Fluid Neon Bright Shadows:
The Music of Iannis Xenakis

Paul D. Miller

"I originated in 1954 a music constructed from the principle of indeterminism; two years later I named it 'Stochastic music.' The laws of the calculus of probabilities entered the composition through musical necessity … But other paths also led to the same stochastic cross-roads—first of all, natural events such as the collision of hail or rain with hard surfaces, or the song of cicadas in a summer field. These sonic events are made out of thousands of isolated sounds; this multitude of sounds, seen as a totality, is a new sonic event. This mass event is articulated and forms a plastic mold of time, which itself follows aleatory and stochastic laws. If one then wishes to form a large mass of point-notes, such as string pizzicati, one must know these mathematical laws, which, in any case, are no more than a tight and concise expression of a chain of logical reasoning. Everyone has observed the sonic phenomena of a political crowd of dozens or hundreds of thousands of people. The human river shouts a slogan in a uniform rhythm. Then another slogan springs from the head of the demonstration; it spreads towards the tail replacing the first. A wave of transition thus passes from the head to the tail. The clamor fills the city, and the inhibiting force of voice and rhythm reaches a climax. It is an event of great power and beauty in its ferocity. Then the impact between the demonstrators and the enemy occurs. The perfect rhythm of the last slogan breaks up in a huge cluster of chaotic shouts, which also spreads to the tail.

Imagine, in addition, the reports of dozens of machine guns and the whistle of bullets adding their punctuations to this total disorder. The crowd is then rapidly dispersed, and after sonic and visual hell follows a detonating calm, full of despair, dust and death. The statistical laws of these events, separated from their political or moral context, are the same as those of the cicadas or the rain. They are the laws of the passage from complete order to total disorder in a continuous or explosive manner. They are stochastic laws. Here we touch on one of the great problems that have haunted human intelligence since antiquity: continuous or discontinuous transformation … Transformation."

(Iannis Xenakis, "Formalized Music" 1955)

Amongst his many other achievements, Iannis Xenakis was one of the first composers to truly engage the notion of being a polymath, of allowing a cross-fruition of different metiers to fully fertilize expression. To understand the music of Iannis Xenakis, you have to understand this. All else is an elaboration of this step towards a translatability between codes, of carrying the structures of thought through different media. Xenakis, along with physicist Herman Helmholtz, Erik Satie (with his *musique d''ameublement)* and Edgar Varese, significantly focused on the similarity between physicality and metaphor, organized sound verging on noise and its translation into signal. His presentation of "Metastasis" in 1954 was the first instance of achieving the effect of mass through the use of organized glissandi, and from that point on, he pursued his interests in sound media in a number of different ways: orchestral, electro-acoustic (electronic and concrete), and numerical (from computers and digital to analog converters). He likes to describe his

music as being based on what he called a "principle of indeterminism." In his work one finds the turbulent aftereffects of an encounter with something that seems to be a new art form, yet, conversely, one also is confronted with the echoes of ancient value systems as core elements of his compositional techniques: signal into music, music into concrete form, concrete form into transcendent engagement with the cosmos. In his Thesis defense, Xenakis was asked by the renowned philosopher of science, Michel Serres, "Why is a fugue an automaton?" and his reply speaks volumes about the cybernetic implications this style of creating music has on human consciousness. The conversation, in its own way, sums up his continual dialog with the notion that music and science go in cycles— for Xenakis, music is usually the forerunner of other conceptual developments that occur in society. Their conversation was as follows:

Michel Serres: Once again, musical thinking is in the forefront. What do you mean when you say that the fugue is an automaton, that "the fugue is an abstract automaton conceived two centuries before automated science?" I don't believe this is true. I think they coincided, if science didn't appear first.

Iannis Xenakis: Oh no, not automated science. Automated science was born in the 20th century.

Michel Serres: Not automated, but the construction of automatons.

Iannis Xenakis: That makes a difference, because the use of automatons dates from Alexandrian times.

Michel Serres: In *A Thousand and One Nights,* for example, there are automatic fountains, water machines.

Iannis Xenakis: Yes, but *A Thousand and One Nights* dates from the 12th century, the use of automatons occurs much earlier than that. The Alexandrian period already knew Heron and the first steam engine.

Michel Serres: Yes, even Archytus's Dove.

Iannis Xenakis: All of these are concrete inventions. It was music, however, which introduced its abstraction.

Michel Serres: So then, why is a fugue an automaton?

Iannis Xenakis: I think that it corresponds more or less to the definition of a scientific automaton which came about in the twenties, thanks to Weiner and cybernetics. It can be summarized in the following manner: An automaton is a network of causes and effects, meaning a temporal chain of events, eventually coupled or multicoupled with certain liberties. An automaton can be closed. It suffices to plug in energy and it works cyclically. It can be relatively open, complete with data entries and external actions, thanks to the help of buttons, for example. Every time new data entries are given, an automaton can produce different results, despite the internal rigor which defines it.

Michel Serres: Its syntaxes are repetitive but not its performances.

Iannis Xenakis: Yes, its syntaxes are repetitive. Why? Because there is an internal structural rigor.

Michel Serres: Is the fugue's syntax always stable?

Iannis Xenakis: The fugue does not constitute such an absolute automaton; it is a relative automaton, especially when compared to the automatons studied by science, which are relatively rigorous in relation to musical ones. When I say musical automaton, I consider that a minuet is also an automaton. The value specific to musical invention is that it was the first to give, to create an abstract automaton, meaning that it produced nothing except music …

(From *Arts/Sciences: Alloys, The Thesis Defense of Iannis Xenakis, 1976*)

Open yourself to the sounds of total war: not war as a physical embodiment of the political differences between obsolete nation-states, but war as an engagement with technological acceleration. War as a questioning of the human condition. War as the sounds of primal fear stitched across the empty spaces of the mind. (It has been said that Xenakis' music could only have been composed by someone whose flesh had been traumatized by steel, pierced by the stupidity of any one group of humans that try to impose their will on another.) War as the numbers at the core of human expression, a binary dissonance between presence and absence, an expression of a metalanguage we all know, but very few of us can pronounce.

In the multiplicity of sound, everything is disentangled, nothing is deciphered, "run" through (like thread in a stocking, or the glissandi of Xenakis's stochastic structures) at every point and every level, but there is nothing beneath; the space of music is to be ranged over, not violently pierced, music ceaselessly posits meaning to ceaselessly evaporate it, carrying out a systematic exemption. Letting the numbers at the core of consciousness shine through, a perpetual play and instability occurs in the unending drift across the transverse. Sound and signification? Sound and its deployment in space? This flickering of the signifier, fissuring and retarding any signified … Xenakis's gleaming mathematical constructs, his ruptured and fractured sounds: thought dissolves in the reverie, emotion unfolds in the glitter of the algorithms he uses to produce his music … This vertiginous music lies beyond conventional narrative.

Xenakis often writes about his experiences during World War II—the great social upheaval that brought us computers and refined nuclear physics, and that exposed the world to some of the greatest carnage in human history—as a kind of abstract crucible, a place that forged his fascination with turbulence. But the "stochastic method" Xenakis employs (stochastic here refers to the notion of change as a series of contingencies), has deeper roots in his own continuous engagement with extreme change.

"In my music," he wrote many years ago, "there is all the anguish of my youth, of the resistance (the Greek anti-Fascist movement) and the aesthetic problems they posed, together with the gigantic street demonstrations or the rarified mysterious noises, the mortal noises of the cold nights of December 1944, in Athens. Out of this was born my mass conception, and in turn, stochastic music." Later, he cited Harry Neville as saying, "The explanation of the world and consequently of the sound phenomenon that surrounds us, or that may be created, required an enlargement of the causal principle, the basis of which is formed by the law of the great numbers." Stochastic (derived from the Greek "stochos"—"to aim") music for him was a path away from the deterministic realm of "neoserialism" that was so prevalent in the works of composers of that time. What he would eventually describe in a 1955 article entitled "The Crisis of Serial Music", was what he felt was an ossification in the Western classical world that he saw himself as having to break out of.

As Maurice Fleuret wrote in the liner notes of a release of *The Polytope of Montreal:* "Other times, other customs: to the young, who question formerly sacred values and revolt against the confines of society, this music expresses the rage to live and think. Better still: by fusing art and science, for the service of mankind, it symbolizes the new conscience of our times."

But to stick with Xenakis's own words […], here is his account of a future defined and circumscribed by extreme flux, an epoch on the edge of continuous cultural upheaval: "In barely three generations, the population of the globe will have passed 24 thousand million. 80 per cent will be aged under 25. The result will be fantastic transformations in every domain. A biological struggle between generations unfurling all over the planet, destroying existing political, social, urban, scientific, artistic and ideological frameworks

on a scale never before attempted by humanity, and unforeseeable. This extraordinary multiplication of conflict is prefigured by the current youth movements throughout the world. These movements are actually the beginnings of this biological turmoil which awaits us, irrespective of the ideological contents of these movements. […]"

The mechanical implementation of sequential and non-sequential forms of text, music as a reference to other zones of human expression, an engagement with culture as a collective archive, asymmetries in sound as it translates into cultural signifiers, aural metonymy, electronic means of composing and deploying sound, and a host of other characteristics link the experimental compositional structures of 20th century avant garde classical music to the art form of DJ'ing. Indeed, when seen in this light, the vernacular of DJ culture has absorbed almost all of the previous art movements of the 20th century.

Excerpt from the liner notes of *Kraneerg,* Asphodel