Space as Metaphor: The Use of Spatial Metaphors in Music and Music Writing

Frederico Macedo
1. Introduction

In classical terms, metaphor is a figure of speech, an adornment or elaboration of language, primarily intended for literary and poetic purposes, but which may also appear in contexts other than literary works and poetry. It can be defined as “a figure of speech […] that associates two distinct things; the representation of one thing by another” (Murfin & Ray 2003, p. 260). The tenor is the thing represented and the vehicle is the image used to represent the thing. When metaphors are used to describe music, the tenor is the music or some specific aspect of music, and the vehicles are the images and non-musical concepts used to describe music. If one says, for instance, that in Ravel’s Jeux d’eau the sounds are like a waterfall, the music is the tenor, and the image of the waterfall is the vehicle.

The idea of space — and related concepts — has been used as a metaphor throughout the history of musicology, musical analysis and music theory to refer to different aspects of music. In a wide sense, the expression musical space may be used to refer to the experience of music as the experience of being a place different from the physical one where the listener is, not a real space, but a phenomenal space. Thomas Clifton describes the experience of being in a musical space as follows:

To be in musical space means more than mere existence at a particular place, and therefore has nothing to do with one’s physical location. It is all too obvious that placing one’s body in the concert hall during a musical performance
is not what is meant by being-in-a-musical space. [...] Ultimately, musical space has significance because a person finds himself there, as a place to take up a temporary habitation. (Clifton 1983, p. 141)

In a more restricted way, spatial metaphors have been used to refer to specific aspects of music, such as pitch structure, timbre or dynamics, in expressions like tonal space, space of timbres or space of intensities. In many cases the meaning of these expressions is taken for granted and a more technical definition is not given. In other cases the concepts are formally defined, for instance, when Bayle describes the experience of instrumental music as an experience of an enclosed space:

In the discipline of instrumental music we have gained the experience of an enclosed space, marked by precise divisions: the scale from low to high frequencies, the harmonic system, the spiral of tonalities. This is a space, but it is well marked out, a space made of divisions, a ‘dividual’ space, the opposite of the space of timbres, a gradual space where changes occur in shades, as it is with the space of intensities. (Bayle 2007, p. 243)

In a similar way, expressions like tonal space, modal space or pitch space have also been used to refer to the pitch structure of music. Schoenberg speaks of ‘tonal regions’, using this idea as part of his theory of harmony. Tonalities can be more closely or remotely related, and the notion of distance is applied to different chords and tonalities as a measure of similarity or difference (Lerdahl 1987, p. 315).

Another well-known use of spatial metaphors in music is the description of pitch. High pitches and frequencies are supposed to be ‘higher’ than low pitches and frequencies in the audible spectrum. A whole range of spatial words has been naturally developed as a consequence of this primary perception, like ‘ascending’ and ‘descending’ lines, ‘upwards’ and ‘downwards’ motions or melodies, and so on. Why has music been described through the use of spatial metaphors, if one takes in consideration that music is, ultimately, an aural experience? To answer to this question it is necessary to understand more about metaphors in general, and, specifically about spatial metaphors.

Using some of the ideas of contemporary theory of metaphor, in this article I discuss how space and spatial concepts have been used as metaphors to describe music and musical structures. First I expose some key concepts of contemporary theory of metaphor. Then I analyse two cases of systems created to describe music based on the use of spatial metaphors: Thomas Clifton’s conception of space as one of the essentials of music experience and Trevor Wishart’s concept of sonic space. Then I suggest three criteria to evaluate the use of spatial metaphors for music description.
2. Contemporary theory of Metaphor

Since the late 1970s, there has been a huge development in the study of metaphor, which, from a small province in the fields of linguistics, rhetoric and philosophy of language, became one of the richest and most challenging and interesting subjects of contemporary research, with important implications for different fields of knowledge such as philosophy of science, social and cognitive sciences, and psychology, among others. Different approaches and practical applications of the research about metaphor have been proposed.

According to Ortony (1993) the theories of metaphor can be divided in two large groups: nonconstructivists and constructivists. The nonconstructivist view, which accords with most presuppositions of classical theories of metaphor, conceives metaphor as an adornment or elaboration of language, a secondary, deviant and parasitic use of “normal language”. Nonconstructivists believe that there is a sharp distinction between literal and figurative language. According to this view, scientific language would be literal, while metaphors should be found primarily in literary and poetic contexts. Constructivist theories of metaphor, on the other hand, challenge most of the presuppositions of classical theories, conceiving metaphor as a matter of thought, not just of language, a phenomenon which goes beyond the purely linguistic, closely related to the way mind apprehends and conceptualizes reality. Constructivists also believe that the difference between metaphorical and literal language is one of degree, and not of nature. Metaphor is, therefore, a pervasive phenomenon, which can be found in all kinds of discourses.

According to Lakoff (1993), one of the most important constructivists, metaphor is not a purely linguistic phenomenon restricted to the poetic and literary uses of language, but an essential part of the conceptual system through which reality is conceived, and also an essential part of everyday language. Metaphor is conceptualized as a system of correspondences, a general mapping across conceptual domains. This system is manifest in language through metaphorical expressions. A metaphorical expression is “a linguistic expression (a word, phrase or sentence) that is the surface realization of such a cross-domain mapping” (Ibid., p. 203). “The locus of metaphor”, he says “is not in language at all, but in the way we conceptualize one mental domain in terms of another” (Ibid.).

Lakoff gives many examples of everyday concepts which are conceptualized via metaphor, among them emotional and abstract concepts used in everyday life, such as “time, quantity, state, change, action, cause, purpose, means, modality, and […] category” (Ibid., p. 212). Love, for instance, is conceptualized as a journey, in which two partners travel through a vehicle to reach a common destination. A number of metaphorical expressions are derived from this mapping, such as “We’re at a crossroads”, “Our relationship has hit a dead-end street” or “We may have to go our separate ways” (Ibid., p. 206). Because this metaphor is part of the way love in conceptualized in English, they are easily understood. Like many other emotional and abstract concepts, they are part of the system of everyday conceptual
metaphors. Lakoff suggests the concepts of source domain and target domain to replace the older terminology (vehicle and tenor, respectively):

The metaphor involves understanding one domain of experience, love, in terms of a very different domain of experience, journeys. More technically, the metaphor can be understood as a mapping (in the mathematical sense) from a source domain (in this case, journeys) to a target domain (in this case, love). *(Ibid.*, pp. 206-207).

Lakoff also suggests a system of mnemonics, which is very useful for the description and analysis of metaphors. For the name of the mapping he uses, in capital letters, the structure TARGET DOMAIN IS SOURCE DOMAIN, for the description of the mapping he uses the structure TARGET-DOMAIN-AS-SOURCE-DOMAIN, followed by a series of expressions that clarify the set of correspondences established between the domains. For the metaphor LOVE IS A JOURNEY *(Ibid.*, p. 207), it follows:

LOVE-AS-A-JOURNEY mapping:
The lovers correspond to travellers
The love relationship corresponds to the vehicle.
The lovers’ common goals correspond to their common destinations on the journey.
Difficulties in the relationship correspond to impediments to travel.

Lakoff does not abolish the distinction between metaphorical and literal meaning, but makes it much more fluid and flexible than classical theories used to do, showing that great part of our everyday concepts are metaphorical and that this system of metaphor is also the basis for the interpretation of literary and poetic metaphor. “Though much of our conceptual system is metaphorical”, he says “a significant part of it is nonmetaphorical. Metaphorical understanding is grounded in nonmetaphorical understanding” *(Ibid.*, p. 244).

3. What metaphors are for?

If metaphor is understood, in classical terms, as an adornment of language, the first reason to use metaphors would serve an aesthetic purpose: to make the discourse more attractive and beautiful. This can be understood as one of the reasons to use metaphor, but not the only one. Ortony (1993), surveying the ideas of different authors, tries to give some provisional answers for the question of what metaphors are for. He points out that recent research suggests that “something new is created when a metaphor is understood” and that “metaphors afford different ways of viewing the world” (Ortony 1993, p. 5). In this sense, the use of metaphor is closely associated with the process of production of new knowledge.

New knowledge involves the creation of new concepts and the use of new words or known words with different meanings or in different contexts. The recourse
to metaphor is one of the sources of new vocabulary and new concepts and “an important means of expressing ideas for which the language may not have any literal terms” (Ibid., p. 7). Even in science, which is conceived by classical theories of metaphor as the domain of literal language per se, metaphor has proven to be essential for the elaboration and transmission of new theories and new models.

Lakoff speaks of two main categories of metaphors, conceptual metaphors and image metaphors. Conceptual metaphor “maps one conceptual domain onto another, often with many concepts in the source domain mapped onto many corresponding concepts in the target domain” (Ibid., p. 229). In the examples discussed below, knowledge about space is mapped onto knowledge about music, in this sense, what is valid for the source domain should be valid for the target domain:

Each mapping defines an open-ended class of potential correspondences across inference patterns [...]. Each map should be seen [...] as a fixed pattern of ontological correspondences across domains that may, or may not, be applied to a source domain knowledge structure or a source domain lexical item. (Lakoff 1993, p. 210)

Image metaphors work with images, instead of concepts, mapping “one conventional image onto another [...] they are “one-shot” metaphors: they map one image onto another image” (Ibid., p. 229). The distinction between image metaphor and conceptual metaphor is not clear-cut, as very often a conceptual metaphor is based in knowledge derived from image metaphors.

The concepts of conventional metaphor and novel metaphor are also important to understand how metaphor works. Conventional metaphor is the system of metaphors in operation in everyday language, exemplified above by the metaphor LOVE IS A JOURNEY. Novel metaphor happens when someone, usually a writer, creates new metaphors. The examples discussed below, created by Clifton and Wishart, are examples of novel metaphors. Conventional metaphors are much more common than novel metaphors, and in most cases novel metaphors are extensions of conventional metaphors (Ibid., p. 237).

Spatial metaphors can be understood as a special case of image metaphor, in which the knowledge from the spatial domain (source domain), in most cases understood as a visual domain, is mapped into the target domain. They have an important role in the conventional system of metaphor, being responsible for the conceptualization of a number of abstract concepts. As an example, Lakoff mentions the CATEGORIES ARE CONTAINERS metaphor. The language and inferences used in the description of the abstract concept of category are derived from the image of containers (Ibid., p. 213). Lakoff raises the possibility that “a great many, if not all, abstract inferences are actually metaphorical versions of spatial inferences that are inherent in the topological structure of image-schemas” (Ibid., p. 216). In this sense, the use of spatial metaphors for music description is nothing but a particular case of a widespread use of spatial images used to conceptualize abstract concepts.
4. The use of spatial metaphors for music description

If music can be understood as an experience, the description of this experience in words may be a difficult task, because ordinary language may not, and in fact does not, have literal terms to describe it. This is probably the main reason why different kinds of metaphor have been used for music description. There is also one additional reason why spatial metaphors are used to describe music, which is, ultimately, an aural phenomenon, rather than a visual one: the natural interdependence of the senses and the predominance of visual sense in western thought.

Thomas Clifton points out that, despite being primarily an aural experience, the experience of music is not strictly auditory. Each of the five senses work with a specific kind of information. However, there is a level of interaction between them and this is why images and non-aural perceptions can be activated by sounds. The human perception of the external world is not fragmented because there is a self that synthesizes the empirically discrete perceptions of each individual sense. This self “transcends, and provides a background to, those parts of the self which see, hear, feel, and judge” (Clifton 1983, p. 66). This interaction of different senses is also present in spatial perception, as Bartley explains:

Space perception is not a function of vision alone, although vision is rather peculiarly a space sense. Touch and kinestheses enable contact with objects and exploration of their size, shape, and location in a sequential manner. Hearing by way of acoustic enables the detection and identification of objects and events and their locations. But vision provides for an overall apprehension of the space domain in a rather direct way. (Bartley 1980, p. 268)

Smith (1979) points out that the visual emphasis in musicology is part of a widespread tendency of western thought to rely on the visual sense, even when referring to experiences originated from other senses or to abstract concepts. He argues that the visual emphasis in western thought started with the use of visual metaphors in the expression of philosophical thought in Greek times. As he points out:

The history of philosophy since Aristotle seems largely bound to sight and light. How a thing looked or appeared concretely to the sight, be that of the eye or of the mind, was the most important approach to what a thing was […]. From Plato to Aristotle through phenomenology in its traditional forms we are dealing almost exclusively with the phenomenon of actual and metaphorical sight, literally dominating what a thing is by how it looks. (Smith 1979, pp. 28-29)

This emphasis on the visual sense has also influenced the language of musicology and musical thought in general, which have relied heavily on the use of visual metaphors to describe music. The fact that western music has developed a system of visual notation may also explain why it has been particularly influenced by visual symbol and metaphor:
The fact that western music is grasped or written down in musical notation sets it off as an art peculiarly influenced by visual symbol and metaphor. For the audial experience is literally transferred over to an intellectual grid that originated in things seen, whether by the physical eye or by the mind’s eye. And thus in a larger sense western music history has been the history of a veritable Augen-music […] the reason for this can again be traced in the rise of music theory, as it took its terms from philosophy. (Ibid., p. 153)

5. Effective, ineffective and neutral metaphors

One point that seems to be evident about metaphor is that not all metaphors are equally well succeeded as metaphors. Some of them seem to be effective, others neutral and others simply ineffective metaphors. Ortony (1993, p. 14) mentions the concepts of powerful and impotent metaphors, suggested by Pylyshyn, to evaluate the use of metaphors in science:

Pylyshyn […] wants to distinguish those that carry with them explanations as well as descriptions from those that have no explanatory potential, even though they might leave their protagonists with an unwarranted and unhelpful “comfortable feeling” that something has been explained. (Ibid., p. 14)

Metaphors can be powerful tools to produce new knowledge, but they may also be source of misunderstanding and the source of arguable views about the subject under examination, not only in science and politics, but in any context where they are used. Lakoff suggests two principles that may be of great help to evaluate the use of metaphors: the Invariance Principle and the experiential basis of metaphor.

The Invariance Principle establishes criteria that metaphors should conform to if they intend to be effective. The most important point is that the structure of the target domain must be preserved and the structure of the source domain must be consistent with the structure of the target domain. Two basic principles follow [1] “image-schema structure inherent in the target domain cannot be violated” and [2] “inherent target domain structure automatically limits what can be mapped” (Lakoff 1993, p. 216). The simple conclusion, which can be taken from these principles, is that, in order to be effective, a metaphor should be appropriate to describe or explain the subject under examination. If, for instance, one decides to use metaphors to describe music, the images chosen should be appropriate for the description of that aspect of music under discussion. If a metaphor needs too much explanation or if it makes the discussion of the subject obscure or too difficult to understand, it is a good sign that it is not an effective metaphor.

To explain the experiential basis of metaphor, Lakoff gives as example the metaphor MORE IS UP. This metaphor is grounded in the experiences of “pouring more fluid into a container and seeing the level go up, or adding more things to a pile and seeing the pile get higher” (Ibid., p. 240). The idea of verticality is
transferred to other domains, even when there is no strict vertical correspondence, such as in the expression “the prices rose”. In music the characterization of pitch in terms of high and low seems to be a case of metaphor grounded in experience. Probably this is why these metaphors are easily accepted and incorporated in the music terminology without problem. Meyer says “the fact that cultures all over the world tend to characterize pitches in spatial terms […] supports the view that this way of perceiving pitch is at least partly innate” (Meyer 1967, p. 251). Wishart speaks of an environmental metaphor to explain the use of terms like ‘high’ and ‘low’ to refer to pitch, saying, “airborne creatures have high voices and earth-bound creatures low voices” (Wishart 1998, p. 191). Gibson also says that:

There is an interesting illusion that occurs with high and low frequencies in the world of imaging — highs are higher and lows are lower. […] There are a number of reasons why this illusion occurs. First of all, low frequencies come through the floor to your feet; high frequencies don’t. […] Another reason is the fact that our bodies have a large resonant chamber, the chest cavity, below a smaller resonant chamber, our head. (Gibson 2005, pp. 24-25)

It should be clear, however, that the fact that this metaphor is grounded in experience does not mean that high pitches are always physically higher than low pitches, despite the fact that they may be perceived as such.

In order to evaluate the effectiveness of metaphors for music description I suggest here three criteria: the aesthetic value, the explanatory value and the experiential value. According to these criteria, metaphors can belong to one of three categories: effective metaphors, ineffective metaphors and neutral metaphors. An effective metaphor is a metaphor in which the knowledge derived from the source domain can offer new insights, expand or clarify important aspects of the target domain. An effective metaphor adds something new to the understanding of the subject, even if it is only to make the writing about music aesthetically more attractive. Metaphors which fit in the three criteria — aesthetic, explanatory and experiential — seem to be the most powerful, but if they fit one of them, they may be effective enough, provided they accord to the Invariance Principle.

An ineffective metaphor is a metaphor that does not accord with the Invariance Principle. Ineffective metaphors tend to need a lot of explanation and may add an unnecessary level of complexity to the discourse, making the understanding of the subject more difficult or obscure. A neutral metaphor is a metaphor that, even though not necessarily adds anything original or new to the understanding of the subject, does not make it confusing or unnecessarily complicated, but does not violate the Invariance Principle. A neutral metaphor may have aesthetic value, which could be a good reason to justify its use. These criteria can be applied both to metaphorical expressions and to systems of metaphors. Using the criteria and terminology suggested, I evaluate in the next two sections the effectiveness of Clifton’s and Wishart’s use of spatial metaphors for music description. It should be clear that the way these authors use spatial metaphors go beyond the mere use
of metaphorical expressions for their aesthetic value. In their writing, they are proposing systems of conceptual metaphors based in spatial images and concepts to describe and conceptualize music and the musical experience.

5.1. Space as one of the Essentials of Music Experience

Clifton (1983) in his attempt to build a system of phenomenological description of music, conceives musical space as one of the four essential of musical experience — time, space, play and feeling and understanding. He tries to build a system of conceptual metaphors to describe musical texture — target domain — in terms of geometric space — source domain. Some of the metaphors suggested by Clifton may be evaluated as neutral or effective metaphors, while others seem to be cases of ineffective metaphors. The system as a whole does not seem to agree with the Invariance Principle, which makes it of limited value for description or analysis of music. In Lakoff’s terms, the system may be named as the MUSICAL TEXTURE IS A GEOMETRIC SPACE metaphor, and can be summarized as follows:

MUSICAL-TEXTURE-AS-GEOMETRIC-SPACE mapping:
Perceived melody is line
Texture is surface
Perceived distance is distance
Surfaces can be penetrated by silence
The short-memory of a sound can be penetrated by another sound
Surfaces can be penetrated by sounds
A surface can emerge from other surface
Surfaces can overlap one another
Sudden modulation is change of perspective

Line is defined as the narrowest and simplest kind of musical space that can be experienced in monophonic music, such as Gregorian chant (Cliton 1983, p. 143). The musical line exhibits some of the properties of geometrical lines, for instance, thickness. The association of melody with the concept of line seems to be straightforward, and the traditional description of melody as melodic line seems to be the point of departure for this metaphor. Line seems to be a case of neutral or effective metaphor, as the notion seems to be grounded in experience.

Surface can be understood as texture. Musical surfaces, according to this metaphor, exhibit the same properties found in physical surfaces: shape, relief and solidity (Ibid., p. 69). Clifton suggests a typology of musical surfaces, with four categories: undifferentiated surfaces and surfaces with low, middle and high relief. Undifferentiated surfaces occur under the absence of movement, contrast in dynamics and timbral complexity (Ibid., p. 155). In surfaces with low relief some kind of differentiation starts to happen, which is more evident in the surfaces with middle relief. The differentiation may happen when a line emerges from the texture or when any parameter in an undifferentiated surface — intensity, timbre, attack or rhythm — changes, while the others remain constant (Ibid., p. 156).
The three first kinds of surfaces suggested by Clifton describe in a clear way the musical extracts to which they refer, taken from 20th century works, and can be understood as cases of neutral metaphors. In surfaces with high relief, the sound structures are clearly differentiated through melody, harmony, pitch and intervals. The notion of surfaces of high relief is relatively clear to describe the different sound planes in Bach’s first prelude from The Well-Tempered Clavier. However, in my experience as a listener, I do not perceive the emerging melody as a surface, although I may recognize that other listeners could experience this perception. There seems to be also a lack of clarity in the notions of line and surface, and the distinction between them does not seem to be very clear either. From my experience I regard surface as a case of ineffective metaphor, as there is, in geometry, a clear distinction between line and surface that does not correspond to a similar distinction in musical space, as defined by Clifton.

The notion of distance is conceived by Clifton as perceived distance, or the subjective perception of hearing a musical passage “as coming from the distance” (Ibid., p. 182). He mentions that many factors may be involved in this perception, including the dynamic level, but he does not discuss further the subject, just saying, “there is no fixed way in which one can safely predict such appearances. One must simply catch the phenomenon as it is experienced” (Ibid., p. 182). He argues that the factors involved in the perception of distance in the visual and aural fields are different, and that there is no direct correspondence between them. For this reason, I believe that there is no explanatory value in the metaphor. This can be regarded as an ineffective metaphor, as the invariance principle is not taken in consideration and the structure of the target domain is violated.

The concepts of penetration, emerging and overlapping are used to describe the multidimensional linear forms, in which the texture is complex or important changes happen in the texture. A texture can be penetrated by silence when the silence has a formative function in the composition, for instance, in pauses which are meaningful from the point of view of articulation or when simultaneous pauses occur in all voices (Ibid., p. 186). Penetration of sounds by silence has a clear association with the technical means described, and can be understood as an alternative way of referring to pauses, silences or different kinds of articulation in the description of textures or transitions between textures. As they are grounded in the experience of the listener, penetration of sounds by silence may be regarded as an effective metaphor.

However, as a whole, the notion of penetration is quite problematic, as Clifton uses the idea to refer to different phenomena, some of them not related to texture. The first kind of penetration mentioned is the penetration of the short-term memory of a sound just played by another sound in the transition of one movement of a larger structure to another. A texture can also be penetrated by other sounds, when important changes occur in the texture, so that one texture — for instance, octaves — is perceived as being penetrated by another — for instance,
a more complex texture of sharp dissonances. The third kind of penetration described by Clifton is the penetration of the listener by the sound, which seems to be a phenomenon of another order. Clifton seems to change here from what was initially a relatively objective description of musical texture to the discussion of more subjective and comprehensive aspects of music reception in general. Here the target domain seems to change, which makes the system as a whole confusing, difficult to follow and of little explanatory or descriptive value, if any.

The discussion of multidimensional linear forms ends with the presentation of the concepts of emerging and overlapping. Emerging happens when individual elements which were already present in a texture take prominence and become more important (Ibid., pp. 196-197). The concept of spatial overlapping describes structures in which different melodies happen at the same time, some of them starting before others finish. In the examples, melody and harmony are entwined and the focus of the attention of the listener changes through time, and the notions of melody and accompaniment become blurred (Ibid., p. 196). Both concepts seem to describe in a clear way what happens in the examples, and could be used to describe similar occurrences in other works, being useful as a category for music analysis. Therefore, I believe they can be regarded as effective metaphors.

The last concept presented by Clifton — faceting — remains isolated as an attempt to include some aspects of harmony in his discussion of musical space. Clifton refers to the sense of distance and proximity produced by tonal modulation. He treats a sudden modulation from C-sharp minor to C major as a spatial change. Faceting, here, means that a sudden change in harmony is a change of perspective, as if the listener was listening to another facet of the piece (Ibid., p. 202). The idea of faceting does not seem to have any direct relationship to what has been discussed up to this point about texture, and there seems to be here, also, confusion about the target domain, now regarded not as texture, but as what Lerdahl (1987) named tonal pitch space, another case of spatial metaphor used for music description.

Despite the importance of Clifton’s work for the conceptualization of the phenomenology of music, his attempt to build a system of metaphors to describe musical space seems to be one of the weakest aspects of his work. When he discusses the differences between the visual and aural domains, he finds four differences and three similarities (Clifton 1983, pp. 178-181). Among the differences he mentions that the notion of depth, distance, motion and colour (understood as timbre in musical space) do not follow the same principles in visual and aural domains. This would lead naturally to the conclusion that the explanatory value of the system would be very limited, as the metaphors would not be self-evident and would need the kind of explanation that he provides to make sense. In terms of the Invariance Principle, the image-schema structure of the target domain is violated and the limits imposed by this structure would not allow the use of geometric space as an effective metaphor to describe musical texture. Perhaps this is one of the reasons why his terminology and his system of musical space has had so little impact in the
musicological community and has not been incorporated as categories of analysis by most analysts. For all these reasons, as a whole, I regard Clifton’s MUSICAL TEXTURE IS A GEOMETRIC SPACE metaphor as a good example of ineffective metaphor.

5.2. Sonic Space

The composer Trevor Wishart (1998) suggests the concept of sonic space to refer to the auditory field of music, as perceived by the listener. He uses spatial and visual metaphors to map this field, building a system of conceptual metaphors to describe a new concept of music, sonic art. In Lakoff’s terms, the system may be named as the MUSIC IS A SONIC SPACE metaphor, and can be summarized as follows:

MUSIC-AS-SONIC-SPACE-METAPHOR
The aural dimension of music is sonic space
Vocal/Instrumental music is lattice sonics.
New music/electroacoustic music is sonic art
Sound with defined pitch is pitch-continuum.
Noise-based sound is noise-colouration space
Timbre is timbre-space.

In order to expand the concept of music, to encompass new forms of sound discourse and the sound materials used in electroacoustic music, Wishart suggests the concept of sonic art, which includes not only instrumental and electroacoustic music, but also all practices which involve any kind of organization of sound events. “Sonic art”, he says, “includes music and electro-acoustic music […] it will cross over into areas which have been categorised distinctly as text-sound and as sound-effects. […] For me, all these areas fall within the category I call ‘music’” (Ibid., p. 4).

In his system he describes three dimensions of sonic space: pitch-continuum, the domain of sounds with defined pitch; noise-colouration space, the domain of noise-based sounds and timbre-space, the domain of timbre. The discussion of the features of the pitch continuum is part of Wishart’s description of sonic space, and is related to what he defines as lattice sonics:

Conventional music theories, dealing with the organisation of pitch in finite sets, rhythms using summative notation and most usually in fixed tempi, and sets of instruments grouped into clearly differentiated timbre-classes […]. Everything from isorhythm through Rameau’s theory of tonality to serialism comes under the general heading of lattice sonics […]. (Ibid., p. 8)

In order to describe the pitch-continuum, Wishart discusses the nature of sonic space examining and criticizing the rationales used to explain the scalar system of western music and the claims that the division of the octave in twelve semitones is based in a natural phenomenon. He discusses the principle of harmonicity (Ibid.,
p. 71) and the principle of adjacency (Ibid., p. 73), to conclude that the number of intervals by which the octave is divided is defined culturally. This does not mean that the choice of intervals for a scale is arbitrary, as the pitch-continuum has a metric that can be heard — a nodal structure — from which different musical cultures choose intervals which are close approximations of the nodes defined by this structure (Ibid., p. 74).

The nodal structure of the pitch continuum provides a way of measuring in a precise way the perceived relationships in the dimension of pitch, as if we had, internally, a grid of references based on the Pythagorean consonances. When we listen to sounds with defined pitch, we adjust this grid to the sound listened and attribute hierarchic and subjective values — such as consonance and dissonance — to the sounds which are perceived to be more or less related to each other (Ibid., pp. 73-74). Because the pitch continuum has a nodal structure it is possible to perceive aurally the subtle differences between different pitches, scales, modes, chords and harmonies. It also explains why the same pitch in different registers is perceived as being the same sound one or more octaves higher or lower.

In order to describe the noise colouration space, Wishart points out that one of its main features is that it does not have the nodal structure characteristic of the pitch-continuum. The ability to perceive intervals is a direct consequence of the ability to perceive the frequency of sounds with defined pitch. Although physical measurements can be made to define the frequencies present in noise-based sounds, and in this way conclude that, for example, one given noise-based sound is one octave higher than another one, we do not perceive them as being one octave higher. Wishart explains this phenomenon saying that “in the case of the noise-bands, the dimension of ‘noise colouration’ has no perceivable nodal structure and therefore we can only have a sense of linear distance (principle of adjacency) between the objects”. (Ibid., pp. 75-76)

Wishart’s mapping of sonic space as being constituted by pitch continuum and noise colouration space offers an effective description of the auditory field, especially if one takes into consideration its utility for composition. The discussion of the structure of the pitch-continuum is clarifying. The principles of harmonicity and adjacency are an effective way to describe some of the properties of the pitch-continuum and noise-colouration space and a good way to explain some of the differences between them.

Wishart suggests also the expression lattice sonics to refer to all music that deals with the organization of the pitch dimension, which can be roughly identified with vocal/instrumental music. This metaphor is also effective, as it describes precisely the kind of music in which the rhythmic dimension is measured through combinations and subdivisions of a basic beat and the pitch dimension is defined by a system of pre-defined pitches. This concept is used in his discussion as a way of differentiating it from a more advanced conception of music, which he defines as sonic art. Implicit in the metaphor is the idea that sonic art does not necessarily
work with sounds with defined pitch, and when they occur they do not have to obey a pre-defined structure such as the 12-semitone subdivision of western scale. Also, the temporal dimension does not necessarily need to be derived from a rhythmic structure based in subdivisions and combinations of a basic beat.

The third dimension of sonic space is timbre-space. Wishart conceives timbre as a multi-dimensional phenomenon, in which many variables are present, among them the quality of the attack, the placement of energy in the frequency spectrum, the inharmonicity of the sound, among other morphological characteristics. Because many variables are involved in the perception of timbre, it is not possible to use a two-dimensional frame, like the one used in lattice sonics, to describe timbre-space. “The timbre domain”, he says, “is quite distinct in structure from the pitch dimension” (Ibid., p. 80).

Wishart believes that the timbre-space has some kind of structure, but, when he wrote, he was not aware of any structural models that could be used to describe appropriately the dimension of timbre. He claims that it would be necessary to find new ways of thought to describe timbral space and gives some suggestions, but does not offer a definitive of complete description of the timbre-space. He suggests the use of the concept of field to describe groups of timbres with similar features, which would allow constructing multi-dimensional maps to describe their timbral possibilities (Wishart 1998, p. 82). He suggests also that the computer could be used to try to overcome the limitations of real instruments and performers and also that it could, perhaps, help to discover some kind of structure in the timbre dimension. In an equally speculative way he mentions two scientific theories which could be used to describe the structure of timbral space: the theory of strange attractions and catastrophe theory (Ibid., pp. 86-87).

In spite of suggesting these parallels between science and the aural domain, Wishart is careful not to try to establish any kind of direct relationship between scientific models and music, refusing to advocate “the formalist temptation to categorise all sound structures in the continuum in advance” (Ibid., p. 92). He seems to be aware of the complexity involved in any description of sonic space, but also of the possibilities of having a better understanding of its nature. “The continuum is not an undifferentiated seamless fog”, he says, “opaque to human intellectual control but rather a wonderful new area for exploration provided we have tools to control the phenomenon […] and the right conceptual categories to approach the material” (Ibid.). His comments show the awareness that any use of these theories for the musical purposes should take in consideration the sound as perceived. This is a very important point, as it works as a warning against the theories which can have a high degree of complexity but that, at some point, lose contact with the object of musical perception, music itself. As a whole, Wishart’s metaphors accord to the Invariance Principle and do not violate the structure of the target domain. Therefore I believe his system can be characterized as an effective system of spatial metaphors for music description.
6. Final Considerations

From what has been discussed, it seems to be evident that, much more than a mere adornment of language, metaphor can be regarded as “the main mechanism through which we comprehend abstract concepts and perform abstract reasoning” (Lakoff 1993, p. 244). This is why metaphor should be regarded as an essential property of thought, and not only a figure of speech like classic theories conceived it. Metaphor is part of the way that mind apprehends reality, and many of its aspects, from everyday concepts to complex scientific theories, can only be understood via metaphor. Although the properties of physical sound may be described in physical terms using a literal terminology, music, as a human phenomenon, needs the recourse to abstract concepts to be analysed, described and understood. Therefore, the use of metaphors for music description should be regarded as a particular case of a general property of thought expressed in language, and the aesthetic, explanatory and experiential potential of metaphor should not be disregarded in music writing. However, in order to be effective, the use of metaphors to describe music should follow the Invariance Principle. Spatial metaphors seem to be relatively common in descriptions of western music because of some similarities between the way music is perceived and the way space is perceived, and also because of the emphasis on the visual sense characteristic of western thought. When spatial metaphors for music description violate the image-structure of the target domain, such as in Clifton’s conception of space as one of the essentials of music experience, they may be ineffective and not very useful from the analytical and explanatory point of view. When spatial metaphors for music description accord to the Invariance Principle, such as in Wishart’s conception of sonic space, they may lead to new insights about music, may also reflect a new and broader conception of music, suggesting new directions for future research. Therefore we may conclude that metaphors in general, and spatial metaphors in particular, may be regarded as important resources that can be used to describe music and musical experience. However, it is important to take into consideration the way they are used, so that they help to clarify and enrich our understanding of music and musical experience, instead of becoming a source of confusion and useless complexity in the discourses on music.

Bibliographical References


