

# Thinking Outside the (Music) Box: Collaborations Between Composers and Architects

JIM LUTZ

University of Memphis

## INTRODUCTION

Louis Kahn once said, "The poet is one who starts from the seat of the unmeasurable and travels towards the measurable, but who keeps the force of the unmeasurable with him at all times."<sup>1</sup> While Kahn's comment on the "poetic" spirit was directed toward architecture, the same could be said for great music, and although music and architecture have a different phenomenal presence, the underlying organization of their respective formal structures and colloquialisms can be similar. Because of this shared concern for the "unmeasurable", joint ventures involving musicians and architects have historically yielded fruitful and synergistic results.

In this presentation I posit that successful collaborative efforts between musicians and architects are possible for two reasons. First, to restate Kahn's assertion in more prosaic terms, because isomorphic correspondences exist between these two allied arts at a fundamental level. Architectural historian Stephen Grabow describes isomorphic correspondence, a concept taken from Gestalt psychology, as "similar structural relationships occurring in different media. [It is] the relationship between our experience of order in space and the distribution of underlying dynamic processes in the brain."<sup>2</sup> To this end, principles such as structure, rhythm, harmony/dissonance, metrics, and the like, provide a common compositional vocabulary – sound and space can inform one another through a body of concepts shared by musician and designer. The second idea facilitating architectural-musical collaboration is that they can find commonality in mathematics. Frank Lloyd Wright acknowledged this concept by stating, "It seems to me that music is a kind of sublimated mathematics. So is architecture a kind of sublimated

mathematics, and in the same sense. There lies the great relationship and warm kinship between music and architecture. They require very much the same mind."<sup>3</sup>

In support of this thesis, three examples of collaborations between architects and musicians are offered:

1. The Le Corbusier/Iannis Xenakis/Edgard Varèse joint-effort on the Philips Pavilion at the 1958 Brussels World's Fair.
2. The Renzo Piano/Luigi Nono collaboration in 1983-84 that produced the purpose-built performance space for the opera *Prometeo*.
3. The Peter Zumthor/Daniel Ott project for the Pavilion of the Swiss Confederation at Expo 2000 in Hanover, Germany.

These works span a period of 44 years, from 1956 to 2000, and, while they are not the only projects to be had, represent perhaps the most significant examples of collaboration between architects and composers in recent time. Each project illustrates a different way in which architects and composers have been able to work together, melding aspects of art and science together to produce a synergistic result.

## THE PHILIPS PAVILION (1956-58) – LE CORBUSIER/IANNIS XENAKIS/EDGARD VARÈSE

In the winter of 1956, Philips, the Dutch electronics manufacturer, approached the nearly seventy year-old Le Corbusier with an offer to design a pavilion for their company at the world's fair to be held in Brussels in 1958. One might think that a relatively small 6,500 square foot temporary structure would hold little interest for one of the world's

most famous architects, especially when he was then immersed in completing the new capital city for the Indian state of Punjab. Since the end of the Second World War, however, Le Corbusier had grown increasingly interested in exploring aspects of the fourth dimension in his work, specifically how to address the concept of a space-time continuum in architecture. Philips, as one of the world's foremost manufacturers of electronic equipment for illumination and sound reproduction, offered to provide him with access to some of the most advanced electronic technology available. Provided this incentive, and the fact that the company did not want a traditional "showroom" exhibition space, but rather one where the capabilities of their products could be demonstrated rather than simply displayed, Le Corbusier accepted the commission.

As originally envisioned by Le Corbusier, the temporary structure was to serve as the venue for an eight-minute long multi-media presentation he entitled *Poème électronique*. The work was to feature a film montage designed by the architect synchronized with colored lights and coordinated with a specially commissioned, pre-recorded musical work. Regarding his concept and its proposed musical component, the architect wrote to his future musical collaborator stating, "My idea is that music should have a part in this. [...] It is a scenario to be created wholly from relationships; light, plasticity, design and music. [...] It will be the first truly electric work and with symphonic power."<sup>4</sup>

Music was intended to be a salient feature of the work from its inception. Philips had initially recommended that the architect work with Benjamin Britten for the music, but Le Corbusier insisted that Edgard Varèse was the composer that he wished to collaborate with on the project. Corbu had met Varèse while in New York in 1935 and had attempted to work with him in 1954 on the pilgrimage church he designed at Ronchamp. Varèse would write in response to Corbu's offer to participate in the Philips project, "...I want to let you know immediately that I find your project superb and that I accept with great pleasure your offer of collaboration."<sup>5</sup>

While the structurally ambitious and technologically complex nature of the project required many collaborators – film editors, structural and electrical engineers, acoustic consultants, and the like – one individual played a key role in the

conceptualization and realization of the project. Iannis Xenakis is today known to most as a composer, but he was for twelve years employed in the office of Le Corbusier as an engineer and project manager. During his tenure in Corbu's office, he would spend any rare moments of free time composing. In this discussion Xenakis provides a critical link between the worlds of music and architecture. He played a pivotal role in the design and development of the Philips pavilion, the project that would precipitate a bitter break between himself and his friend and mentor, and which would eventually lead him to largely abandon architecture and to devote himself to music.

Because of the very tight schedule for the project and the pressing need for Le Corbusier to spend extended periods of time in India attending to his on-going work there, a great deal of the responsibility for the Philips project fell to Xenakis. In seeking a form for the Brussels building, Xenakis made a connection between his musical score for a composition he had previously written entitled *Metastasis* (1953-54) and a possible concept for the Philips building [Figures 1 and 2]. About this Xenakis writes, "[...] *Metastasis* was the source of [...] the Philips Pavilion [...] which I designed and made out of ruled surfaces much like my fields of string glissandi, which suddenly and for the first time in the history of music opened the way to the continuity of sound transformations in instrumental music."<sup>6</sup>

Xenakis' unequivocal claim of ownership of the design concept proved to be a major point of contention between him and Le Corbusier, bringing forward one of the potential pitfalls of the collabo-

Figure 1. Graphic score of glissandi section from *Metastasis* composed by Iannis Xenakis.

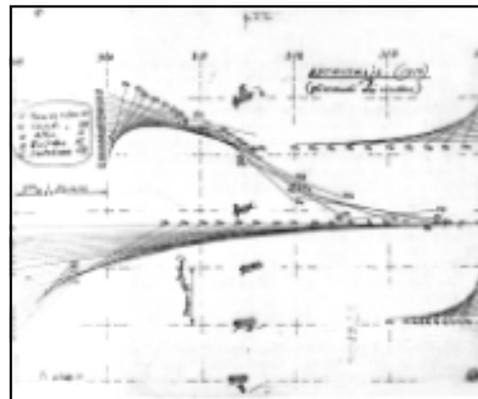
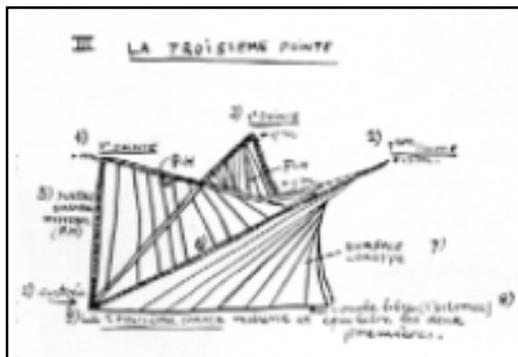


Figure 2. Concept sketch of the Philips Pavilion by Iannis Xenakis.



rative process: that of disputes over authorship. This disagreement was no doubt exacerbated by the employer/employee relationship between the two. Along similar lines, architectural historian Marc Treib raises another point of relevance to authorship inherent in complex technological undertakings, asking, “Can Varèse be credited with the work [music] entirely, given the amount of collaboration provided by [the Philips engineers]? Or does one regard this contribution as one would a virtuoso violinist or conductor who might consult on the limits of what can be performed on the instrument?”<sup>7</sup> Despite the friction that developed between Le Corbusier and Xenakis over the architectural component of the project, there was certainly none to be found between Corbu and Varèse. After completion of the project, the architect wrote to the composer expressing his “great satisfaction with your brilliant collaboration [...]. You will have to agree that I did not bother you, but I must say that you yourself have been the structure for this Poème with your magnificent music.”<sup>8</sup>

While the technical demands of the cutting-edge work delayed its opening, during the six months that the pavilion was open to the public, more than one million visitors had the opportunity to experience the work. The collaborative venture was critically lauded, Varèse’s biographer describing it as, “a music box for the twentieth century, [...] the meeting of two sculptors in space, one working with ‘solids’, the other with the ephemeral.”<sup>9</sup> [Figure 3]

In this instance the collaborative process allowed for the realization of ideas long held by the project’s three major contributors: Corbu’s interest in space-time, Varèse’s notion of “spatial music” and Xenakis’ desire to translate music into three-dimensional

Figure 3. Philips Pavilion, 1958 Universal Exposition, Brussels.



space.

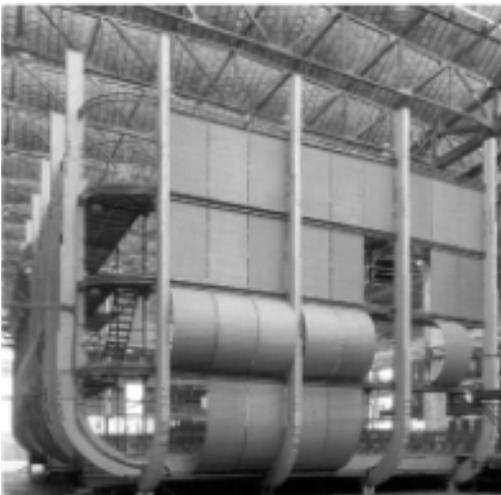
### ARCHITECTURAL SETTING FOR THE OPERA PROMETEO (1984) – RENZO PIANO/LUIGI NONO

Following the Philips pavilion by some twenty-five years, the architect Renzo Piano and composer Luigi Nono collaborated to create a purpose-built musical space for Nono’s opera (or “non-opera” as it has sometimes been characterized) – Prometeo. Nono’s Prometheus: A Tragedy in Listening [Prometeo: Tragedia dell’ascolto] (1984), to give its full title, came some nine years after another of his operatic works, *Al gran sole carico d’amore* (1975), a work that was known for its extremely elaborate and complex staging. Prometeo initially began along similar lines, but by the late 1970s Nono had decided to move in the opposite direction, foregoing any theatrical sets whatsoever, at least in the traditional sense, instead envisioning his work performed within a bespoke minimalist framework. Regarding these changes Nono said, “After Gran sole I needed to rethink my whole work and my whole existence, not only as a musician but as an intellectual in today’s society in order to discover new ways of seeing things and new opportunities for creative endeavor. Many concepts and ideas have become hackneyed so that it is now absolutely necessary to give the greatest possible prominence to the imagination.”<sup>10</sup> He later states, “We must learn to live with the plurality of times and spaces, with multiplicities and with differences.”<sup>11</sup> The representation of the “prominence of imagination” and the “plurality of times and spaces” are central concepts underpinning not only the musical work, but its original architectural environment as well.

Technically, *Prometeo* incorporates compositional elements previously used by Nono in others of his works: fragmented and dislocated texts and sounds (in this instance sources as disparate as Hesiod, the biblical book of Genesis, and Walter Benjamin) and electronic technology to alter and augment live vocals and instruments. It is in his conceptualization of the performer/audience relationship, however, that architecture becomes an essential component of the piece. Like other members of the Darmstadt School, Karlheinz Stockhausen and Pierre Boulez in particular, had done before him, Nono sought to cultivate the potential for interaction between sound and space. In this operatic work, the composer sought to subvert the traditional spatial arrangement of performers and audience, placing the listener in the central space and integrating the musicians and singers around, above, below and alongside them. Reclining and swiveling seating was designed in order to facilitate the audience's new relationship to the players. Performers moved through the space to envelop the listeners in a dynamic and constantly changing sonic environment. As architect Renzo Piano describes, "The music in *Prometeo* is not projected into perspective, over the heads of the audience as in a traditional opera house, but instead inundates the audience, which becomes fully immersed in the performance."<sup>12</sup> [Figure 4]

Not only were the staging requirements called for by Nono's production challenging in their own right, for example the dispersed arrangement of the

*Figure 4. Exterior view of the architectural setting for Prometeo.*



musicians required the use of closed circuit video monitors in order for them to follow the conductor, but they were made even more complex by external factors. First presented in Venice as part of the Biennale in 1984, the production premiered at the church of San Lorenzo. Several months later, a revised version of the opera was mounted in a disused factory in Milan utilizing the same performance environment. The internal requirements of the work, coupled with the demands and limitations of mounting the production in very different types of venues, plus the technological challenges associated with orchestrating dozens of perambulating singers and musicians, called for a collaborative effort that went well beyond that typically found between composer and set designer. When characterizing his approach to the design of performance spaces, Piano uses a musical metaphor saying, "The most beautiful adventure for an architect is to build a space for music. Perhaps it is more beautiful for a luthier to design a violin, but both are about building instruments."<sup>13</sup> The architectural "instrument" created by Piano for the opera relates both to the instruments of the performing musicians through form, material and action (various curved wooden panels could be adjusted to "tune" the space) and the setting as an "instrument", or tool, essential to the realization of Nono's artistic vision.

The critical contribution of the architectural setting to the success of the opera's intent can, in this instance, be demonstrated. A later production of *Prometeo* in Brussels presented the work in a conventional opera house, staged in a more traditionally dramatic manner. In the words of director André Richard, a frequent collaborator of Nono's, "[...] neither the performances nor the production was any good. The whole show was a failure. The visual direction interfered with the performances; for a fact, the performers told me it ruined their performances".<sup>14</sup> We find in the collaborative effort of Luigi Nono and Renzo Piano a synergistic relationship where each art is informed by the other. Here architecture gives form to conceptual notions of time and space while addressing the pragmatic demands of the production, while the instruments of the musicians provide the inspiration for the architectural expression.

**PAVILION OF THE SWISS CONFEDERATION (2000)—PETER ZUMTHOR/DANIEL OTT**

Architect Peter Zumthor and composer Daniel Ott conceived the Pavilion representing the Swiss Confederation at the world exposition held in Hanover, Germany in 2000, as a *gesamtkunstwerk* for the new millennium. The structure was intended as a truly collaborative effort that brought not only architecture and music together in a meaningful way, but lighting, fashion and the culinary arts as well to create an environment engaging all of the senses. Not unlike Renzo Piano's environmental setting, the Swiss Sound Box as it was dubbed (*Klangkörper*: literally "sound body", or, more to "sounding body"), finds much of its inspiration in the materials and structural concepts of the musical instruments that are used to fill its spaces with sound. Zumthor served not only as architect, but also as the individual responsible for establishing the project's overall concept. Initially trained as a cabinetmaker, the realization of the building form reflects the designer's appreciation of wood as a primary material in both the architecture and musical instruments native to his country. The temporary structure is composed of walls formed of stacked lumber, not unlike the manner that wood is set out to cure in a luthier's workshop [Figure 5]. These timber members are held together solely by compression, without nails, bolts glue or any other fasteners, utilizing steel rods placed into tension by large springs that adjust to the swelling and shrinking of the wood. Tectonically, these assemblies poetically reference instruments like the

violin and dulcimer in their use of wood and tuned metal. [Figure 5]

Daniel Ott, the composer (or musical curator as he is officially credited), shared in developing the concept for the project. Responsible for creating the sonic component of the environment, Ott writes, "I had this idea of 'spatial music' with mobile musicians inside a continually changing sound space. [...] One of the aims is to complement/cross the musical flow, to intervene and disrupt constructively."<sup>15</sup> This desire to "disrupt constructively" can find an architectural parallel in the purposefully disorienting, labyrinthine layout of the enclosure. Both the structure and the music are further united through their use of numbers as organizers. The numerical relationship between the architecture and the musical program is described in the publication written to detail the various aspects of the project thus: "The composer has attempted to convert the number that he gathered from the Swiss Sound Box enterprise into a composition and in turn to convert the rows of numbers and proportions produced by the composition into sound and time-based structures. For example, architectural numbers: twelve stacks, three courts, the number of beam layers within a stack (4, 5, 6, 8, 10, or 11), proportions of the floor plan, etc."<sup>16</sup>

In other words, the composer is here taking physical elements of the architecture as the source of inspiration for his compositions. Using the language of mathematics as the common denominator, numbers found in the building itself establish the sonic and temporal parameters for the improvisational musical performances occurring within the space. Both architect and composer have worked together to consciously establish a quantifiable link between the physical and sonic realms. Daniel Ott has further extended this notion of creative collaboration through the nature of his compositions, providing opportunities for self-expression on the part of individual performers. Relative to this kind of collaboration, or musicians as "joint composers" as he characterizes the relationship, he writes, "The idea was not to produce a bunch of random elements but to create a *gesamtkunstwerk* that benefits from the diversity of the participating musicians: integrating the performers as co-authors, as people and not just executing robots."<sup>17</sup> Peter Zumthor and Daniel Ott found common ground for fruitful collaboration through numerical relationships common to both music and

Figure 5. Exterior view of the Swiss Sound Box.



architecture. Issues of materiality (wood, metal) and structure (tension, compression) shared by buildings and musical instruments became additional concepts that united sound and space—the building itself becomes an instrument played upon by nature.

## CONCLUSION

As briefly outlined here, we see that architects and composers have a history of collaborations producing synergistic results. In the case of Le Corbusier, Xenakis and Varèse, we find that despite being separated by vast distances geographically (New York, Chandigarh, Paris and Eindhoven), collaboration was possible because the three artists were closely joined in their aesthetic intent. The true spirit of the Philips Pavilion literally was formed in the final few days prior to opening as architecture, sound and cinema were united to form a transcendent environment—the whole being greater than its parts. Renzo Piano's work with Luigi Nono, on the other hand, deferentially placed architecture in a supporting role to music. Rather than seeking a direct translation of music into architectural form as Xenakis did, the structure presented itself as a neutral instrument brought to life only when "played" during the musical experience for which it was built. In a somewhat different form of interaction between sound and space, the collaborative effort between Peter Zumthor and Daniel Ott manifested the give-and-take exchange of improvisational artists. The composer restated themes borrowed from the architecture, while the designer drew inspiration from the tools and tropes of musicians.

All of these constructions were purpose-built, temporary structures. In essence, the buildings became as ephemeral as the music performed within them. As the dialogue using the shared vocabularies of compositional systems and mathematics continues it is logical to assume that collaborative ventures between practitioners of these allied arts will continue. Through an analysis of the processes used by architects and composers to develop these works it is possible not only to gain a deeper insight into the nature of collaboration, but also to extrapolate the potential for applications across other disciplinary boundaries.

## NOTES

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