Kwartalnik Młodych Muzykologów UJ
no. 47 (4/2020), 177–195
DOI 10.4467/23537094KMMUJ.20.047.13920
www.ejournals.eu/kmmuj

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The Metaphor of Movement and Its Materialisation in Twentieth-Century Spatial Music

Abstract

The article concerns the issue of experiencing spatial music. While discussing movement and space in music, Bohdan Pociej draws attention to two types of spatiality in a music work: the 'internal' and 'external' spatiality. The former derives from the nature of the sound material and the interaction of elements; it remains in the sphere of impressions and metaphors. The latter involves the physical parameters and actual performance of the piece. I demonstrate that the works of twentieth-century composers tend to break through from the internal space, transforming it into the external one. The issue of the body as a centre is present in the works of Edmund Husserl, Yi-Fu Tuan, Edward Hall, and others. The metaphor of movement in language and music has become the subject of research in cognitive science. In the context of spatial music, the metaphorical level coexists with the physical level. During the performance of a composition, listeners may enter into various relations with sound sources but always locate

them with reference to their own bodies, which they treat as the centre. The two basic types of external spatiality – the perspective of the observer and the perspective of the participant – correspond to the two ways of understanding the metaphor of movement in music (internal spatiality) proposed by Steve Larson and Mark Johnson.

Keywords

Spatial music, spatiality, the metaphor of movement, carnality, musical experience

Space has many levels and meanings in music. The term, variously understood, can be found in the context of individual compositions, their notation and performances, in critical commentaries and research works of historical or analytic character, as well as in the theoretical, philosophical, and aesthetic thought of all ages from the Antiquity to the modern day.[1] In the context of the music work itself, however, considered in its ontological fulness which comprises all the stages of its existence,[2] the concept of space frequently gives way to other, more detailed ones, such as spatiality and spatial music. Spatiality may concern both the work's music material and the purely physical aspects of its performance. This is the division suggested by Bohdan Pociej, who distinguished between the internal and external spatiality of a music work.[3] The former refers to situations when

[1] In one of the most recent Polish publications on the subject of space in music, Katarzyna Szymańska-Stułka describes, among others, phenomena related to music technique (such as the Venetian polychoral school and the hocket echo effects), symbolic and metaphorical meanings of music (e.g. scattered harmonies and extreme registers), as well as philosophical and aesthetic concepts (for instance, the Pythagorean music of the spheres). Cf. K. Szymańska-Stułka, *Idea przestrzeni w muzyce* (2015).

[2] Namely, the stages of concept, implementation, perception, and reception, in accordance with Mieczysław Tomaszewski's model of integrated interpretation. Cf. M. Tomaszewski, 'Nad analizą i interpretacją dzieła muzycznego. Myśli i doświadczenia', *Teoria Muzyki. Studia. Dokumentacje. Interpretacje*, 8–9 (2016), 420.

[3] B. Pociej, 'O przestrzenności dzieła muzycznego', *Muzyka*, 1 (1967), 74. Krzysztof Szwajgier considered various degrees of musical spatiality, depending on internal relations between elements of a music work. Pociej's 'internal spatiality' corresponds to Szwajgier's passive degree (in which spatiality is a subordinate quality, as in imitative presentation of the theme by successive instrumental groups, which

> […] the music generates in us an irresistible sense of real space. The music work constitutes itself in our perception as a kind of spatial object with specific dimensions: length, width, volume, density, solidity, depth, and perspective. […] When we listen to a piece, when we read it or perform it, these static-voluminal impressions of the spatial object are accompanied by a similarly spatial impression of the movement of the sonic creation: its tempo, type, and direction.[4]

At the other end of the spectrum we find external spatiality, 'related to the performance of the music work and its location in real space'.[5] In practice, this category is made up of works in which the physical arrangement of the sources of sound both on and outside the stage is part of the composer's intention. It overcomes the traditional model by reaching out to the audience, surrounding the listeners with sound or placing them among the performers / speakers.

We will use this distinction between the two basic concepts of spatiality in music as our point of departure. They can be characterised in terms of pairs of opposites: metaphorical vs literal, imagined vs real, describable vs measurable. These two distinct and clearly separated worlds seem to converge at one point: in the human recipients, the listeners, in the way they perceive and conceive of music through the prism of their experience of their own carnality. Examining this thesis is the first objective of my paper. To achieve this aim, I will seek support in philosophical, anthropological, and cognitive concepts which concern the body as the centre. My second objective is to develop and confirm the intuition presented by Pociej at the very end of his sketch, where he claims that one of the key characteristics of new music's spatial concept is

(as if 'incidentally') creates the impression of movement. 'External spatiality', on the other hand, incorporates Szwajgier's next two degrees: active (where spatiality is treated on a par with other elements, as in polychoral technique or when an ensemble is arranged spatially on the stage) and autonomous (where spatiality is the dominant factor, as when the sound surrounds the audience or when performers move around while playing or singing, and the other elements are subordinated to this one). Cf. K. Szwajgier, 'Muzyka przestrzenna', *Forum Musicum*, 15 (1973), 36–48.

4 Pociej, 'O przestrzenności…', 73.

5 Pociej, 'O przestrzenności…', 74.

> the desire to overcome internal musical space and transform it into intensely extended external one […] by expanding 'the wall of sound' (spatial grouping of performers on the stage), spatial arrangement of the sources of sound, up to the situation when the listeners are surrounded by music on all sides, and placed, as in the middle of a sphere, at the spatial centre of the composition.[6]

This 'transformation' can be illustrated by highly specific examples, which will take it from the level of metaphors (considered from a cognitive perspective) to that of physical space as represented in the works of twentieth-century composers.

The Body as the Centre

We will depart for a moment from questions directly related to music, and attempt to examine the importance of the human body and of space to the way we perceive, understand, and shape our environment. In the twentieth century, the perception of space in the context of bodily experience became the object of interest for many disciplines of the humanities. Comments relevant to this subject can be found in the writings of authors representing various disciplines, in the fields of both philosophy (e.g. pragmaticism, phenomenology, environmental aesthetics) and social sciences (cultural anthropology, human geography, proxemics, ecology, sociology, and space psychology). Without attempting an exhaustive description of issues related to the body, space, place, and experience, I will outline a certain initial model which will shed helpful light on the problem of spatiality in music.

It seems worthwhile to begin with Edmund Husserl's view of carnality as expounded already in his lecture series *Ding und Raum*, delivered in the early twentieth century and published in 1973. Husserl understands the body on the one hand as a physical object (*Körper*), and on the other – as the vehicle of the 'self', the location in which impressions and emotions take place, the living body (*Leib*). In the latter capacity, the body constitutes a permanent point of reference

[6] Pociej, 'O przestrzenności…', 78. In the later part of the same paper, Pociej applies the previously defined concepts of 'internal / external spatiality' rather inconsistently. In some contexts, he prefers to talk of 'internal / external space' instead, which is to be taken as a synonymous pair of terms.

for our perception and experience of space. The body is the centre, the zero point (*Nullpunkt*), 'in relation to which all the spatial relations are represented; [it] thus determines the right and left, the front and back, the up and down'.[7] For everything that is changeable and mobile, our body constitutes a point of reference, even when it is itself in motion. The field of perception is always dependent on the body. Movement of the body immediately entails a change in how directions and our relation to the space around us are perceived.[8] In his analysis of the interrelations between the understanding of carnality in phenomenology (E. Husserl, M. Merleau-Ponty[9]) and cognitive studies (especially in the concept of embodied cognition[10]), Marek Pokropski observes that

> […] the body as a reference point is itself the 'blind spot' of the whole system. It is neither to the right or to the left, neither close nor far, and my right hand does not appear as situated any closer to me than my right leg. Neither the body as a whole nor its parts can thus be defined and situated in space in the way other perceived objects are.[11]

Human geographer Yi-Fu Tuan uses the existing dependencies between the structure of the human body and the perception of directions and space as a point of departure for a study of their historically and culturally conditioned meanings. The top-bottom polarity is related to the human being's posture and position (vertical – upright and dignified, or horizontal – prone and humble) as well as with the body's shape (the head as its most important, topmost element). Similarly with respect to the front-back directions, frontal space (that is, what is in view) is vivid and full; the human face commands respect; the natural direction is forward towards future goals, while the rear is dark, out

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7 E. Husserl, 'Ding und Raum. Vorlesungen 1907', in U. Claesges, ed., *Husserliana: Edmund Husserl Gesammelte Werke*, 16 (1973), 80. Edward Casey sees in this concept a return to Kant's intuition concerning the three fundamental spatial dimensions rooted in the human body, which form the basis for our orientation in space. Cf. E. Casey, *The Fate of Place. A Philosophical History* (1998), 217.

8 Husserl, 'Ding und Raum…', 80.

9 Husserl, 'Ding und Raum…'; M. Merleau-Ponty, *Phenomenology of Perception*, tr. Colin Smith, 1st edn (1945).

10 F. Varela, E. Thompson, E. Rosch, *The Embodied Mind* (1993).

11 M. Pokropski, 'Ciało. Od fenomenologii do kognitywistyki', *Przegląd Filozoficzno-Literacki*, 4 (2011), 135.

of view, and associated with going back, to the past.[12] Notably, these two directions are asymmetrical within the human body, whereas our right and left sides are nearly identical. Tuan explains that

> People do not mistake prone for upright, nor front for back, but the right and left sides of the body as well as the spaces extrapolated from them are easily confused. In our experience […] front and back are primary, right and left are secondary.[13]

For this reason, we associate these directions with different meanings, grouped into semantic areas. The top, front and right side signify godhead, sacred space, the heavens, all that is bright, good and perfect. Their opposites are associated with the profane, earth or hell, death, and darkness.[14]

According to Tuan, the thus understood categories translate into how humans shape and organise the space around them, which is reflected in elements of interior design, architecture, and urban planning. Height bestows significance on objects and territories; natural elevation as well as places artificially raised by humans (on pedestals or at the top of stairs) are reserved for important, distinguished, prestigious or holy objects and buildings.[15] The category of the centre occupies a similarly privileged place and is additionally strongly related to spatial orientation towards oneself and one's own location. The centre is 'me': my body and my immediate surroundings, the space I find myself in, where I live (my home, city, or country). Interestingly, the category of the centre does not always refer to what is (physically) centrally located, but rather – what has been singled out as in some way important for us.

> Rooms at one end of the scale and cities at the other often show front and back sides. […] Rooms are asymmetrically furnished: their geometrical center is not usually the focal point of interior space. For example, the focal point of the parlor may be the hearth, which is located at one end of the room.[16]

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12 Y.-F. Tuan, *Space and Place: The Perspective of Experience* (1977), 51–70.
13 Tuan, *Space and Place…*, 61.
14 Tuan, *Space and Place…*, 51–70.
15 Tuan, *Space and Place…*, 55.
16 Tuan, *Space and Place…*, 59.

Edward Hall, on the other hand, points to the role of kinaesthetic factors in our perception of the surrounding space.[17] The way we perceive a given space is determined by what opportunities for movement that space affords. A long corridor appears cramped since it limits our body's movements. A square room, even of the same volume, will be considered spacious. Distance is also defined with reference to ourselves and our bodies: 'I' and 'this' are 'here', whereas 'you' and 'there' are a little farther off, but not as far as 'he' and 'yonder'.[18] These relations also reflect the transposition of the literal meanings of terms (i.e. those referring to physical relations) onto the metaphorical, non-literal plane.

> 'Distance' connotes degrees of accessibility and also of concern. […] 'We talked of this and that, but—alas—mostly that.' The word 'that' clearly suggests conversational topics both remote and trivial.[19]

The themes and concepts discussed here put into focus the role and significance of our bodily experience in the perception of space. What is more, the relation between the human (body) and space (the surroundings) is characterised by a kind of feedback. On the one hand, we perceive and comprehend the surrounding reality through the medium of our own corporeal nature. On the other, when we shape and organise the space around us, we assign similar qualities to it.[20] The interrelations between the two are as strong as they are complicated. How does all this bear on music, though? The link turns out to be essential, both on the metaphorical plane and with reference to actual physical space. This link is easily demonstratable on the example of spatial music, in which the physical location of the listener in relation to the source of sound acquires significance. I shall return to this topic later. First, however, let me have a look at some mental habits related to space as reflected in our language.

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17 E.T. Hall, *The Hidden Dimension* (Doubleday and Company, Inc.: New York, 1966).

18 Tuan, *Space and Place*…, 67.

19 Tuan, *Space and Place*…, 66-67.

20 The concepts and relations discussed in this text refer first and foremost to the culture and inhabitants of the Old Continent. Even though many of them are strictly associated with the universal form of the human body, we must bear it in mind that they are also dependent on historical and cultural context, on tradition, religious beliefs, and geographical location. In other cultures, tribes or civilisations the same phenomena may be perceived differently.

Metaphorical Movement

'Among the key metaphors used to describe music, we find the notions of space and movement',[21] observes Ewa Schreiber in her analysis of metaphorical concepts connected with music. Of those concepts some represent the cognitive approach, which directly relates the categories of space and movement to bodily experience. The study of social and cultural meanings building up between humans and their environment is of less interest to cognitivists than to the already quoted cultural anthropologists. The former focus much more on mental processes and the functioning of the human mind in relation to the body.

Of interest in the context of our discussion will be the conclusions presented by cognitive linguists, concerning the use and place of metaphors. Let us consider one specific example. Mark Johnson and George Lakoff observe that the notion of movement is closely related to that of time, as perceived from the perspective of our everyday bodily experience. In the context of the metaphor 'time is a moving object',[22] the scholars identify two ways of conceptualising time:

1. one in which time is moving and we remain in one place (as when we say 'the time for action has arrived…', 'the time has long since gone when…'), and
2. one in which time is stationary and we move through it (we say: 'as we go through the years…', 'we're approaching the end of the year').

In both these cases, the perception of time is rooted in experience: Movement exists with reference to ourselves (that is, to the physical location of our body in space). Direction of movement is also important: from the past (behind) to the future (in front).[23]

Steve Larson and Mark Johnson take up the same problem with reference to time and space in music. They claim that the human perception of musical motion is metaphorical throughout and is grounded in

[21] E. Schreiber, 'Muzyka wobec doświadczeń przestrzeni i ruchu – między metaforą pojęciową a percepcją', *Sztuka i Filozofia*, 40 (2012), 104.

[22] G. Lakoff, M. Johnson, *Metaphors We Live By* (The University of Chicago Press, Ltd.: Chicago, London 1980, 2003), 42.

[23] Lakoff, Johnson, *Metaphors We Live By*, 42-45.

our basic experience of the physical motion of our body in everyday life.[24] The authors analyse three key metaphors of movement in music:

1. 'moving music', that is, the situation in which we remain stationary ourselves and observe the moving segments of the composition, musical phrases, the successive parts, etc. (from this perspective we say, e.g., that another section is 'coming', and 'a third voice enters (joins in)';
2. 'musical landscape', when the observer moves across a stationary landscape (e.g. 'we're coming to the coda', 'we're going faster here');
3. music as a 'moving force', when we feel that some force sets our body in motion; this includes references to such physical forces as inertia, gravity, and magnetism (e.g. music 'attracts' us, 'leads' us, and 'moves' us).

By using such expressions (extremely frequent in colloquial speech, in journalism, but also in scientific publications), we aim to represent what Pociej called the internal spatiality of musical space.[25] It should be noted that the first two variants of these metaphors are completely analogous to the metaphorical modes of talking about time as described by Lakoff and Johnson. The interrelations between these notions are also quite clear. Music takes place in time (and is therefore considered as a temporal art). Time (at least in our language and way of thinking) implies movement and space. Larson and Johnson emphasise, however, that the above-listed metaphors apply, first and foremost, to classical tonal music, in which very direct associations with movement in space can be evoked by, for instance, diversifying sound colour, dynamics, agogic parameters, textures, as well as by means of such polyphonic techniques as imitative entries of the successive voices, harmonic progressions, etc.[26] Even when we speak of melody ascending and descending, or when quiet chords seem to reach us from afar and loud ones – to surround us on every side – we still remain in the sphere of metaphors, within which cognitivists would distinguish such 'image

[24] M. Johnson, S. Larson, 'Something in the Way She Moves – Metaphors of Musical Motion', *Metaphor and Symbol*, 2 (2003), 63–84.

[25] Pociej, 'O przestrzenności…', 74.

[26] Krzysztof Szwajgier views these elements as early manifestations of the idea of sound spatialisation. Cf. K. Szwajgier, 'Muzyka przestrzenna…', 36–37.

schemata' as top-bottom, front-back, the centre and the peripheries, or the scheme of the path (trajectory). According to this concept, music is perceived and understood through the prism of our bodily experience of movement and space.

Materialisation of the Metaphor of Movement

Space – not the metaphorical, but the actual physical one – fully manifested itself in the music of the twentieth century. The exploration of the possibilities of spatial sound distribution, of dividing and arranging the performing forces in space in various manners, as well as experimenting with space in electroacoustic music – have been explored in the output of such composers as Bela Bartók, Charles Ives, Henry Brant, Edgard Varèse, Karlheinz Stockhausen, Pierre Boulez, John Cage, Raymond Murray Schafer, and many others.[27] Using Pociej's terminology quoted in the opening section of this paper, I am going to talk here about the external spatiality of the music work.[28]

What substantially differentiates spatial music from other types in which the performers are located traditionally in relation to the audience is the enhanced status of the listeners' perspective. Much depends on the spatial situation in which the listeners find themselves. As I have suggested earlier, the experience of one's own carnality plays a major role in how we perceive the space and movement around us. Besides, a concert audience is conditioned by listening habits that have formed within the tradition of classical music. These habits have been significantly impacted in turn by the architectural models commonly applied in concert halls and operas built in the second half of the nineteenth

[27] For a historical survey of the problems of spatial music and its origins, see: M.A. Harley, *Space and Spatialization in Contemporary Music: History and Analysis, Ideas and Implementations* (1994); K. Szymańska-Stułka, *Idea przestrzeni…*; R. Zvonar, 'A History of Spatial Music', *eContact!*, 7.4 (2005), https://www.econtact.ca/7_4/zvonar_spatialmusic.html, accessed 15 May 2020.

[28] It should be noted, on the margin of this discussion, that 'external spatiality' as a quality associated with the performance of a specific work naturally does not preclude the presence of 'internal spatiality'. The latter is more universal and characteristic of music in general. Nevertheless, these two types of spatiality constitute two different planes distinctly separated from each other by the presence of the physical aspect. In the former case, we deal directly with physical space, which is absent from the latter.

century.[29] The listener takes his or her seat in the audience, separated from other listeners so as to guarantee an undisturbed view of the stage and reception of the sounds that come from it. Space has been designed so as to offer the possibility of the fullest possible contemplation of music, whose sounds always come from the same place at the front. The very fact of the stage being an elevated space is of symbolic significance; we associate the categories of 'top' and 'high' with what is important, prestigious, holy, and imbued with meaning. For all these reasons, it is the stage that we normally view as the centre of the process of classical music reception.

In spatial music, however, many of our habits are overcome. Sounds may reach us from different sides: from the front, back, etc. Their direction, location, and distance from us may change. Music may not always be performed in the elevated space; instead, the musicians surround the audience or mix with the listeners. The stage is no longer the natural centre, the main and only point of reference. Instead, our own body becomes the centre. It is only in the various variants of spatial music that the centre of gravity has shifted onto the listeners, their own perspective, as well as onto the body in relation to which they perceive and experience the music.

Spatial music is thus a special case since its complete experience is only possible when we actually participate in the concert. Its indirect experience in the form of recordings or scores will be, out of necessity, fragmentary or distorted, since it is deprived of its spatial aspect. Spatial compositions should for this reason be considered in the context of the performance situation and of the spatial relations between listeners and performers.[30] I will now attempt to consider different cases. The relations between the listener and the sound source may be different in the case of any given composition. The listener may move around or remain stationary. In the complex though rather technical classification of various spatial arrangements proposed by Maria Anna Harley,[31] one

[29] Cf. R. Sennett, *The Fall of the Public Man* (2002); C.B. Small, *Musicking: The Meanings of Performing and Listening* (1998).

[30] My examples come from instrumental works since in their case some phenomena can be represented in the form of music notation. The same conclusions will be relevant, however, for electroacoustic music, in which the instrumentalists are replaced by a set of speakers.

[31] The author takes into account such aspects as: types of performing forces, the number of performers, type of sound (acoustic, electroacoustic), venue (a concert

of the criteria is whether the performers and/or the audience are static or mobile. This approach makes it possible to look at the performance situation from the listener's perspective and lay additional emphasis on the importance of physical movement in space. We may thus encounter three main situations:

1. static audience and static performers,
2. static audience and mobile performers,
3. mobile audience and static performers.[32]

All the three call for a commentary. In spatial music (though not exclusively), the first of these is the most common. The audience stays in one place whereas the performers are likewise statically located at specific points of the real space (for instance, on the stage or around the audience). Strictly speaking, the sound source does not physically move, but we may get the (sometimes highly suggestive) impression that the sound structures are indeed in motion, in the literal, not just purely metaphorical sense. When sounds (as well as phrases, motifs, and gestures) reach us from various locations, but they have some (for instance colouristic or textural) qualities in common or are properly correlated (for instance by means of dynamic changes), we tend, in accordance with the principles of Gestalt psychology, to combine them perceptively into larger wholes.[33] Such a whole not only has a definite duration, sound colour, harmonies, etc., but also a specific direction or spatial trajectory. The changes of individual sound parameters may additionally enhance the impression of movement in space. Most accurately, this phenomenon could probably be referred to as an illusion of movement.

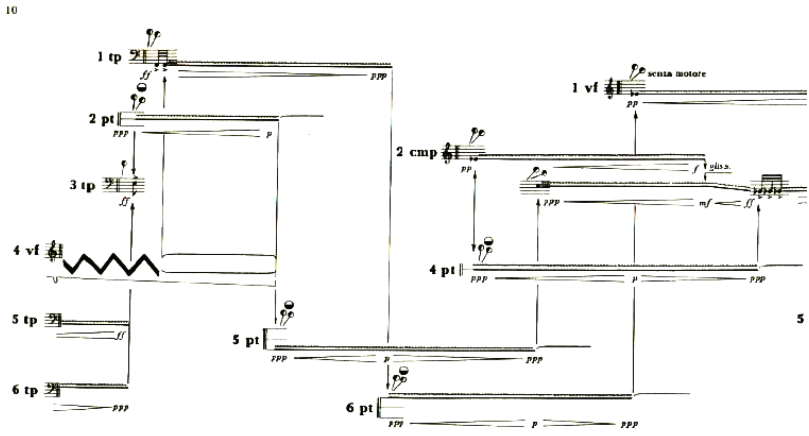
Let us examine this on specific examples. Illusion of movement may be produced by means of appropriate composition techniques provided that we have at least two performers situated at a distance from each

hall, open air, etc.) Cf. Harley, *Space and Spatialization…*, 210–211.

[32] In her classification, Harley considers four cases, the fourth one being that in which both the performers and the audience are mobile. Such solutions are extremely rare in actual composition practice, though examples can be found (one of them is Karol Nepelski's piece entitled:, composed in 2016). However, from the listener's perspective this fourth situation turns out to be very close to the third one described above.

[33] A. Jordan-Szymańska, 'Percepcja muzyki', in M. Mantuszewska, H. Kotarska, eds, *Wybrane zagadnienia z psychologii muzyki* (1990), 132–150.

other. For a 'spatial canon' to take shape, it will suffice to shade the dynamics in the individual parts, as long as the sound material is similar. Kazimierz Serocki makes use of this effect in his *Continuum* for six percussionists arranged in space, where in the central passage of segment 14 (the composition is not divided into measures) he introduces successive overlapping entries of percussionists (2 – 5 – 6 – 4) playing a cymbal tremolo (example 1). The spatial arrangement of performers around the audience makes the listeners combine these four entries in their minds into one whole – one gesture which follows a definite trajectory (see Figure 1).



Ex. 1. Kazimierz Serocki, *Continuum*, fragment of segment 14.

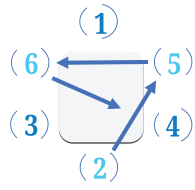
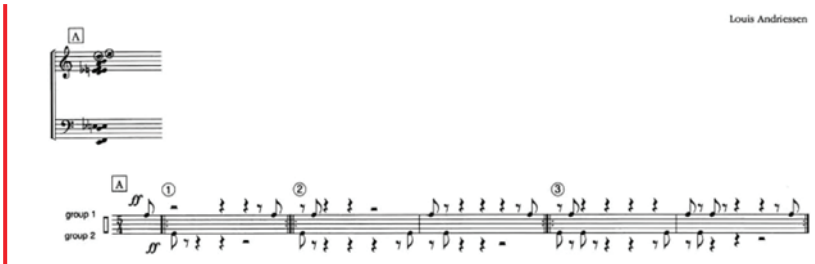


Fig. 1. Spatial arrangement of performers in Kazimierz Serocki's *Continuum* and the spatial trajectory of the movement of the cymbal tremolo.

The idea of spatial trajectories of illusory sound motion was applied by twentieth century composers particularly frequently in spatial compositions in which sound sources surround the audience. For instance, in Gérard Grisey's *Le Noir de l'Étoile* (1989–1990),[34] where the performing forces and organisation of space are similar as in *Continuum*, the composer employs this technique on a wide scale, skilfully manipulating textural density, the durations and dynamics of the successive structures, thus generating multiplied and multidirectional, spiral sound constructs. The illusion of movement is very realistic here; the listeners find themselves in the very eye of a changeable and dynamic whirl.

Illusion of movement may also be created without any dynamic changes, as in Louis Andriessen's *Hoketus* (1976) for two groups, each consisting of five identical instruments. In the score the composer instructs both ensembles to maintain precisely the same sound and volume and be seated as far as possible from each other during the performance. He makes use, on the one hand, of the fourteenth-century hocket technique, and on the other – of reductionist, minimalistic solutions. The alternating irregular entries of large harmonies in the two twin groups make a nearly tangible impression of actual movement, of a mechanical game consisting in 'popping' the harmonies to each other (example 2). The listener need not be placed precisely between the two ensembles in order to perceive the illusion of movement along the right-left axis. Even when seated in the auditorium, the listeners will perceive these relations with reference to their own bodies, which also in this case constitute the main point of reference.



Ex. 2. Louis Andriessen, *Hoketus*, mm. 1–5.

[34] Both pieces were composed specially for the outstanding contemporary music ensemble Les Percussions de Strasbourg.

In all of the above-mentioned examples, both the audience and the musicians remain stationary throughout the performance. Let us now consider the other two situations, in which either the source of sound (2.) or the listeners (3.) are in motion.

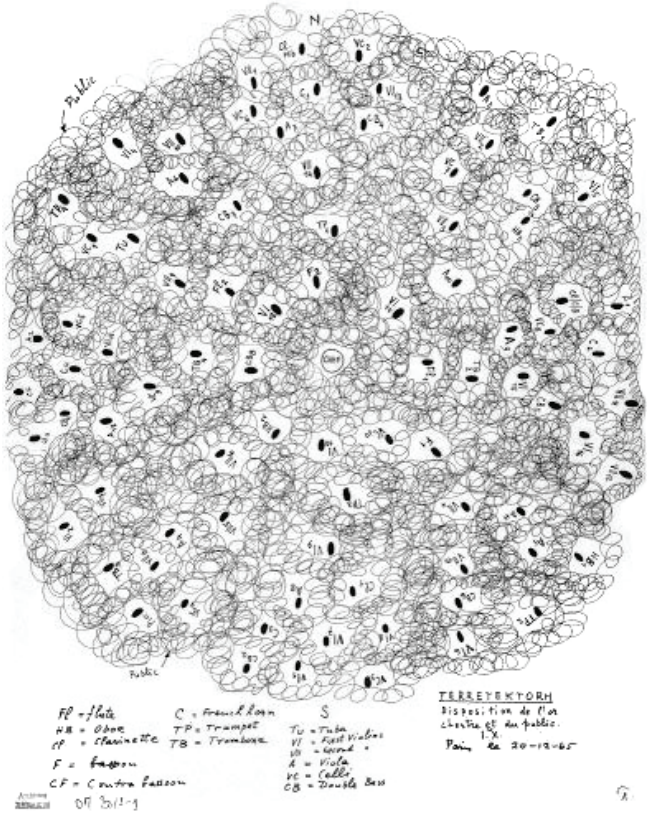
Such solutions are rather less common in actual composition practice, and, for various reasons, somewhat more problematic. Examples of both can be found in the music of Iannis Xenakis. In *Eonta* (1964) for chamber ensemble, the listeners are traditionally seated in the auditorium, and the performers – on the stage, but some of the latter (two trumpeters and three trombonists) change their positions while playing the instruments; they turn around their axes (which mainly alters the sound colour), walk round the stage and between the rows in the auditorium. In this and similar cases, the listeners are set in the role of observers; themselves remaining in one place, they experience the motion of sound in physical space. As it turns out, however, the performative elements, which are not always welcome, may come to the fore, pushing the purely musical qualities to the background. Another possible issue related to practical limitations results from the fact that the effect of playing an instrument while moving may prove unnatural, instrumental parts need to be simplified due to problems with synchronisation, etc. As the composer himself observes:

> The problem is that the movement of performers is theatrical. Besides, when the sound moves along with the speed of a walking human it is not interesting enough. If you could ask the players to run and play at the same time, that would be more interesting, but I have not seen such a thing anywhere. Sound movement is very difficult to obtain also because most performers do not like to walk, even slowly, and play at the same time.[35]

In Xenakis' *Terretektorh* (1965–1966) for orchestra it is the audience rather than the musicians that is allowed to move around during performance. The instrumentalists are evenly distributed along the circumference of a circle in a manner which the composer refers to

[35] I. Xenakis, 'Music, Space and Spatialization: Iannis Xenakis in Conversation with Maria Anna Harley', Paris 25 May 1992, unpublished transcript, 10; quoted after: M.A. Harley, 'Spatial sound movement in the instrumental music of Iannis Xenakis', *Journal of New Music Research*, 23/3 (1994), 299.

as 'quasi-stochastic sprinkling';[36] though the location of each instrumentalist was precisely planned, the whole makes the impression of a random arrangement (example 3). In accordance with the composer's intention, listeners should be equipped before the concert with soundless folding chairs which will allow them freely to move around or sit in any place of their own choice within the circle.[37] This changes the character of the listeners' experience; from observers, they turn into participants.



Ex. 3. Iannis Xenakis, *Terretektorh*, distribution of the performers and the audience.

[36] I. Xenakis, F*ormalized Music. Thought and Mathematics in Composition* (1992), 236.

[37] For practical reasons, however, immovable seats are frequently introduced for the audience during performances of this piece, which limits the experience of movement and reduces it to situation no. 1, that is, an illusion of moving sound.

By way of conclusion, I wish to emphasise certain types of relations. In the two situations I have just discussed, connected with the uses of physical space in music, we can discern distinct analogies to the already mentioned metaphorical ways of describing music (metaphors of movement as discussed by Lakoff and Johnson), as well as, if we go a step further, to the metaphor of time as a moving object (as in Larson and Johnson). These analogies have been represented below (Table 1):

Metaphors of time as a moving object (Lakoff and Johnson)	**Metaphors of movement in music (Larson and Johnson)**	**Spatial music**
-	-	Illusion of movement: static audience and static performers.
Time is moving and we remain in one place ('the time has come to…').	'Moving music' ('the next section is coming').	Observer's perspective: static audience and mobile performers.
Time is stationary and we move through it ('we're approaching the end of the week').	'Musical landscape' ('we're coming to the coda').	Participant's perspective: mobile audience and static performers.
-	Music as a 'moving force' ('music attracts us').	-
	'internal spatiality' of the music work	'external spatiality' of the music work

Table 1. The materialisation of the metaphor of movement in spatial compositions.

In twentieth-century spatial compositions we may observe phenomena directly referring to the sense of phrases that we use to describe music. It is a language mediated by the experience of our own carnality. This concerns two situations; either the listeners are observers of a moving musical landscape (they remain stationary and as if outside the events, observing what is moving in their surroundings), or they move across that landscape (thus at the same time actively participating in what happens around them). Each of these corresponds to a different type of metaphors: those concerning conceptualisations of time, and those used to describe music (the grey fields in the table above). The phenomenon observed by Pociej and described by him

as a transformation of internal into external spatiality[38] can thus be called, in the context of the above, a materialisation of the metaphor of movement in twentieth-century spatial music, that is, the transition from linguistic metaphors to solutions that overcome their non-literal character. The potential for spatialising sound and setting it in motion may possibly lie not only in the very nature of music, but also in the ways we speak, think, and experience reality.

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[38] Pociej, 'O przestrzenności…', 74.

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