

# Divergences and convergences between Xenakis and Cage's indeterminism

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Xenakis and Cage could be described as the two main figures in the decades of the 1950-60's who were attracted by indeterminism and used chance in their music. They emphasized originality in both their theoretical and musical works and used chance in many and different compositional ways. Indeterminism shaped a large part of their works and theoretical thinking. Sometimes, their approaches of indeterminism, and of music in general, reach up to a point of difference that permit to qualify them as "oppositional" composers. Other times, their approaches seem to converge. In this paper, the divergences and convergences between Xenakis and Cage's approach of indeterminism in music will be discussed. We will focus on the theoretical thoughts that they formulated and we will try to outline certain aspects that appear interesting. More precisely, we will discuss the traditional versus scientific indeterminism in parallel with the *western-eastern* dipole, the imitation of nature "in her manner of operation", the relation of Xenakis with revelation, intuition and emotions, and finally, we will emphasize the two composers' search of freedom.

In this paper, we compare Iannis Xenakis and John Cage, through the way each of them applied indeterminacy, chance, in the field of music. We should perhaps justify why Xenakis and Cage. The comparison of these two composers was motivated by the interesting fact that they were two prominent and particularly influencing figures of the 1950-60's avant-garde music, both fascinated by the dipole *Determinism-Indeterminism*, while each confronted indeterminism in a different manner, at times an absolutely opposite manner, creating thus a sort of a new dipole, beside the first one.

This comparison is a wide and complex issue. However, we will try to outline certain aspects of it that appear interesting, so much the more as they are offered to a transfer of the discussion from particular musical concerns to others, that touch the fields of natural sciences, philosophy, cultural studies and others.

## Xenakian and Cagean indeterminism

Both of them, in the eminently serial decade of the 50's, proposed new ways to approach musical composition. Cage was almost never interested in serialism, even though, paradoxically, as Jean-Jacques Nattiez observes, his "[...] ideas - if not his works - partially contributed to the development of the total serial technique [...]" (Nattiez 1993, 12), that is, to Boulez's matrix technique in *Structures I*. Xenakis, on the other hand, did start examining serialism, as documented in his notes in Xenakis Archives (Cf. Xenakis Archives, Cahiers 2/8, 2/9), but he abandoned it fast, while he concurrently condemned it in his famous article *The Crisis of Serial Music*; he preferred mathematics to arithmetic (Romanou 2006, 216).

One of the *solutions* that the two composers proposed for the creation of *new* music is the exploration of the indeterminate. Here, we find a major convergence of views between Xenakis and Cage, but at the same time, an important divergence; that is, in the way each one approaches chance.

These two different approaches are similar to two different definitions of the word *Chance* that we can find in a dictionary contemporary with this period, the *Dictionary of Philosophy* by Dagobert David Runes (Runes 1960):

1. Property of being undetermined.
2. Property of being predictable according to the laws of probability.

Agreeing to the first definition, Cage uses chance in his *traditional* perception, as something that happens without causality and which is out of control; as he clarifies: "Chance, such as I use it, is not something that I must control, nor that it must control me. It is not the chance of the physicist. But that does not mean the physicist's chance shouldn't exist" (Cage 1995, 147-

148). In contrary, Xenakis' aim is to control chance. He will use science, beginning with the laws of probability, in order, as he says, "to control sound masses both in their invention and in their evolution" (Xenakis 1992, 255).

In parallel to the previous general considerations, we can also distinguish two main philosophical abstractions that lie in the background of these two composers' thought: Western philosophy and Science for Xenakis and Eastern philosophies and particularly Zen Buddhism for Cage. Eugene Eoyang, comparing the western and the eastern cultural vision of chaos, that is of total indeterminism, and making a generalisation, distinguishes a "[...] traditional Western perspective, which sees it as rampant disorder, something that must be controlled or at least diminished" and an "ancient Chinese (and specifically Taoist) perspective, which sees it as primordial and natural, something that is neither threatening nor negative [...]" (Eoyang 1989, 271).

In the West, chance has always been an *annoying* factor that did not allow the creation of stable and durable rational constructions. For this reason, it became the object of scientific research, starting with Fermat and Pascal and the creation of Probabilities Theory. Xenakis approaches western science, mainly mathematics and natural sciences (Cf. Solomos 2004), with the intention to have "a reasoned support less perishable than the impulse of the moment" (Xenakis 1992, ix) and so to create a "procedural guide better suited to modern thought" (Xenakis 1992, 178).

On the other hand, in the East, the interest is in the interdependences despite the definition of concrete oppositions (Cf. Granet 1968). Determinate and indeterminate are considered as interrelated elements of nature with no need for analysis, or intervention, nor even any disturbance of their balance. Cage's intention is to leave sounds to express themselves, *alone* and *free*, without the intervention of a human being, that is, the composer. For *eastern* Cage, logic is a simplification, and art should protect us from it. He says that: "[...] unfortunately for logic, everything we understand under that rubric "logic" represents such a simplification with regard to the event and what really happens, that we must learn to keep away from it. The function of art at the present time is to preserve us from all the logical minimalizations that we are at each instant tempted to apply to the flux of events" (Cage 1995, 80-81).

Cage refers often to the Indian vision of art, not as an *imitation of nature*, but as an imitation of nature *in her manner of operation*, a statement that has been formulated by the historian of art Ananda Kentish Coomaraswamy (Coomaraswamy 1934). In Indian art, no one imitates nature as it is presented to us, since the natural phenomena are considered as an illusion, a *maya*, but we imitate the manner in which nature operates that is to say the hidden *truth* (something like the platonic *idea*) that exists, behind the phenomena. Coomaraswamy has explained that: "Art is an imitation of the nature of things, not of their appearances" (Coomaraswamy 1971, 6). For Cage, music, in some way, offers us the opportunity to look behind reality (out of the Plato's cave), the occasion to hear the sounds released from the signifieds that memory has charged them with, or, as he formulates it, "to let sounds to be themselves rather than vehicles for man-made theories or expressions of human sentiments" (Cage 1961, 10).

However, Xenakis also imitates nature in its manner of operation. We can say that western science also searches the *truth* that exists, hidden, behind the phenomena, the *laws* that condition the operations of nature, *the manner*, finally, in which nature *operates*. Xenakis' frequent references to mass natural phenomena, as that of rain or sounds of cicadas etc., attests his great interest to the role of chance in nature. But, Xenakis' main objective is not to imitate the sounds of nature, but rather the hidden *reason* to which they obey; to imitate the "divine harmony" (Xenakis 1992, 179), as he quotes from Plato. His aim is to *capture*, if possible, this hidden reason and to apply it in his music, with the help of modern sciences that, after Heisenberg, have changed our image of nature adding to it an indeterminist colour.

The imitation of nature's manner of operation will be a common and important topic for Xenakis and Cage. As Agostino Di Scipio also observes: "[...] in spite of the differences between Xenakis and Cage, one may speak about their "operational metaphors", that is, the *mimesis* of nature in its process of making, in its *poiesis*. Again, the phenomena are modelled in their internal processes and not in their form or final structure" (Di Scipio 2003, 192).

Nevertheless, Xenakis was also interested in Buddhism. The Reincarnations, the Wheel of Birth (bhavachakra), but also Orphism and the mystic side of Pythagorism (Xenakis 1992, 201), attracted his interest, as we can see through his texts, mainly in *Towards a Philosophy of Music*. In the same text, he refers to the book *Hinduism and Buddhism* of Ananda K. Coomaraswamy (Xenakis 1992, 201), and to *I Ching* considering it as a "divination practice", like a lot of others, related to the repugnance of the indeterminate by religions and philosophies, which repress chance "to the frontiers of universe" (Xenakis 1992, 205). Furthermore, on the first page of an unpublished text that is found in the Xenakis Archives (Xenakis Archives, DE 1/8), we find references to the book *The Way of Zen (Le Bouddhisme Zen)* of Alan Wilson Watts (Watts 2002) (who, parenthetically, is mentioned also by Cage in *Silence* (Cage 1961, xi)). Here, we may also mention Xenakis' great interest in Japan and Japanese traditional culture.

In the above-cited unpublished text, which according to Benoit Gibson who made me know it, seems to be a text that constituted the first part of *Towards a Philosophy of Music*, Xenakis makes a description of the music that, at first glance, could be considered as *eastern*. He writes: "Music must transcend us in areas where we will be filled with light, happiness, innocence, wisdom and unlimited knowledge. It is so to speak a catalyst, a psychic switch, a drug" (Xenakis Archives, DE 1/8). This text resembles to the well-known text in the first page of *Formalized Music*: "Art, and above all, music has a fundamental function, which is to catalyze the sublimation [...] to draw towards a total exaltation in which the individual mingles, losing his consciousness in a truth immediate, rare, enormous, and perfect" (Xenakis 1992, 1).

But these texts are *eastern* in appearance only. Below, in the same unpublished text, Xenakis clarifies that if "[...] the previous description which seems poetic recalls by certain muddy sides the far-eastern religions which cultivated partially attitudes of this kind [...], it does not constitute a kind of Perfect Buddhist Awakening not even a "Tun Wu" Zen because we think that in the Buddhist way there is inhibition against conscience [...]"(Xenakis Archives, DE 1/8).

Here, the word *conscience* is used rather as synonym of *knowledge* (as it is also marked below in the same text) and may be considered problematic, as someone can argue that in the Buddhist revelation exists as well a *conscience*, with a *deep* also knowledge. The meaning becomes clearer if we consider that for Xenakis the word *knowledge* means here (and in other Xenakis' texts) the scientific one, the *commonly accepted knowledge* that we can reach via Reason, via Logic, via Control (*Ἐλεγχος*), and not the subjective personal knowledge that we can reach via Revelation.

What is interesting in Xenakis thought is that this *logical knowledge* doesn't exclude notions as revelation, intuition, etc. Xenakis not only talks about "[...] pure logic but also about the 'logic' of emotions and of intuition" (Xenakis 1992, 178). It seems that Xenakis attempts a *deconstruction* of the dipole *Determinism-Indeterminism*, or *East-West*, remaining, however, always in a western *logical* perspective. He takes a position similar to the way 20th century western science approaches eastern philosophies (Cf, Eoyang 1989).

Curiously, Xenakis would find an unhoped-for ally in the person of Cage, when the second says that: Coomaraswamy's statement on imitation of nature's operation "[...] led me to the opinion that art changes because science changes--that is, changes in science give artists different understandings of how nature works" (Cage 1961, 194).

While Cage, in the decades of the 50s and 60s, tries to follow a way in which Indeterminism is continuously increasing, Xenakis chooses to move between the two opposite poles defining intermediary situations; as he says, between the "[...] two age-old poles, which are unified by modern science and philosophy [...]. Between the two poles actual everyday life goes on, partly fatalistic, partly modifiable, with the whole gamut of interpenetrations and interpretations" (Xenakis 1992, 178).

### **The search of freedom**

Perhaps, the main convergence between Xenakis and Cage, which may also *explain* their huge interest for Indeterminism, is their *need* for unconditional freedom. Both of them wanted *to go beyond themselves*, to surpass their individuality and open it towards something more general.

The attraction that they felt for indeterminism is also related to the fact that the principal consequence of a deterministic philosophy is that free will is an illusion. In contrary, beginning with Epicurus, as Xenakis points out, chance constitutes the essential condition for the existence of free will.

As Makis Solomos observes: "In fact, for Xenakis, the absence of causality, indeterminism, is synonymous to absolute freedom, to a world without rules [...]" (Solomos 2008, 117). For Xenakis, freedom is closely interrelated to originality. "The idea of originality", he says, "is linked to the question of freedom. The value of art, of the artistic offer of a person, of a nation, of a culture, depends on originality - this fundamental freedom" (Xenakis 2001, 120). So, he uses indeterminism as a means to reach the field of freedom and originality. The request for Xenakis is the asymmetry that can be achieved via chance: "Thus I fix the higher level of my freedom", he says, "symmetry not to exist at all" (Xenakis 2001, 129). Stochastic allowed him "to seed points arbitrary", to break the symmetry, and "in this case," as he says, "my freedom is identical with the quest for chance" (Xenakis 2001, 129).

The freedom that Xenakis searched for, besides his juvenile *heroic*, anti-Nazi period, was also an inner freedom. As he writes: "Music is a means to liberation. Initially to realise one's self" (Xenakis Archives, DE 1/8). However, he knows that the search for freedom seems to be vain. He says: "The struggle for freedom, that is, to go beyond myself [...] has not an end. It is merciless and hopeless" (Xenakis 2001, 128). Xenakis appears to have something *dramatic* and to be aware of it.

*To go beyond himself* was also sought by Cage. He, also, used chance for the same aim; to be released from himself, from memory, from the past. For him, the pursuit of freedom was individual, but it was as well social-political reaching the point of *anarchism*, through the unlimited freedom that, according to Cage, offers art interconnected with everyday life. Cage, under the influence of Marshall McLuhan and Buckminster Fuller's utopian globalism, became part of the 60s social movements. As Judy Lochhead observes: "While composing against a background of chaos as creative force, Cage also articulated an aesthetic of liberation that was resonant with not only other events in music but also the American culture of the 1960s in general" (Lochhead 2001, 234). Similarly, here, we can think of the graffiti slogan "Xenakis, not Gounod" in the French May 68.

## Epilogue

Xenakis and Cage's offer to music is important; they tried to expand its limits. The way they did it seems to contain contradictions. Xenakis sought the reconstruction, the formalisation of music, connecting it with sciences, with logic but simultaneously with the "'logic' of emotions", of intuition and of "revelation" (Xenakis 1985, 33). Cage didn't seek the reconstruction, but rather the deconstruction of music, connecting it with Zen, with the absurd that looks like logical, the naïve that looks like well aimed, and the irony that looks like wisdom. If Xenakis has something *Dramatic*, then Cage seems to have something *Aristophanean*.

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