuvres complètes, édition établie et commentée par Marie-Louise Bablet-Hahn*, vol. 1 "La mise en scène du drame wagnérien" (Lausanne : L'Âge d'homme, 1983 [1895]), 127.

19   Mannoni, *Le Grand Art de la lumière et de l'ombre*, 214 (cf. note 6).

20   Jules Duboscq, *Catalogue systématique des appareils d'optique construits dans les ateliers de J. Duboscq* (Paris: A. Hennuyer, 1876).

21   Reproductions of Jules Duboscq's devices can be found in Adolphe Appia, *Œuvres complètes*, 360–365 (cf. note 18).

issued ordinances after the fire at l'Opéra-Comique in 1887.[22] However, while the company was in charge of a multitude of locations that hosted both theatrical and cinematic performances, it was up to the architect to anticipate the integration of lighting devices. In fact, from 1908 onward, it was the architect who appropriated these inventions and integrated them within buildings from the very beginning. In view of *l'Ordonnance du Préfet de police, en date du 10 août 1908, concernant les théâtres, cafés-concerts et autres spectacles publics* [Ordinance of the Police Commissioner dated August 10, 1908, regarding Theaters, Cafés-Concerts, and other Public Performances], the plans for construction permits relating to this integration included a great amount of detail.

23   With respect to projection machines, the fire that destroyed the Bazar de la Charité in 1897 also led to the creation of ordinances regarding the opening and ventilation of theaters. Even though the Lumière brothers had since improved the security of their devices, this regulation was imposed on architects beginning with the design of the first cinemas. How were artificial lighting and projection devices, which formed a new program for these locations, integrated within architecture?

CINEMA ARCHITECTURE: ABSORBING TECHNICAL CONSTRAINTS AND EVOLUTIONS

The emergence of a program specific to cinemas

24   In France, the year 1896 was marked by a race for patents, whose starting signal was the presentation of the Lumière brothers' *Cinématographe* at the Salon indien in December 1895. Subsequently, from the *café-théâtre* to the darkened museum, different types of locations were arranged for the projection of luminous images. Yet if the invention of the first projectors such as the *magic lantern* had already imposed the creation of a dark environment during the 17th C., this plurality of sites entailed an occasional and hence more improvised placement of these machines within the space welcoming them.

25   The work of Jean-Jacques Meusy regarding the history of these initial projection sites in France helps identify the moments of latency and rupture in the implementation of spaces used for projections. The first official construction permits for buildings to serve as cinemas were issued in 1907. While there was a need to erect sites that could accommodate this new type of light projection, the programs relating to the optimal conditions for viewing them were just beginning:

> *In almost all cases, its function as a cinema does not take priority in the theater's design. Booths located just about anywhere, with deflector mirrors if needed, overly large projection angles causing deformations, seats too far from the screen or too far off to the side, stage frame pompously loaded with decorative motifs enclosing screens that are too small, are so many recurring anomalies. The cinematic performance is not conceived and integrated as such, with its own distinctive features.*[23]

26   The first programs appeared around 1913, six years after the first construction permits.[24] The low power of projections and their still mediocre quality made the darkening of theaters an essential condition for viewing. To provide these ideal spatial conditions, isolation from the exterior (which enabled greater control over artificial light and projection) became inevitable. Cinema architecture was thus caught in a network of constraints, in which light conditions conflicted with the security conditions put in place after the fires of 1887 and 1897. Improved projection and the implementation of lighting systems used solely during the projection had to accommodate a new architectural form that adhered to respecting the constraints relating to theater ventilation and the concealment of electrical networks.

22   Guy Richard, "Naissance et évolution des entreprises d'installations électriques," *Culture technique*, n° 17, 1987, 17-19.

23   Jean-Jacques Meusy, *Paris palaces ou Le temps des cinémas, 1894-1918* (Paris: Nouveau monde éditions, 2014), 432.

24   Shahram Hosseinabadi, "Une histoire architecturale de cinémas : genèse et métamorphoses de l'architecture cinématographique à Paris" (Ph.D. diss., Université de Strasbourg, 2012).

A composition still close to the theater model

27   In these spaces that were increasingly closed onto themselves, and also limited by constraints relating to acoustics and visibility, the manipulation of light effects opened new possibilities for the conception of space and the decoration of auditoriums. While projections were held in less diffuse locations than during its beginnings, cinematic performances nevertheless had to share their space with theater. Habits in construction were closer to the theater, given its already long history using darkness and light.

28   Cinema thus had to free itself from the esthetic codes and social rituals of theater, all while producing a modern representation of the world that could respond to new demands in programming. However, film projection was still secondary in the production of theaters, as the directors of these locations did not want to place this activity at the center of their program.[25] In addition, the darkness of theaters and the content of films were highly criticized from the standpoint of morals.[26] Louis Jalabert, a fervent critic of cinema, believed the movie theater to be a place of perversion with regard to the subjects of films as well as the environment in which they were screened: "And when one thinks that it is in the complicit darkness that such troubling lessons break free [...]."[27] Despite such reprobation and the hesitation of wealthier audiences, projection activity very quickly gained in importance, reaching a broad public after the First World War.

29   Contrary to theater, the darkening of these auditoriums was not so much a response to the demands of a director seeking to control the state of receptivity for their work, but a necessary condition for being able to enjoy the show. In order for the image to appear, it was vital for the room to be dark, at least partially and especially in the areas surrounding the screen. Another distinctive feature of the film projector in relation to theater was the introduction of a projection booth, whose positioning was adjusted according to the screen's location, in order to ensure visibility for all spectators. This room was not always located in front of the screen, and in certain cases could even be located behind it, in order to prevent the projection beam from being intercepted by cigarette smoke. On this topic, Ernest Coustet's *Traité pratique de cinématographie* [Practical Treatise on Cinema], published in 1913, enabled both establishments and architects to assess the optical considerations relating to projection. In 1914, *Comment on installe et administre un cinéma* [How to Establish and Manage a Cinema] by Emile Kress, provided an overview of the material conditions that must be taken into account, from lighting of the front to the positioning of the screen. These recommendations regularly discussed the organization of space: "One must also avoid bulky columns, especially repeating ones; large overhangs for balconies, thin and smooth partitions made of boards, whose vibrations distort sounds [...]."[28] For that matter, at a time when cinema was still silent, auditoriums were still designed with a space reserved for an orchestra. Yet an orchestra needs light in order to play, and so following the same logic as Bayreuth, it had to be placed in a pit, and contain "light in special consoles that do not allow the light rays to escape and cast a damaging glow under the screen, which must be surrounded by shadows."[29] All of these parameters made the auditorium a space caught between old and new technical constraints.

Toward an integration of artificial light in the composition of space

30   There was such a variety of screening sites in the early 20th C. that it is difficult to summarize the situation by focusing on a few examples. However, we can observe a few variations that played on the technical constraints imposed by the design of buildings devoted to projection. As emphasized by Jean-Jacques Meusy, there was no genuine cinema architecture before the

25   Meusy, *Paris palaces*, 422 (cf. note 23).
26   Louis Jalabert, "Le film corrupteur," *Action populaire*, n° 68, 1921.
27   *Ibid*., 6.

28   Émile Kress, *Comment on installe et administre un cinéma*, 2e éd., Bibliothèque générale de cinématographie n° 2 (Paris: Charles-Mendel, 1914), 20.
29   Vergnes, *Cinémas. Vues extérieures et intérieures*, 7 (cf. note 17).

Second World War. Yet in the aftermath of the First World War, certain cinemas already revealed different strategies used by architects.[30] Eugène Vergnes (1872-1925), Marcel Oudin (1882-1936), and Henri Sauvage (1873-1932) were among the French architects who proposed various stances for cinema architecture, visible through how they integrated lighting systems and projection requirements. These few figures made way for a new generation of architects with the coming of talking and sound movies during the early 1930s.

31   The work *Cinémas. Vues extérieures et intérieures. Détails. Plans.* [Cinemas: Exterior and Interior Views. Details. Architectural Plans] published in 1920 and edited by Gaston Lefol, is one of the rare works in France written by an architect (Eugène Vergnes) that takes stock of a few film-specific creations from the period. The book, which appeared in a new edition in 1925, included plans as well as exterior and interior views of cinemas, along with a few pages on the regulatory ordinances for these establishments. As highlighted by the work of Shahram Hosseinabadi, Vergnes tried at the time to theorize this typology of architecture by approaching the ordinances from a constructive and sensible point of view.[31] In fact, right from the book's introduction, Gaston Lefol stressed these program-related difficulties for architecture:

> Lighting should, in fact, be both bright during intermissions, and soft enough not create too violent a contrast with the almost complete darkness of the auditorium during the performance. The issue of ventilation was apparently a particularly difficult problem to solve, as one had to allow the audience to smoke in a room in which the requirement of darkness prevented using the usual methods of ventilation. Entirely new devices had to be used.[32]

32   In view of the different recommendations made by Vergnes and the projects presented in the publication from 1920, it is possible to divide these productions into different architectural attitudes with regard to the handling of lighting.

33   One of the first architectural stances is that of the Montrouge Palace (1921) cinema in Paris's 14th arrondissement and the Gergovia (1920) in Clermont-Ferrand, both imagined by Marcel Oudin. They still had a marked presence of lamps as decorative objects, positioned independently from the architecture and the project for the atmosphere. While in the description for the Montrouge cinema Vergnes mentions the presence of "light fountains" within the angles, which were supposed to give a "distinctive and artistic appearance to the theatre," it was more so the openings in the form of skylights (located on the upper sides and serving to ventilate the theater) that lightened the importance of the structure through natural light. Jean-Jacques Meusy has pointed out that the Montrouge Palace underwent profound transformations in 1951, as part of the installation of indirect light.[33] So even though the skylights were opened to obtain what one imagined to be sufficient light for photography, artificial light was little present in the structuring of space, and its integration remained incidental (fig. 3).

34   Less spectacular in its volumes, the Gergovia cinema in Clermont-Ferrand offered a better logic in the positioning of light fixtures in relation to the rows. While lights were still treated as objects, they tended to be positioned in balance with the space's structure. The Madeleine cinema (1921) in Paris's 8th arrondissement, by the same architect, exhibited a closer collaboration between the idea of the space and the introduction of light fixtures within it. The light fixtures highlighted certain architectural gestures, such as the curves of the balconies and the bas-relief arches on the sidewalls. However, the inspiration for the space closely conformed to that of a theater, notably through the presence

30   Meusy, *Paris palaces*, 434 (cf. note 23).
31   Hosseinabadi, "Une histoire architecturale de cinémas," 191 (cf. note 24).
32   Gaston Lefol's introduction to *Cinémas. Vues extérieures et intérieure de Vergnes*, 3 (cf. note 17).
33   Jean-Jacques Meusy, *Écrans français de l'entre-deux-guerres - L'apogée de l'art muet*, vol. 1, Histoire culturelle (Paris: Association française de recherche sur l'histoire du cinéma, 2017), 80.

Figure 3: Marcel Oudin, Cinéma Montrouge (1921), interior views, taken from Lefol, Gaston (dir.), *Cinémas, vues extérieures - détails - plans* (Paris: Ch. Massin, 1920). © Collection La Cinémathèque de Toulouse.

of balconies extending outward from the continuity of the story.

35 The Splendid-Cinéma (1920) in Paris's 15th arrondissement, which also included chandeliers, produced an esthetic convergence between the lights and the more or less somber wall motifs: the tapestry motif grew lighter as it neared the vaulted ceiling, which featured different types of lights, as well as "three large rosettes made of decorative latticework."[34] These two elements located at the highest point of the vault were both wrought in the same Art Deco style. The lighter hue and luminosity contributed to a sense of brightness in the upper part of the auditorium, in order to arrange for a darker layer toward the lower part (fig. 4).

In these different projects, other types of light- 36 ing were often added for functional reasons in the sections beneath the gallery, which were generally where the entrance to the auditorium was located. These entrances were treated independently from the lighting for the rest of the auditorium.

The Danton (1920) cinema by Eugène Vergnes 37 in Paris's 6th arrondissement offered a specific lighting configuration that grew out of the architect's explorations with the positioning of the projection booth, which was hidden within the ceiling at the level of the dome (fig. 5). This space included both the ventilation grating and much of the artificial lighting that produced this dome effect. In fact, Vergnes indicated that the lighting was "controlled through resistors that ensured a gradual transition from darkness to light, and shielded the eye from the fatigue that

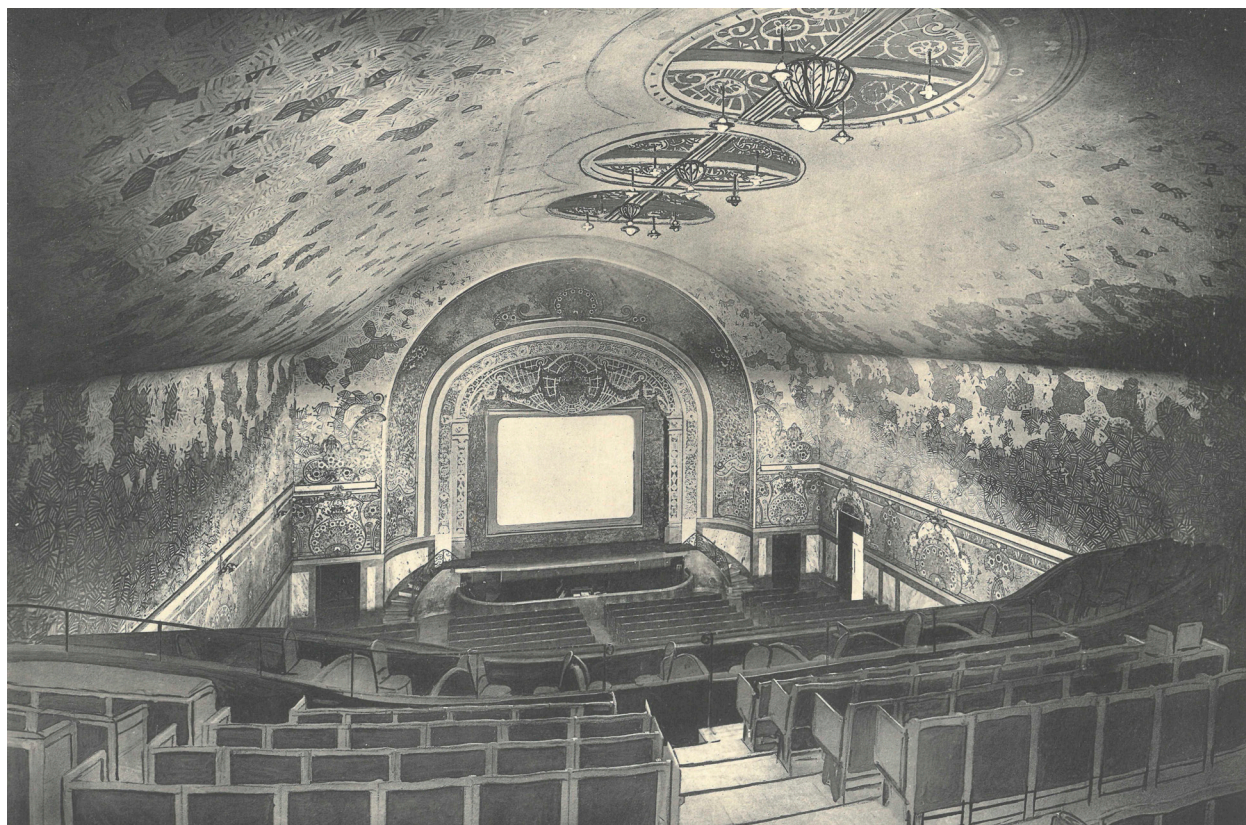34 Vergnes, *Cinémas. Vues extérieures et intérieures*, 14 (cf. note 17).

Figure 4: Eugène Vergnes, Cinéma Splendid (1920), interior views, taken from Lefol, Gaston (dir.), *Cinémas, vues extérieures - détails - plans* (Paris: Ch. Massin, 1920). © Collection La Cinémathèque de Toulouse.

Figure 5: Eugène Vergnes, Cinéma Danton (1920), interior views, taken from Lefol, Gaston (dir.), *Cinémas, vues extérieures - détails - plans* (Paris: Ch. Massin, 1920). © Collection La Cinémathèque de Toulouse.

Figure 6: Henri Sauvage, Cinéma Sèvre (1921), interior views, taken from Lefol, Gaston (dir.), *Cinémas, vues extérieures - détails - plans* (Paris: Ch. Massin, 1920). © Collection La Cinémathèque de Toulouse.
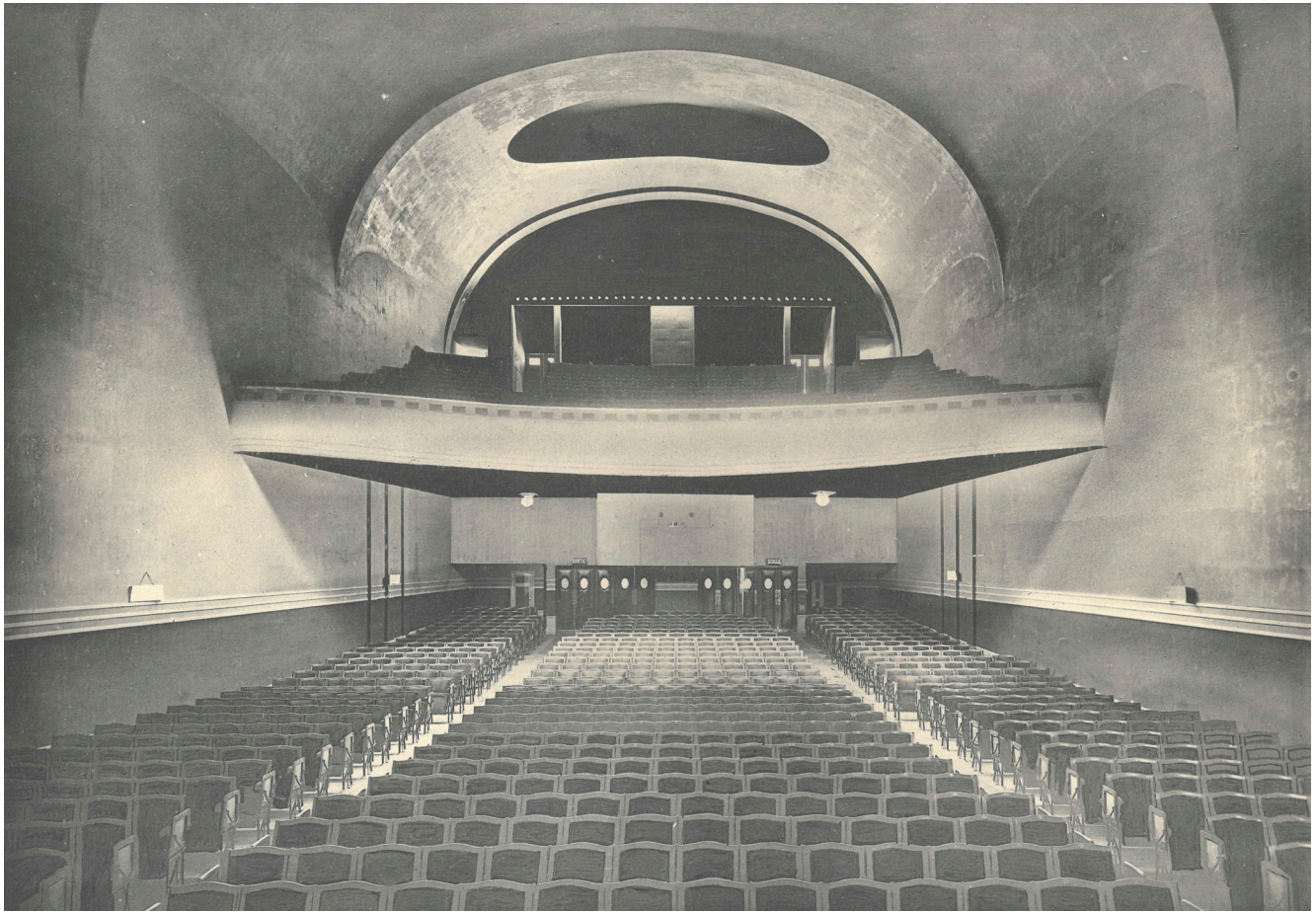
comes from an overly abrupt transition."[35] The windows, which were visible in the background of the auditorium, supplemented the dome's ventilation system during intermissions, but it was indirect lighting that retained the function of lighting the auditorium.

38 Finally, the Sèvres cinema (1921) created by Henri Sauvage, in Paris's 7th arrondissement, used electrical lighting in such a way as to accentuate the building's volume (fig. 6). The sidewalls were relatively bare, and allowed for a staging of light effects. The boards of the Sèvres presented a more radical project than its predecessors, in that the light dramatized the volumes. While the images of the Sèvres are touched-up photographs, they express the architect's desire to use electrical lighting in the building. The placement of lighting revealed the volumes constituting the architecture, by combining a light that

skimmed the sidewalls with another one that directly emphasized architectonic elements by playing on contrast. This project reflects a desire to curve the auditorium's shape into a kind of funnel more appropriate for viewing a screen. For that matter, the description provided by Vergnes notes that the thickness of the dividing walls hides "electrical projectors whose light projects various images onto the walls and the vaults, thereby making it possible to endlessly renew the decoration."[36] These projections were intended to emerge in ovals, which were interpretations of the dome that would slowly close, making way for darkness and the interplay of light.

39 This last project, not yet finalized when the book was published in 1920, involved an appropriation of these light effects in response to the staging of the architecture, which exists outside the

---

35 *Ibid.*, 14.

36 *Id.*

time of the performance. This appropriation took the form of an exploitation of artificial light for the plastic effects it offers within a dark space. Artificial light was therefore no longer necessarily associated with an object, and became a tool for design, for which darkness is a prerequisite.

40   Light subsequently left behind its role as the dominating chandelier, and settled in the folds of the architecture. Shadows took more unexpected directions than those normally provided by irradiant light. This interplay of shadows tended to accentuate the types of surface and their impact, which sometimes became contradictory through the effect of double projections. This effect of shadow and light disturbed perception of the interior space, thereby renewing its design. Through the program imposed by the movie projector, the integration of darkness prompted architects to absorb artificial light within design, in an effort to highlight the structural framework by working from a more stage design standpoint.

CONCLUSION

41   The manipulation of artificial darkness was decisive for both the reception and production of the image. According to Noam Elcott, it was toward the late 19th C. that artificial darkness was controlled thanks to the image, in order for darkness to cancel out the physical dimension and favor the surfaces produced for the eye. This observation is in accordance with Jonathan Crary's regarding the modern observer, whose visual attention "must therefore increasingly exclude or engulf whatever presents an obstacle to its functioning."[37] In the examples presented here, this attention was handled by reducing the impact of the material space beyond the stage through the management of lighting effects and the darkening of the auditorium. The succession of projection machines and centralized lighting systems ultimately concentrated the viewer's attention. In this sense, the use of darkness was, from the outset, invested in the relation to illusion and performance. Having become a technical condition for the appearance of the luminous image, it was a factor in the viewer's conditioning, who disregarded his or her own environment in order to be immersed in what was being presented for viewing.

42   Truly instituted within architectural practice during the 20th C., artificial darkness was driven by technical and optical discoveries, as well as increasingly controllable light sources. In the construction of cinemas, the latter also emerged as a means for elaborating the appearance of the projection, as well as the space. As modern artificial darkness became a programmatic condition, it combined with control over artificial light to offer a tool for navigating between the revealing and elimination of space.

43   While locations for projections and the luminous image are more widespread today, darkening is not as necessary as it once was to showcase them. Nevertheless, dark stage designs are increasingly present whenever screens are present. The arrival of luminous images within museums with the emergence of video art required the design of a "Black Box" within the "White Cube," the apex of modern space.[38] In addition, beyond the reproduction of cinematographic equipment within the museum, installation-projections pursue this project by playing on the ambiguity between the boundary of the work and the architecture. Space is modulated by the intervention of light and dark parameters that are not necessarily based on material aspects. While artistic practices spontaneously seized upon the plastic potential of the complementarity between artificial light and darkness, it was the surpassing of this programmatic constraint that enabled architects to fully consider and accept this element.

---

37   Jonathan Crary, *Techniques de l'observateur : vision et modernité au XIX*e *siècle* ; suivi de *Spectacle, attention, contre-mémoire*, trad. par Frédéric Maurin (Bellavaux: Dehors, 2016 [1990]), 150.

38   Brian O'Doherty, *White Cube: L'espace de la galerie et son idéologie* (Paris: JRP Ringier, 2008).

Bibliography

Alloa Emmanuel
"Architectures de la transparence," *Appareil* [En ligne], n° 1, mis en ligne le 21 février 2008.

Appia Adolphe
Œuvres complètes, édition établie et commentée par Marie-Louise Bablet-Hahn, vol. 1 "La mise en scène du drame wagnérien" (Lausanne: L'Âge d'homme, 1983 [1895]).

Auer Gerhard
"Bauen als Versenken [Building as Sinking]," *Daidalos*, n° 48, 1993, 20-33.

Casati Roberto
La découverte de l'ombre : de Platon à Galilée, l'histoire d'une énigme qui a fasciné les grands esprits de l'humanité (Paris: Librairie générale française, 2003).

Coustet Ernest
Traité pratique de cinématographie. Les Projections cinématographiques (Paris: Charles Mendel, 1913).

Crary Jonathan
Techniques de l'observateur : vision et modernité au XIXe siècle ; suivi de Spectacle, attention, contre-mémoire, trad. par Frédéric Maurin (Bellavaux: Dehors, 2016 [1990]).

Duboscq Jules
Catalogue systématique des appareils d'optique construits dans les ateliers de J. Duboscq (Paris: A. Hennuyer, 1876).

Elcott Noam
Artificial Darkness: An Obscure History of Modern Art and Media (Chicago: University of Chicago Press, 2016).

Gleizes Delphine et Reynaud Denis
Machines à voir : pour une histoire du regard instrumenté (XVIIe-XIXe siècles) (Lyon: Presses Universitaires de Lyon, 2017).

Hosseinabadi Shahram
"Une histoire architecturale de cinémas : genèse et métamorphoses de l'architecture cinématographique à Paris" (thèse de Doctorat, Université de Strasbourg, 2012).

Jalabert Louis
"Le film corrupteur," *Action populaire*, n° 68, 15 octobre 1921, 1-26

Kress Émile
Comment on installe et administre un cinéma (Paris: Charles-Mendel, 1914).

Meusy Jean-Jacques
Paris palaces ou Le temps des cinémas, 1894-1918 (Paris: Nouveau monde éditions, 2014).

Écrans français de l'entre-deux-guerres. L'apogée de l'art muet, vol. 1 (Paris: Association française de recherche sur l'histoire du cinéma, 2017).

Michaud Philippe-Alain
Aby Warburg et l'image en mouvement (Paris: Macula, 1998).

Monin Éric et Simonnot Nathalie (dir.)
L'architecture lumineuse au XXe siècle (Gand : Snoeck, 2012).

O'Doherty Brian
White Cube : L'espace de la galerie et son idéologie (Paris: JRP Ringier, 2008).

Patte Pierre
Essai sur l'architecture théâtrale, ou De l'ordonnance la plus avantageuse à une salle de spectacles, relativement aux principes de l'optique et de l'acoustique, (Paris: Libraire imprimeur Moutard, 1782).

Perruchon Véronique
Noir : lumière et théâtralité (Villeneuve-d'Ascq : Presses universitaires du Septentrion, 2016).

Richard Guy
"Naissance et évolution des entreprises d'installations électriques," *Culture technique*, n° 17, 1987, 17-19.

Siret Daniel
"Les sensations du soleil dans les théories architecturales et urbaines. De l'hygiénisme à la ville durable," *in* Ulrike Krampl, Robert Beck et Emmanuelle Retaillaud-Bajac (dir.), *Les cinq sens de la ville du Moyen Âge à nos jours* (Tours: Presses universitaires François-Rabelais, 2013), 105-117.

Tabet Frédéric
"Entre art magique et cinématographe : un cas de circulation technique, le Théâtre Noir," *1895*, n° 69, 2013, 26-43.

Tanizaki Jun'ichirō
Éloge de l'ombre (Lagrasse: Verdier, 2011 [1977]).

Vergnes Eugène
Cinémas. Vues extérieures et intérieures. Détails. Plans. Avec notice sur la construction et l'aménagement des cinémas (Paris: Ch. Massin, sans date [vers 1920]).

Wagner Richard
Œuvres en prose de Richard Wagner : 1849-1850, vol. 3 (Paris: Libr. Delagrave, 1913).

Weber Pascale
Le corps à l'épreuve de l'installation-projection (Paris: L'Harmattan, 2003).