Towards a decodification of the graphical scores of Anestis Logothetis (1921-1994) .
The graphical space of *Odysee(1963).*

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Abstract — **In this presentation we are going to examine, via de-codification of graphic scores, the work of the avant-garde composer and pre-media artist Anestis Logothetis, who is considered one of the most prominent figures in graphic musical notation. In the primary stage of our research, we have studied these graphical scores in order to make a first taxonomy of his graphical language and to present the main syntax of his graphic notation, aiming at a future sonic representation of his scores. We also present an example of graphical space through his ballet *Odysee* (1963).**

INTRODUCTION

In the late '40s – after the 2nd World war –musical practice, following the developments in the visual arts, adopted a renegade stance moving away from the musical tradition that was prevalent up to that point. The palette of sound possibilities was radically enriched – incorporating electronic sounds and noise – and the new theories and techniques were followed by equally radical changes in musical notation. Composers had created their own private, individual way of notating their thoughts, and a new interest was developing among this generation of experimentalists in the organizational potential of each of the parameters of sound. From 1951, the role of the performer and listener became increasingly central to the conception of several works. Some of these new approaches were received as functional and essential for the evolution of music as practice; others though were criticized as being extreme and exaggerated.

The illustrations – the graphic pictures used as scores – show the extent of freedom and responsibility given to performers and reflect the emergence of chance as a defining element of this novel musical practice. The resemblance of some of the scores to the work of contemporary painters, such as Modrian, Mirò and Klee is striking. This growing interest in the visual qualities of graphic (pictorial) notation is a fact. Numerous collections of such scores have been arranged for exhibition in museums and galleries. There was an emerging feeling that graphic scores, independent of their function as notation, also have a meaning in the visual realm. The exhibition of those scores brought forth a fundamental question: "how can graphic musical scores stand as a form of visual art?" Pictorial notation can be perceived as art in the sense that it involves the drawing of symbols. While to the composer the use of a pictorial or graphic notation is strictly functional, to the viewer it is a drawing to be interpreted as a form of visual art.

1. THE POLYMORPHISM OF LOGOTHETIS' NOTATION

Logothetis's urge to start a new, different musical notation derived from the problems music was facing during his time. According to his words: *In this way, the compass of modes of musical expression is significantly expanding. However, the notation with which one wants to describe the sonic events is not adequate for this purpose. Several problems arise out of this: not only noise-like sounds can only be represented with great effort or in some cases not at all, but the desire for a flowing music whose genesis can be experienced again and again is impossible to realize in this way*[1]. Considering therefore that the musical material was infused with new sonic possibilities, Logothetis tried to find a way to include into notation some additional parameters of sound, such as the time parameter of the musical structure, the positioning of sound in space, timber that can attain the quality of noise, and the homogenized flow of sound masses. Because of these additional parameters, this graphical notation system was more flexible and polymorphic than the traditional one. In addition, the composer tried in some way to protect on one hand the uniqueness of each performance and on the other hand the preservation of a piece's principles, giving the musicians designated flexibility (while performing). According to Logothetis: *What fundamentally differentiates graphic notation from traditional notation is the afore mentioned polymorphism, which clearly enables all performers to retain their subjective reaction times. The composer takes into consideration the divergences of the different performers in composing and expects a certain degree of surprise through the new formalization of musical form in every performance*[2].

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[1]Anestis Logothetis, *Kurze Musikalische Spurenkunde. Eine Darstellung des Klanges*, Melos, 1970, Bd. 2, p. 39-43

According to Logothetis the polymorphism of graphical notation has both to do with space and with the method by which it is read. *Traditional notation is divided into systems and is read from left to right, like books. But since sound does not behave in the way written word does, we could think about using pictorial notation to represent musical events. (...)because musical time doesn't follow any direction, let alone the conventional left to right writing found in literary forms*[3]. The duration, time in a musical piece, is associated with motion in space and determined by its placement within it. *When a piece of paper is used as a space for representing sonic events, every point and line is brought into relationship with the entire surface and is temporally defined as short or long. This arbitrary correspondence between surface and symbols allows for the temporal associations of sonic events and the control of their duration; while out of convention, the positioning of musical events high or low on the paper represents high and low pitches respectively.*[4]

During the development of his notation system in the 60s, Logothetis completed more than 100 graphical notations.

At this point we should explain the terms "graphical notation" and "musical graphic", that were coined in an attempt to define this new script in music. *Notations are, generally, systems of signs/symbols, but the musical graphic is a painting, a drawing*[5]. The important difference between them is the fact that a graphic, though musical, *conveys a meaning not because of its use of signs and symbols, but because of its special aesthetic quality*[6], while notation is a code, related to semiotics. A graphical score is basically judged by the musicians, who comprehend, read and perform the music that lies beneath the script. In any case though, the dividing line between the two is blurry.

Concerning Logothetis's graphical scores, both terms have been used. Karkoschka for example classifies them in the "musical graphic" category. On the other hand, Logothetis himself referred to his system as a "graphical notation system", since his main focus was to broaden the musical script/code and not to provide a score with illustrative elements.

With this notation he tried to offer performers the possibility to enact music dynamically and unpredictably. That is why he developed three kinds of symbols in his notation system:
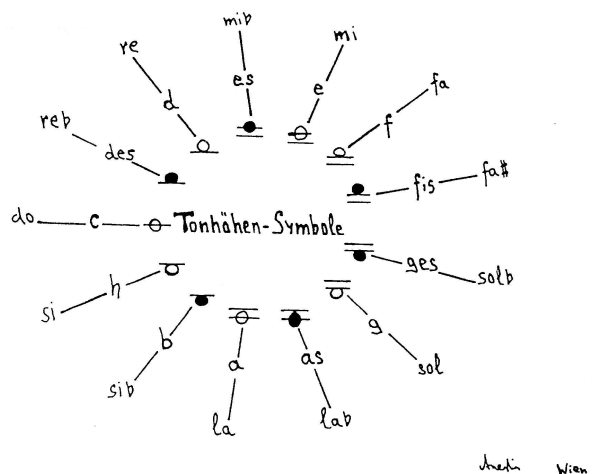
A. Pitch – symbols:

Fig. 1, Pitch - symbols

The first symbol type, seen in fig.1, consists of pitch-symbols for the realization of the tone-constellations, which can be played in every octave and combine with other markings.

B. Association – factors:

Fig. 2, Association - factors

The second category (fig.2) consists of association symbols and factors, which deal with loudness, timbre changes and sound character. The information resides in the shape of the symbol: dots mean short, and lines long note durations; loudness is derived by the size and intensity of the symbols; sound character and accent can be interpreted according to the sign's shape; the color of the signs indicates timbre changes.
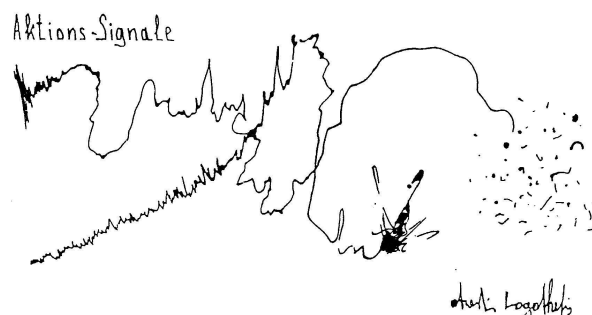
C. Action signals

Fig. 3, Action signals

[2]Anestis Logothetis, *"Über die Darstellung des Klanges im Schriftbild", Impluse: für Spielmusikgruppen*, Universal Edition, Wien, 1973, p. 3-9

[3]Anestis Logothetis, *"Über die Darstellung des Klanges im Schriftbild", Impluse: für Spielmusikgruppen*, Universal Edition, Wien, 1973, p. 3-9
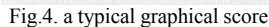
[4]Anestis Logothetis, *Zeichen als Aggregatzustand der Musik*, Wien, 1974

[5]Walter Gieseler, *"Zur Semiotik graphischer Notation"*, In: Melos NZ, Bd. 4 (1978), p. 27-33

[6]Walter Gieseler, *"Zur Semiotik graphischer Notation"*, In: Melos NZ, Bd. 4 (1978), p. 27-33

The third category (fig.3) consists of action symbols, which are lines and dots in movement. This graphical movement is to be transferred correspondingly to instruments (for transformation into music).

In the score these three kinds of symbols are combined, while the composer is trying to capture on paper his musical idea. Below there is a description example, given by Logothetis himself, of the symbols and their combinations.

Fig.4. a typical graphical score

The above example illustrates (fig.4) that, regardless of the symbols related to the dynamics and playing technique, the ledger line symbols coincide with specific notes – the pitch being defined by the performer – while symbols lacking ledger lines relate to noises with indefinite pitch. The quality and way of playing them is left to the performer's decision, so long as the noise's auditory outcome corresponds to the visual representation adopted by the composer. *All these components will be brought into relation by means of a primarily acoustic setting and its permanent intrinsic visualization. The visual results will inform about the auditive events and their character. This kind of sound organization gives performers the freedom to participate in a multilayered hierarchy of sounds and actively shape the evolutionary polymorphy of the produced sonority*[7]. This means that the composer himself defines the boundaries of the performer's liberty as an interpreter through the way in which he draws the pattern, or graphical notation.

2. A TAXONOMY OF LOGOTHETIS GRAPHICAL SCORES

Accordingly he has classified his works in three different categories:

- works where the order and the temporal dimension of the signs are predefined by numbers (p.e. *Mäandros, Dynapolis, Styx, Emanation I + II)*

- works where the order and the duration of the subgroups are strictly organized, but the signs of action are left upon the improvisation of the performers(p.e. *Kentra, Ichnologia, Polymeron, Polychronon, Konvektionsströme)*

- works where the improvisation is left totally upon the performer. (*p.e.. Labyrinthos, Agglomeration, Kleine Parallaxe, Entropie*)

In a first attempt to examine Logothetis' work in chronological order, we can delineate the course through which he developed his graphical notation system.

In the table 1, which is at the end of the paper, we present some of his important works, underlining the particular innovation in his graphical language. The most crucial parameters depicted are pitch symbol, action symbol, time, instrumentation, and movement in space.

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[7]Anestis Logothetis, *Zeichen als Aggregatzustand der Musik*, Wien, 1974

3. Space in the Graphic Score "Odysee" (1963)

The central feature in Logothetis' graphical notation is that sound is spatially arranged on a paper sheet surface, thus determining the final structure and flow of the piece. *The outline on a piece of paper guarantees the overview of the whole form [of the music-piece]. Every detail is built by the spontaneity of the moment and its contrapunctal processing – its polymorphism. It underlies the process of the sound-event from the graphical inflexible situation to a flexible [situation] of the sound*[8]. This helps us to see the importance space had for the composer on the sheet/paper of the score, as well as in the sound representation of the piece in physical space. He notably compared his graphical sheets/papers to architectural blueprints, which represent a large spatialization scaled down on a paper surface.

In the case of Odysee(1963) the composer treats space in a micro-scale, aiming to express the adventures of Ulysses. *Odysee* combines movement and sound through the de-codification of graphical space by the interpreters as traced in the score. Thus, the multiple adventures of Ulysses are visually 'sonified' through the personal interpretation of the instrumentalists. The main score (fig.15) which describes different psychological states related to Ulysses' adventures (island of Circe, Island of the Lotus Eaters, Cyclops, etc. is complementary to the second transparency (fig. 16) which indicates the movement of the instrumentalists in order to trace their own Odysee. The lines (vectors) which indicate the movement in fig. 9 are printed in red ink on a transparency; this transparency complements the main graphic score in order to indicate the trajectory. The musicians-dancers are divided in two or three groups. The first group traces the central trajectory -the "dromos"- and is comprised by the protagonists of the performance. From the transparency (fig.16) we can also draw information about the second and third group, and about the sonic representation of the score. Simultaneously to the first group, which follows the main path (dromos), the other two groups are on the left and on the right, producing sound masses upon the figures. Every section of the path, every vector, lasts about 2,5 min and the changes are dictated by the conductor. In every case the groups can change responsibilities and parts.

In a first attempt to "read" the graphic score of Odysee (1963) we can interpret some of the sound graphics as pictorial descriptions of Ulysses' adventures, but also as deeper psychological states which the interpreters could enter. This interpretation of the graphical score could be seen as a psychological journey to maturity, as this is described by the great Greek poet Constantinos Kavafis in his poem, *Ithaca*[9]. Through this psychodynamic

interpretation of the visual graphics and their sonification, the interpreters enter an evolutionary adventure of the person situated in space and time.

For example we could refer to some of his main figures in the score as an interpretation of fig.5, which indicates the strong winds that drove Ulysses and his fellows to the island of the Cyclops. The performers may interpret this section as windy, by making the movement of the number "8" in order to express an essence of 'spaciality'. Moreover, fig.6 could be regarded as the island of the Lotus eaters, and fig.7 as the wooden spear that blinded the Cyclops Polyphemus.

We could also interpret Aeolian winds by the pattern in fig.8 which leads to the island of the Laestrygons (fig.9). The fascinating environment of Circe's island is represented by peculiar star-like patterns (fig.10). The descent in Hades is represented by the sign of the cross (fig.11) and the passage through the land of the Sirens and Scylla and Charybdis is represented in fig.12. The next stop in Ulysses' journey on the island thrinacia, is represented by fig.13 (group of figures, triangles, squares etc.). Finally, upon reaching Calypsos' island and then that of the Pheacians, Ulysses is coming to the end of his journey (fig.14). At this point, some real notes appear for the first time in Logothetis's score. To quote the composer:

In order to produce specific sound configurations, I have invented sound symbols which are "liberated" from the five line system and can be fused with other symbols, allowing for flexibility in quarters and thirds.
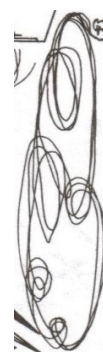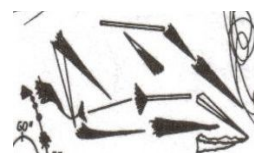

Fig. 5

Fig. 6

Fig. 7

Fig. 8

[8]Anestis Logothetis, *[Zu "Polynom"]*, Text written in Zakynthos, Juni 1990, in book: Krones Hartmut, *Anestis Logothetis, Klangbild und Bildklang*, Verlag Lafite, Wien, 1998, pp. 156
[9]*"Ithaca"*
As you set out for Ithaca,
hope your road is a long one,
full of adventure, full of discovery.
Laistrygonians, Cyclops,
angry Poseidon - don't be afraid of them:
you'll never find things like that on your way
as long as you keep your thoughts raised high,
as long as a rare excitement
stirs your spirit and your body.
Laistrygonians, Cyclops,
wild Poseidon - you won't encounter them

unless you bring them along inside your soul,
unless your soul sets them up in front of you.
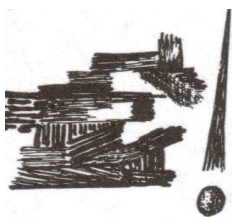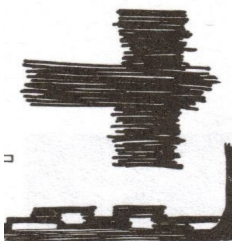http://cavafis.compupress.gr/kave_17b
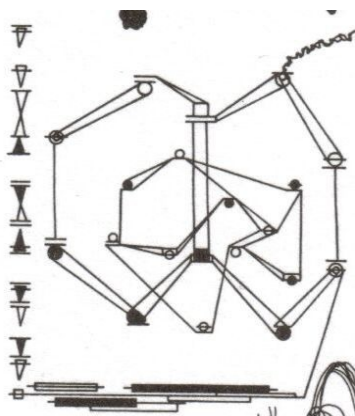
Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig 13

Fig.14

whole, that should be perceived as a unified work of art. Future research will attempt to convey and 'translate' the virtual sonification and dramatisation of the score via the means of novel tools in audio technology.

Digital technology can be used to homogenize diverse sources through the screen of the computer. All sources, visual, textual and sonic, can be translated into digital information, in order to enable digital manipulation.

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[8] Motte-Haber, Helga de la, *Musik und bildende Kunst, von der Tonmalerei zur Klangskulptur*, Laaber, 1990.

[9] Roschitz, Karlheinz, *Anestis Logothetis und die Musik-Graphik*, protokolle – Zeitschrift für Literatur und Kunst, 1969, pp. 167-175.

CONCLUSIONS

At this point our approach in the decoding of Logothetis' music, {as this is represented by the graphical notation of the composer, and its superbly dramatic enactment in the work *Odysee*(1963),} reaches a conclusion. We can state that his music and notation system form an integrated
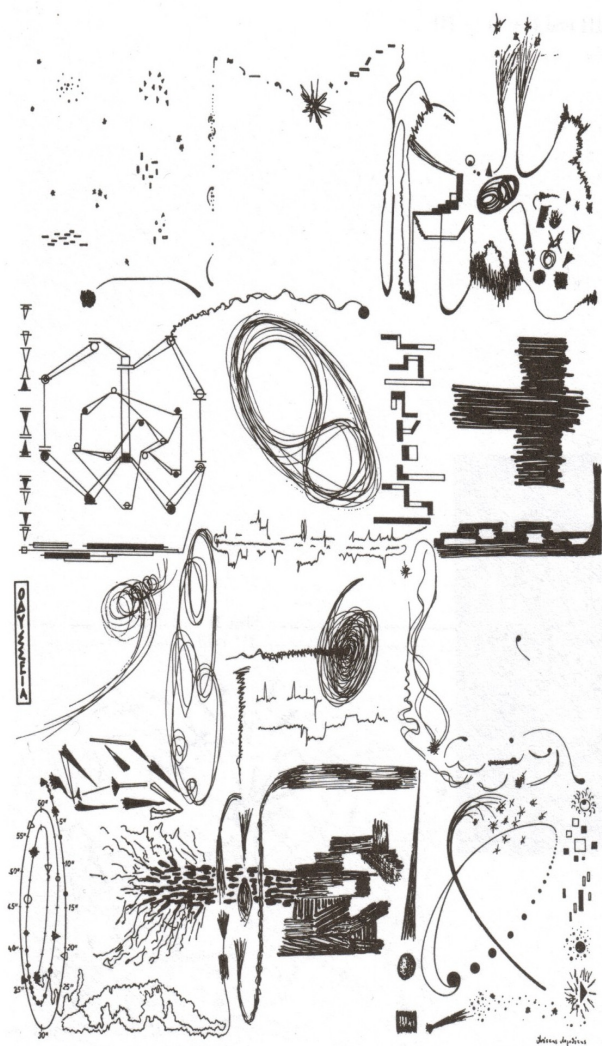
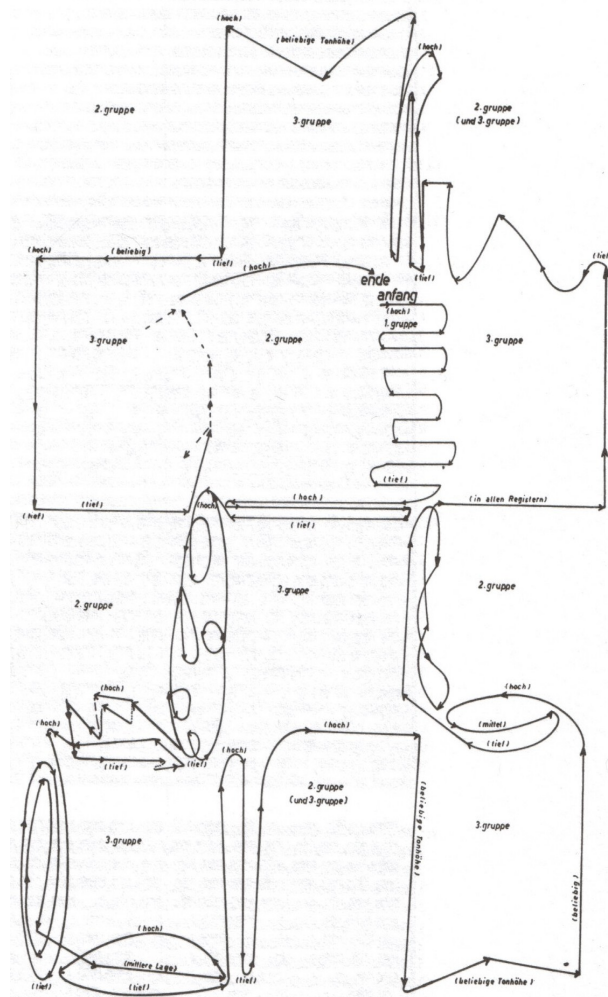Fig. 15, The graphical score of Odysee

Fig. 16, The Movement of the instrumentalists (transparency)

TABLE 1

	PIECE	PITCH SYMBOLS	ACTION SYMBOLS	TIME	INSTRU-MENTATION	MOVEMENT IN THE SPACE
1957-58	**Polynom**	notes on 5lines	composed on diagramms	-	Orchestra in 5 groups	
1959	**Struktur – Textur – Spiegel – Spiel**	notes on 5lines, pitch-symbols	"D"structure gestural signal	-	variable instruments	Microstructures, no movement
1960	**Parallaxe**				Ensemble "die Reihe"	no route given
1960	**5 Porträts der Liebe: Katarakt I+II, Verkettungen I+II, Cycloide I+II+III, Novae, Reflexe I+II**	many notes, (seperate score)	many actions, (separate score)	-	Ballet (variable instruments)	route for each player, but not for the piece. -Complexity-
1960	**Agglomeration**	clear tones some chords	not many not complex	-	Solo Violin with or without Stringorchestra	given separate voice's route, but not piece's route
1961	**7 Kooptationen**	in chords	separated to pitch symbols	-	Ensemble "die Reihe"	microstructures without order
1963	**Mäandros**	12-tone piece, defined notes	in relation to pitch-symbols	Duration: 25'	Orchestra (variable instr.)	given route of the piece
1963	**Odysee**	some few tones	Many action-assosiation symbols	-	Ballet (variable instr.)	given route of the piece on a transparent paper
1963	**Dynapolis**	some defined notes	basic part of piece	Duration: 12'	Orchestra (variable instr.)	given route of piece (choice)
1964	**Ichnologia**	notes on 5lines, pitch-symbols	separate or related to pitchsymbols	-	Ensemble (variable)	given route but not in the whole work
1965	**Spiralenquintett**	undefined pitches	actions score	-	5 variable Intruments	voices' routes
1966	**Intergration**	one long chord, 12-tone	soundquality changes	-	Orchestra Groups (variable instr.)	horizontal, right + left
1961-67	**Karmadharma-drama**	undefined pitches	action-in-room score	-	Puppet choir	move in space, room-models
1968	**Styx**	12-tone piece, difened notes	in relation to pitch-symbols	Duration: 10'	Plucked Orchestra or (variable instr.)	given route of the piece
1971	**Kybernetikon**	language game – word game	in relation to words	about 30-50'	Radio Play for speaker	given reading direction
1972	**Kerbtierparty**	few notes	in relation to words	-	Radio Play	given some reading direction
1976	**Geomusik**	defined notes	in relation to pitch-symbols	Duration: 19'	Solo & Orchestra	space relativity music processes
1976-78	**Daidalia**	Pitchsymbols and text/words	Actions - Dramaturgy	-	Multimedia Spoken-Opera	
1982-84	**Aus welcem Material ist dr stein von Sisyphos**	Pitchsymbols and text/words	Actions - Dramaturgy	Given separate parts' duration	Multimedia Opera	defined movements on space
1987	**Kyklika**	12-tones in circle	quality-action changes on every tone	-	Symphony of cyclic counterpoint	given voices' route