

THE CREATIVE COMPOSITIONAL LEGACY OF IANNIS XENAKIS

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ABSTRACT

In this presentation, I introduce a selection of composers who have not only declared a debt to the compositional innovations of Iannis Xenakis, but who also demonstrate in many cases a profound understanding of different facets of his compositional theories and applications. While some composers are well-known and well-documented for their connection to Xenakis (Dusapin, Estrada, Maceda, Mâche, Pape, Takahashi), there are others who are less well-known but whose music is worthy of better acquaintance for enriching the legacy of Xenakis. The style of each composer differs widely from the others as well as the master. In addition to myself, this collection of “post-Xenakis” composers includes: Richard Barrett (UK), Zbigniew Karkowski (Poland/Japan), Cort Lippe (USA), Curtis Roads (USA), Brigitte Robindoré (USA/France), and Fred Szymanski (USA).

1. INTRODUCTION

“Imitation is an existential mistake. So, to escape from the trivial cycle of relationships in music, the musician, the artist, must be absolutely independent, which means absolutely alone.” [32: 212] In the context of this quote, a discussion of “legacy” may seem foolhardy. On the other hand, Xenakis did not deny his own admiration for certain predecessors, and he welcomed contact with colleagues and younger composers, even while he avoided expending much energy on explicit compositional pedagogy. His primary advice was that “one must be free,” [19: 16] for all that this implies. Nonetheless, the force of his thought and music attracted many, and composers the world over have taken inspiration from Xenakis’s ideas, techniques, and expression. A small selection of these will be introduced here, chosen primarily to exemplify and underscore a diversity of influences and styles. It should be emphasized that the choice of composers included here is in no way intended to be exclusionary, merely exemplary. Many others could equally well be presented.

2. MUSICAL ORIGINS AND ORIGINALITY

“Xenakis’s radicalism has thrived on standing aside from all traditions and all other contemporary initiatives.” [33: 291] Such iconoclasm does not necessitate working in complete isolation. Xenakis obviously benefited enormously from his contact with Olivier Messiaen. “What captivated me most of all was his pure combinatorial thought.” [32: 31] More important than any specific technique was the master’s advice to work on his own: “Messiaen’s example has taught me that I can do whatever I like, without any restrictions.” [32: 32]

Of Edgard Varèse, to whom he is most often connected aesthetically, Xenakis has said that he “was a man who felt the sound in an extraordinary way.” [32: 56] And, “I regarded him as one of the most original composers of the century.” [32: 38] From a historical perspective, the “concern with volumes and densities of sound” which Xenakis shared in common with Varèse carried on in the texture-based music of Eastern European composers such as György Ligeti and Krzysztof Penderecki. [25: 185] At first, Xenakis found it perplexing to learn that he himself was being imitated: “But then I thought: if others were using my methods there must be an objective need for what I was doing.” [32: 38]

Mostly, though, Xenakis encouraged originality—freedom and the responsibility that comes with it. As Gerard Pape notes, “Absolute freedom implies absolute responsibility. You have no excuse... You are responsible for your creativity or lack of it.” [19: 16] For those who heard this call, and responded to it, Xenakis was a stalwart friend, a fellow traveler.

3. COMPANIONS

Many composers cite Xenakis as an influence, far too many to discuss here or even list. Fewer have addressed this connection in detail. A representative selection is presented here, each having had significant personal contact in one form or another. They are presented here in chronological order with respect to when that contact was first made.

3.1 François-Bernard Mâche

Xenakis met François-Bernard Mâche at the studios of GRM in 1958. They remained life-long close friends. Mâche, in addition to a successful career as a composer, has pursued parallel paths as musicologist and classicist. In his role as researcher, he provided much-needed exegesis on the music and ideas of Xenakis at a time when there were few others willing, with numerous publications to his credit. In particular, he has been interested in Xenakis’s “Greekness,” publishing the first study of the composer’s pre-*Metastaseis* compositions. [16]

In his own music, Mâche has followed an independent, though not unrelated, path, incorporating interests in mythology, culture, language, and nature (birdsong and other non-human utterance) into his creative work. [15]

3.2 José Maceda

In 1961, Xenakis was invited to attend an international music congress, East-West Music Encounter, in Tokyo. While his encounters with Yuji Takahashi, Toru Takemitsu, and Seiji Ozawa may have proved more important for his career, Xenakis also met an extraordinary musician from the Philippines, José Maceda. As Matossian reports, Xenakis was powerfully affected by his experience of Japanese traditional music and culture. [18: 146-47] And, as he himself noted, “I couldn’t understand why young Japanese composers were writing tonal or serial music.” [32: 39]

This was a concern that strongly affected Maceda. He had been studying Western music in Paris and the United States but turned away from this pursuit to take up ethnomusicology. He continued to advocate, however, for music he believed in, indigenous or no. Xenakis was one cause he supported, and at an international musicology congress in Manila in 1966 Maceda conducted a performance of *Achorripsis* along with work of his own and traditional Philippine music. [14: 336] This concert, along with Xenakis’s presentation on “outside-time” structures, profoundly influenced young musicians in Manila, encouraged no doubt by their professor’s enthusiasm.

Maceda’s own music is rich in complex texture and rhythm. Mostly, he has composed music for large

numbers of musicians performing on indigenous instruments—“the emphasis was on ambiguity, complexity and color... perspectives of time with no beginning, no end, and space of coexistence without strife.” [31]

3.3 Yuji Takahashi

On that same trip to Tokyo in 1961, Xenakis met Yuji Takahashi, an extremely intelligent and talented young pianist/composer. *Herma* followed, and *Eonta*, both extraordinarily difficult works for the piano. Having until this point concentrated mainly on creating ensemble textures, the composer was for the first time able to fuse his concerns for structure and stochastic techniques with the visceral reality of instrumental solo performance. “The ultimate reality of the music... is to be found in the solution—the engagement with the performing material—as realized on real instruments in real time.” [25: 185]

Takahashi traveled to Paris to work with Xenakis, and spent time in Berlin with him during the composer’s Ford Foundation residency there in 1963-64. He worked hard to understand the mathematics and engineering-architectural thought behind Xenakis’s approach to music, along with the philosophical underpinning, rooted as it is in ancient Greek thought. In thinking about this period much later, he reflected: “I renewed my understanding that not seeking the universal which manifests itself beyond chance, you were looking for the road sign to get out of the labyrinth of time and space where we fell into, looking for the Moebius ring which returns from ‘chance’ back to ‘Being’ at the origin by reversing the ancient history of philosophy.” [29]

Takahashi’s own music, coming from a different culture and generation, is very different. He has questioned many conventions of the music profession, and has incorporated a wide range of influences and interests into his music-making. From the foreword to *For Thomas Schultz (Piano 3)* (2001), the composer writes: “no thinking no projecting / hear the sounds not as a melody but as separate colors spreading in the acoustic space and fading variously / lose control a little / respect your mistakes and modify the written notes accordingly or improvise the change.” [30] While there is a Cagean element to this, there is also his experience working through the “utopian” scores of Xenakis that have shaped his attitude to contemporary performance practice. [4]

3.4 Julio Estrada

Julio Estrada, from Mexico, studied in Paris during the period 1965-69, attending Messiaen’s composition class at the Conservatoire and then Jean-Etienne Marie’s seminar on music and architecture/mathematics at the Schola Cantorum. In 1968, Xenakis was a guest in that seminar (he was then teaching at the University of Indiana and commuting to Paris). This was a profound encounter for Estrada, who struggled as a student seeking to develop as a composer to reconcile the notion of “écriture” (musical language based, more or less, on tradition) with the “lack of correlation between discourse and actual works in other authors of that time” in Xenakis’s work. [7: 218] As he goes on to say, “To write like Xenakis was to *think* like him; that is to say, to look for original forms of composition that incorporated instrumental techniques purposely conceived to produce a musical result that kept itself distant from known procedures.” [7: 219]

As Estrada continued to find his way to an original music, “to create according to one’s own light,” [7: 227] he acknowledges the “fraternal” influence of Xenakis, who posed questions rather than provided answers. Estrada has gone on to explore the pre-Hispanic culture and music of his native Mexico, and to develop theories of intervallic and rhythmic continua. [8]

3.5 Pascal Dusapin

Pascal Dusapin has become one of the most important composers in France, author of several operas and much else. In 1974, at the age of 19, he was studying at the Sorbonne, and was taken along one day to Xenakis's seminar in aesthetics at the fine arts faculty, Université de Paris I. Like Xenakis, the aspiring musician didn't fit into the "conservatoire" mould, being more interested in developing his ability to think independently than in assimilating traditional musical techniques. Dusapin spent four years attending Xenakis's seminar. "What did we learn from him? Truthfully, nothing... Xenakis's 'pedagogical approach' consisted in *disorienting* the complacency of his students, by indescribable artistic and scientific allegories through which his power of seduction and extraordinary instinct could enable the transfiguration of all our understanding." [6: 90, my translation]

Xenakis's profound questioning of so many assumptions, as well as the force of his musical expression, provided a model for the young composer (along with that of Varèse). Dusapin has never shied away from expressing his admiration and gratitude. He has composed much, but written little, and has not sought out a pedagogical role in the society he lives in. Rather, he has concentrated on expressing his ideas as forcefully as possible through his music. His independence is achieved through a "creative distance of an aesthetic order and sensibility, a way of existing in sounds." [28: 184]

3.6 Gerard Pape

Parallel to being a composer, Gerard Pape is a psychologist. This background in psychoanalysis helps him to understand "something about why our musical perception is engaged or not, why we find music interesting or not... [W]e know that each one of us has a unique way of finding satisfaction in the functioning of our minds and bodies... This unique way of deriving satisfaction that each of us has colors our fantasies and feeling about what is 'objective reality' for us." [17: 24] Pape himself was drawn to electronic music that was "made without a keyboard model in mind." [17: 24] He became the first person in North America to own a UPIC system (it was installed at his studio in Ann Arbor, Michigan, in 1989), and went on to Paris to take charge of Les Ateliers UPIC (which became CCMIX—Center for the Composition of Music Iannis Xenakis). The notion of "designing" sound was very attractive, but Pape was particularly interested in working "inside the sound," controlling the timbral evolution of sound. The music of Xenakis was an inspiration, but so was the music of Giacinto Scelsi. [17: 22]

Pape's knowledge of Lacanian psychoanalysis in particular has helped him to understand Xenakis's focus on renewal and invention. The creator must wait for the unconscious to open in order to "remain inventive and not merely productive." [19: 16] Further, "the moment of creative invention is a moment of 'ek-stasis,' that is, a going beyond the limits of the ego of the individual." [19: 17] This "going beyond," according to Pape, touches the "Real," which is "the sum total effect on the psychic structure of all of one's formative experiences, verbal and non-verbal." [19: 18] Perhaps better than anyone else, Pape articulates that "Xenakis's music tries to evoke the Real of his own subjective experience, ... traumatic and non-traumatic... The Xenakian music of the Real hides behind no nostalgic concepts of longing for the lost beauty of the past. Xenakis's music is not afraid to touch on the Real of a Universe that is for him both overwhelming in its blind forces of power and intensity and totally indifferent in its cosmic cruelty towards humankind, a mere speck of dust in the infinite." [19: 19]

4.FOLLOWERS

As Gerard Pape points out, no one can truly be a “follower” of Xenakis. His “Real” is absolutely unique, and the experiences that have shaped it are so powerful and unusual that no one could really even come close. But, there are points of common resonance that touch many. What follows here is an introduction to a few composers who not only share similar concerns, be they aesthetic or technical, but who have also worked with Xenakis in some context, either as students, participants in masterclasses or other events, or as colleagues in one capacity or other. They also happen to be people whose work I personally find of particular interest, and who exemplify and extend, each in their own way, some aspect of the Xenakis universe.

4.1 Richard Barrett

Richard Barrett (b. 1959, UK) is a British composer who began his studies in genetics, so has something of a scientific background. His approach to composition focuses on “sonority (l’objet sonore) and the development on that basis of a new approach to instrumental performance, to the detriment of classical models of form and expression.” [9: 27] He is usually placed into the “new complexity” camp, but he has also, over many years, developed an approach to live electronics, usually as part of the duo FURT, that involves a combination of composition and improvisation.

In asked to consider how Xenakis has touched or influenced him, Barrett had a good deal to say. I am presenting much of it here, as what he says stands very well on its own.

4.1.1 Xenakis Influence

“I read *Formalized Music* for the first time in 1980, that is to say just at the point where I was deciding to devote myself to composition. I’m sure the book played a crucial role in that decision... I remember at the time being deeply impressed by the fact that one could theoretically reconstitute (a completely different version of) *Achorripsis* from the description given there, ... which struck me as very open and generous--and *scientific*--on Xenakis's part, as opposed to the mystification and obfuscation practiced by many of his colleagues.

Continuing on that strand, Xenakis's distinction between *inside-* and *outside-time structures*, as opposed to the more specialized and traditional *material* and *form*, struck me as a highly important generalization in compositional thinking. This distinction also encapsulates the differences between Xenakis's notated music and his electronic compositions, the latter existing almost entirely in the inside-time domain, which in turn served to clarify for me the relationship between my work in notated music and in improvisation.

My attitude towards instrumental writing is of course quite different from Xenakis's but was indeed strongly ‘influenced’ by his. One example: when I first heard broadcasts... (I remember *Epei* in particular in this context) I was irresistibly attracted to what I thought were strangely gnarled and ornate ‘melodies’ for the wind instruments. Looking at the scores some years later... it became clear that for the most part all Xenakis had written were ‘impossible’ glissandi, which the players then would negotiate in their own (either enthusiastic or half-hearted) way. Much of my subsequent work has tried to produce comparable results from the opposite direction, i.e., knowing as exactly as possible what performative actions are required for a given musical result and notating those.

While working on my essay about *La légende d'Eer* [1] I was also working on *DARK MATTER* (which, like *ruin*, is dedicated to Xenakis) which involved me in for example studying the pre-Socratic philosophers (and

therefore ancient Greek language, prosody, and hypothetical pronunciation), the Hermetic writings, Pascal's *Pensées*, and contemporary astrophysics. In writing about Xenakis's piece, then, I was also in a way writing about my own, but at the same time in writing my piece I was also saying something about Xenakis's music which couldn't be said in the essay.” [2]

4.2 James Harley

James Harley (b. 1959, Canada) is a Canadian composer who was drawn to composition from a background in jazz and electronic music. He attended Xenakis's seminar at the Université de Paris I for two years, during 1985-87. In speaking about his music, Marc Couroux has said: “his seemingly endless capacity for reinventing himself and his seamless integration of heterogeneous elements are the chief mysteries to behold... it is the unmistakable condition of the searcher, always moving forward, attaching little significance to past results, treating the compositional process as a life-enhancing experiment.” [3: 43]

In speaking of Xenakis's influence, Harley has written: “I had just one real composition lesson with Xenakis... His main comment was that it was too simple. Too simple? ... I was shattered. But not in a damaging way. More in a quantum leap kind of way... He was looking beyond the surface to the structure, to the development of the materials and the unfolding of the form... I must admit, I never became fluent with probability theory, nor with juggling interlocking matrices. But the rigor of his thought posed a challenge that has certainly shaped the way I approach music.” [10: 199-200]

4.3 Zbigniew Karkowski

Zbigniew Karkowski (b. 1958, Poland) is, according to his biography, “a nomadic composer and performer who has lived in Sweden, Holland, France, Germany, and Japan.” One can add that he grew up in Poland, studied music there, and continued his studies in Amsterdam and Goteborg. In Sweden, he helped organize the International Computermusic Festival, creating a link with CEMAMu (where the UPIC system was housed and developed at that time) in 1986. Much of what he does can be called “noise art,” and he has focused in recent years on live electronic performance, with Sensorband, and on his own.

Karkowski did a residency at Les Ateliers UPIC in 1989, and attended a few of Xenakis's lectures at the Université de Paris I while he was there. Xenakis was, for him, “a true visionary. He was very different to all the other composition teachers that I ever encountered... [who] were teaching music in the same way as one could teach somebody to be a clerk in some bank.” [11] In live performance, Karkowski uses a “patch” in the SuperCollider environment based on GENDY principles.

Karkowski initiated the idea of presenting Xenakis's *Persepolis* along with a set of “remixes.” While originally intended for a concert in Tokyo, the project eventually came to fruition as a CD release in 2002 on the Asphodel label (produced by Naut Humon). Xenakis, more concerned with looking forward to new invention than with guarding past accomplishments, was quite willing to facilitate this creative appropriation of his work.

4.4 Cort Lippe

Cort Lippe (b. 1953, USA) is an American composer who studied computer music with Gottfried Michael Koenig and Paul Berg at the Instituut voor Sonologie in The Netherlands and then spent three years working with the UPIC

system at CEMAMu while attending Xenakis's seminar at the Université de Paris I. Following this, he worked for eight years at IRCAM developing real-time musical applications and providing pedagogical and technical support for these applications. From his studies with Koenig and Xenakis, Lippe has developed compositional algorithms that carry on from the work of those pioneers. His music usually incorporates electronics as well as instruments, and he has explored the sonic continua between these elements, often by means of signal processing-based transformations of the instrumental sounds. [12]

In terms of aesthetics, Lippe acknowledges that Xenakis's influence is "huge," but "personal and quasi-intuitive." [13] Regardless, his music exhibits an attraction for complex sonorities, structural organization based on systematic parametrical variation, and extended instrumental sonorities. He has offered here his thoughts on the originality of Xenakis's concept of time in music.

4.4.1 Xenakis Influence

"There is a unique quality to every aspect of Xenakis's music, from the meta-formal down to the use of and choice for each parameter on a note-by-note basis. One prominent feature of his music is its relationship with and concept of time--quite different from other post-World War II music. Time in Xenakis's music often seems experiential. There is little use of time for poetic purposes, or as a poetic element of the music. Using time to explore concepts of metaphysical space like Stockhausen, or physical space (resonance, and thereby dilation/contraction of time) like Boulez, making quasi-historical connections with other musics/periods via time, like Ligeti and others, are alien functions for Xenakis. Time appears as a finite element, as one parameter, always tied to other parameters without a separate function from the music itself. Nothing appears contrived via time. It is not used to create illusions, large-scale memories, etc., in typical 'musical' fashion. His concept of *outside-time*, his philosophy of time as 'the blackboard on which are inscribed phenomena and their relations outside the time of the universe in which we live,' [34: 266] all contribute to his belief in 'the profound necessity for musical composition to be perpetually original--philosophically, technically, aesthetically.' [34: 267] ...When listening to Xenakis's music I am not reminded of or thinking about anything else." [13]

4.5 Curtis Roads

Curtis Roads (b. 1951, USA) is well-known as a computer music researcher, with numerous publications to his credit, most notably *The Computer Music Tutorial*. [20] Among other accomplishments, he has been one of the main developers of tools for working with granular synthesis. His research in this domain has resulted in the publication *Microsound*, [21] and granular synthesis-based software, CloudGenerator and PulsarGenerator.

Roads's enormous contributions as a researcher have at times overshadowed his creative work as a composer. His music is exclusively electroacoustic, and a collection of pieces from the past several years has recently been issued as *Point Line Cloud* on Asphodel. While conceived as audio compositions, video artist Brian O'Reilly has collaborated with Roads on creating multimedia versions of a number of these pieces, issued on DVD as part of the same release.

Roads has offered a chronological account of his connection to Xenakis's music and thought.

4.5.1 On Xenakis's Influence

“The music and thought of Xenakis impacted me greatly in my youth. It began with the music, including recordings of *Metastaseis* and the [early] electroacoustic recordings in 1971 (I was age 20). The next spring, living in Madison, [Wisconsin,] by chance I saw a poster for a course in Formalized Music at Indiana University. I traveled there for the course and met Xenakis and his entourage. That summer, I read his book *Formalized Music*, learned the Fortran programming language, and only then began to understand the lectures I had heard earlier, which were quite technical.

In 1973 I traveled to Paris and experienced the sound and light spectacle *Polytope de Cluny* eight times. One laid on one's back, gazing upward. It was synaesthesia, enhanced by the strong aroma of frankincense in the room. From 1972 to 1974 at the California Institute of the Arts I made experiments in stochastic data generation, with the results printed on paper, as I had no way to synthesize sound by computer. In 1974, at UCSD, I was finally able to gain access to a computer that could synthesize sound, and my goal was granular synthesis, which I programmed in December 1974 for the first time.

In a rich vein of ideas, there is usually a chain of influences at work. Clearly my research on granular synthesis was taken directly from Xenakis's theory, although my implementation was quite different. One must not forget that Xenakis adapted the idea of granular synthesis from the papers of the physicist Dennis Gabor. Gabor in turn was Einstein's student in Berlin, and was surely aware that Einstein had extended quantum theory into the realm of acoustics with his theory of phonons.

The sequel to my initial contact with Xenakis occurred in 1993-98 when I worked at Les Ateliers UPIC in Paris which was allied with Xenakis's CEMAMu research group. It was a different sort of rapport. We were now colleagues, I obviously junior to him.

In works like the GENDY pieces, which he was realizing at the time, the sonic outcome is an epiphenomenon of a programmed process. He stayed faithful to that radical experimental process. Of course he did not use software to make his later instrumental pieces, because he had essentially absorbed the algorithms into his intuition.

However I always I had my own musical aesthetic, which is quite distinct from Xenakis's. After an early flirtation with the intellectual purity of algorithmic composition, I could not abide the sometimes sterile results it produced. I was too interested in sound itself, more than I was interested in the theory of its construction.

So while I respected his approach, ultimately it was not my approach. This suited Xenakis fine. He had little interest in spawning followers.

Looking back, the most important influence of Xenakis on me and many others was his *tabula rasa* approach to musical thinking. He showed how it could be possible to rethink the foundations of the composition game, and in so doing expand it enormously. In this he was absolutely indispensable.” [22]

4.6 Brigitte Robindoré

Brigitte Robindoré (b. 1962, France) studied composition in the USA (Duke University), with Ton de Leeuw in Amsterdam, Julio Estrada in Paris, and apprenticed in electroacoustic composition at GRM. From 1991-97, she was associated with Les Ateliers UPIC (CCMIX), eventually directing Music Production activities there.

Robindoré has the rare distinction of working closely with Xenakis on his last attempt to create music on the UPIC system, *Erod* (1997, withdrawn). She also spent much time in conversation with him, often within the context of public seminars at les Ateliers UPIC, and drew together a number of his thoughts for publication. [23]

Her music exhibits a fine sensitivity for sonority, both complex and harmonic. She appears particularly concerned with exploring continuities of elements on different organizational levels.

4.6.1 Xenakis's Influence

“Xenakis’s influence on me is less technical than as a ‘force de nature.’ His sheer and unadulterated artistic power lay in part in his unabashed courage to express his musical impulses without apology. Even his ‘masks’ of formalism could not withstand the atomic energy that exploded in his oeuvre. He bowed to no one, no system, and certainly not to the rigid French musical hierarchies that excoriated him for his resistance. It is this musical integrity that most influenced and still influences me by challenging me to express what is innermost with as few veils as possible. Genius lies in letting the music life-force speak through us without compartmentalizing and intellectualizing it to its grave.” [24]

4.7 Fred Szymanski

Fred Szymanski (b. 1954, USA) is the exception in this representative group of “followers” in not having had any significant personal contact with Xenakis. His training is primarily in the visual arts, but Szymanski was quickly drawn into the experimental electronic scene in New York. Working under the Laminar moniker, he has created video works, installations, and electroacoustic compositions.

His approach to sound synthesis has involved “a microcompositional approach to the creation of timbre and form in an attempt to produce second-order sonorities by means of the global emergent properties of the sound material.” The idea that “both micro- and macro-level structure can be extracted from a low-level nonlinear dynamic system” was first developed by Xenakis. The “iterated nonlinear functions” he has been working with derive from research by Agostino Di Scipio, “iterating the sine map in order to produce textural auditory images which are then applied to the perceptual characteristics of sound.” [27]

5. CONCLUSION

There are many other composers who have had a close personal or professional connection to Xenakis who could have been discussed here: Tom DeLio (USA), Agostino Di Scipio (Italy), Ivar Frounberg (Denmark), Francisco Guerrero (Spain), Peter Nelson (UK), Michel Philippot (France), Roger Reynolds (USA), Horacio Vaggione (Argentina), Jan Vriend (The Netherlands), etc. The aim, though, is not to be comprehensive, but to introduce a range of composers of different ages, nationalities, and styles who illuminate different aspects of Xenakis’s creative compositional legacy.

Xenakis has tended to be studied and discussed in relative isolation. There are exceptions, a few noted here: Makis Solomos has explored the connections between Xenakis and Gérard Grisey; [27] Agostino Di Scipio has noted the affinities between the algorithmic formalizations of Xenakis and Herbert Brün; [5] Gerard Pape has touched on the efforts of both Xenakis and John Cage to transcend the ego. [19: 18-19] The singularity of Xenakis’s contribution to musical history ought not preclude the acknowledgement of influences, parallels, and extensions to his creative universe. It does, after all, continue to exist and to reverberate.

6. REFERENCES

- [1] Barrett, Richard. "Musica instrumentalis of the Merciless Cosmos: *La légende d'Eer*." *Contemporary Music Review* 21/2-3 (2002), 69-83.
- [2] Barrett, Richard. "Xenakis influence." Personal communication to the author. 26 March, 2005.
- [3] Couroux, Marc. "Daring the Wilderness: The Music of James Harley." *Musicworks* 69 (1997), 42-50.
- [4] Couroux, Marc. "Evryali and the Exploding of the Interface: from Virtuosity to Anti-virtuosity and Beyond." *Contemporary Music Review* 21/2-3 (2002), 53-67.
- [5] Di Scipio, Agostino. "Systems of Embers, Dust, and Clouds: Observations after Xenakis and Brün." *Computer Music Journal* 26/1 (2002), 22-32.
- [6] Dusapin, Pascal. "Hommage." In *Portrait(s) de Iannis Xenakis*, ed. François-Bernard Mâche, 90-92. Paris: Bibliothèque nationale de France, 2001.
- [7] Estrada, Julio. "The Radiance of Iannis Xenakis (1922-2001)." *Perspectives of New Music* 39/1 (2001), 215-229.
- [8] Estrada, Julio. "Focusing on Freedom and Movement in Music: Methods of Transcription inside a Continuum of Rhythm and Sound." *Perspectives of New Music* 40/1 (2002), 70-91.
- [9] Harley, James. "The New Nihilism: l'Object Sonore and the Music of Richard Barrett." *Musicworks* 72 (1998), 26-34.
- [10] Harley, James. "Iannis Xenakis. A Personal Memorial." *The Open Space Magazine* 3 (2001), 199-201.
- [11] Karkowski, Zbigniew. "Xenakis influence." Personal communication to the author. 7 April 2005.
- [12] Lippe, Cort. "Real-Time Interaction Among Composers, Performers, and Computer System." *Information Processing Society of Japan SIG Notes* 123 (2002), 1-6.
- [13] Lippe, Cort. "Xenakis influence." Personal communication to the author. 28 March 2005.
- [14] Maceda, José. "Xenakis, l'architecture, la technique." In *Regards sur Iannis Xenakis*, ed. Hugues Gerhards, 335-39. Paris: Éditions Stock, 1981.
- [15] Mâche, François-Bernard. *Music, Myth and Nature*. Chur, Switzerland/Philadelphia: Harwood Academic Publishers, 1992.
- [16] Mâche, François-Bernard. "The Hellenism of Xenakis." *Contemporary Music Review* 8/1 (1993), 197-211.

- [17] Makan, Keeril. "An Interview with Gerard Pape." *Computer Music Journal* 27/3 (2003), 21-32.
- [18] Matossian, Nouritza. *Xenakis*. London: Kahn & Averill, 1986.
- [19] Pape, Gerard. "Iannis Xenakis and the 'Real' of Musical Composition." *Computer Music Journal* 26/1 (2002), 16-21.
- [20] Roads, Curtis. *The Computer Music Tutorial*. Cambridge, Massachusetts: The MIT Press, 1996.
- [21] Roads, Curtis. *Microsound*. Cambridge, Massachusetts: The MIT Press, 2002.
- [22] Roads, Curtis. "On Xenakis's influence." Personal communication to the author. 25 March 2005.
- [23] Robindoré, Brigitte. "Eskhaté Ereuna: Extending the Limits of Musical Thought—Comments On and By Iannis Xenakis." *Computer Music Journal* 20/4 (1996), 11-16.
- [24] Robindoré, Brigitte. "Xenakis influence." Personal communication to the author. 21 April 2005.
- [25] Salzman, Eric. *Twentieth-century Music: An Introduction*, 3rd edition. Englewood Cliffs, New Jersey: Prentice-Hall, 1988.
- [26] Solomos, Makis. "Pour une filiation Xenakis-Grisey?" In *Iannis Xenakis, Gérard Grisey: La Métaphore Lumineuse*, ed. M. Solomos, 149-167. Paris: L'Harmattan, 2003.
- [27] Szymanski, Fred. "Xenakis influence." Personal communication to the author. 23 March 2005.
- [28] Stoianova, Ivanka. "Pascal Dusapin: Febrile Music." *Contemporary Music Review* 8/1 (1993), 183-196.
- [29] Takahashi, Yuji. "Xenakis in Kyoto (1997)." < <http://www.suigyu.com/yuji/en-text/xenky.html> > 1997.
- [30] Takahashi, Yuji. *For Thomas Schultz (Piano 3) for solo piano*, 2001.
- [31] Takahashi, Yuji. "in memoriam José Maceda." < <http://www.suigyu.com/yuji/en-text/maceda-memory.html> > 2004.
- [32] Varga, Bálint András. *Conversations with Iannis Xenakis*. London: Faber and Faber, 1996.
- [33] Whittall, Arnold. *Musical Composition in the Twentieth Century*. Oxford/New York: Oxford University Press, 1999.

[34] Xenakis, Iannis. *Formalized Music*, revised edition. Stuyvesant, New York: Pendragon Press, 1992.