Systems of Embers, Dust, and Clouds: Observations after Xenakis and Brün
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but the clouds of the sky
when the horizon fades;
or a bird's sleepy cry
among the deepening shades
[W. B. Yeats, quoted in Beckett’s TV drama . . .
but the clouds . . ., 1976]

The following considerations are meant to describe a personal way of listening to Iannis Xenakis and Herbert Brün (their music, their words, their designs) and to clarify, in retrospect, how that listening might have pushed me to establish a dialectical attitude towards their art and thought. I would also like to describe how that listening might have reflected onto specific compositional explorations that I [as a composer of a younger generation than theirs] have been pursuing in recent years. My ear found its way particularly in their electroacoustic and computer music compositions. This may sound like a personal, and even idiosyncratic, statement about their music, as those compositions alone are clearly but a partial aspect of the entire and multifaceted picture of their work.

It must have been in the mid 1980s that I first listened to Iannis Xenakis’s music. At that time, he was already in his sixties. A little later, I also encountered the music of Herbert Brün, who was then almost seventy. I was little more than twenty years old. I was turning to computer music, leaving behind the customized solid-body Fender guitar I had been scratching for some years with resultant sounds ranging from deafening punk rock and dark ambient music to southern Italian (i.e., partly Arabian, Greek, and North-African) song. I was turning to a different noise. The sounds of other electroacoustic and computer music impressed me, too, including Luciano Berio’s tape works from the late 1950s, some early John Cage (the Imaginary Landscapes, and the “mix” pieces), as well as Jean-

Claude Risset’s computer-synthesized music from the 1970s and 1980s. I was also fascinated by Franco Evangelisti, the early works by Gottfried M. Koenig, and a number of younger researchers and composers (including my former teacher Michelangelo Lupone, and other friends and colleagues I met across the years). But listening to the music of Xenakis and Brün—I mean all of their work, but with a strong preference for electroacoustic and computer music—had a special impact on me, an impact that today, in retrospect, I should try to better understand.

Ambivalent Legacy

In 1991, in Montreal, I attended the premiere of Xenakis’s powerful computer-generated Gendy301 (later published as Gendy3). Three years later, a companion piece followed that I loved in all its strangeness, the shorter and somewhat trembling S.709. Although he was by then in his seventies, to my ears the man behind such sounds was quite young indeed, just like the one behind the embers of Concret PH (1958), the clangorous sound fabric of Bohor (1962) and the sound clouds of his instrumental works from that period. This sonic art demanded that the listener take a clear position concerning “music” and “sound,” however different from the composer’s own position. This happened to me with Brün’s music, too, especially with early electronic works like Anepigraphe (1958), Klänge Unterwegs (1961), and computer-generated works composed after his move to Urbana, such as Infraaudibles (1967–1968) and the works of the Sawdust project (since the mid 1970s). In my experience as a listener, another similar type of musical sound came from the hard-edged analog sounds of Koenig’s Funktionen (1968–1969).

At first, most of this music sounded radically strange to my ears. In a sense, it gave voice to the stranger. Listening is welcoming. Today, my com-

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positional efforts are only relatively close to theirs, grounded in a different historical situation and in a different aesthetic. Furthermore, they are pursued by means of substantially different technologies. [I don't mean simply newer tools or more powerful computers, but more precisely a different technical rationale, a logos of technique that is historically different.] I was born in a world technologically different than that of Xenakis and Brün. Although I've devoted much time to studying their work, I never tried to imitate it, and sometimes even deliberately avoided following the corresponding constructive criteria.

Any issue of legacy, then, would be twofold: there must be something concerning "heritage" and something concerning "departure." Or, conversely, there must be something that reflects a kind of "questioning" and some other thing that reflects an essential sympathy, a binding connection: Pòlemos and philein. "Opposition is true friendship," wrote William Blake in his manuscript of The Marriage of Heaven and Hell. We might call it "dialectics"—an ambivalent, dialectical kind of legacy.

Beyond the Dualism of Computer Music

I have always been interested in merging the seemingly distinct areas of sound design and algorithmic composition. To my ears, the sound is the music. Timbre is musical form and is born out of the patterning and interaction among minute elements. This comes with a need to overcome the distinction between "orchestra" and "score" and to smooth out the clear-cut separation of signal representation and music representation. Clearly, this is not only my personal view. Indeed, in the entirety of 20th-century music, I believe electroacoustic and computer music may signify a peculiar aesthetic and intellectual potential, one that brings about a healthy confusion of matter and form, as a radical stance concerning the indissoluble intertwining of nature and culture, object and subject. [You may hear echoes of the Heisenberg uncertainty principle here, but also of constructivist modes of thinking about reality: one cannot deal with anything truly objective, anything natural, anything objectively material. To deal with something is to transform it, so the essence of "it" is a matter of speculation.] In a sense, the characteristic specifica of this sonic art is a tension towards a limit—that is, it is about the merging of the qualitative and the quantitative, in an inextricable exchange between the primacy of perception and the primacy of modern reason. This way, we are easily led into urgent questions of science and power, of ecology and environmental issues, and ultimately to politics, the domain of decisions concerning the community. The sense of philein that keeps the community together is only achieved by pòlemos and argument. They are bound together.

I am going astray, admittedly, as this is clearly not the place to dwell on such subjects. Still, I believe art deals with those subjects in a variety of ways. Xenakis and Brün bear witness. To keep to the music, though, I think they both have fostered an aesthetic, intellectual, and moral attitude toward art and human understanding, according to which nature and culture—timbre and musical form—eventually become no longer distinguishable. In some of their work, "sound synthesis" and "music composition" become one and the same. This radical approach pointed to an experiential limit. In such music, for the first time, formalized processes of composition resulted in inextricable sound textures and a profusion of sonorities.

The notion of "emergent sonorities" is crucial here. It was central to Xenakis's earlier granular synthesis efforts, as implicit in his "hypothesis of 2nd-order sonorities" (Xenakis 1992, 47; see Di Scipio 1997a for the music-theoretical implications and the perceptual correlates of that hypothesis). But it was central also to later nonstandard digital sound synthesis methods, such as the stochastic synthesis pursued first for La Légende d'Eer (1977) and later for the aforementioned Gendy3, not to mention its function as an important criterion of much of his orchestral music (from Metastasis and Pithoprakta to Jonchaires).

Brün's methods of nonstandard sound synthesis came even earlier than Xenakis's (e.g., Infraudibles, then Dust in 1977). There, too, sound becomes the epiphenomenon of implemented relationships

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among atomic elements at different time scales: one or more ground-level processes bring forth higher-level processes that give rise to an overall sonority, either a continuing sound texture or a more definite pattern or gesture. Sound is worked out by implementing compositional processes bearing on micro-time events, then reaching higher time scales, in an instance of algorithmically controlled micro-time sonic design (Di Scipio 1994a).

All granular synthesis methods can be understood as ways to cope with this question: how can one arrange particles, at different time scales, such that their patterning may eventually reveal emergent audible properties? This could be considered a question of system theory, and thus extends into issues of ecology. The making of Analogique A + B and Concret PH, for example, followed systemic approaches. Their internal cybernetics was the object of study in Di Scipio (1997a, 1998a). It is well known that computer music composers like Curtis Roads and Barry Truax have dealt with such problems in several inventive ways. More recently, other paths have been followed (for example, in Horacio Vaggione’s music and in my own compositional efforts) that represent new ways to define principles of “sonological emergence” (Di Scipio 1994b).

Questions Concerning (Music) Technology

In Brün’s computer-generated pieces and in most of Xenakis’s, the object of composing is a system or mechanism whose operations leave traces that are the music as finally heard. A mechanical process like sawing wood follows a precise design, and the sawdust is a side effect, or a byproduct. Brün put this byproduct at the center: the music is a side effect of composing, just as dust is the residual phenomenon of some process. As a byproduct, this residual is “noise.”

Someone today would be prone to tie this view with current endeavors in Internet audio art bearing on “glitch” and “sonic residualism” (Cascone 2000). A number of Web sites devoted to Internet audio art describe Concret PH as a precursor of today’s “glitch.” A protagonist of this scene, DJ Spooky, was invited to manage the tape part of Analogique A + B for a recent CD release of that work. Such a link between two historically distant musical situations is only possible because the early Xenakis pieces, decades earlier than today’s “electronica,” can be and have been described as a kind of carefully composed bruit de fond (see, e.g., Serres 1969).

Algorithmic composition can be a labor that results primarily in sound, and only secondarily in note-based constructs. This represents a thoroughly constructivist approach: nothing in the music has the status of something that exists prior to the composer’s work, not even the so-called “sound material.” Also, in subtle ways, this view lends itself less to the notion that the computer transforms our ways of creating and experiencing music than to a notion that we make music with computers because a change occurred concerning us, within us. It is because we changed ourselves, and the music changed with us, that we started making music with computers. Computer music, especially in its academic guise, is always on the verge of representing an instance of technological determinism [the theory that technology is the primary determinant of social life and developments]. Composers such as Xenakis and Brün, among others, showed that a “margin of maneuver” exists (that one should be able to find in oneself) that ultimately represents today a kind of technological indeterminism—or, more properly, of “determinism from the base” [the theory that society’s requirements are the main determinants of technological developments, and that only a variety of hermeneutic exchanges among different communities in the society finally gives rise to actually accepted technological configurations]. If anything, technology is a social determinant only to the extent that it is socially determined (Flichy 1995). This is why it is always the case that, by struggling with their tools and materials, artists actually struggle with society, as Adorno pointed out (1986; see Zuidervaart 1993, p. 97). Adorno observed, too, that an artist’s labor always implies a personal or shared “critique of technology,” but it can actually only do so only by confronting and exploiting the technology without getting rid of it. Based on such considerations, we can argue that,
today, art can confront technology in an approach of “subversive rationalization” (a term first proposed by Feenberg in 1991; see Di Scipio 1997c, 1998b).

Xenakis defined his “mechanism” as a minimal set of rules capable of allowing the emergence of a musical flow of particular properties. This approach was shared by Brün, whose Sawdust program actually included a very limited set of machine instructions (Blum 1979). A most relevant difference exists, however, concerning the cybernetics of the two approaches. Whereas Xenakis’s “mechanism” is stochastic and thus essentially non-deterministic, Brün’s could be seen as thoroughly deterministic, or even hyper-subjective, and could be also considered as an instance of a “critical theory of [music] technology” made audible (Di Scipio 1997b, 1997d). The difference is heard as two distinct universes of sound.

In recent years, I have observed that both approaches featured a kind of “ecological inadequacy.” (This is not a statement about these composers’ music, but only an observation in composition theory.) They tended towards self-organizing systems, but only to the extent that self-organization resulted in homeostasis, namely, a progressive reduction of information, a compulsory path towards a definite, though unforeseen, end. For example, Xenakis’s stochastic rules (as used in a number of works, including the computer-generated scores of the ST series, beginning in 1962) did not implement an “observing system” (term coined by Heinz von Foerster). The composer’s algorithm, or “mechanism,” could not change its own behavior based on a knowledge of its own previous states. Indeed, the spectrum of probabilistic functions allows for one only global property to emerge, an ineluctable rush toward the average final point or “mean state value” (i.e., stochos, destination, destiny). Xenakis’s compositional algorithm, then, needed to be reinitialized and re-started many times for the output cloud of sounds to exhibit significant changes in sound and overall structural orientation. In works thus composed, each re-initialization yielded a separate musical section. (Analogique A + B and ST/10 are typical examples.)

On the other hand, Brün’s approach (e.g., Dust, More dust, and Dustiny; see Grossman 1987) often resulted in a closed system living in a vacuum, abstracted from any surrounding ambience or medium, having no context, no feedback from external conditions (perhaps paradoxically, as this approach anyway opened to vivid sonic manifestations of the composer’s own very lively and acute perception of the social context). Just as in Xenakis’s case, here the composer should be seen as an integral part of the overall compositional system or “mechanism,” and as the sole source of creative information and flexible adjustment that injects a little noise into the machine, resulting in unexpected developments.

At this point, I have already mentioned aspects of both “heritage” and “departure.” By “heritage,” I mean an atomic representation of sound, micro-time composition, the merging of sound synthesis and algorithmic composition, with emphasis on emergent properties—a “critical” and inventive approach to the technological environment of composing. By “departure,” I mean a need for different principles of sonological emergence, closer to an ecosystemic view, and a sonic attention more focused on the centrality of “noise.”

**Toward an Ecosystemic View of Composition**

By the late 1980s, I started looking into these matters in my own composing. I first addressed the notion of chaos (iterated nonlinear functions modeling feedback systems, showing a quite articulated and varied dynamic), then a notion of the musical work as a kind of “ecosystem”—namely, as a system in continual exchange with the surroundings and with its own history. It had to be an “observing” and “self-observing” system. The traces of a system’s own past are traces it has left in the ambience. The ambience, in turn, causes the system to leave further traces of its own existence. I was influenced not only by Heinz von Foerster’s notion of “observing systems” (e.g., von Foerster 1960), but especially by Humberto Maturana’s and Francisco Varela’s theory of autopoietic systems (Maturana and Varela 1980), that is, systems capable of
self-regulation upon contact with the ambience [such as living systems].

In actual composition, my first step along this line was to drive granular sound synthesis or processing by means of mathematical models of chaotic systems (Di Scipio 1990, 1991). This resulted in a number of works, such as Punti di tempo ("Time Points," a tape work from 1987), Plex (for double bass and 4-track tape, 1991), and other music I produced at Centro di Sonologia Computazionale (University of Padova). An extension of this research was Essai du vide. Schweigen, a tape work composed in 1993 during a residency at Simon Fraser University, which adapted a number of facilities of Barry Truax’s PODx software to my own processes.

A second step was to use iterated nonlinear functions to directly generate audio samples, using mathematical models of chaos as a sound synthesis engine. I had started this in 1990, preparing my own computer code in a variety of programming languages [and eventually Csound], which resulted in a series of five works collectively called Sound and Fury (1995–1998). Natura allo specchio ("nature in the mirror"), the last work in the series, is scored for two percussionists, interactive signal processing, and 8-track digital tape [a live recording will be featured in the Computer Music Journal 2002 compact disc]. A brief discussion of the compositional-technological concept of this work is found later in this article.

A third step was to experiment with some general criteria coherent with the above-mentioned notion of "ecosystem." This required a particular approach to interactive music that I pursued by programming with the Kyma real-time sound-design workstation. I do not mean only a kind of interactive composing [i.e., using a real-time controllable apparatus, in either concert or studio situations, as in Joel Chadabe's work since the late 1960s], nor do I mean a way to somehow synchronize machine-generated events with human performers. Rather, I mean a strategy of "composing the interaction," namely, creating a network of agents or components linked among themselves by a number of dependency rules, possibly changing over time. Similar research is documented in Hammer (1999), projected down to the level of the audio sample, inspired by physical modeling but freed from a need to replicate the mechanism of real musical instruments.

Performance resources, including conventional musical instruments, computers, the shape and surfaces of the concert hall, microphones, and so forth, can be seen as components or nodes of a whole network, and each can be made to communicate with the others and to influence them. Such is the case, for example, in my work 5 difference-sensitive circular interactions for string quartet with digital signal processing, composed in 1998 and recorded on the 2000 International Computer Music Conference compact disc. The sounds of the string quartet are granulated as the performance proceeds, but the granulation parameters are subject to changes driven by control signals extracted from the sound amplified from the instruments' bridges as well as from the total sound in the concert hall. [A number of large-field microphones are scattered throughout the hall.] Depending on the room's acoustical response to the music, the granular processing yields various sonic results, ranging from a complete 'vaporization' of the instrumental sound to more compact rhythmical gestures in some relationship to the quartet playing. The processing of noisy transient phenomena results in transparent, thin sonorities that I like to refer to sounds "filled up with short silences."

Furthermore, some sections of the string quartet score require from the players that tempo and dynamics be changed according to audible features in the granular byproducts. In turn, tempo changes and variations of dynamics will eventually cause other side effects in the granular processing. A chain of causes and effects is established, out of which a unique sonorous shape finds its way into being at each new performance, providing an experiential audible trace of the meeting of human, machine, and environment. A meeting in the medium of sound.

Observe that "space" here is not the object of technological simulation, as would be the case with the notion of "virtual space." Rather, it is the
real, material, and historical space hosting the performance becomes an active part of the music.

The premiere of 5 difference-sensitive circular interactions [Rome, November 1998] took place within a larger sound installation, called INSTALL QRTT. The members of the string quartet visited the installation site, they played, and finally left. After their departure, the soundscape of the site appeared quite different, as the computer installation could not restore the initial soundscape.

Something is welcomed, something is listened to. The one that welcomes is changed a bit after the one that was welcomed has gone. The one that is welcomed is also changed, as it too is one that listens and welcomes.

**Natura allo specchio, and the Sound & Fury Works**

The overall Sound & Fury cycle (1995–1998) calls for two or more percussionists, two actors (reading short fragments of Shakespeare’s *The Tempest*), interactive signal processing, multichannel tapes, and slide projection. Leaving aside the theatrical element, the staging, and so on, the basic concept is a kind of technological body made of various overlapping and intercommunicating strata, as shown in Figure 1.

At the most basic level, there is an algorithmic event generator—a kind of pure machine music-maker. This is a short piece of computer code that implements the iteration of a nonlinear function, generating data to feed the sound synthesis engine throughout the performance. The synthesis engine consists of a non-standard method, again exploiting iterated nonlinear functions [see below], and creates odd acoustic turbulences and, at times, drum-like sounds. At a higher level, the mapping of synthesis data and the tempo of the machine music component are modulated by control signals extracted from the percussionists’ sounds and from the total sound across the site hosting the performance, denoted as “ambience” in Figure 1. Extracted features include amplitude and density of events in time. [Note that for larger densities, amplitude and density are perceptual correlates.] The mapping of data from the algorithmic music generator to the synthesis engine can also be controlled via MIDI faders.

In short, the machine music output is molded and continually rearranged in real time by human–machine and machine–environment interactions. Technically, this requires that the computer system manage dynamic scheduling of run-time variables (available using Kyma). Furthermore, the overall computer output (machine music component and synthesis engine) is used as a kind of “au-
dible score’’ that the performers must play from, like playing from ear to some recorded music. However, because the percussionists’ playing affects the tempo of the machine music component itself and aspects of the sound synthesis, they actually play from a flow of sounds that is continually changing depending on their own playing. A strict interdependency is established: the performers’ actions change the conditions of the surrounding environment, altering the very same object that represents a template for their actions.

Crucial to the overall design is the notion that each link in the network implements a particular mapping of data from one dimension to another. Also, the creation of suitable control signals requires some sort of hysteresis, so that changes in amplitude in any one node are integrated over time, preventing too-frequent changes that would otherwise result in modulation effects. Feedback delay lines and low-pass filters are used to accomplish this (for example, with a cut-off frequency around 5 Hz or less). In short, all connections are implemented via low-frequency feedback signals.

For the overall Sound ∞ Fury cycle, I use a large palette of finely tuned parameter network configurations. In Natura allo specchio, the particular configurations give rise to a somewhat synthetic sonic environment, but one that is likely to be perceived as being almost natural. There is an ambiguity, as the sound is overtly artificial, but still preserves cues reminiscent of natural agents and environmental sonic phenomena. This is owing to the internal dynamic behaviors of nonlinear system equations in the algorithmic music component, as well as the synthesis method (described in the next section).

**Noise Textures and Noise’s Texture**

Consider the following iterated transformation: 

\[ x_{n,i} = f(f(x_{i})) = f(f(...f(x_{0},i))) \]

As a nonlinear transfer function \( f \), for Natura allo specchio I have used the iterated sine map, often discussed in chaos theory since its inception (c.f. Feigenbaum 1980; May 1977; Collet and Eckmann 1980):

\[ x_{n,i} = \sin(rx_{i,n-1}) \].

The mapping process repeats \( n \) times to get the \( i \)th sample (i.e., the \( n \)th iteration is taken as the sample). Then, the function parameters \( r \) and \( x_0 \) are automatically updated (using linear or other control functions), and the process is repeated \( n \) more times to get the next sample. The values \( x_{n,i} \) represent the sound samples. Higher iterations \( n > 8 \) yield signals having a larger frequency band, locally more similar to white noise. Usually, the initialization value \( x_{0,0} \) of the overall process is soon “forgotten”—that is, one cannot tell by any analytical means where in the interval \([-\pi/2, \pi/2]\) the iteration process started. Transient fluctuations disappear, and the overall system behavior reaches its attractor, either an apparently random sequence of numbers or a definite limit cycle. When function parameters are controlled by periodic functions, the output includes periodicity, either in the sub-audio or audio frequency range. [For further details, see Di Scipio and Prignano 1996; Di Scipio 2001b; a tutorial Csound implementation can be downloaded from the Web site http://space.tin.it/musica/adiscipi/FIS.htm.]

In the audio–video installations Sound ∞ Fury – IV. Interactive island (1997), the synthesis method is left open to the influence of the resonances peculiar to the site of the installation. The global design is similar to the one depicted in Figure 1. This time, however, it is the visitors to the installations that, by stepping through a specially built wooden island (see Figure 2), create the primary source of information out of which control signals are extracted to change the synthesis parameters and the behavior of the machine music component. The visitors are free to follow any path across the installation which includes some 500 slides created by Manilio Prignano, who also helped me in designing the whole installation.

Sound samples can also be directly obtained from a single iteration process:

\[ x_i = \sin(r x_{i-1}). \]

Thus, typically 44,100 iterations would be needed for one second of sound. This simply maps the nonlinear iteration onto the amplitude–time space.
of the digital signal. I used this straightforward approach for a short tape piece called *Intermittence* (1998), exploring a number of rather harsh audible intermittence phenomena. This work, initially composed upon the kind invitation of Arun Chandra for a concert-homage to Herbert Brün for his 80th birthday, eventually became a kind of “intermezzo” for the full Sound & Fury staging. (An MP3 version can be downloaded at the Web site http://www.artspace.org.au/autonomousAudio/discipio.html.)

**Iterated Nonlinear Functions and the Perceptual Modeling of Textural Events**

Although it represents a non-standard sound synthesis method, the iteration of nonlinear functions lends itself to a kind of perceptual modeling of textural sound events based on a time-domain synthesis method, in contrast to frequency-domain methods. It is commonly understood that sonic events of a textural nature—rain, the cracking of rocks, intermittent electrical noises, wind, burning materials, certain kinds of insects, and so forth—are often best modeled through time-domain strategies [Warren and Verbrugge 1984; Schumakler and Gilden 1993; MacKay 1984; Keller and Truax 1998]. Empirical approaches along this line of research may benefit from the perspective of auditory scene analysis [Bregman 1990]. Significantly, Bregman describes granular synthesis as a viable modeling approach for textural auditory percepts [1990, pp. 119–120].

The audible results of the iterated sine map synthesis model can hardly be likened to either white or colored noise. The rate of change in white noise and $1/f^2$ noise signals is always too fast and inevitably results in sustained, smooth, and non-fluctuating sounds. Sounds synthesized by the iterated sine map model, by contrast, feature an internal articulation of their own, as well as a kind of granularity. Phase modulations and amplitude curves are somehow “built in,” springing out of the internal nonlinear dynamics to give rise to micro-level modulations that are useful in order to approximate environmental sound textures.

The sound generated by visiting the phase space...
of the iterated function at random is heard as a kind of turbulence, a very low-frequency and even sub-audio–frequency rumble. By itself, this low-frequency narrow-band noise is a good starting point to model perceptual cues of sound events, such as boiling water, volcanic phenomena, the flapping of thin but large plates or surfaces, and so on. Higher-order iterates result in larger bandwidths, and the signal waveform shows interesting correlation at multiple time-scales (a kind of fractal shape). Energy is scattered in small phase-modulated wave packets of different lengths and amplitudes. Curiously, the sound may be reminiscent of frying oil or the cracking of rocks or embers. With some band-pass filtering, one can isolate the energy at different time-scales, obtaining a grainy, narrow-band sonority. As the bandwidth gets larger, however, sound droplets of larger and larger sizes overlap. This may be reminiscent of the accumulation of raindrops when a shower is starting. More precisely, what seems to actually change is the auditory perspective, namely, the listener’s position relative to the phenomenon (such as coming closer to the rain storm). This bears evidence of an ecological view of sound modeling that deserves further attention. (So far, only preliminary work has been carried out using this method; see Di Scipio 1999.) What is modeled is the perceptual link between the various components making up the auditory image in their mutual interplay. From changes in the perceptual link of components, we trace changes in the dynamics essential to the system’s generating the auditory image.

Welcome the Stranger

The clash of quantitative and qualitative, of number and sound, of abstraction and sensuous perception, allows the encounter of theory and praxis, concept and experience. This “collision that binds” is peculiar to the existential situation of the up-rooted foreigner—as is the case with both Xenakis and Brün. It also testifies to an element of tragedy, to which I want to briefly turn, in conclusion.

I am not assigning any strictly representational attribute to the word “tragedy.” I am referring neither to any form of theater or literature, nor to the Greek roots of the term. I am rather referring to the tragic as an essential element of human existence. In simple words, tragedy occurs when we perceive that which is—that which comes into presence before it leaves, as a soon-to-vanish presence. It is the perception of something present that makes us sense, by way of its difference, a hitherto unrealized lack of knowledge that leaves us uprooted and a stranger to the “here and now.” It implies a kind of breakdown, but an existential and even ontological one.

We feel what is present, and, at the same time, we feel compelled to find a way to it, however strange or different it may be. However, this experience is often annihilated by a notion that the present is always problematic and somehow incomplete, and that technical solutions exist to cope with that. Yet, the best technical solutions only and always belong to the future: we have a tendency to project or even “outsource” ourselves into the future, to eradicate ourselves from what is, eventually feeling relieved from the often unsatisfying, difficult, or tiresome present. In other words, “Don’t think about it, it’s going to be solved.”

The more we abstract ourselves into the future, the more our present and our presence weaken and impoverish. Actually, the present is made absent by that very projection into the future which is, however, essential to technology.

Technology is commonly viewed as the operative representation of knowledge that provides ways of efficient problem-solving. As a side effect, it weakens our perception of the present, as it always postpones the realization of optimal, best-suited technical solutions. (This reinforces the popular notion of “progress,” as well as the common sense notion that progress is “necessary.”) By removing the present, technology minimizes the experience of the tragic, and even keeps it to nil (hence the term “nihilism”).

An attitude of “problem-raising”—perhaps a different notion of technology, a “heretical” one—is instead characteristic of all art, of composition. It demands a stronger perception of, and an emphasis on, the present. It fosters a perception of the tragic. The present is uneasy, uneven, and unjust, too. It
features many contradictions. The clash of *theoria* and *praxis*—or *empireia*—also witnesses an attempt to preserve and deal with present contradictions as an alternative to turning them into conflicts to solve. Turning contradictions into conflicts is a way to deny differences, as Brün used to say. It is the same as problem-solving, in that it reflects an imperative that differences be negated as such and reconciled to unity: problem overcome, end of conflict, end of game.

Xenakis said, and made it audible in his music, that “the difference is a proof of existence, of knowledge, of participation in the things of the world” [Varga 1996, p. 50]. What is relevant here, for me, is a *pòlemos* that generates difference. It is not that life should be a battle (that would be an ideology of war), but that life is brought about by an essential struggle: being born and bearing is a struggle for life. For Xenakis, “composing is a struggle,” which is to say that composition is a kind of bearing to life, the presenting of something previously non-existent, whose presence is revealed by its difference and reveals new differences previously unseen. I would say that Brün’s composing perfectly coincides with this view.

There, human existence is primarily a question of perceiving and holding the different as different, such that a richer and broader situation is offered at any time, even in the present, and there is a chance to hold the unheard-of, the unknown—a chance to “welcome the stranger.” The “holding of the different” is *philein*, that is, love or friendship, a sense of sharing a common existential, or even ontological scenario. Thus, *pòlemos* (Heraclitus’s “originator of all differences”) is a prerequisite of *philia*, an attribute of peace. It comes into being with a peculiar noise. Beside the information-theory meaning of it, noise should be redefined as a sign of tragedy, of urgent perception of something present, the audible trace of a “collision that binds.” It is the core itself of the ambivalent, constructive and destructive, relationship that today binds us to the art of such strangers as Iannis Xenakis and Herbert Brün.

Personally, I can only proceed with them by proceeding without them. In my modest position as a composer living in today’s world, that seems a relevant lesson to learn, as they, too, had proceeded with and without other masters. Because I seem to hear this lesson in their sounds, I am warmly grateful for all those clouds and dust. In retrospect, I learn something about myself: most of my own noise now appears to me as made of many sorts of sonorous powder.

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**References**


