Space, Sound, and Acousmatic Music. The Heart of the Research

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The spatial projection of music for acousmatic listening – the sound in space – enables the space of the future to open up to a fifth dimension of expression in music: the space of sound.

The listening conditions of acousmatic music (with no real established sound source) approach those of a blind person, who senses space by close listening to the acoustic qualities of his or her physical environment. The ›eyes closed‹ approach abolishes the physical limits of the performance space, and it allows the imagination to deploy its spatial sensations.

Species of Spaces: The Four Main Spatial Categories

Four categories of space emerge from this particular practice of interpreta- tion and knowledge of the acousmatic repertoire: (1) the ›ambiophonic‹ or ›surround space‹ immerses the listener in a ›bath‹ of sound; as opposed to (2) the ›sound source‹ space, in which sounds may be localized; (3) the ›geometry space‹ in a work structures planes and volumes; and (4) ›space illusion‹, works in the traditional stereo format. The first three categories relate mostly to multichannel recordings. In contrast, the fourth category, the traditional stereo form, creates both a phantom sound source (possibly moving) and an illusion of spatial depth across the distance of two loudspeakers, regardless of whether that depth is consciously perceived as such. This sonic image resembles a film that displays spatial depth in the central perspective format on a screen.

1a – Ambiophonic Space

A space is termed ambiophonic if we cannot determine where sounds come from, so that the auditor is bathed in a diffused ambiance. Listening achieves a ›mixing‹ of all events hinted at. One can draw an analogy to Byzantine churches: these include domes covered with gold tesserae, which redistribute what little ambient light there is equally across the whole church, but the source cannot be localized.

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For ambiophonic diffusion, we surround the audience with identical speakers, relatively equidistant to each other, so that there is no acoustic ›hole‹. The encircling takes place in every plane; the sphere is the ideal model. If the audience is encircled on only one plane, then the circle be- comes the appropriate model. Dolby and THX cinema systems can also be classified in this category: three different channels at the screen but the sides and rears share one or two channels. The sound projection should be done with identical loudspeakers surrounding the audience. There should be only little movement realized with the aid of the console.

1b – Divided Space

Unlike general surround space, which favours the same type of sound positioned, with a few variations, on several loudspeakers, and spatialised in a unified global movement (like the octogris software), divided space allows a polyphony of different sounds and a superposition of diversified movements, in an encompassing and unified perception of space.

Unlike pointillism, spatial sources are not precisely heard. Space is globalised. It is, however, permeated by small internal movements that bring it to life and make it vibrate. It immerses the listener in multiplicity. It can be compared to flux, in the taxonomy of energy-movements.

The dome projection instrument seems to be the best spatial configuration because it is associated with an envelopment (bath) of sound, and therefore ambiophonic in all dimensions, including height. The perception of auditory space in height is almost as precise as angular perception (the circle). Spatial division is conditioned by the multiplication of output channels: 16 at least (8 and 8).

The expressive capacity of such a domed device at the time of compositionn is very varied:
overflowing: an accumulating figure of space.
Multiplied internal movements: wave-like figures of space, rapid alternation, distributed breath, etc.
Dramatisation :surprise :figures of space: incrustation, appearance/disappearance.
Dialogue (spatial antiphony).
Action/reaction: clarification through space: triggers/resonances
Superimposition (spatial polyphony) in different planes: figures of space: accumulation, unmasking, filling/emptying.
Superimposition (spatial polyphony) of different movements, paths and geometries.
Realism (false landscape): figures of space in accumulation

2a – Source Space: Pointillism

In contrast to the previous category, the ›pointillist‹ type of space pinpoints the source of the sound, which can be monophonic, two track, or multitrack (but not ste-

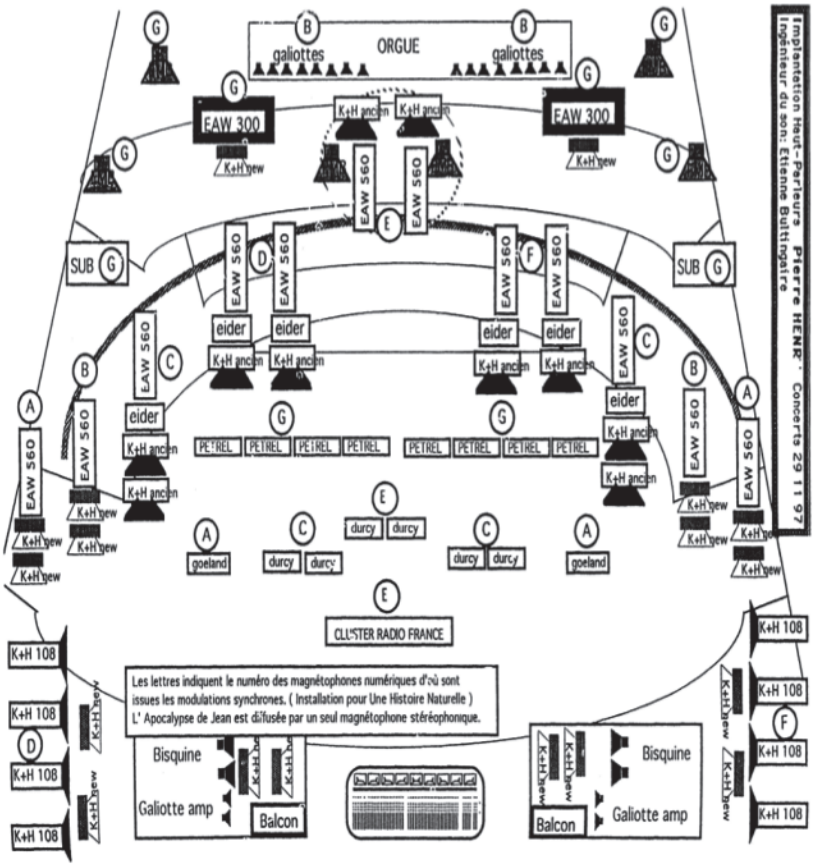

Figure 1. Loudspeaker distribution of Pierre Henry's Histoires naturelles, Paris, Radio France, Olivier Messiaen Hall, 1997.

reo[1]). The movements and the localization of the sound are what matter. We may also want to make the audience feel the differences in colour and power of each speaker.

Pierre Henry was probably the first to explore the musical possibilities of this philosophy of space, during both the compositional process and the concert. In this context, he often contrasts the right and left channels and tracks (›biphony‹) using the geography of the space as an organizational principle (cf. Figure 1). Today, the most common use of the source space is the multiphony from a multitrack player.

Creating a source space involves placing sounds with attack transients sufficiently delineated for localization, even if these transients are very short.

The composition then becomes a pointillist environment, playing with mass- es, the occasional phrasing, and variations in density. Multitrack dialogues and sequence overlays assigned to the same speakers are another kind of this source-space aesthetic,

[1] In contrast to stereo, two-track recordings have different sounds on each track, while stereo works carry interrelated information on their two channels.

which highlights sonic characters or counterpoint.

Sound projection can work with identical or with a diverse range of loudspeakers, selected according to the musical situation. Only little movement with the console is required for realizing this type of space.

2b – Source Space: Movement

Anything in movement is also part of the source space, an audible trajectory in ›outer space‹, generated by the interpreter or written by the composer on the multitrack tape (›inner space‹). As Aesop's tongue, the movement itself can be the worst or the best thing. Indeed, it has always seemed useless to try to save a poor composition, one without internal energy, by applying movements or external ›agitations‹. The movement remains mere ornamentation, not integrated into the music, nor is it justified by musical structure or phrasing. But if we consider the musical expression from the point of view of energy, the trajectories may strengthen the internal energy of the sound. Western music history is strewn with works that give importance to agogics themselves as a factor in expression (think of Claudio Monteverdi and his *stile concitato,* of word painting, particularly in the work of Johann Sebas- tian Bach or the *Symphonie fantastique* by Hector Berlioz) and a structural factor (Igor Stravinsky's *Rite of Spring*, Arthur Honegger's *Pacific 231*, Gi- acinto Scelsi, etc.). If you forgive a banal example, an orbit around the audi- ence, or any other pivot, will highlight to the ears any rotary motion of a spinning top, a swivel, or a repetition.

Finally, the application of a swinging spatial movement to a neutral, ab- stract sound gives it a special meaning, that of a lullaby for example. It may be recalled here how much time, space and motion are related: fast or slow rotations do not generate the same meaning, and if a rotation gradually moves to a faster tempo, it changes its shape and becomes a spiral. This movement space would especially have an ornamental or metaphorical function to sustain: expressive sounds themselves in which it provides a spatial support. In the nineteenth century, timbre and melody maintained the same relationship.

Sound projection is based on identical loudspeakers in a multichannel set. The various colours and movements of this type should be strengthened or created at the console.

3 – Geometry Space

If we consider space from a structural point of view, we can imagine it as the intersection of different lines and planes, as surface or volume interspersed with lines that are bisected biphonically, obliquely, vertically, laterally, etc. From multiple sources (multichannel), think of the sound in terms of composition of the space (monophonic, two track, quadrophonic, triple stereo, dual quadrophony, octophonic, etc., or in any combination possible) applied to a single acoustic chain or to many, simultaneously or sequentially, in close or distant planes. This gives space the equivalent parameter status of the other four parameters. The movement is part of the form when it becomes a

figure, a repetition, a transition, a rupture, a trigger, etc. Here, space geometry is not a carrier; it is a real and abstract musical object that leads the perception of listening and structure, with its evolution over time.

This organized and controlled space requires a diagram of the diffusion system and the choice of the spatial patterns to appear on the tape, for exam- ple, within the sound systems of specific venues or installations. Too much complexity (number of tracks, the possible spatial variations) will affect the transparency of the architecture. My current perceptual experience is limited to four movements or four differentiated geometric spaces. The disposition *a priori*, writing space for itself from multiphonic point sources, generates a stabilizing musical thought that binds the space to the form, so once again, to time.

Sound projection of this kind has to work with identical loudspeakers and a diverse choice of situations by sequences.

4 – Illusion Space

This type of sound projection is based on the illusion of spatial depth and uses stereo technology and its capability to create so-called phantom sound sources (which may be heard in fixed positions or moving between a pair of loudspeakers), thereby building a sonic plane. The sound is no longer per- ceived as a real object, but as an image or as a representation. We enter the world of media coverage, a world of photos, film, video, radio, etc.

Technologically, phantom sound sources appear in the interrelation of two sound tracks. This must be considered throughout the entire chain of production, and the two channels should stay connected to each other. The creation of an imaginary space is based on multiple pairs of loudspeakers; each pair forms its own sound plane in the three-dimensional concert hall.

Therefore, perspectives need to be created and depth planes need to be multiplied, highlighted by multiple phase screens (pairs of loudspeakers), by their staged disposition in at least three positions (near, middle ground, and distant), and by at least three different types of spatial width (very large calibre, medium, and very thin). One may play different calibre registers on a single plane or in 3-D space to enhance the centre of a wide phase screen (static) or to effect a movement of expansion or contraction (dynamic).

The direction of the loudspeakers relative to the audience may or may not specify the contours of sounds as they converge towards one another and towards the centre of the cone of the audience's presence or, on the other hand, diverge as the loudspeakers project sound live. Conversely, the projec- tors may radiate the sound towards reflective surfaces indirectly, or fill the entire space.

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The colour (i.e. the spectral response of the transducers, from low to hyper-high frequencies), also plays an important role. The transducers are di- vided into five families:

- the basses, called ›double basses‹ (10–400 Hz) in a very wide stereo that covers the whole field of the room, or in the centre if there is only one sub- woofer;
- the ›hollow‹ midrange (250–1000 Hz) is used to fill the space;
- the ›clear‹ midrange (400–3000 Hz) is responsible for maximum audibility of the message, and especially of the human voice;
- the ›bright‹ midrange (3000–8000 Hz) reinforces the presence of microscopic life of sonic beings;
- a multiplied group of very high-frequency loudspeakers or tweeters (8000–16000 Hz), which specify the edges. We will use small tweeters to refine the contours present in the audience. The very high pitched speakers or trumpets are used to help locate a set placed far away. The bass is diffuse. Speakers of poor quality (hollow medium) will smoothly play a role of diffuse mass (radiators).

All combinations of placement, calibre width, colour, and directivity give to each pair or group a different musical role, like orchestration: soloists (a pair of references, often in close and converging focal length), mass (distribution of loudspeakers in reflection, on a large area), referential stereo (large width calibre, all frequencies), double basses (bass), and effect (vertical stereo, ceiling, presence in the public etc.).

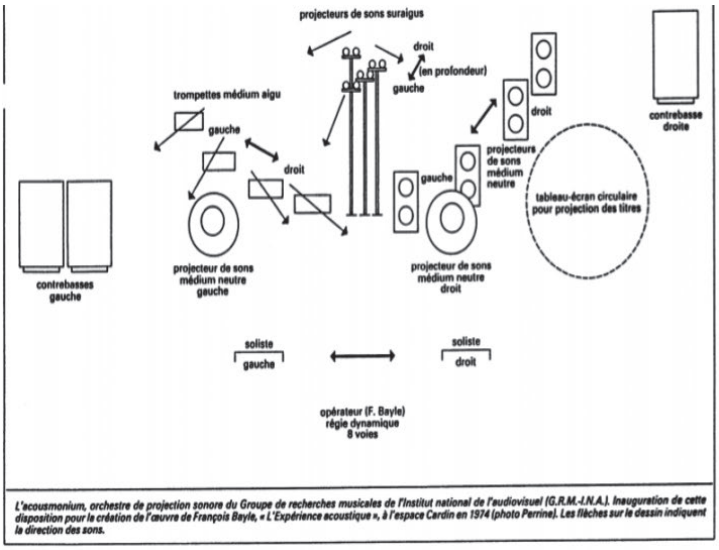
This projection instrument designed to enhance existing space on the tape (the internal space) and reach the imagination and emotion of the listener was developed by François Bayle in 1974, who named it an *Acousmonium* (cf. Figure 2). The last step of the acousmatic production, the *GRM Acousmonium*, counted more than 80 speakers by 2002.

The *acousmonium* of *Musiques & Recherches*, Brussels, founded in 1980, had more than 70 speakers in 2014. It combines the interpretation of the imaginary space with that of the multiphonic space source.

The sound projection works with a variety loudspeakers. Spatial figures and situations of the internal space need to be reinforced from the mixing console.

François Bayle, article »L'acousmatique ou l'art des sons projetés«*, Encyclopoedia Universalis*, Paris 1984.[2]

[2] reprinted in: idem, Musique Acousmatique, propositions... positions, Paris 1993.



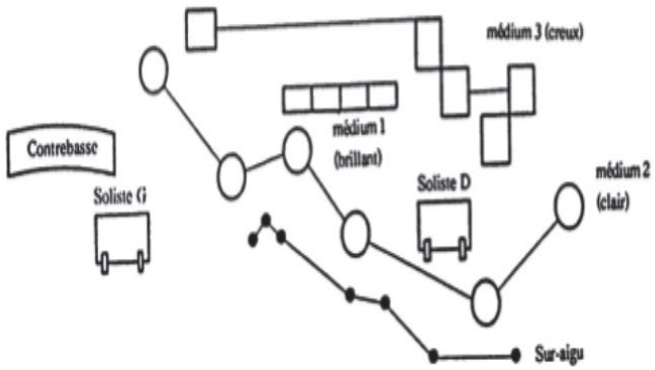


Figure 2. The first version of the Acousmonium, by François Bayle, Espace Cardin, Paris, 1974.

Spatial Interpretation: Stereo-based Spatial performance

The console of projection (fader, multitouch surface, interactive gestures, etc.) is a musical instrument, and its ›operator‹ is a performing musician.

This requires some virtuosity on the part of the interpreter, taking into ac- count not only the chosen speaker system but also the ergonomics of the sound projection instrument, stylistic knowledge of the repertoire, a graphic statement of the simplified works and relevant to their spatialization, and maximum memorization of the works.

The interpretation of acousmatic music tends to bind different spatial figures that reinforce the writing of the work; the figures highlight existing figures or create new ones. The stereo works also offer more freedom of choice to the interpreter. Sixteen figures are listed, with their musical function:

Crossfading

Crossfading is a slow or imperceptible transition of sounds between pairs or larger groups of loudspeakers. The gesture must be careful to avoid digging any acoustic ›hole‹. Start to move up the faders to be faded in before bringing down the first set of faders, and find a balance point.

Musical function: strengthening the existing crossfade on the tape by changing the plane or depth calibre. Draw a path by successive crossfades if, for example, this sound evokes a moving object (ball, car, plane, etc.).

Unmasking

This is a sort of ›upside-down crossfade‹ from a given mass; we hear the de- sired pair or group of loudspeakers by reducing the amplitude of other speakers or by removing them from the mix entirely. The gesture can be gentle, imperceptible, or brutal, using the mute buttons for example.

Musical function: to strengthen an existing unmasking effect on the tape, to change the plane or the depth calibre, or to impose a trajectory on the sound by successive unmasking if, for example, this sound evokes a moving object (ball, car, plane, etc.) and the starting spatial situation is a *tutti* or a mass encompassing the public.

Emphasis

This is the highlighting of a specific location (the soloists, for example) or a group forming a particular space, volume, or a new calibre, by slightly increasing the amplitude of the chosen speakers without modifying the others. The amplitude of departure (the basis) is important because it determines the overall level. We balance it from the stereo reference pair (also called ›the principals‹).

Musical function: this approach can be applied to a specific passage of the work or to a general strategy of projection, in which case we slightly open all the main faders (which thus provide the basis) and then we increase some points following the structure or sections of the work, the desired effect on the listener's perception. This is the general strategy used by François Bayle. Emphasis is a soft, light, and relaxed way to play on the console.

Sparkling

This figure consists of fast, cascading operations highlighting a given mass (and back). Random play of the amplitude within the acousmonium, play on the spectrum (by filtering) in the context of the *Cybernéphone*, developed by Christian Clozier at the *Institut International de Musique Electroacoustique de Bourges* (IMEB) in 1973. To ensure continuity, also keep some channels open and fixed.

Musical function: the spatial equivalent of a *tremolo*, to create liveliness ›inside‹ a thick and smooth mass by digging, or lightly increasing spectral and dynamic frag-

mentation. This can also highlight a moment composed by micro-montage or pointillist (granular) techniques.

Oscillation

Rapid and regular alternation between two loudspeakers or two groups of loudspeakers; the dynamic and the spectrum are subject to alternation. The effect of ›vibration‹ given by a very rapid regularity is only possible on an automated console. A low frequency oscillator (LFO) could serve as a controller.

Musical function: the spatial equivalent of the trill, agitation preparing an explosion, a burst, or otherwise, creating a lively reflux or a fermata.

Swinging

Slow and gestural alternation between two loudspeakers or two groups of loudspeaker; subject to alternation are the dynamic and the spectrum.

Musical function: highlighting the composed musical dialogue, delimitation of spatial landmarks, lullaby.

The Wave

A ›round trip‹ that runs through crossfades or successive unmasking gestures, a series of speakers in a line. For example, from the backstage to the front of the stage, or along the sides, or to the back of the room and back again to the front.

Musical function: the effect of moving mass and of predictable unidirectionality. This gesture has the advantage of joining a known agogic archetype.

Rotation

Circular trajectory between four speakers on stage or, more often, around the audience, with a gesture slightly highlighting each of the points by successive crossfades.

Musical function: evidence of the sound's internal rotation (then we must keep the pace of this internal motion) or creating movements to give, for example, a sense of confinement.

The Spiral

A circular trajectory onto which is applied an acceleration or a deceleration, where the endpoint would be somewhere other than the start.

Musical function: a preparation, an announcement, or a goal-oriented or conclusive trajectory.

Rebound

A quick jump from one point in space to another, from one group to another, or from a soloist to a group (and *vice versa*), by effectuating a quick, alternating gesture on the console or by using a set of mute buttons. The rebound is even more effective when both poles are distant.

Musical function: launch (or relaunch) of a triggering sound; going into another spatial region without any transition.

Insertion (Rupture)

In an area that has already been established, and over a sufficiently long period, a sudden shift or overlap (by unmuting) of a characteristic space or a different width. For example, inserting a directional solo of narrow width into a large and diffuse mass.

Musical function: a rhetorical figure, highlighting written inserts on the tape; an accentuation. The rupture can be used as an abrupt and contrasted departure to another state.

Appearance (and Disappearance)

An unprepared burst or closing from a different spatial state, superimposed on or following the preceding state. The use of mute buttons is the best way to proceed.

Musical function: surprise, ›magic‹, or awakening the listening.

Explosion

The sudden passage from a narrow or directional space to a large and environmental space: not diffused.

Musical function: highlighting an eruptive mass, or a characteristic and energetic morphology.

Accumulation

The successive addition of planes or calibres on top of each other to achieve a spatial *tutti*.

Musical function: the highlighting of a corpuscular sound material (e.g., grains) or the progressive enlargement of a frame.

Invasion

A rapid accumulation, an accumulative trajectory oriented towards the audience.

Musical function: similar to the Lumière brothers' *Arrival of a Train at La Ciotat Station*, an effect of subjective aggression.

Empty and Full

A game playing with the density of the stereo ramp, planes, or volumes. A stereo ramp bounded by two distant speakers seems ›empty‹ or transparent, compared to the same thing when it is filled by other pairs of loudspeakers

placed on the same front (as in the case of wave field synthesis, WFS). The same choice is also possible between depth planes or volumes that incorporate an additional dimension of height, away from one another or filled by intermediate loudspeaker pairs.

Musical function: to clarify or strengthen a sonic mass, akin to a symphonic orchestration. Note, however, that a spatial *tutti* destroys any sensation of space.

The Multiphonic Spatial Performance

The interpretation of multiphonic works raises new requirements, both in terms of technology (including drivers, interfaces, and types of transducers) and in terms of aesthetics. This becomes evident in an examination of interpretations of stereo works.

Today, the means of access (for example, multitouch tablet) and multitrack recording of a sound or sequence, in real time, allow for greater accuracy of trajectory and positioning in space. Each sound can receive a precise spatial identity in the studio. Space truly becomes a musical parameter equivalent to others, if the composer so desires. In concert situations, however, the interpretation is less free and creative than in the case of a stereo work. Unless we multiply the total number of loudspeakers by eight – octophony has become a *de facto* standard in electroacoustic music – with one group of eight loudspeakers controlled by a single fader (cf. BEAST in its second version, for which Jonty Harrison has completed a piece of 72 channels [*BEASTiary*], is the precursor system), it reduces the possibilities of choice in the play on the projection console and it also decreases the diversity of colours offered by the *acousmonium ›à la française‹*; indeed, to fulfil the spatial balance of the composition, we must give the same colour, so the same loudspeakers in each group. The *acousmonium* used at *Musiques & Recherches*, Brussels, solves these two requirements (diversity of colours and groups of eight speakers) with an *›à la belge‹* compromise.

Stylistic Aspects

Depending on the character of each piece, one can, for a different work space, focus on some aspect of the writing, for example, iconicity, movement, ›unmix- ing‹ of polyphony, phrasing changes, matters of subjectivity, or the fluidity of the trajectories.

- image, or iconicity: The ›phonographic‹ image is viewed, understood and reframed, and enlarged with appropriate dimensions to present its content. We do not give the same emphasis, the same calibre to an outdoor soundscape, or to a vocal character's portrait, or to a sonic representation of an interior.

- movement: The energy, the inherent movement in the nature of a sonic sequence or a thread, will be all the more apparent if it is translated by a correlated spatial movement of the same nature.
- ›unmixing‹ of contrapuntal writing: The mixing is ›stripped‹ from the original, after it has been analysed for specific spatial placement of types of sounds. If the writing gives more importance to an individual sonic element, this can be highlighted from a pair of loudspeakers inside a larger group.
- phrasing and variations: The structure of the work – its phrasing, rhythm, and variations – are made explicit by an interpreter who has internalized the work and who now ›relives‹ it, playing it with eyes closed, as if interpreter and composer were one and the same person. This is ›acousmatic modality‹ ap- plied to interpretation.
- subjectivity: Often, in works with text, for example, it comes to making the listener feel the internal situation of which a character speaks. A kind of
› subjective camera ‹, it is the balance between different points of space, de- fined and fixed, which the internal space (often reinforced by the tone of voice in the presence of a text) clearly differs.
- matter: The roughness, grain, or flow, the density and mass of the materials will be enhanced by the proximity, distance, number, and density of the loudspeakers.
- mobility: Create fluid and unpredictable trajectories by a set of successive crossfades separating stereo into two mono channels that are placed inde- pendently on different numbers, locations, and qualities of loudspeakers.

A New Profession: The Spatialization Interpreter

The concert stereo projection of sonic images on phase screens that are pairs of loudspeakers – this is undoubtedly the form of spatial interpretation that is most flexible, varied, and free. This new interpretative profession requires both experience and learning.

It takes the knowledge of the work, which may be helped by its graphic transcription and a well-founded knowledge of the response of each pair of speakers in the acoustic of a given space. The act of interpretation begins with the design of the sound system and its placement, the orientation and the role given to each loudspeaker, the ergonomic allocation of these on the potentiometers of the console. The interpreter then becomes familiar with the system and memorizes the configuration of the console to acquire gestural reflexes that are both lively and reliable.

Then, the rehearsal will take into account the internal space of the work, movements, highlighting speeds will increase, clarifying planes in the depth of field. I still assign other functions to the spatialization in the context of the interpretation itself in concert, as well as part of the multichannel composition in the studio. This is to clarify to the listener the structure of the work and its sections, for example, by attributing to each a different spatial configuration. It will then perform spatial figures within each configuration. This is also to strengthen the perception of memory games, by returning to the same spatial configuration or location with the resumed signal sounds or identical sequences in the different times of the composition.

Multichannel works, for which the writing space is already defined, leave, *de facto*, less freedom or fluidity for the interpretation in concert. The task, then, is to set in place the ratios of tracks on a system, of which the number of speakers is greater than the number of tracks, and to play varying combinations of groups, ensuring that all tracks are always audible: indicate in this design, the track number on the console of projection.

These are just a few aspects of the profession of the spatialization interpreter, which responds, just like any other instrumental discipline, to the combination of competence and performance: technical knowledge of the instrument, analytical and memorized knowledge of the work, and the desire of forward following the ›feeling‹ of the moment, the emotion experienced during the concert.

Levels of Composed Space

As for any musical element, the space of sound is attributed a level of musical function determined by the composer. Nowadays, technology allows for any variation in the use of space, from a micro-event (static or dynamic spatial location for each sound) to a macro-structure (whole spatial structure, dynamic or static, monophonic or polyphonic for each section, phrases, or group of events). Among other possible levels, I have selected the following six that, to me, are particularly useful and expressive:

- The abstract level of space, conceived of planes, volumes, movements, or ge- ometric figure.
- The structural level of space, used to emphasise sections, transitions, or recall.
- The decorative level of space, often in movement, added to an event to strengthen its meaning or temporary function.
- The figurative level, relating space to the imagination, the key feature, the metaphor.
- The archetypal level of some obvious space figures, such as the wave (rocking movement), circle (locked-in effect), etc.
- The ›madrigal‹ level of the expressive strengthening of elements external to the music itself (text, image, etc.): through figures, movements, and appro- priate spatial situations.

Abstract Level

In stereo, depth planes lighten and clarify the sonic orchestration, the mix. The space becomes an active agent, as well as terracing pitch registers and tonal colorations in orchestral writing. Spatial differentiations allow a form of variation on the same material.

Without going back to the 1950s and the 1960s (Karlheinz Stockhausen's *Gesang der Jünglinge*, from 1956, and *Kontakte*, from 1960) or 1972 (John Chowning's *Turenas*), abstract multichannel writing evolved in the 1990s, with digital 8-track player-recorders. In 1989, *Lune Noire*, by Patrick Ascione, composed and mixed at the *GRM* on analogue 16-track, 2-inch tape, installs a dual-space movement swirling

around the audience and on stage. The same year, *Terre*, the fifth element of Annette Vande Gorne's *TAO*, combines geometric figure spaces in and around the public on 8-track, analog, 1-inch tape.

Structural Level

The choice of movement helps to clarify a form or section, highlighting a particular moment. For example, a double-mirror section, of which events and materials are similar, but inverted spatial movement accentuates an inverted form, for example in *Yawar Fiesta, Act II, »Combattimento: sous les coups de ta croupe, et le lait de tes reins«*[3].

Ornamental Level

Space or added movement strengthen the interest of a sound figure. As with a *mordent* or trill, the path directs attention to perceptual elements among others. This space allows source-type »background and figure« writing. For example, in the first act of *Yawar Fiesta*, »Condor«, a circlular movement takes place on the word »Taureau«, in order to fight the bull.

Figurative Level

The imagination, which is based on recognition, recreates space, movement and location. In *Voyage*, from Annette Vande Gorne's *Paysage/Vitesse*, the movement from left to right is artificially applied to a cicada sound; what does one hear more: the source or the movement?

Archetypal Level

Certain movements, by their mere presence, qualify the meaning of the mes- sage, the context, and the communication. Examples for such archetypal movements are:

- the wave (as a representation of a round trip, a hesitation, a rocker), for in- stance, in the final monologue (»The Gods«) from *Yawar Fiesta*;
- the circle (as a representation of confinement), for example, the final mono- logue of *Yawar Fiesta*; and
- the explosion, for instance, in *Terre*, the first part of *TAO*, to express the pri- mordial big bang.

Madrigal Level

The abstract architectures of polyphonic music have evolved towards ex- pressiveness, thanks to the passage of the text and its immediate naive relationship developed

[3] *Yawar Fiesta*, acousmatic opera, (2009-2012) libretto by Werner Lambersy, music by Annette Vande Gorne.

in the 16th century madrigal. I aimed for a similar rela- tionship in my opera *Yawar Fiesta*, assigning this role to spatial movements, or spatial illusion. In the second act, *Combattimento*, the words »I dream« are illustrated with reverberation on all channels; the phrase »sound of your hoof« is depicted with rhythms on the fragmented words; and the sentence »We have fed our souls on it« is expressed with a movement far away in front and with medium-high frequencies on the word »soul«. Also, in the fi- nal monologue of the third act such ›madrigalisms‹ are to be found. So, for example, in the following sentence, »Here at least where words are sung all meet up again for the games « (full space), »[. . .] of darkness [. . .]« (empty space rear), »and light« (solo front center).

Conclusion

The spatial projection of music for acousmatic listening – sound in space – enables the space of the future to open up to a fifth dimension of expressive music: the space of sound.