Physicality as a performer-specific perspectival point to I. Xenakis's piano work: Case study *Mists*

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The current paper is attempting a hands-on approach to Xenakian piano performance practice, using *Mists* as a case study, while also reflecting upon the problematic status of performative physicality in current Xenakian scholarship. Starting off with S. Kanach's *Performing Xenakis*, I detect two poles (the body as obstacle versus the body as transparent object) in the keyboard performers’ references to physicality. Subsequently, I rethink a list of the most common challenges (physical effort, non-linear keyboard, complex rhythm, form and detail) against a historically informed background, including: a reading of G. Sandor's *On piano playing* (pre-Xenakis) under the light of ideas on embodied and extended cognition, as presented by M. Rowlands in his *The New Science of the Mind*; plus insights and remarks gained from New Complexity theorization (post-Xenakis). The emerging notion of corporeal navigation, demonstrated through multi-layered tablatures, is hopefully a useful tool towards the demystification of difficulty in Xenakian performance, as well as an original contribution in the construction of a much needed performer-specific discourse for complex music, focusing on physicality and non-serial learning.

The role of performative physicality in current Xenakian performance practice scholarship

The initial ideas for this presentation were inspired from the panorama of testimonies from Xenakis's renowned performers in S. Kanach's new book *Performing Xenakis* (2010). As often is the case with contemporary performance practice scholarship, I was struck by the position physicality holds in the keyboard performers' discourse: Extreme physical effort, as integral part of a "philosophy of surpassing" on the one hand, or a mind-centered, disembodied approach, which prioritizes an objective understanding of the Xenakian sonic image on the other, seem to predominate. The two poles, contradictory as they may seem, are actually complementary and reflect the traditional dichotomy between Technique and Interpretation (and its own aporias). A danger of further mystifications regarding physicality, through either quasi-athletic fetishization or sheer absence from the discourses, is here palpable. In the current discussion, I will attempt to elaborate in a different understanding of performative physicality, as the performers’ per se mode of existence inside Xenakis's work, using *Mists* (1980) as my case study.

Background and Aims

If Merleau-Ponty's basic thesis describes, as I believe, perfectly performers' ontological position: "we are not an abstract, absolute consciousness, but in some way inserted into the world of space and time,[...] and it is our embodiment that realises this insertion" (Baldwin:6), then, in my outlook, embodiment will be treated as an immanent layer and solution to a highly disembodied notational object.

The skilled body is not only executor, but also assumes the functions of:

i) a locus of information for energy saving;

ii) an interface for information processing;

iii) a vehicle of navigation inside the work.

These concepts owe a lot to *models of embodied and extended cognition*, as discussed in the work of the american philosopher M. Rowlands.

In terms of the more familiar, even though rethought, "task and challenge" domain, I will address the issues of: effort and energy expenditure; Xenakian textures in relation to non-linearity; complex rhythm; and eventually learning process as corporeal navigation in a score rather than serial arrangement of tasks. The latter point is ambitious enough, in trying to
address on performative terms Xenakis's own architectural sensibility for calibrating detail against the perceived whole.

Next to my own insights as a performer, developments after Xenakis, especially in the field of New Complexity, as well as traditional accounts of piano performance, will be establishing historical interconnections, as a measure of the Xenakian performance's exoticism.

**Pole nr. 1: Effort and Challenge in Xenakis**

Association of physicality to extremities and effort forms an unquestioned consensus between scholars, performers, and more importantly the composer himself. In the context of his reference to what he calls the Xenakian "ecstatic gesture", M. Solomos writes: "Xenakis aims at sheer physical pressure. [...] the performer is being asked to realize a feat". And also: "With Xenakis, since it is impossible to tell the "wrong" notes, virtuosity is measured as pure consumption of physical energy" (Solomos: 157). As for the performers, we can't find a single one who wouldn't attest to what C. Helffer very succesfully calls "a philosophy of self-surpassing" (Helffer/Kanach: 112). M.-F. Buquet's comment on performing *Evryali* sounds like an echo of Solomos's previous quote: "It is not a question of catching one's breath, but of finding enough consumable energy within one's own body" (Buquet/Kanach: 69).

Xenakis has been clearly very conscious about triggering this utopian drive of performance, a kind of expression resulting from the sheer strive to realize the unattainable. This can be easily deduced from his own testimonies- for example his interviews to B. Varga- or some of his performance prefaces to notoriously difficult works, like the piano concerto *Synaphai*: "the pianist plays all the lines, if he can" (Xenakis: 1969), in an explicit invitation to the impossible.

**Pole nr. 2: Mind-centered and composer-specific approaches**

As for the other pole evident in the piano performers' contribution, the disembodied approaches: those could be epitomized by S. Thomopouloso's ending lines on learning *Synaphai*: "The pianist must be prepared to deconstruct his/her physical reflexes in relation to the keyboard. [...] Xenakis's keyboard can never be considered as physical space in association with the physiology of one's hands, nothing is there to reassure or stabilize one's physicality" (Thomopoulos/Kanach: 127-128), echoing Xenakis's own anecdotal saying: "music is not realized by one's hands, but by one's brain" (Kanach: 121). Other disembodied examples of performers' discourse are plentiful-ranging from traditionally analytical approaches, to descriptions of the learning processes mostly involving mental work away from the keyboard (R. Woodward's learning account of *Keqrops* is very characteristic in that respect, bringing to mind Leimer and Gieseking's ideas on memorization as exposed on their *Piano Technique* (1972)).

The suggested "deconstruction of physical reflexes and of keyboard space" is a latent manifestation of what New Complexity theorist F. Cox has called a "High-Modernist Model of Performance Practice", assuming a "[...] "noise-free", transparent relationship between all elements of the communicative chain [between conception, notation, performance and reception]" (Cox: 71), and against which New Complexity provides a paradigm shift. A fully deterministic notational image is assumed able to fully represent the sonic phenomenon, and dictate concretely specified tasks to the performer, turning physicality into a transparent tool (what Heidegger would call equipment ready-to-hand (Heidegger: 104-105)).

This is also the context, from which attempts of "para-human" realizations, heavily rejected by Xenakis himself, are trying to draw their validity: "None of the present compositions is really capable of being interpreted "correctly" [...] which triggers "the desire to hear a composition exactly as Xenakis had in all probability imagined it" (Sora: 6).

If the body is indeed considered as a transparent tool for interpretative purposes in Thomopoulos's sense, I cannot see the reason for not considering para-human renditions as completely legitimate (other than a generic notion of human fallibility, which results in striving as expressive element). To my mind, it is exactly Xenakis's paradoxical and ingenious ambivalence, the production of a complex disembodied score to be corporeally attempted, which not only invites rather a reconstruction of physical reflexes (in place of their deconstruction), but also grants them with the possibility of an elevated ontological status.
**Embodied and extended cognition**

In the place of the traditional Technique/Interpretation model, I will suggest one influenced from embodied and extended cognition, whereby embodiment is a non-eliminable part of the very cognitive processes of performing learning and performing Xenakis.

In his most recent book *The New Science of the Mind* (2010), M. Rowlands offers an overview of a cluster of theories, comprising the beginnings of a non-cartesian cognitive science. Early cornerstone influences (such as Gibson's *ecological theory of visual perception* or Luria and Vygotsky's *account of memory*), along with current parallel research (e.g. Shapiro's and Damasio's research around the *embodied mind*, Clark and Chalmer's *active externalism* etc.) form a formidable corpus of references (Rowlands: chapters 2-3). Their common nexus is located in the *attenuation of the role of representation*, combined with the *augmentation of the role of action*.

In the context of learning and performing Xenakis, this feature would translate as follows: part of the internalization of *mental representations* in the form of notation, is substituted with the action (manipulation, exploitation, and transformation) upon appropriate information-bearing structures, including the score, the body and the instrument. This embodied and extended activity constitutes *in itself* part of the cognition or "understanding" of the work: learning how to *plug into* the score is learning the work.

The advantage of this enacted account is that it allows for the immanent presence of the performing body and the instruments, and thus stands closer to the real performance situations, without fetishizing the physical for the mental or vice versa. Its novelty is understood in relation to both disembodied and challenging approaches, as transcending the Technique/Interpretation dichotomy and its aporias (the body as problem/the body as absence).

**Tasks and Challenges reconstructed**

**Nr.1: Effort**

Energy-saving strategies are *at least equally* important to energetic striving, exactly because of the extremity of the required tasks. A modified understanding of: i) physicality in piano performance, and ii) how it relates to Xenakis's structural notions of continuity and discontinuity, will hopefully demystify its role as a solution rather than a problem. Avoidance of injurious tensions, as well as of the danger of disregarding subtleties in Xenakis's performance, without sacrificing aesthetic intensity, are here the aims.

**G. Sandor's On piano playing** is a very good example of how economy of energy expenditure can be thematized, through i) an exhaustive analysis of instrumental technique, and ii) its organization in patterns of action corresponding to notated formations, thus a sort of *physically constituted "code" for scores*.

In a previous paper (Antoniadis: 2010) I have analyzed Sandor's ideas in the light of ideas on embodied cognition (under the title of "environmentalism"): in this sense, the body is already in itself an invaluable *locus of information* about how actions can be achieved at the least internal cost; the pianist is invited to tap into that source and actively manipulate it, rather than strive through pressure and development.

Some universal principles of performative efficiency thus understood, include:

- a) the awareness of gravity as an energy source collaborating with our own muscular energy, with the purpose of minimizing our own contribution;
- b) the development of muscular *coordination* and the optimal distribution of tensions, as opposed to muscular strength and endurance;
- c) the speed of the hammer as the central parameter in generating dynamic differentiation; and
- d) movement as antidote to tension-generating fixations.

While these remarks remain valid for Xenakis, Sandor's "code" for translating notation into gesture is significantly short-circuited due to the complexity of textures and disembodiment of
the notation-more on that will be exposed in the non-linearity section of the current. Xenakian surpassing will be examined against this background of *maximized efficiency with minimized costs*, rather than through the distorting lenses of an omnipresent comparison to the olympic ideal of "Citius-Altius-Fortius".

**Xenakis's sound and the piano**

One of Xenakis's main conceptual and sonic features, the notion of *continuity*, seems incompatible with a very basic characteristic of the piano sound, namely its *rapid decay*. The most notoriously challenging Xenakian contributions to piano literature, namely the tremoli in *Synaphai* or the repetitions in *Evryali*, result from this incompatibility. In my case study here, *Mists*, the requirement for continuity is manifested in the legatissimo character of the linear materials, random walks or arborescences (Figure 1, Examples 1,2), as well as in the instruction for non sec and unpedalled sounds *to be held as long as possible* in the stochastic section (Figure 2, Example 3). In some cases, namely the 4-part linear unpedalled random walks, the legatissimo character is indeed taxing, while holding the sounds as long as possible is often simply disregarded in most recordings of the work, resulting in some undesired gaps in the mists of the stochastic section.

This challenging incompatibility should however be calibrated against other characteristics of piano sound and technique, which are actually relieving part of it: the piano sound, however short-lived, *cannot be altered after attacking*, making one of Xenakis's favourite tasks of sustaining a note easier than in any other instrument: it just means keeping the damper away from the string, thus either keeping the key down with a minimum of effort, or using the pedals. The instantaneous nature of the pianists' actions allows for energy-saving towards the subsequent actions. This characteristic I will call a "passive" form of economy (*not doing*).

At the same time, a notion of "active" economy, as the saving of muscular energy through employment of gravity through motion (along Sandor's lines), is the key to avoiding fixation and excessive tension on the performing mechanism. This notion is highlighted in another Xenakian sonic feature counterbalancing and complementing continuity: fragmentation of chaotically moving surfaces. The very fact of *rapid disposition all over the keyboard* in stochastic parts like the previous one, makes it actually physically *easier* to play loud and avoid stiffness as a result of fixation, due to the greater facility in employing gravity and generating the desired speed in the hammers. This fact might also be part of an explanation for the great role of energetic striving in contemporary performance practice in general. What surfaces here, is the need for more inner articulation of complex formations, thus the co-ordination of *strive* with *accuracy*. A mist is better perceived in the presence of clearly delineated shapes behind it!

The interplay between passive and active economy can be perceived in the aforementioned 4-voice unpedalled linear random walks: while the *marcato fortissimo* character can be very well facilitated through employment of forearm rotation (active economy), the requirement for legato shows towards a "closer to the keys", more restricted gesturally approach (passive economy). The idiosyncratic co-ordination of those two aspects constitutes an example of how "interpretation" of a passage is calibrated through physical facts and choices (e.g. individual hand span will affect more or less use of rotation and marcato or legato sound qualities, different degrees of keynoise will come out etc).

This universal dialectic between movement (as active economy) and economy (as passive economy) in piano technique will become here our guiding thread through Xenakis's music, substituting physical tension with movement. It will also assume the wider meaning of *navigation*: the physical movement inside the piece for the appropriation of the information contained there (the body as an *information processing interface*).
Figure 1. Linear materials in *Mists* (Random Walks in bars 16-18, 18-22, 24-25 and Arborescences in bars 14-16, 22-24).
Dans tout ce passage et dans ceux semblables à celui-ci, les durées des notes sont maximales dans la mesure du possible, sans indication plus long. See en tête de page.
Throughout this and similar passages the notes are to be held as long as possible, except when 'pas sec', 'au sec' or 'tissu sec' is indicated.

Figure 2. First stochastic section from *Mists*. 
Nr.2: Non-linearity

On the Kanach's performers' part, "non-linear keyboard", as a result of Xenakis's pointillistic textures, is a domain which invites the only more practical references to performative physicality. All performers agree on the quintessential role of calisthenic memory in mastering this aspect of Xenakis's piano music. According to Buquet's words: "there is a whole school of piano technique that professes what we call digital memory: it is as though there is a guiding line [...]. Here, it is a question of being able to approach that line from each and every direction without ever fearing that one will end up at a dead-end; it is necessary to create new tools" (Kanach/Buquet: 67).

The new tools demonstrated below aim at reassuring one's physicality in performing Xenakis, as well as at using it in order to effectively group what on the paper looks disjunct. In this sense, physicality is not only perceived as a tool, but also as an interface for information processing in itself.

In this demonstration, I will show the emergence of a tablature for Xenakis's stochastic parts of Mists, a sort of outside time gestural ground, which is inner and hierarchically articulated in distinct gestural units. Links to traditional ideas on piano technique will allow us to evaluate the degree of exoticism and challenge.

Emergence of a tablature

Example 4i: Xenakis's score of a rather dense stochastic part in Mists.

![Example 4i](image)

Figure 3. Mists, bars 45-46, first dense stochastic passage.

Example 4ii: my own transcription of the same, in i) 4 staves, avoiding octave signs, and thus making the distribution of pitches (and thus movement) in space clearer ii) removing the 16th stems which striate the time-space. The resulting image clarifies the previously used term "disembodied score": one not pertaining to inherited instrumental traditions, ignoring occasionally instrumental limitations, and referring to non-gestural and non-linguistic constellations of sound. In that and similar passages it simply takes some time to decide about the distribution of materials in the pianists 2 hands (and thus Sandor's "code" for translating notation into gesture is short-circuited).
Example 4iii: A representation of my suggested physical groupings, with different colours for the two hands: starting off from the hand grasp as the gestural unit emerging with romantic pianism (as opposed to a finger-based understanding featured in Buquet's account), 3 types of groupings are discernible: a) hand grasps (what one can simultaneously grasp, even though one might not be required to) indicated with big circles, b) quasi-grasps (keeping the configuration of fingers 1 to 5 but not being actually physically graspable) indicated with coloured arrows, c) edges (individual notes or short groups that stick out from grasps at a distance) indicated with small circles or dots connected to grasps with straight lines (and thus associated physically with leaps). From now on I will refer to those 3 gestural types as neumes, indicating their outside time gestural content.

Figure 4. Transcription of bars 45-46.

Figure 5. Physical grouping. Blue and orange correspond to right- and left- handed gestural formations respectively.
Example 4iv: The *neumes* are further clarified in space via their respective register, labelled with positive and negative numbers, in relation to the efficiency of an area for a given hand (negative octaves signifying the move of the hand in a less efficient area, resulting in different upper arm and body positions). At the same time, the pitches and finger numbers are away, signifying the movement towards a different layer of the tablature, where the focus is not on hand grasps, but on arm movements.

![Example 4iv: Register Assignment](image1)

Figure 6. From hand grasps to arm movements.

Example 4v: The trajectories of the connecting motions between the initial groupings are representable through purple curved arrows.

The direction of the curvature in both the connecting motions and the quasi-grasps reflects the most effortless movements of the arms, in a perspective which matches the pianist's upon rotation of the tablature by 90 degrees clockwise: in movements from the centre of the keyboard to the extreme, the curvature points outwards (away from the keyboard), and from the extremes to the centre, the curvature is inwards. In both cases, facilitation of the fingers is achieved through a proper participation of the *upper arm*, in an extension of the traditional motions for playing linear events like scales or chords. Here is Sandor's description of the latter:

> In scales toward the extremes of the keyboard the upper arm uses small, pendulum like motions while the body moves forward; in scales toward the center it will stay out at all times, away from the body as far as necessary while the body leans backward. Activating the upper arm is the only way to facilitate the fingers (if the upper arm stays out for an extended period of time, then the shoulder muscles need relief which one finds lowering the arm occasionally toward the torso) (Sandor: 65).

A third necessary motion, is the one associated with rapid and continuous changes of direction in the keyboard space (as opposed to monodirectional events like scales or chords). I represent this as a straight line. This type of motion, which I most often associate with and use in the type of events I called edges, is corresponding to the traditional forearm rotation, traditionally used in patterns of constant change of direction, and properly adjusted to the extremities of the writing: "When the intervals increase and the axial rotation of the forearm no longer suffices to reach the note comfortably, we add lateral motion to the rotation of the forearm by rotating the upper arm on its own axis" (Sandor: 85). Interestingly enough, as tempo increases and with it also the frequency of direction change in the keyboard space, the edgy rotation can start substituting some of the smoother arm movements.
Conclusions

Comparing example 4vi (Figure 7) -what I personally like to call a "folded version" of the tablature where larger patterns of movement are identified and sketched- with example 4i (the original score), one can make the following comments:

a) The decoupling from a completely disembodied notation becomes visible and at the same time relieved, as two linear trajectories of motion -what I called gestural ground, hierarchically articulated in 4 types of events: grasps, quasi-grasps, edges, and in between motions- emerge out of a non-linear constellation.

b) The amount of disposition on the keyboard is not that dramatic, given the fact that the hands can remain in the positively assigned registers for most of the time. The same applies to the amount of pitch information for each neume, constituting an argument for the latter’s fitness as a manageable chunk of information (as opposed to a disembodied, understanding-based approach).

c) The layered nature of gesture (fingers-grasps-arms), as represented in this tablature, corresponds to a layered understanding of form, and introduces the notions of corporeal navigation and in-time sculpting: in the place of serial accuracy learning, a more flexible movement between those distinct embodied layers is conceivable, their co-ordination being the ultimate target for performance. Prioritization of this focus constitutes interpretation, in the sense that focus on e.g. appropriate arm movements might facilitate a faster tempo sacrificing some of the pitch and dynamic accuracy, or producing desired or not amounts of keynoise (as in the lateral rotation), focusing on fingers can result in rhythmic and dynamic detail, grasps can be very important grounding points for re-focusing, and so on.

d) The relation of those gestural units to traditional technical patterns gives a measure of their exoticism and difficulty and helps us demystify the whole notion of a new xenakian geometry on the keyboard and what would that mean.
Nr.3: Complex rhythm

The universal principle of movement as an antidote to tension can be extended into the notoriously mind-centered domain of complex rhythm. Here we will try to show how a process of corporeal navigation between different embodied layers of the rhythmic structure becomes quintessential in approaching notated objects which escape clarity of understanding due to complexity. The most demanding rhythmic challenges in Mists take the form of mosaics of multiple non-coinciding polyrhythms, mostly associated with linear random walks (as in Figure 1)-later in the piece also with arborescences. Despite the facilitating factors of a guiding beat of constant sixteenths and the clarification of nodes by Xenakis, accuracy and its proper approach in the learning process remain here a big issue.

Traditional approaches

The tools that have been developed for challenges like this, are typically orbiting around what F. Cox names "mediation/conversion techniques" (Cox:95-102): attack points are ordered according to their distance from the guiding beat (expressed here in decimals, example 6); and/or all polyrhythms are transformed into the relative metronomic speeds in relation to the basic tempo (example 7).

Figure 8. Mediation Techniques applied in Mists.

The term "mediation" indicates that one is not actually learning the notated rhythms, but rather uses translations of them around more familiar materials (beats and tempi). They are merely tools which facilitate coordination of lines notated independently, and in that sense no one alone is adequate for the verifiably absolutely correct performance of the rhythm. As S. Schick puts it, in his own account of approaching such a notational object (this time, during
the process of learning Ferneyhough's *Bon Alphabet*: "Guessing is an underutilized strategy in solving difficult rhythmic problems [...] where any common multiple strategy would be unmanageably complicated" (Schick: 105). While the latter phrase sheds a rather non-cartesian light to the notion of "understanding" a rhythm, Cox is criticising such techniques as "degrading challenges in the realm of irrational inflections rather than elevating them in the realm of the musically "real"" (Cox: 100-101).

**The approach of embodied navigation**

To my mind, two are the main problems with these learning strategies: i) the abstraction of rhythm as a problem from other parameters, such as pitch or dynamics, which are definitive of the gesture to be applied (so the mind-centered problem), and ii) the serial building of a singular time-line, disregarding the layered and nested nature of rhythmic tasks.

In my own process of learning passages like that, I found it rather more important to keep always *in touch* with the gestural ground, a *horizon* against which one focuses, while gradually refining the rhythmic accuracy, always on the instrument and always with an inseparable physical participation, instead of building a series of resolved and fixed tasks. The notion of navigation emerges here again, between the following layers:

Firstly, the *outside time ground of gesture* as exposed before. In this case, this would give us example 8i: the polyphonic weaving has been transformed into a series of chords in two hands, while the letters R+L correspond to Legato and Rotation respectively, indicating the combination of technical patterns for it to be played and the curved arrows showing the arm-movement trajectories. Rotation becomes more important as tempo increases, sacrificing in extreme cases some of the legato character for extremity of dynamics.

![Example 8i: Ground](image)

**Figure 9.** Gestural ground for *Mists*, bar 9-11

The mediation techniques mentioned above, in combination with what I consider a more organic approach focused on *pulse* and *speed*, are used for *rhythmically sculpting this ground*: For one-handed beam-based structures (8ii) alternating focus on each of the individual lines, in the form of *finger-based attunings of the relevant hand-grasp succession* is usually an adequate process, especially in a faster tempo which facilitates the equal distribution of notes in the given space. Alternatively, one can learn also the metronomic speed conversion of each polyrhythm in relation to the beat.
Figure 10. Bars 9-11: One handed beam-structures: grasps (blue circles), fingers (red digits).

For actually finely coordinating the two hands, switching focus from hand to hand or line to line is inadequate. The finer level of detail is on the contrary very well served from the decimals technique (8iii) - and in such, I practice each individual note as a properly ordered appoggiatura to the next 16th note. The physical focus here turns into a more melodic, linear succession of fingers, happening as slow as necessary to control the sound quality.

Figure 11. Bars 9-11: Serialization of complex rhythm.

As a 4th structure (8iv) I would define the performative tempo of the whole, thus choosing the proper pulse (which gives a very different physical focus if it is an eighth, a quarter or a half note. Different landing and take-off, or breathing, points are experienced in relation to gravity).
The difference of such an approach should be clear when juxtaposed with work in a traditional polyphonic manner: in such a case, one learns a mental representation and sonic equivalent of each individual voice/rhythm, favouring thus an analytical understanding, as opposed to the emergence of the refined detailed gesture from the initial (but also immanent, since it exists in the final performance) fluid whole. Beware that the difference is though not one of a top-down or bottom-up approach: it is rather about the immanent role of physicality and gesture in the process of interweaving texture and rhythm, as opposed to the analytical, mind-centered approach.

Coming back to the navigational aspect: it is clear that no one of the four structures described is alone capable of providing sufficient rhythmic accuracy and playing capacity. The rhythm is disclosed through movement inside the passage, deciding i) where to stop (focus) ii) which is the vehicle of the movement or localization of the focus; horizontally (how far do you go) and vertically (on which layer of detail do you focus). The focus is always happening against a horizon of gesture. The qualities of this movement, such as speed, viscosity, direction, focus, define the performed outcome.

Nr.4: Form and detail

In search of Xenakis's notational ideology

In his early text "Aspects of Notational and Compositional Practice", B. Ferneyhough refers to notation's "implied ideology of creation" as a presupposition for a "renewed esthetic foundation of closed form". In his own work, this ideology is manifested through the famously dense and detailed notational surface, which invites performer's choice as to the i) order of exploration and ii) prioritization of materials (Ferneyhough: 4).

A question that raises here is: can we trace an implied ideology in Xenakis's notation? And if so, what are the implications for the paths during the learning process and interpretation as prioritization?

I wouldn't like to focus here on New Complexity foreshadowings, through prioritization as necessary omission of information due to unplayability, like in *Synaphai* or *Evryali*; but rather, on a least celebrated aspect of Xenakis's notational ideology: the paradox between massive, but clear in its totality design, often initially conceived in drawings, and mind-numbing complexity due to the use of traditional notation, in itself very often polyphonic in nature. The handling of this paradox constitutes to my opinion the main performative challenge in Xenakis, to engulf and interconnect all the rest.

Here are two Xenakis's quotes which shed some light to this search of an implied notational ideology.

One comes from the famous for introducing the notion of probability and attacking serialism "La crise de la musique serielle"(1955): "Linear polyphony is self-destroyed due to its current
complexity [...] There is contradiction between the system of linear polyphony and the audible result which is surface, mass" (and Xenakis's return to probabilities in the 70's legitimizes a strongly felt echo, despite the historical and stylistic distance).

If seen in relation to his pronounced architectural sensibility:

"Instead of starting from a detail, like a theme, and building up the whole thing with rules, you have the whole in mind" (Kanach: x),

then we have very strong implications for i) a grasp of the whole from the very first learning stages and ii) the prioritization of performative elements which project that whole. But this prioritization has to be calibrated against the paradoxically highly polyphonic and analytical traditional notation, in a way which does not produce generic results. As Sora puts it, it is: "[...] lengthy stretches of enormous complexity and multilayered writing, which in reality cannot be mastered by any interpreter" (Sora: 6), thus inner articulation of the massive effect and distinction of polyphonic entities, rather than clouds and galaxies in themselves, that pose problems.

To put it in a very empirical way: how is a mist to be built? How clear and discernible are the limits of objects inside that mist supposed to be?

**Grasping form in Mists**

The already introduced notion of corporeal navigation emerges here as i) a way to cope with this pronounced ideological tension between conception and notation, in ii) a way which does not favour the perception of the intended whole as neat mental image, but rather as disclosure through the vehicle of performative physicality.

 Allow me here a "stream of consciousness" excerpt from my own diary during learning Mists:

"I never start learning smaller chunks serially and I never do it away from the instrument. I always try to scan the whole several times (quasi sight-reading), usually mapping it with very detailed fingerings and positions at first and increasing speed of access later as well as "folding" it in tighter units. The outcome constitutes the ground of gesture. I always insist on the physicality of that movement, but it is always taken for granted that this involves also analytical insight, even of a more intuitive type. According to how things evolve, the navigation focuses on different hierarchical levels, freely sculpting detail or becoming aware of larger units. The question of continuity becomes here crucial through the question of interrupting it: Where does one stop when learning? When I get tired of detail or feel physically and mentally fixated, I move either forward or on another hierarchical level, in between hierarchical levels and structures. When I feel dizzy out of too much movement and very unfocused, or in danger of a generic approach, I smoothen out my navigation by repeating... and so on. A continuous process of stratification of a smooth score space (and vice versa, a smoothening of the highly stratified notated score, in a Boulezian/Deleuzian sense), a sort of higher rhythm of learning is always there to organically interweave things together. Usually it is not very much time, until I get a certain physical feeling of the whole and start fixating things for the performance and making proper interpretative choices and putting priorities, albeit a certain degree of elasticity as remnant of this process survives in the future performances".

Such disclosure of form through corporeal navigation can result in performer-specific insights, whose interaction with traditional analytic approaches I would now like to explore.

After having learnt and performed Mists several times, I read R. Squibbs's exemplary analysis of the piece, which came to clarify many of my questions concerning e.g. the pitch material or the organization of arborescences in space. At the same time, I was excited upon realizing, that my perspectives, as far as form and textures are concerned, were offering a significantly different interpretation.

Xenakis mentions in his foreword to Mists two types of material which are manifested as 3 distinct textural types- linear and non-linear random walks, and arborescences. The first two form the main contrasting device in the piece, landmarking larger sections -3 according to Squibbs's schema (Squibbs: 104)- while arborescences are immanently present: as Squibbs puts it, an intermediate category between linearity and non-linearity.

In my own experience, this primary contrast manifested initially as a contrast in the employed actions, that is between the highly fluid choreography of the stochastic section (already explored in the non-linearity section of this paper), and a very grounded, legato gesture of
slow moving ascending chords employing slight rotational movements as tempo increases, for
the initial continuous random walks (as explored in the current’s complex rhythm section).

On a more refined level of navigation, different switches of focus: on the one hand, painstaking
rhythmic sculpture as extreme discontinuity, inner articulating the monolithic effect of four-
voiced passages, versus, on the other hand, an emphasis on continuity of gesture, contrast
being achieved through other parameters—pedalling, dynamics, and articulation, but in larger
brushes, as far as the stochastic section is concerned, were the case. Not only in terms of
choreography is that felt, but also in terms of tension or viscosity in the navigation: the initial
sustainance of the sound, only occasionally relieved with slight, but mutually exclusive,
rotational movements for the extreme dynamic, is gradually mobilized and completely
dissolving in the choreography of the stochastic section. Certainly, the degree of discontinuity
is equally felt in the stochastic section and the care for individual note
rhythmic/dynamic/articulative sculpting is equally necessary, but the sense of prioritization
towards fluidity vs ground is for me clear.

After registering the previously mentioned fundamental contrast, I came to realize that the
arborescences in the first section of the piece had to a lesser degree the same relationship to
the linear random walks, as the one that the stochastic section has to the latter, in their
polyphonic and centrifugal quality as experienced gesturally—in agreement with Squibbs’s view.
Similarly, the arborescence starting at p. 7

![Figure 12. Development of arborescences.](image)

feels like an effective development of all the previous arborescences, being further mobilized
by rhythms of complexity equal to the initial 4-voice formations, with the exciting "wave" of
crossing polyrhythms—continuous random walks—(example 10) emerging as a thickening of
the texture which concluded the first part (example 11). All this is happening in the context of an
overall mobilization of the form, in the sense of a busier interpenetration of all 3 textural
types—a sort of form as hyper-polyphony. Essentially, what is felt and seen here is rather a
bipartite model of exposition and development (starting at bar 80)—in the place of the
Squibbs’s suggested tripartite model. Eventually, under the light of this principle of increased
mobilization on different hierarchical levels (from line to bending, to cluster of lines, to simple
arborescences, to a faster tempo of lines in opposite directions, to stochastic explosion, to
arborescences with repeated notes and more rhythmic complexity organized in an arch, to
wave, and all that in a context of a busier higher polyphony of materials) the whole piece could
be approached as a gradual polyphonic "bending" or diffraction of the initial monolithic
material. Thus, the title Mists refers to developing degrees of obscuring clarity, on top of the
literal description of the musical surface in the stochastic section.
**Epilogue**

Perception of this very clear "arrow of obscurity in time" in performance—a dynamic rather than proportional and sectionalized one, based on the various degrees and perforations of performative continuity rather than analytic measurements—, in combination with Xenakis's own ideological manifestations and paradoxes, is never adequate in itself as a mental representation to be reproduced. This monotimeline is in itself opening in a perpetually renewable multitude of learning paths, reflecting the very specific properties of the materials; a movement inside the materials and in between them as a movement between the actual physical movements and tension-distributions experienced physically, thus as a movement between the various embodied hierarchical layers. This experience grants performative physicality with its unique ontological position as the per se *inside time* manifestation of Xenakis's work, rather than treating performances as a quasi *outside time* given.
References


