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Abstract Moving Images and Expanded Architectures. The 1958 World's Fair in Brussels and the Philips Pavilion

Marie Rebecchi

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Exposing the Moving Image: the Cinematic Medium across World Fairs, Art Museums, and Cultural Exhibitions

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Exposing the Moving Image

*The Cinematic Medium
Across World Fairs,
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*A cura di/edited by
Diego Cavallotti
Simone Dotto
Andrea Mariani*

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sommario/contents

*Exposing the Moving Image:
The Cinematic Medium Across World Fairs,
Art Museums, and Cultural Exhibitions* 15
Diego Cavallotti, Simone Dotto, Andrea Mariani

1. Expos and Universal Fairs in Cinema History and Historiography 21

*Performing Innovation: Exhibiting Media
as Novelty and Spectacle at World Fairs 1893-1904* 23
Frank Kessler, Sabine Lenk

*Nature vivante et mécanisme artificiel :
archéologie d'un mouvement à l'aquarium
de l'Expositions universelle de 1867* 33
Guillaume Le Gall

*The Electricity Fairy, Loïe Fuller's Serpentine
Dance and Cinematic Display in Paris 1900* 45
Éline Grignard

*Moving Image – Moving Nation: Exhibiting Italy
at the International Cinematographic Contest of
Turin 1911 World's Fair* 53
Agnese Ghezzi

*Spain as National Dreamscape:
The Interplay of Dioramas and Moving Images in
the 1929 Barcelona International Exposition* 63
Albert Elduque, Manuel Garin

*Watching Films Scientifically: Traces of Cinema at
the Museo Nazionale della Scienza e della Tecnica
"Leonardo Da Vinci" in Milan* 77
Simona Casonato, Elena Canadelli

*Abstract Moving Images and Expanded
Architectures. The 1958 World's Fair in Brussels
and the Philips Pavilion* 95
Marie Rebecchi

*Montréal's Expo 67 Within an Expanding
Cinema History* 101
Malte Hagener

*The Space Frame and the Architectural Screens in
Displacement: Inside Montréal's Expo 67 from the
Past Until Today* 111
Benjamin Léon

<i>Projective Monuments: Moving Images, Architecture and World Fairs</i> Trond Lundemo	119
<i>Introduction: Glorious and Permanent Bazaar</i> Marion Polirsztok, Amandine D'Azevedo, Térésa Faucon	125
<i>« L'Amérique à venir sous forme d'utopie » : Vachel Lindsay, D.W. Griffith et l'Exposition Internationale Panama-Pacific (1915)</i> Marion Polirsztok	127
<i>C'est le bazar ! Une autre histoire d'exposition des images indiennes et anglaises</i> Amandine D'Azevedo	137
<i>Exposition des non-alignés</i> Térésa Faucon	147
2. Exposing Bodies and Nature. Anthropologies, Phantasmagories and Archaeologies of the Viewing Dispositive	155
<i>Anthropologies</i>	157
<i>From Screens as Prostheses of Our Body to Our Body as a Quasi-Prosthesis of the Screens?</i> Mauro Carbone	159
<i>Wearing the Image in Motion: Tattoos as Cinema Archaeology?</i> Barbara Grespi	167
<i>External Perception, Internal Projection. A Skin Eye Disconnection</i> Simona Pezzano	175
<i>Reversible Skins and Internal Images: Visibility Issues</i> Sara Damiani	183
<i>Fiction de dispositif. Notre ethnographie : La Jetée (Chris Marker, 1962) et le diorama</i> Barbara Le Maître	191
<i>Phantasmagories</i>	199
<i>Hic falsum index veri. Le cinéma, la fantasmagorie, l'exposition du vrai et du faux (en histoire)</i> Édouard Arnouldy	201

<i>Établir des continuités critiques : Paris 1900, le corps en mouvement et le voyage immobile</i>	209
Sonny Walbrou	
<i>Histoire exposée, bonheur de l'humanité. De quelques fantasmagories photo-cinématographiques</i>	221
Mathieu Péchenet	
<i>Impatience (1928) de Charles Dekeukeleire. Construction et circulation d'un mythe historique</i>	231
Mathilde Lejeune	
<i>Archaeologies</i>	239
<i>A Screen at the Bottom of the Sea: Public Aquariums in the 19th Century</i>	241
Massimiliano Gaudiosi	
<i>Marcel Griaule and the Dogon: Masks and Cinema as Twinned Technologies of Mediation in the Musée de l'Homme</i>	249
Sophie Hopmeier	
3. The Cinematic Museums: Art, Science and Cultural Heritage on Screen	257
<i>The Exhibition Space as Cinematic Space: Film as Museum Object</i>	259
Andrea Haller, Stephanie Plappert	
<i>Le Cinéma dans trois expositions patrimoniales françaises</i>	269
François Amy de la Bretèque	
<i>Exposed Auto-Mobility: Self-Driving Cars on Stage</i>	277
Sonia Campanini	
<i>La Ville comme espace d'exposition : notes sur le cinéma exposé et l'architecture</i>	285
Francesco Federici	
<i>Creating Entangled Histories of Museum Collections: Isaac Julien's Vagabondia (2002) and Camille Henrot's Grosse Fatigue (2013)</i>	293
Miriam De Rosa, Catherine Fowler	
<i>Exhibiting the Disobedience Archive: Video, Activism and Art</i>	301
Vincenzo Estremo	

*Alternative Screens in Western Avant-Garde
Cinematic Practices – A Media Archaeological
Approach* 311
Lei Feng

4. Exhibiting Film History Today 319

Technès 321

Introduction : TECHNÈS 323
André Gaudreault, Gilles Mouëllic,
Laurent Le Forestier

*Visualiser une base de données à travers
une carte ? Propositions pour l'exposition
numérique TECHNÈS* 327
Marta Boni

*Comment le format « webdocumentaire » permet-il
de penser le projet d'Encyclopédie numérique des
techniques du cinéma ?* 333
Rémy Besson

*Modalités d'exposition du cinéma d'animation pour
une Encyclopédie technique du cinéma en ligne:
le cas de l'industrialisation du dessin animé dans
les années 1910* 341
Jean-Baptiste Massuet

Film History and Contemporary Exhibitions 351

*Dreyer on Display: Film Director Exhibits and
Historiographical Theory* 353
Casper Tybjerg

*From Exhibition Cinema to Addendum Cinema:
Pere Portabella's El sopar as a Spanish Case Study* 359
Alan Salvadó, Ivan Pintor Iranzo

*The Role of New Technology in The Marketing
and Distribution of Independent Films: Producing
a Virtual Reality Trailer for Marie Curie: The
Courage of Knowledge (Marie Noelle, 2017)* 369
Frank Mannion

Abstract Moving Images and Expanded Architectures. The 1958 World's Fair in Brussels and the Philips Pavilion

This paper is based on research into the history and theory of abstract and synesthetic audiovisual works, its environmental dimension and the alternative projection conditions it often required. I aim to show the case in which our theorization of the moving abstract images ends up being redefined within frameworks that include projection environments such as architectural pavilions. I approach projection environments as a connected space “in-between,” that is, between subject and object, a *milieu* redefined by technology. I seek to show how the experience of *milieu* becomes a *medium*, an intermediate field of sight and sensation that is constantly reconfigured by technical devices.

Abstract moving images, and abstract cinema, especially as exemplified by their early developments in the 1920s, offer a privileged point of observation for developing a new, deeper understanding of the various ways the technical potential of the cinematic medium enabled forms of experimentation in synesthetic abstract art. Abstract films blended painting, music, movement, images, sounds, forms, and colours to create unique audiovisual works of art, works that no longer addressed a single perceptual level (vision), but rather sought to achieve a fusion of vision and hearing. In this sense, we can shed light on abstract film's experimentally and technologically innovative role by comparing it with cinema's original properties and the new synaesthetic works of art.

The experimental and technologically innovative role of abstract film can be revealed most clearly by comparing it with the intrinsic characteristics of cinema (projection, light, movement) and the concepts of production and reproduction, concepts which were widely debated in 1920s theories of cinema.¹ In relation to this issue, Hans Richter declared that

by a strange paradox, the principal aesthetic problem of cinema, which was invented for reproduction (of movement), is precisely that of “going beyond” reproduction. In other words the question is this: to what point should the movie camera (film, colour, sound, etc.) be perfected and used to “reproduce” (any object that appears in front of the lens) or to “produce” (sensations that cannot be aroused with any other artistic medium)?²

In a 1922 text entitled *Produktion–Reproduktion* (“Production–Reproduction”),³ László Moholy-Nagy addressed the problem of the normative distinction between production and reproduction in both acoustic and optical-kinetic (photography and film) phenomena and proffered an effective response to this question. While in the majority of cases *reproduction*, by proposing connections that already exist, should be regarded as a mere act of virtuosity aimed at reiterating already-established relations, *production*, instead falls within the sphere of the relationships that have to do with improving and developing human creative processes:

reproduction (repetition of existing relationships) without enriching points of view must from the special point of view of creative art be considered at best only a matter of virtuosity. Since production (productive creativity) is primarily of

*service to human development, we must endeavour to expand the apparatus (means) which has so far been used solely for purposes of reproduction for productive purposes.*⁴

The idea of productivity expressed in Moholy-Nagy's comments is not exclusively to meet the demands and requirements of artists associated with the avant-garde movements; instead, it should be seen as a general condition of humanity: seizing on the new techniques for improving the faculties of the senses, modern man inevitably sets out to complete and perfect human sensory organs, even the most complex, and to establish new and more extensive relationships between various optical phenomena (fig. 20).

Throughout its history, the projection of abstract images and coloured light has produced environments that share many characteristics with mid-place or *mi-lieu* (lack of clear coordinates, un-centeredness). Proponents of abstract cinema have seen its "universal language" – as it was ambitiously defined by Hans Richter and Viking Eggeling in a 1920 text that has since been lost⁵ – as having the potential to give rise to a new humanity (a utopian hope that represents a common feature of Modernism), and, in turn, stimulate a series of multisensory, immersive, synesthetic, and virtual new possibilities for projecting images. Abstract cinema can thus be better understood by rethinking the *medium* through which it is made visible. Two of its possibilities were to achieve a condition at once aesthetic and political: on one hand, to exert better control over the viewer's feelings and reactions, made possible through a different conception of the screen; on the other hand, to ensure collective participation in the same environment, potentially open and interactive; spectators could move within and interact with its architecture, sounds and moving images. This participative experience of a common space – a public, free, interactive architecture – calls into question the traditional conditions of image projections: if the essence of synesthetic audiovisual works lies in an alternative language consisting of moving abstract forms, sounds, music, psychedelic lights and colors, then it is necessary to reconsider the "environmental" device that enables films to be reproduced. This would require a different shape, something other than the traditional silver screen,⁶ and a different posture for the spectator to replace straight bi-dimensional film projection.

Examples of "alternative screens" of this kind are the "Poly-Kino" imagined by Lázló Moholy-Nagy⁷ in the 1920s and the "Dynamic Square"⁸ suggested by Sergei Eisenstein; in terms of alternative and immersive projection environments, some cases worth citing are the Movie-Drome theater designed by Stan Vanderbeek in the 1960s,⁹ and the "Expanded Cinema" proposed by Gene Youngblood in the 1970s (Multiple-Projection Environments in particular).

In this paper I will focus on one of the most significant examples of a project that expanded the conditions of projection in a multimedia architectural environment: the Philips Pavilion at the 1958 World's Fair in Brussels. Le Corbusier and his assistant and composer Iannis Xenakis conceived the Pavilion as an electronic-spatial environment capable of combining architecture, vocal and concrete music, sounds, colored light, abstract images and film in a virtual experience of an astonishing synesthetic audiovisual work.

Although Le Corbusier agreed to the commission (the idea for the Pavilion came from Louis Kalff, Artistic Director of the Philips corporation), he refused the Philips Corporation's proposals of individuals to collaborate with him in this production; the architect was resolute about his personal choice of Edgard Varèse as composer and equally determined to supervise the entire visual spectacle of the *Poème électronique* himself. It is important to recall that, at that time, Le Corbusier was working on one of his most significant projects: the Complex of the City Hall in Chandigarh, India. The concept for the Philips Pavilion unquestionably stemmed from Le Corbusier's creativity, but the actual implementation and design of the exterior was left to Xenakis, Philips technicians and Strabed company engineers (H. C. Duyster).¹⁰ The Philips Pavilion building was finally a tool for staging Le Corbusier's main project: the synaesthetic audiovisual work the *Poème électronique* (fig. 21).

Poème électronique was the first electronic-spatial environment combining architecture, film, light and music in a total experience that unfolds in time and space.

This *Electronic Poem* – an 8-minutes electronic piece written and composed by Edgard Varèse in Eindhoven at the Philips laboratories, as a part of the multimedia presentation for the Philips Pavilion – was projected thanks to a very complicated spatialization scheme involving 400 loudspeakers scattered throughout the Pa-

vilion and synchronized with the projection of slides selected by Le Corbusier, featuring images related to the history of human civilization, abstract images and monochromes. In relation to this aspect, Le Corbusier states: “I will not make a façade for Philips, but an electronic poem. Everything will happen inside: sound, light, colour, rhythm. Perhaps a scaffolding will be the pavilion’s only exterior aspect.”

Some important documents contained in the Iannis Xenakis Archives provide a detailed presentation of the Philip Pavilion and *Poème électronique*: “The theme of this new sound and light show had to do with the humankind’s evolution from the beginnings of the species. This sound composition was electronically devised to create stereophonic affects, projections of images and plays of light and colour, with all the elements coming together to make up Le Corbusier’s architectural and audiovisual piece.”¹¹

The *Electronic Poem* would never have been possible without advances in the sciences of applied electronics. Indeed, electro-acoustics, lighting and electronic control technology – a field that owed many of its developments to the disinterested, applied research work carried out by Philips Laboratories – represented essential components of the piece (fig. 22).

Poème électronique is a complex, 480-second-long sonic composition generated by magnetic strips and electronic sound that could be staged without a real score. Instead, the variations in colour and musical intensity were indicated on spectrometric cards. There was no pre-established synchronization or correspondence with the visual material selected by Le Corbusier, organized by Jean Petit and edited by Philippe Agostini; it was wholly random except for a specified period of six minutes of silence occurring during the piece.

Among other elements, Le Corbusier used machine noises, transported piano chords, filtered choir and solo voices, and synthetic tone colourings¹² for *Poème électronique*. With the help of the advanced technical means made available through the Philips Pavilion, the sounds of this composition for tape recorder were able to “wander” through the space along highly complex routes. Varèse’s work had always pursued the abstract and, in part, visually inspired concepts of form and spatial movement.

In his fundamental book *Space Calculated in Second*, Marc Treib stresses that visual elements and sound created a strange form of “accidental” synaesthetic system (fig. 23):

*The work intended to be a new genre, would utilize, publicize – and stimulate – the technical potential of the Philips corporation, and would synthesize light, color, sound, and rhythm. Sound, for the most part, was left entirely to Le Corbusier’s collaborators Edgard Varèse and Iannis Xenakis, who would compose the primary eight-minute score and the two-minute interlude, respectively. The link between the visual and aural senses would be fortuitously accidental [...]. For the most part, the musical score was conceived and produced completely independently of the visual work. Their points of congruence, or at least intersection, would be determined solely by chance.*¹³

Creating *Poème électronique* required elaborate lighting and electro-acoustical equipment; as Louis Kalff and the technical specialists working for Philips state in the *Philips Technical Review*, a complex electronic control system was needed to create the lighting effects:

1. “Ambiances,” which are illuminated surfaces intended to conjure up a particular atmosphere. They are produced by projecting coloured light onto the pavilion walls; long bands of colour accentuate the peculiar shape of the building.
2. “Volumes,” i.e. two figures suspended in space, one female and the other a space structure of metal tubes, both treated with fluorescent paint. When flooded with ultraviolet, the one “volume” glows red, the other greenish blue.
3. “Ecrans,” these are large areas of the wall onto which black-and-white pictures of human beings, animals and all kinds of objects are projected. The fact that “ambiances” are also present at the same time makes the black of the projections appear to be coloured.
4. “Tritrous,” at certain points along the wall around the “écrans,” brilliantly coloured beams of light or figures in black and white are occasionally projected. This is carried out by means of a film strip, each frame of which is entirely opaque except for three holes (“trois trous”) into which the colours or figures are introduced.¹⁴

Figure 24 et seq., held by the Le Corbusier Foundation, illustrate the scenario for these different light effects, image projections, and sound-space arrangements in the different ambiances of the Pavillion.

As Kate Mondloch suggests in her essay on the Philips Pavilion, “Le Corbusier conceived of the *Poème*



électronique as an entirely new kind of spectacle and intended for the building to be reminiscent of the human stomach, a combination of the organic and the geometric.” Le Corbusier indeed described the Philips Pavilion as “a stomach assimilating 500 listener-spectators, and evacuating them automatically at the end of the performance.”¹⁵ Ever since initially conceiving of the project’s, he had planned for each round of approximately 500 visitors to stand for 8 minutes in order to experience the presumably multidirectional presentation from all points.

These environmental and synesthetic conditions of projection, conditions which are at the foundations of experimental and abstract film from its origins in the 1920s, set in motion the significant process of “aesthetic upgrading” I mentioned earlier produced by moving images, sounds and architectural space. The atmospheric density produced by the complex stratification of atmospheric elements in this piece was reminiscent of the Chapelle de Notre-Dame-du Haut à Ronchamp *ambiance* Le Corbusier created in 1955, shortly before the Philips Pavilion (fig. 25). This density contributed to granting *Poème électronique*, and indeed the entire Pavilion, the character of a “total environment,”¹⁶ a synthesis of the greatest artistic achievements of mankind: architecture, music, visual arts. In other words, a true *Gesamtkunstwerk* for that period, the Philips technology of the 1950s.

Le Corbusier had carefully selected a series of images and documents from a wide array of fields (some surprising images were chosen from the Palais de la Decouverte catalogue) and entrusted them to his collaborators Jean Petit and Philippe Agostini to be translated into a film montage.¹⁷ The Philips Pavilion presented a kind of virtual collage for 20th century humankind. The visual presentation consisted of seven sections: *Genesis; Matter and Spirit; From Darkness to Dawn; Manmade Gods; How Time Molds Civilization; Harmony; To All Mankind*. In sequence, we can see a montage of elements from heterogeneous contexts: coloured lights, a bull, the head of a Greek statue, a skull, a projections of sea shells, scientists, an African woman, a dinosaur skeleton, coloured lights, geometric figures, the Sphinx, a telescope operator, a surgeon, a miner, a farm horse, Charlie Chaplin, a bomber plane, a radar, clouds, children staring at the camera, the Eiffel Tower, animals, Stan Laurel and Oliver Hardy, abstract images and astronomical images, babies, skyscrapers, the Modulor, a baby’s hand, children (fig. 26).

In conclusion, I would like to emphasize two points: The “Total Electronic Gesture,”¹⁸ as Iannis Xenakis described it, on one hand, and the multisensory, immersive and synesthetic new possibilities for projecting images and lights and *spatializing* sounds staged by *Poème électronique*, on the other hand, produce two effects and two direct consequences: they virtualize experience and create an “Abstract Realm.”

Concerning the first effect, the virtualization of experience, in relation to this point I share the position Kate Mondloch presents in *Le Corbusier’s Poème électronique and the Historicization of New Media Arts*, in which she suggests that *Poème électronique* is an “8-minute experience of virtuality.” Her essay seeks to historicize the technological production of artistic virtual space by investigating the *Poème électronique* as a paradigmatic example of much earlier attempts to create spatialized, virtual experiences in spectators. She argues that there are many significant parallels between the highly disciplined spectatorship conditions of *Poème électronique* and those of contemporary artistic production in new media, thus offering a theoretical and historical foundation for art-historical discourse on the proliferation of immersive multimedia artworks:

*Le Corbusier’s 1958 automated multimedia performance event commissioned by the Philips Corporation for its pavilion at the World’s Fair in Belgium, the Poème électronique, prefigured the “virtuality” of certain computer-reliant works made with new media. The Poème électronique’s immersive environment strove to create a sense-overloaded observer who would experience a spatialized virtual event.*¹⁹

As for the second consequence, the one deriving from the synaesthetic specificities of *Poème électronique* and the Philips Pavilion, as Iannis Xenakis claims in *Notes Towards an “Electronic Gesture”* (1958), the Philips Pavilion at the Brussels World’s Fair represents an early attempt to achieve this artistic synthesis of sound, light, and architecture, an initial step towards an “Electronic Gesture.” In his Notes, Iannis Xenakis argues



that electro-acoustic techniques made it possible to conquer geometric space, mathematical thought and the realm of Abstraction:

They enable a vast audiovisual synthesis in a “Total Electronic Gesture” previously unattainable and above all, one which is placed in the realm of Abstraction, which is the natural and indispensable environment to its existence. In this respect, the Philips Pavilion at the Brussels World’s Fair represents a first experiment in this artistic synthesis of sound, light, and architecture, an initial step towards an “Electronic Gesture.” I would like to conclude by noting that a new conceptual consciousness, abstraction, and a new technical infrastructure, electronics, are currently stirring human civilization even as we speak.²⁰

Illustrations

20. László Moholy-Nagy, *Ein Lichtspiel: schwarz weiss grau*, 1930.
21. Philips Pavilion, Brussels 1958 (*Revue Philips*, no. 26, 1958), Fondation Le Corbusier.
22. Iannis Xenakis, *Poème électronique*, 1958, Xenakis Archives (BnF – MUS).
23. *Poème électronique*, proposal for the *minutage* (Sequence IV), Fondation Le Corbusier.
24. Scenario were hand coloured in gouache illustrating the effect of ambiances (Sequence I), Fondation Le Corbusier.
25. Le Corbusier, *Chapelle de Notre-Dame-du Haut, Ronchamp*, 1955.
26. Le Corbusier, Xenakis, Varèse, *Poème électronique*, 1958.

Notes

- ¹ On the issue of the epistemological, productive and innovative power of the cinematic medium in 1920s theories on cinema, see Francesco Casetti, “Lo sguardo di un’epoca,” in *L’occhio del Novecento. Cinema, esperienza, modernità*, Bompiani, Milan 2005, pp. 21-54.
- ² Hans Richter, “Dalla pittura moderna al cinema moderno,” in *Il cinema astratto*, in *La Biennale di Venezia*, no. 54, 1964, p. 3; republished in Gianni Rondolino, *Il cinema astratto. Testi e documenti*, Editrice Tirrenia Stampatori, Turin 1977, pp. 219-20.
- ³ See László Moholy-Nagy, “Produktion-Reproduktion,” in *De Stijl*, vol. 5, no. 7, 1922, pp. 97-101; also the article with the same title published by Moholy-Nagy in *Malerei Fotografie Film* (first ed. 1925, expanded in 1927), Gebr. Mann Verlag, Berlin 1986 (English ed.: “Production Reproduction,” in *Painting Photography Film*, trans. by J. Seligman, MIT Press, Cambridge [MA] 1973, pp. 30-1).
- ⁴ *Idem*, p. 30.
- ⁵ Hans Richter and Viking Eggeling, *Universelle Sprache* (1920). The original text has not survived; all that remains is a draft republished in English under the title *Demonstration of the “Universal Language.”* See Stephen C. Foster (ed.), *Hans Richter, Activism, Modernism, and the Avant-Garde*, MIT Press, Cambridge (MA) 1998, pp. 185-239. Umberto Eco, *Search for the Perfect Language*, Wiley-Blackwell, Hoboken 1997.
- ⁶ On the recent debate regarding the specificity of the cinematic device, see Raymond Bellour, *La Querelle des dispositifs. Cinéma – installations, expositions*, Trafic, Paris 2012; Francesco Casetti, *The Lumière Galaxy: Seven Key Words for the Cinema to Come*, Columbia University Press, New York 2015.
- ⁷ László Moholy-Nagy, *Painting, Photography, Film*, 1925-27, trans. by J. Seligman, MIT Press, Cambridge (MA) 1969.
- ⁸ Sergei Eisenstein, “The Dynamic Square,” *Film Essays and a Lecture*, 1930, Princeton University Press, Princeton 1982, pp. 48-65. See Antonio Somaini, *Ejzenštejn. Il cinema, le arti, il montaggio*, Einaudi, Torino 2011, pp. 411-22.
- ⁹ Gloria Sutton, *The Experience Machine. Stan VanDerBeek’s Movie-Drome and Expanded Cinema*, MIT Press, Cambridge (MA) 2015.
- ¹⁰ Carlotta Darò, *Les Murs du son, le Poème électronique au Pavillon Philips*, Editions B2, Paris 2015, p. 6.

- ¹¹ The original document is in French: “Le thème de ce spectacle inédit de son et lumière traite de l’évolution de l’humanité depuis ses commencements. Une composition sonore électroniquement ‘ajustée’ à des effets stéréophoniques, des projections d’images, des jeux de lumière et de couleur, sont les éléments dont se compose la création architectonique et audio-visuelle de Le Corbusier.” (Iannis Xenakis Archives, BnF – MUS).
- ¹² See Golo Föllmer, “Le Corbusier; Iannis Xenakis; Edgard Varèse ‘Poème électronique: Philips Pavilion,’” *Media Art Net*, <http://www.medienkunstnetz.de/works/poeme-electronique/>, last visit 31 December 2018.
- ¹³ Marc Treib, *Time Calculated in Seconds: The Philips Pavilion, Le Corbusier, Edgard Varèse*, Princeton University, Princeton 1996, p. 98.
- ¹⁴ Louis Kalf, “The Electronic Poem Performed in the Philips Pavillon at the 1958 Brussels World Fair,” in *Philips Technical Review*, vol. 20, n. 2-3, 1958/1959, p. 38.
- ¹⁵ Kate Mondloch, *A Symphony of Sensations in the Spectator: Le Corbusier’s “Poème électronique” and the Historicization of New Media Arts*, in *Leonardo*, The MIT Press, vol. 37, no. 1, 2004, p. 59.
- ¹⁶ Carlotta Darò, *Les Murs du son, le Poème électronique au Pavillon Philips*, cit., p. 11.
- ¹⁷ See Kate Mondloch, *A Symphony of Sensations in the Spectator: Le Corbusier’s “Poème électronique” and the Historicization of New Media Arts*, cit., p. 59.
- ¹⁸ Iannis Xenakis, “Notes Towards an ‘Electronic Gesture,’” (1958), in *Music and Architecture by Iannis Xenakis*, trans. Sharon Kanach, Pendragon, New York 2008.
- ¹⁹ Kate Mondloch, in her essays on *Le Corbusier’s “Poème électronique” and the Historicization of New Media Arts*, cit., p. 57.
- ²⁰ Iannis Xenakis, “Notes Towards an ‘Electronic Gesture,’” (1958), in *Music and Architecture by Iannis Xenakis*, cit.