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► **To cite this version:**

Séverine Bridoux-Michel. The enveloping spatial relationship. Xenakis 22. Centenary International Symposium, May 2022, Athènes, Greece. pp.309-319. hal-04379159

HAL Id: hal-04379159

<https://hal.science/hal-04379159v1>

Submitted on 8 Jan 2024

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The enveloping spatial relationship : some perspectives relating to Xenakian architectural work

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Proceedings of the *Xenakis 22: Centenary International Symposium* Athens & Nafplio (Greece), 24-29 May 2022 - <https://xenakis2022.uoa.gr/>

Abstract

This paper proposes a reflection based on Xenakian architectural work relating to the idea of *enveloping spatial relationship* (Xenakis 1980). The unrealized Parisian Cité de la musique project is examined here through three important aspects of Xenakian thought : the idea of “integrating the arts of sight and hearing”, reference to the Orient, and the “enveloping spatial relationship”. It is linked to our various research projects on Xenakis and the question of the dialogue between architecture and music.

Xenakis' work responds to theoretical and scientific debates, heralding the multimedia era of the 21st century. It extends the idea of “*electronic gesture*” that he set out in 1958, at the time of the construction of the Philips Pavilion. With regard to a few texts and reflections such as "Music, Temporal Architecture" and "Art and the Arts" (Brelet 1941 and 1949), we will return to the idea of "integrating the arts of sight and hearing" (Xenakis 1958) and to Xenakian prospective experimental works — the films *Continu-Discontinuu* (1959) and *Orient-Occident* (1960) made for the RTF under the direction of Pierre Schaeffer, as well as the musical pieces *Idole Amesha Spenta* and *Hibiki Hana Ma*, composed to be projected, both, in the Iran Pavilion and in that of the Japanese Steel Federation Pavilion at the 1970 Osaka exhibition.

We will then see how reference to the Orient, to Japanese art in particular, seems to have guided the designers of the “Cité de la Musique” project directed by Iannis Xenakis and Jean-Louis Véroet, by focusing on the hidden part of the creative work (based on archival documents). What you cannot see, what is in the shadows constitutes the essential parameters for the development of the Work.

Finally, we will see how the term *enveloping*, used by Xenakis in “spaces and sources of hearings and performances” (1980), is extended into the operating concept for the enveloping room, used in the initial program of the concert hall of the new Philharmonie de Paris, also located on the site of La Villette, designed by the architect Brigitte Métra in association with Jean Nouvel. We will then question the possibility of affiliation between the architectural work of Hans Scharoun (Berlin Philharmonic concert hall, 1956-1963), the unrealized prospective project of the team of Iannis Xenakis and Jean-Louis Véroet (Cité de la musique, Paris, 1983-1984) and the one realized some thirty years later by Jean Nouvel & Métra+Associés (Philharmonie de Paris, 2007-2015).

1. Introduction

In January 1984, a national consultation was launched in two stages for the general outline of a future Cité de la Musique on the site of La Villette, in Paris, with a view in particular to moving the Conservatoire National Supérieur de Musique from rue de Madrid. At the end of the second stage, the architectural project of Christian de Portzamparc and his team was finally selected in January 1985. This project is designed “in a spirit of plurality, the two poles of the Cité de la Musique [responding] in counterpoint” (Christian de Portzamparc 1985, 112), according to a “singular geometry” (Christian de Portzamparc 1985, 106)¹. In contrast, the (unsuccessful) proposal by Iannis Xenakis and Jean-Louis Véret appears as the result of thinking about the design of complex spaces, according to the principle of the *public-source relationship / enveloping spatial relationship*² (Xenakis [1980] 2001, 197-200) and of the *envelope* (Xenakis 1983), with the creation of an experimental concert hall sheltered by a *roof-veil* (Xenakis-Véret [1984] 2006). The Xenakian concert hall was conceived from the theorisation of an idea developed during the design of the Philips Pavilion in 1958, which was further developed until its investigations into the Cité de la Musique project in Paris in 1984-1985. Xenakis then proposed architectural systems that were free from the traditional models of concert halls. The particularity of Xenakis' work for this architectural project is that it is based on a theoretical reflection that is productive for the future. That is why it interests us here.

The uniqueness of this architectural project seems to me to stem from three important aspects of Xenakian thought :

- the idea of “integrating the arts of sight and hearing”³ (Xenakis [1958] 1971, 143)
- reference to the Orient
- *enveloping spatial relationship* (Xenakis [1980] 2001)

2. “Integrating the arts of sight and hearing” : from *electronic gesture to immersion*

The idea of “Integrating the arts of sight and hearing” clearly stated by Iannis Xenakis at the end of the 1950s, in the text “Notes on an ‘electronic gesture’ ” published in 1958 — year of the Philips Pavilion at Expo'58 in Brussels — is a particularly important point in Xenakis' work : the arts of sight and hearing find an extension in space, according to the three dimensions of space. Although this project is the beginning of the “enveloping spatial relationship” which is the subject of this paper, I will not return here to the case of the Philips Pavilion, which we have studied extensively in our previous work (Bridoux-Michel 2001, 2004, 2006, 2018). Let's just recall some of the background : at Expo'58, the aim was to work for “a more human world”, to question the future of the world, in this period of technological innovation which saw the beginnings of cybernetics with the emergence of computers and everything that heralded the technological world we know today. Formulated at the time of the creation of the first multimedia space in the Pavilion (commissioned to Le Corbusier by the Philips company), the Xenakian *electronic gesture* responded to this idea of “integration of the arts of sight and hearing”. It materialised a “new architectural conception”, a “space with three real dimensions”, as Xenakis put it in “Notes on an ‘electronic gesture’”.

2.1. a « *new auditory sensitivity* »

It was a time when young philosophers and musicians in Paris like Gisèle Brelet, in the wake of Etienne Souriau, participated in the renewal of the old debates concerning the question of the classification of the arts, which were still frozen in the Fine Arts system : Gisèle Brelet sought to define a critical

¹ Christian de Portzamparc states how his work is ‘on the edges’ of Euclidean geometry. inheriting the geometric experiments carried out in the studios of Candilis and Josic, he “sometimes tries to make several geometries play together” and confronts the drawing of the architectural project with “a-geometry”.

² Adjective chose by Xenakis (« *relation spatiale enveloppante* »).

³ See : Iannis Xenakis, “Notes sur un ‘geste électronique’” (1958)

thinking of art by testing the comparison or correspondence of the arts, as well as the simple division of the arts into two categories : arts of space and arts of time. Brelet therefore proposed an analysis of musical thought by borrowing the tools of philosophy, psychology, but also those of the emerging phenomenology. A musician herself, she based her work on the musical and sound experiments of young avant-garde composers : Pierre Schaeffer, Pierre Boulez, Karlheinz Stockhausen, Henri Pousseur, Jean-Claude Risset, and also Iannis Xenakis⁴. The text “Musique et structure”, broadcast for the French Radio-Télévision published in *Revue Internationale de Philosophie* (Brelet 1965), in this way provided an overview of “new music” by explicitly grasping the notion of *structure*. For her, the notion of structure is defined as a principle of “alliance between the arts”. In her analysis of new music, Gisèle Brelet also takes into account the point of view of the listener and the question of listening, “new way of listening”, a “new auditory sensitivity” (Brelet 1965, 391), a “total emancipation from the auditory sensitivity” (Brelet 1965, 392).

In this period of renewed debate on the classification of the arts, Xenakis' theoretical texts constitute important written traces concerning the renewal of the question of the relationship between the public, visual and sound sources and architectural space. His point of view as a theorist complements those of the composer and the architect. In his text “Notes on an ‘electronic gesture’ ” (1958), Xenakis shows that the cinematic screen, usually flat and level, and defining the “space-time volume” of the work, should not be reduced to a “small window, even a panoramic one”, but can become totally integrated with complex architectural surfaces. Similarly, the different sound sources must be able to define a three-dimensional space, consistent with the architectural space in which the audience finds itself. The history of the Philips Pavilion is well known. Unfortunately, the work was destroyed in 1959 at the end of the World Exhibition in Brussels. What is special here is that Philips had sought to collaborate with architects and artists (Le Corbusier, Edgard Varèse, Iannis Xenakis) not to present objects or works, but to offer a multimedia show combining visual and sound arts (*le Poème électronique*). Associated with the architectural project, the *Poème électronique* immersed visitors in a space integrating sound and light projections. After this remarkable experience, Xenakis had to leave Le Corbusier's studio (in 1959) and continued his quest to “integrate the arts of sight and hearing” with a series of experimental works over the coming decades — and more precisely with the pieces of *musique concrète*, *Continu-discontinu* (1959) and *Orient-Occident* (1960), composed for experimental films directed by Pierre Schaeffer produced by Radio Télévision française. However, these “cinematic stereophonic” (Xenakis 1971, 148)⁵ possibilities and “magnificent extensions of the art of vision and the art of hearing” (Xenakis 1971, 149), are not exploited as they could have been in a suitable space. Nevertheless, this series of pieces renews the question of the border between the arts around prospective experimental works, at the centre of the scientific and aesthetic concerns of the time⁶, heralding the multimedia era of the 21st century. Indeed, the question of the relationship between space and time, between the arts of sight and hearing, seems to be posed here in relation to the question of *permanent values*⁷ of art (Brelet 1946), which at the time infiltrated the fields of philosophy and aesthetics, but also that of architecture.

⁴ Xenakis is quoted by Gisèle Brelet in “Musique et structure” (1965), p. 390 and p. 405.

⁵ See : “Notes sur un ‘geste électronique’ ” (1958).

⁶ The study of the most archaic ancient societies also seemed to provide some answers to the questions. See Iannis Xenakis, interview by Jacques Bourgeois, October 1968 (Xenakis 1970, 50).

⁷ Terms of Gisèle Brelet. It should be noted that Gisèle Brelet's research integrating the problem of formal perception in the West is a valuable contribution that could be further contrasted with the work of the new generation of artists and composers, notably those of Xenakis. The publication of his research work as “La Musique, architecture temporelle” (1940-1941), “L'art et les arts” (1949) already showed a shift in points of view defining the field of a new aesthetic. The notion of *form* was a central issue in his various critical essays on art. The boundary (and its dissolution) between the spatial and temporal arts was the subject of theoretical debates as early as 1946, and the publication of his text entitled « Musiques exotiques et valeurs permanentes de l'art musical » (1946) poses the problem of the modes of perception of the different musics (Eastern music, Western music) : “Ya-t-il en musique des valeurs permanentes [...] ?”.

2.2. Prospective experimental works : immerse the public

In *Continu-Discontinuu*, a film directed by Piotr Kamler, the musical pieces of Luc Ferrari and Iannis Xenakis, musical pieces performed by Konstantin Simonovic's instrumental ensemble, respectively structure the two visual parts of the experimental film. In the second part of the film (music by Xenakis), the interplay between the continuous and the discontinuous is suggested by a succession of sound *spots* responding to abstract visual *spots* : the sound piece is an alternation of glissandi of string instruments, pizzicati and percussion of the orchestra, recalling in particular the writing of *Analogique A* (1958-59). Here we have the abstract expression of a mysterious visual and sound universe, a universe oscillating between telluric and cosmic energy. The authors of the film thus experiment with the possibilities of abstraction. As for *Orient-Occident*, this electroacoustic piece is part of Xenakis' series of *musique concrète* pieces. It celebrates the relationship between peoples, between East and West, it shifts the listening and viewing experience through the play of contrasts between different sound materials, evoking a kind of dialogue from one culture to another, transitions from an earlier time to a future time.

A few years later, performances combining laser beams and electroacoustics will form another type of extension of the idea of “integrating the visual and auditory arts”, theorised by Xenakis in 1958 : the spatialization project proposed that the public were artistically and physically *immersed* (Delalande 1997, 137-140), , in all dimensions of the work, and — in the wake of the Philips Pavilion and its 1958 *Poème électronique* — to make sound and visual *gestures* coexist in the space in which the audience is standing. For *Idol Amesha Spenta* composed by Xenakis for the Iran-Turkey-Pakistan Pavilion, and *Hibiki Hana Ma* composed for the Japan Iron and Steel Federation Pavilion at the 1970 Osaka Exhibition, the spectators are not invited to see objects on display, but to experience projected sounds and lights, to be *immersed* in environments, to be in an *enveloping relationship*⁸ (Xenakis, 1980), an “*experiential*’ place” (Nitschke 1966, 117), thanks to the principle of *sound routes*⁹ and multiple spherical speakers arranged in the space¹⁰.

2.3. Steel song, sound field and brutalist architecture

Let's take a look at this Pavilion of the Japan Iron and Steel Federation at Expo'70 : designed by the Japanese architect Kunio Maekawa¹¹, the Steel Pavilion had the particularity of hosting an auditorium with a circular, central, mobile stage, containing a system of some 800 loudspeakers arranged in the space above the audience. Specially produced according to the composer's intentions¹², this building structured on the basis of a parallelepiped of concrete, steel and glass¹³, competed with other experimental pavilions at the exhibition, such as the origami faceted volume of the Pepsi Pavilion built by Takenaka Komuten's team to host active experiments, an environment of sound, tactile, visual and atmospheric immersions of the members of the E.A.T. group¹⁴ (“living responsive environment” (Klüver 1970, 1)) or the German Spherical Pavilion designed by Fritz Bornemann to broadcast the music of Karlheinz Stockhausen¹⁵, as an extension of its *Music in Space* (Stockhausen [1958-1959] 1988).

⁸ To use the *enveloping* term used by Xenakis in “Espaces et sources d'auditions et de spectacles” (1980).

⁹ *sound routes*, terms used by Xenakis and Philips technicians in the design of the Philips Pavilion (1958). See : Bridoux-Michel 2018, 139-141.

¹⁰ See the graphic documents and photos published in *Révolutions Xenakis* (Solomos 2022, 134-139).

¹¹ Kunio Maekawa is one of those Japanese architects influenced by Le Corbusier's architectural modernity. He worked in Le Corbusier's studio in the 1920s as a young trainee. He collaborated with Le Corbusier on the National Museum of Western Art in Tokyo (1959). However, he later developed his own architectural style.

¹² “The score he [Xenakis] is completing will last seventeen minutes. It was commissioned for the Japanese pavilion at the Osaka exhibition, and will be performed in a hall built especially for it.”, in “La prochaine symphonie de Xenakis sera jouée sous les fauteuils des mélomanes” (1969).

¹³ And perhaps a bit of the Corbusean *miracle box* idea. See : Michel Richard 2012.

¹⁴ E.A.T. : Experiments in Art and Technology, association of artists and engineers founded in 1966, based in New York, developing interdisciplinary projects combining art and new technologies.

¹⁵ This project is analysed in detail by Séverine Bridoux-Michel (Bridoux-Michel 2006).

Maekawa's work for the Steel Pavilion at Expo'70 is an extension of the spirit of the brutalist architecture of the Tokyo Metropolitan Festival Hall (Tokyo Bunka Kaikan) which he designed between 1957-1961, by transposing the Corbusian architectural style and in particular the Xenakian system of *undulating glass panels*. In this vein, it is a tool for the arts, an instrument of Japanese modernity, in which artists are invited to produce compositions around the theme of the “steel song” proposed by the Japanese Steel Federation. The brutalist materiality of the Pavilion is thus an essential element running through the whole project. Its relatively thick and massive walls contrast with the intangible atmospheres of the Pepsi Pavilion and the many bubbles, spheres and inflatable architectures in the exhibition. The public's immersion in the artistic works proposed in the various interior spaces of the Steel Pavilion goes as far as developing visual and sound experiments around tactility and the expression of the sensitive body : in the reception area, visitors can play the sound sculptures of the Baschet brothers. In the *Space Theatre*, central auditorium of the Pavilion, artists and composers are invited to produce new types of sound pieces immersing the audience in a series of electroacoustic works, recalling the spatialization work for Edgar Varèse's *Poème électronique* and Iannis Xenakis' *Concret PH* in the 1958 Philips Pavilion.

For the *Space Theatre* in Osaka, Xenakis composed *Hibiki Hana Ma*, an 18-minute sound piece produced in the Japanese NHK studio, created from various recordings, a collection of carefully prepared sounds including a thin sheet of steel, aircraft engines and some traditional Japanese instruments. This Xenakian “steel song” proposal is a collage of different types of mixed sound textures, fragments fixed on a support, diffused by a multitude of sources arranged in the space, extending the intrinsic effect of sound texture. The notion of *in-between* thus takes on a very particular meaning in time and space. Does the Japanese concept of *Ma* (間)¹⁶, in the title of Xenakis' piece (*Hibiki Hana Ma*), lead us to understand that space and time are as an “*experiential*’ place, being nearer to [a] *mysterious atmosphere* caused by the external distribution of symbols” (Nitschke 1966) ? Japanese artist Keiji Usami collaborates on the project by creating a work of coloured laser beams responding to the *sound field* (音場) (Keiji Usami 1970) created by the Steel Pavilion. The program also includes works by Toru Takemitsu (*Crossing*) and Yuji Takahashi (*Yéguèn*, with the musical steel sculpture by François and Bernard Baschet). The Japanese Steel Pavilion also hosts a sinfonia concertante : *November Steps* (1967) by Toru Takemitsu including two soloists (Japanese flute and traditional plucked instruments). Still preserved, this Pavilion currently houses a permanent exhibition about Expo'70.

In parallel with this collective experience in Osaka, Xenakis continued with the well-known Polytopes series that he had initiated at the World Fair in Montreal (1967). He then concretized his idea of a “gesture of light and sound” (Xenakis 1978), notably with the creation of the *Diatope* at the Centre Georges Pompidou (1978). Following these experiences, Iannis Xenakis proposed the *Cité de la musique* project in 1984-1985 (unrealised). It thus renewed the debate on the distribution of music, proposing a new architectural model that responds to the different music styles of the world.

3. The *Cité de la musique* project (1984-1985), a setting for sounds that goes beyond *clichés*

The hidden part of the creative work, what is not seen, what is in the shadows, contains the essential parameters for the elaboration of Iannis Xenakis' work. Of course, for Xenakis, theoretical exploration is important; he made this clear in 1983, when he proposed “some ideas for the future building” at La Villette : “you have to [...] work in the theoretical field otherwise you are slaves, trapped by *clichés*” (Xenakis 1983, 41). He then invested in the architectural representation of the building to overcome *clichés* and *prejudices*. What do the study models and drawings of the complex canopies of the *Cité de la musique* project cover, in particular those kept at the *Cité de l'architecture et du patrimoine/Archives d'architecture du XXe siècle* ? How much novelty is proposed in this architectural project ?

¹⁶ The character can be read as *ma* or *kan*, as Xenakis notes (handwritten document, Xenakis archives). The *ma*-concept was disseminated in France in 1978 with “Ma : espace-temps du Japon”, an exhibition designed by Arata Isozaki as part of the 1978 Autumn Festival in Paris.

3.1 *Cité de la musique competition*

During the national consultation of architects for the future *Cité de la Musique de la Villette*¹⁷, Xenakis responds as an “Architect-Composer”. Organised in two stages, this national consultation of architects first selected three projects (Marie Petit-Maxime Kétoff / Christian de Portzamparc / Alain Sarfati) from the sketches of 15 teams¹⁸. The jury then decided to invest in the Portzamparc team's proposal that proposes spaces in which several interrelated geometric figures play together, a system of “sequences of places and objects” linked to the spaces of the Parc de la Villette and of the gallery designed by Bernard Tschumi. Proposing in particular a “musical street” design, or a “spiral winding” (Christian de Portzamparc 1985, XXVI), the project appears to be designed according to compositional design principles. However, it is cautiously limited to the still relatively artisanal and traditional representational tools available at the time, computer tools and computer-generated images still being in their infancy in French architectural agencies. In contrast to Xenakis' proposal, he proposed a plastic composition by fragmentation of spaces, somewhat dispensing with the complex forms that would have required extensive collaborative work with a team of engineers. The June 1985 issue of the magazine *l'Architecture d'Aujourd'hui* presented all the proposals, with 15 photos of models, including the model of the “Iannis Xenakis - J. L. Véret” project. For this competition, Iannis Xenakis called on Jean-Louis Véret, an architect whom he had known at the Le Corbusier workshop in the early 1950s. The team formed around Xenakis and Véret included assistant architects and a structural engineer, Nicos Chatzidakis, of Greek origin, graduate of the Athens Polytechnic (like Xenakis). Chatzidakis had met Jean-Louis Véret and Iannis Xenakis at the Le Corbusier workshop, since 1946 when he was an engineer in the ATBAT design office.

3.2 *Landscapes of clouds, hills, valleys, islands*

The models produced for the *Cité de la musique* competition therefore presented a collaborative project respecting the elements of the competition program. The specificity of the Xenakis-Véret project was based on the design of two large umbrellas with autonomous and relatively complex volumes. Almost origami, these volumes are structured in self-supporting paraboloid veils, hosting the different spaces of the *Cité de la Musique* program, located on either side of the Place de la Fontaine aux lions. The project was then articulated with the urban space and the Parc de la Villette, according to the photomontage with inlay of a hand-drawn axonometry delivered in the competition file. This photomontage shows a concrete view of the southwestern area of the project, “from the roof of the auditorium¹⁹”. The auditorium building, *patatoïde*²⁰ (Xenakis 1984), conceived in concrete covered with wood, is independent of the system of *hulls*, thin *veils*, *roof veils* (Kanach 2006)²¹, covering and structuring the whole building. The experimental room is a kind of large *multimedia space* (Véret-Xenakis 1984)²², free from traditional concert hall models, and, of course, totally free from the modern Corbusian language. Here we can see that Jean-Louis Véret collaborated in the project in harmony with the Xenakian

¹⁷ In 1981, Jack Lang was asked to develop a « Mission de réflexion sur l'idée d'une cité de la musique » (Mission for reflection on the idea of a music city) following Jack Lang's proposals to François Mitterrand : “Your presidency, even more than that of your predecessors, must be marked by a few exemplary achievements. You no doubt remember the great project that you presented to UNESCO concerning the establishment of a “Beaubourg of Music” at La Villette. If this project is to succeed, it is essential that the Minister of Culture has the upper hand in the entire la Villette operation.” Note from Jack Lang to François Mitterrand, 26 May 1981. (Archives of Jack Lang, Institut Mémoires de l'Édition Contemporaine), see Thomas Hélie, “L'architecture des décisions. Un président-bâisseur dans le tournant de la rigueur”, in *Gouvernement et action publique*, vol. 6, pp. 7-35. <https://doi.org/10.3917/gap.172.0007>, Cairn.info, 29/06/2017.

¹⁸ The 15 teams selected are as follows : 1. Archiplus (J. Bernard et F. Soler) 2. O. Baudry 3. H. Gaudin 4. E. et O. Girard 5. F. H. Jourda, G. Perraudin 6. M. Kagan 7. M. Petit, M. Kétoff 8. Maurios 9. G. Clapot 10. J. L. Pellerin 11. Ch. de Portzamparc 12. E. Robin 13. A. Sarfati 14. J. P. Viguier, J. F. Jodry 15. Iannis Xenakis, J. L. Veret. (*L'Architecture d'Aujourd'hui* 1985, XXI).

¹⁹ Centre d'archives d'architecture du XXème siècle, Jean-Louis Véret Archives.

²⁰ According to the term noted in the axonometric competition drawing by Iannis Xenakis, March 1984.

²¹ Terms of Xenakis and Véret (1984).

²² Project, March 1984.

theoretical elements clearly stated in the 1983 text to reform traditional opera. Roof veils, complex canopies and undulating glass panels are used to reduce the frontal aspect of the stage.

This *patatoïd* concert hall, designed according to the well-known “box within a box” principle, is an *écrin de musique* for the designers (Xenakis 1980) or *écrin des sons* (Xenakis-Véret 1984). The hall can be transformed thanks to the numerous possibilities of scenic arrangements (hills, tiers, audience in the centre or on the periphery...) thus meeting the requirements of the music that Xenakis knew as a composer. While the formal complexity of the project makes it possible to regulate the acoustics of the spaces, it above all integrates the sensitive experience of the spectator, placed on *islands* (Xenakis-Véret 1984) and *clouds* (Xenakis 1983) : “The spectator, suspended in space like a spider at the end of its thread, should no longer have the feeling of living on a plan, but in three dimensions” (Xenakis 1983, 40).

The architectural proposal remains experimental, in the image of Xenakian musical thought ; it remains in the state of a “matrix of ideas” (Xenakis 1971, 16-19) ²³. The Cité de la musique project is an extension of this idea, unless it also evokes a reminder of the glissandi “waves” of the composer's first orchestral piece, *Metastasis* (1954), and the paraboloidal curves of the Philips Pavilion from which the spectator-listener “suffers the influence” (Xenakis 1957).

Landscapes of *clouds* (Xenakis 1983), *hills, valleys, islands* (Xenakis 1984). This vocabulary seems almost to echo the words of the architect of the Berlin Philharmonic, built some twenty years earlier (1956-1963), Hans Scharoun. This is how Scharoun describes the new Berlin Philharmonic, and in particular the so-called *vineyard hall* : “the shape of the hall is inspired by a landscape. It is conceived as a valley at the bottom of which is the orchestra surrounded by ‘vineyards’ on the hillside. This ‘landscape’ is matched by the ‘firmament’ of the ceiling. Its shape is reminiscent of a tent.” (Scharoun 1963, 4) The Xenakian project echoes this: the idea of the *public-source relationship* is then translated into space by “hills or islands, valleys on which the listeners-spectators face each other or turn their backs”, “variable arrangements”, a “programmable and computerised” floor (Xenakis-Véret, 1984). Does this vocabulary allow designers to achieve a relatively immaterial architecture, inspired by undulating elements of a landscape ?

²³ Iannis Xenakis, « Les trois paraboles » (1958).

4. Xenakian project : the enigma of Japan

The reference to the *Orient*, to Japanese art in particular, we talked about in connection with *Hibiki Hana Ma* by Xenakis. But our hypothesis is that this experience seems to run through the Xenakian Cité de la Musique project, even if this is not clear. Certain documents held in the 20th century architecture archives of the Cité de l'architecture et du Patrimoine in Paris seem to support this view : Hiroshige's engraving, Naruto's whirlpools, reproducing the “noisy gate” of the Inland Sea in the Awa region, the eastern gateway to Japan, Japanese women sailing on the waves or walking on the edge of the reefs of a beach, playing the flute, the folds and undulations of dresses, all these images found in the Jean-Louis Véret archives alongside the models of the Cité de la musique project²⁴, are possible references for the design of the Cité de la musique project. Black-and-white photographs (Jean-Louis Véret archives) listing various models of the Cité de la musique project can be seen, alternating with representations of Japanese prints. We know that Xenakis appreciated the reproduction of Hokusai's wave, which figured prominently in his studio office. This is of course a reference to *La Mer* by Claude Debussy, who was himself fascinated by the Far East and Japanese prints. One might also wonder whether the project does not borrow some elements from the theatre No Japanese²⁵ that Xenakis had discovered in 1961. The reference to Japanese architecture, which Xenakis describes in a 1977 text, may have led Xenakis to sketch out some particular elements of this unrealized project : “simplicity of forms”, “combination”, “internal ‘mobilit’” (Xenakis 1977). Does the Cité de la musique project outline a gesture towards the *Orient*, a sign of a shift in focus ? These photographs are an enigma, unless they are just an anecdote, without any relationship to the photographs of the models...

5. A future for the “enveloping spatial relationship”

Enveloping, this adjective is used by Xenakis, in « Espaces et sources d'auditions et de spectacles » (1980), to characterise the model of ancient Greek theatre : “the sources are in the centre, the audience around, on a plan, in a bowl or in a sphere [...]. The ancient Greek theatre is a first enveloping spatial relationship.” However, the term seems to refer to the new paradigm of the 21st century concert hall. The unsuccessful architectural proposal by Iannis Xenakis and Jean-Louis Véret appears to be the bearer of a renewed reflection, centred on the design of an experimental, *non polyvalent* hall, but *enveloping* (Xenakis [1980] 2001). Thus, the notions of *envelope* and *enveloping* room were to become driving forces for other projects in the following decades. In the 1983 paper (Xenakis 1983, 40-41) , Xenakis explains what he means by *envelope*. According to him, the envelope is synonymous with the *elegance of the material* at the “limit of the unbuildable”. “The envelope doesn't have to be unique because there are lots of things laid out on the periphery”. Nevertheless, it was not until the beginning of the 21st century that the reflection was taken up again and concretized, particularly in France : “a model for the transmission of contemporary creation” (Bayle 2014) aimed at the “democratisation of musical life²⁶” supported by Pierre Boulez and Laurent Bayle. Thus, the term *enveloping* is used today to describe the type of concert hall in the Philharmonie de Paris that the architect Brigitte Métra designed with her team on the La Villette site, as an associate architect at Ateliers Jean Nouvel (2007-2015)²⁷. Jean Nouvel's project is a “calm relief” with “nuances of pearly tones”, the “grey and silver folds of the building²⁸” (Nouvel) develop a quasi-baroque architecture. At the same time, Brigitte Métra is setting up the project

²⁴ These documents were presented at the « Iannis Xenakis, entre les mondes » exhibition (Séverine Bridoux-Michel exhibition curator), Halle aux sucres / Learning center de Dunkerque, January - February 2019.

²⁵ Xenakis was “attracted by the sounds of the Japanese No' with their very intense contrast between the small flutes and the percussion”. See : Iannis Xenakis interview by François Bernard-Mâche in *Revue Musicale*, n°383-385, p. 221. In 1961, Xenakis was invited to participate in the International East-West Congress in Tokyo at the Metropolitan Festival Hall (Tokyo East-West Music Encounter Conference). Iannis Xenakis, “The Riddle of Japan”, in *This is Japan*, n°9, 1961, pp. 66-69.

²⁶ Official terms in rapport de la commission des finances n°3110 – annexe n°29 de l'Assemblée nationale, 8 October 2015 (<https://www.assemblee-nationale.fr/14/budget/plf2016/b3110-tIII-a29.asp>).

²⁷ She has collaborated with Ateliers Jean Nouvel as associate architect for the Philharmonie de Paris concert hall and the Théâtre de Perpignan, and as partner project manager for the Danish Radio concert hall in Copenhagen and the Culture and Congress Centre in Lucerne.

²⁸ Jean Nouvel, project presentation, <http://www.jeannouvel.com/projets/philharmonie-de-paris/>.

(a “box within a box”) according to the principle of “enveloping design” requested by Laurent Bayle²⁹, as President of the Philharmonie de Paris, the “*cyclorama volumétrique* envelope” (Nouvel 2007). The large 2 400 seat auditorium was then the subject of dialogue with all those involved in the project (acousticians, technicians, architects, but also composers, conductors, musicians, educators, etc.). The project complies with the various elements of the rules of the project management competition (2007) and in particular to the program requirement to propose an innovative architecture renewing the front room models : “It [the concert hall] differs from strictly frontal models and favours an envelopment of the stage by the audience in order to reinforce the feeling of intimacy between the performers and their audience³⁰”. Brigitte Métra is able to play with the models in this way, to orchestrate the architectural work by drawing on her experience as a concert hall architect. Forming and meticulously deforming the interior volumes to optimise the acoustics of the hall, making the project flexible depending on its needs, altering the types of hall format, designing a new model resulting from the cross-fertilisation of different types of hall formats - starting with the one designed by Hans Scharoun for the Berlin Philharmonic. Creating a “modular enveloping room that we have enveloped”, “making the audience feel immersed in the music³¹”, this is the work in which Brigitte Métra actively participated for the Philharmonie de Paris. Thus, “the spirit that underlies the aesthetics of the building [...] is lightness, the impalpable side of music, just as the structure of the hall's balconies is light. There, nothing crushes... Everything is airy...” (Laurent Bayle 2014).

6. Conclusion

In conclusion, let us note that the case of the Xenakian Cité de la Musique project defined, before its time, the renewal of an architectural model that had become obsolete. The system proposed a tool based on theoretical reflection and several decades of experience, integrating the public, the performers, and the new means of sound diffusion experimented by Xenakis in Paris, Brussels, Montreal and Tokyo. If the 1984 La Villette project transposed more the baroque spirit of Scharoun's Berlin Philharmonic than the brutalist spirit of the Tokyo Metropolitan Festival Hall de Maekawa (1961), it heralded the concert hall of the 21st century, carried by the breath of a new paradigm : the enveloping space.

Acknowledgments

LACTH-Ensapl research laboratory / CEAC research laboratory-University of Lille
Cité de l'architecture et du patrimoine. Centre d'archives d'architecture du XX^{ème} siècle, Paris
Archives Famille Xenakis
AAM (Association Architecture & Musique)
and all those who supported me in this work (special thanks to Kathe Gustave for her proofreading in English).

References

- Bayle, Laurent. “les faits nous donnerons raison.” Interview by Jeanne-Martine Vacher. *Journal concertclassic.com*, December 18, 2014.
- Brelet, Gisèle. “La Musique, architecture temporelle.” *Journal de Psychologie*, edited by Pierre Janet, Georges Dumas, 69-91. Paris : Alcan/PUF, 1940-1941.
- Brelet, Gisèle. “Musiques exotiques et valeurs permanentes de l'art musical.” *Revue philosophique* (January-March 1946): 71-96.

²⁹ “To ask for a hall with an enveloping design that can be transformed with a really innovative and efficient modularity. I had many questions about the type of concerts that could be promoted.” (Bayle 2014).

³⁰ Extract from “règlement du concours de maîtrise d'œuvre. Construction d'une grande salle de concert de la Parc de la Villette, Paris, 19^{ème} arrondissement”, competition notice 2006, “concours restreint international de maîtrise d'œuvre”, ordonnance n°2005-649, 6 June 2005.

³¹ Brigitte Métra, Conference-discussion « Architecture Symphonique » with Brigitte Métra and Séverine Bridoux-Michel, 11 February 2016, Académie d'Architecture, Paris.

- Brelet, Gisèle. *Le temps musical : essai d'une esthétique nouvelle de la musique. La forme sonore et la forme rythmique*, 10-25. Paris : PUF, 1949.
- Brelet, Gisèle. "Musique et structure." In *Revue Internationale de Philosophie*, vol. 19 n°73-74 (1965) : 387-408.
- Bridoux-Michel, Séverine. "Croisement disciplinaire Architecture – Musique. Le Pavillon Philips de l'exposition Bruxelles'58." In *Cahiers Thématiques n°1 : Discipline et visée disciplinaire*, edited by Philippe Louguet and Frank Vermandel, 210-219. Gand/Lille : Ecole d'Architecture de Lille Press, 2001.
- Bridoux-Michel, Séverine. "Musique, Architecture, un projet multimédia : le Pavillon de l'exposition internationale de 1958." In *Musiques, arts, technologies. Pour une approche critique*, edited by Makis Solomos, Roberto Barbanti, Enrique Lynch, Carmen Pardo, 91-103. Paris : L'Harmattan, 2004.
- Bridoux-Michel, Séverine. "Architecture et musique : croisements de pensées après 1950 (la collaboration de l'architecte et du musicien, de la conception à l'œuvre)" (PhD diss., University of Lille), 2006.
- Bridoux-Michel, Séverine. *Le Corbusier & Iannis Xenakis. Un dialogue architecture – musique*. Marseille : Imbernon, 2018.
- Delalande, François. "Il faut être constamment un immigré" *Entretiens avec Xenakis*. Paris : Buchet/Chastel-INA, 1997.
- Hélie, Thomas. "L'architecture des décisions. Un président-bâtitseur dans le tournant de la rigueur." In *Gouvernement et action publique*, vol. 6, 7-35. Presses de Sciences Po (April-June 2017) : 7-35. <https://www.cairn.info/revue-gouvernement-et-action-publique-2017-2-page-7.htm>.
- Klüver, Billy. "The Pavilion." In *Techne* vol. 1 n°2 (November 6, 1970): 1-2.
- Mâche, François-Bernard. "Varèse et Xenakis." In *Revue Musicale*, n°383-385 (1985): 221-224.
- Nitschke, Günter. "MA — The Japanese sense of 'Place' in old and new architecture and planning." In *Architectural Design* n°3 (March 1966): 113-156.
- Nouvel, Jean. "Harmonies, accords." 2007. <http://www.jeannouvel.com/projets/philharmonie-de-paris/>.
- Portzamparc, Christian (de). "Pour une géométrie singulière," interview by Jean-Yves Hannebert. In *Technique et Architecture* n°358 (February-March 1985): 106-109.
- Portzamparc, Christian (de). "Projet lauréat du concours pour la Cité de la Musique de la Villette." In *Technique et Architecture* n°358 (February-March 1985): 110-112.
- Portzamparc, Christian (de). "Cité de la musique de la Villette. Projet Christian de Portzamparc." In *Architecture d'aujourd'hui* n°239 (June 1985): XXVI-XXVII.
- Richard, Michel, ed. *Massilia 2012. La boîte à miracles — Le Corbusier et le théâtre*. Paris-Marseille : Fondation Le Corbusier/Imbernon, 2012.
- Scharoun, Hans. "L'Architecte de la Philharmonie". In *La Philharmonie Berlin*, 3-5. Berlin: Thormann & Goetsch, 1963.
- Solomos, Makis, ed. *Présences de Iannis Xenakis*. Paris : Centre de documentation de la musique contemporaine, 2001.
- Solomos, Makis, ed. *Révolutions Xenakis*. Paris : Les éditions de l'œil & Musée de la Musique – Philharmonie de Paris, 2022.
- Stockhausen, Karlheinz. "Musique dans l'espace." In *Contrechamps* n°9 (1988) : 78-99
- Usami, Keiji. "Space Theatre. Sound Field "created by Steel Pavilion." In *Japan Art Magazine Book Bijutsu Techo* n°328 (June 1970): 25
- Véret, Jean-Louis, Xenakis, Iannis. "Cité de la musique. Rapport de présentation" [April 1984]. In *Iannis Xenakis, Musique de l'architecture*, edited by Kanach, Sharon, 266-275. Marseille : Parenthèses, 2006.
- Xenakis, Iannis. "The Modulor." In *Gravesaner Blätter* n°9 (1957): 2-5.
- Xenakis, Iannis. "The Riddle of Japan." In *This is Japan* n°9 (1961): 66-69
- Xenakis, Iannis. "Rencontres avec Xenakis," interview by Jameux, Dominique and Daniel Durney. In *Musique en jeu* n°1, edited by Dominique Jameux, 46-65. Paris : Seuil, 1970.

Xenakis, Iannis. *Musique Architecture*. Tournai : Casterman, 1971.

Xenakis, Iannis. "Geste de lumière et de son." In *Programme du Diatope de Beaubourg*. Paris : Centre Georges Pompidou, 1978.

Xenakis, Iannis. "Il faut se débarrasser des préjugés architecturaux." In *Nouvelles littéraires* n°23-24 (June 1983): 40-41.

Xenakis, Iannis. "Espaces et sources d'auditions et de spectacles" (1980). In *Présences de Iannis Xenakis*, edited by Solomos, Makis, 197-200. Paris : Centre de documentation de la musique contemporaine, 2001.

[Unknown author] "Projet lauréat du concours pour la Cité de la Musique de la Villette." In *Technique et Architecture* n°358 (February-March 1985): 110-112

[Unknown author] "La prochaine symphonie de Xenakis sera jouée sous les fauteuils des mélomanes." *Centre Iannis Xenakis*, <http://www.centre-iannis-xenakis.org/items/show/743>

[Unknown author] "Cité de la musique de la Villette." In *L'Architecture d'aujourd'hui* n°239 (June 1985): XXI