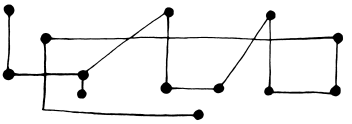
Uneven Mirrors: Thoughts on the Use of Spatial Doubles and Duplication in Three Recent Works



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Introduction

> I saw all the mirrors on earth and none of them reflected me.
>
> —Borges 1978, 27

This article examines the role of duplication in three of my recent works from a spatial perspective. Here I focus on several fields of study: instruments, objects, stage setups, and performers. These are regarded in light of spatiality, avoiding as much as possible the implications of the temporal and sonic domains. The role of the performers is mostly analyzed from a static point of view, regarding them as carriers and/or depositaries of spatial significance within specific musical setups.

A clear interest in setups in which the instruments, objects, and performers are duplicated is present in my work since 2010. This stems from a long-lasting fascination with the visual reproducibility and the

sense of spatial parallelism generated by mirrors. This interest has been materialized in my own work by the creation of setups in which instruments and performers mirror each other, both from spatial and performative perspectives. The use of duplicated instruments and objects may determine a process of visual and sonic equivalences and associations within the space of performance. However, this audio-visual symmetry may be challenged by the usage of dissimilar sonic materials. This possible contradiction may alter or reformulate the mirrored relationships established between two or more identical instruments, delineating a fragile equilibrium between the aural and visual realms. Metaphorically, from a viewpoint of musical duplication, we could regard the spatial domain—the conjunction of duplicated instruments, objects and performers—as the frame of a mirror. In turn, the reflective surface of this hypothetical mirror would be constituted by the sonic domain, completing in such a way the audio-visual contract.

The Borges quote above is particularly appropriate when extrapolated into this particular context: mirrors do not always imply an expected reflection, a causal effect. They are rather conceived as frames of potentiality, as indicators of a possible duplication that may be either confirmed or shattered by the nature of their reflecting surface.

In *Of Other Spaces* (1967), Michel Foucault distinguishes between "utopias" and "heterotopias" as spatial realities that, even if in direct relation with real spaces, reverse, counterbalance, and annul the set of relations they embody and/or reflect. Utopias are spaces without a real place, illusory sites "that have a general relation of direct or inverted analogy with the real space of Society" (1986, 24). Heterotopias, on the other hand, could be defined as the reversal to utopias: existing places in which the rest of real places are "simultaneously represented, contested and inverted" (1986, 24). An illustrative example of this is the theatre. During a play, there is usually a representation of unrelated, alternative spaces—e.g., a battleground, a church, a café, etc.—in the circumscribed realm of the stage. In this regard, the theatre, as a heterotopian space, brings together seemingly disconnected and incompatible places and locations.

Interestingly, Foucault describes an intermediate state in which heterotopias and utopias are indissolubly intertwined: the mirror. Mirrors may be regarded as utopias as they create an impression of virtual spatiality, a feeling of displacement, of a place without a place. We find ourselves duplicated behind the surface, our corporeal identity virtually dislocated, transferred to an unreachable location. Simultaneously, mirrors may also be considered heterotopian devices as they are concrete objects that exist in reality. They mark a limit between the

virtual space and the real, allowing us to reconfigure our original sense of place in the process of mirroring. This feeling of displacement is paradoxically counterbalanced by our reflected image, our vision oriented towards ourselves from the other side of the glass, permitting us to reconstruct our original sense of space and identity. As Foucault observes,

> The mirror functions as a heterotopia in this respect: it makes this place that I occupy at the moment when I look at myself in the glass at once absolutely real, connected with all the space that surrounds it, and absolutely unreal, since in order to be perceived it has to pass through this virtual point which is over there. (Foucault 1986, 24)

The creation of musical situations in which the utopian and heterotopian realms are suggested is present in a considerable number of my compositions. In order to recreate an ambiguous and fluctuating alternation between the two realities, mirror-like setups and symmetrical spatial layouts have often been devised in my work. A feeling of heterotopia is suggested by the use of duplicated instruments, often mirroring their counterparts from a sonic and performative perspective. The heterotopian character is confirmed by means of visibility: a duplicated instrument refers back to the original source by its observable presence and by means of gestural and sonic iteration. A global sense is constructed upon the relationship between the original source and its duplicates, in many cases obliterating the identity of the original by the delineation of ambiguous processes of imitation and sonic exchange. This often prevents the listener from distinguishing between the original and its copy, between the inside and the outside of the mirror.

The utopian aspect is often alluded to by the use of acousmatic sources (speakers and transducer speakers). These suggest parallel, unreachable places in the space of performance by creating unobservable aural duplications. The use of recordings is particularly important in the delineation of utopian parallelisms: the sound of an instrument or a voice is echoed in an inaccessible location, impeding the source's visual identification.

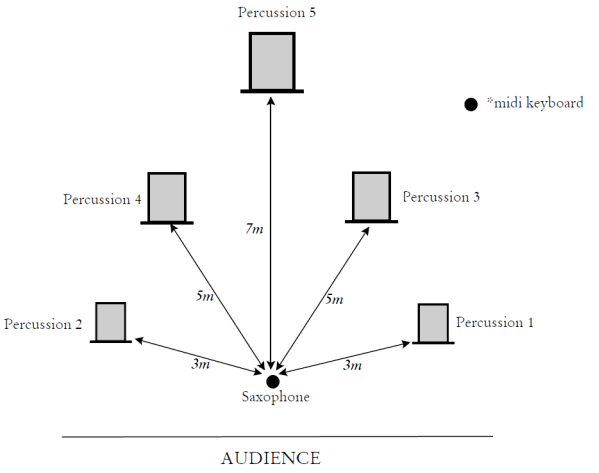
The order in which the works are presented in this article is strictly chronological (from the earliest to the latest).

Huella y Horizonte : Mirror Displacements

Huella y Horizonte (2014–15), scored for tenor saxophone and five flexible steel sheets of different sizes, explores the creation of sonic and architectural mirrors on the stage.[1] The pre-recorded sound of the saxophone is projected onto the metal sheets through surface transducer speakers fixed to their surface.[2] The metal sheets are manipulated in several ways: bending them to various levels of curvature, applying different beaters and resonators to their surface, etc. The sound produced by the transducer speakers is modulated by the acoustic properties of the metal sheets. These could be regarded as sonic screens and/or distorting mirrors capable of substantially altering the nature of the original audio samples. Ultimately, a process of hybridization between the sound of the saxophone and that of the steel sheets is suggested. Throughout the entire performance of this work, the saxophone player is situated with his back to the audience, directing the instrument's sound toward the rear of the stage. The metal sheets are placed in a semicircle around him, facing the audience. In such a way, an almost parabolic configuration is outlined. This creates an illusory effect by which the sound of the saxophone is perceived as being reflected by the sheets. (See Examples 1 and 2.)

The visual content of this work is particularly significant as the different bending processes applied to the sheets imply the creation of a complex architecture of planes, curves, arches, and parabolas. This context of changing configurations is often intended to generate visual analogies and mirroring structures on stage. The simplicity and malleability of the metal sheets allow a direct and observable imprint of physical gestures onto their surfaces and the consequent crystallization

EXAMPLE 1: FIRST PERFORMANCE OF *HUELLA Y HORIZONTE* DURING THE BERNAOLA FESTIVAL, SPAIN, 11/11/2015 (PHOTOGRAPH BY THE COMPOSER)



EXAMPLE 2: SPATIAL SETUP OF *HUELLA Y HORIZONTE* (GRAPH BY THE COMPOSER)

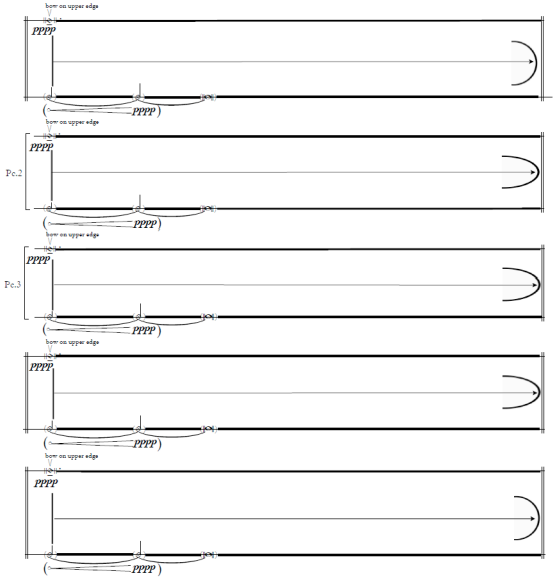
of different shapes and bending degrees. The structure of this work is based on 63 different spatial configurations, each of them involving a different combination of instruments (in fact, mathematically, 63 is the total number of possible combinations). Each specific spatial setup operates as a quasi-independent scene within the piece, characterized by the exploration of different techniques, sound materials, and architectural relationships. This work is completely symmetrical from a structural and spatial perspective. The second half of the piece mirrors the spatial configuration of the first half, although the combination of materials and the specific sound world of the first sections do not always coincide with that of the mirroring sections. As previously discussed, the materials played through the transducers are mostly defined by pre-recorded samples of the saxophone's sound. These samples are largely coincident with the materials performed on stage by the saxophone player, determining a set of references and distorted sonic reflections between the instrument and the metal sheets. In this context, Foucault's notion of the mirror as a territory in between utopia and heterotopia seems particularly appropriate. The metal sheets become distorting mirrors: objects at the limit between concrete spaces (defined by the actual presence and sonic identity of the sheets) and unattainable spaces (defined by the process of projection, distortion,

and reformulation of foreign materials). This process suggests the simultaneous coexistence of various unrelated sonic and spatial universes in the same object. The actual metal sheets are observable exponents of a concrete topos on the stage while the pre-recorded materials, projected onto their surface through transducer speakers, are reminiscent of virtual, inaccessible places. Appropriately, Foucault describes this phenomenon in "Of Other Spaces":

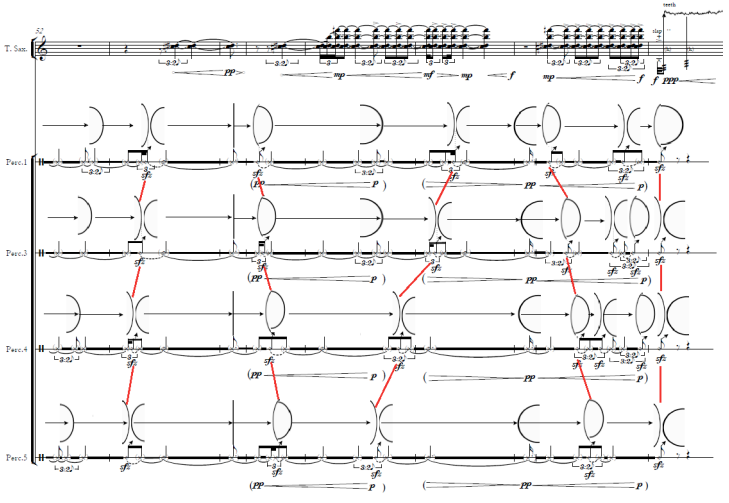
> The heterotopia is capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible. Thus it is that the theater brings onto the rectangle of the stage, one after the other, a whole series of places that are foreign to one another (Foucault 1986, 25)

In the same vein, apart from the sound of the saxophone, a number of recited texts were added to the list of pre-recorded materials of *Huella y Horizonte*. These operate as quasi-unintelligible internal messages within the structure of the work. These texts were extracted from Amundsen's *South Pole Expedition diary*, Copernicus's *De revolutionibus orbium coelestium*, and Melville's *Moby Dick*. They address the problems of geographical awareness and impossible cartographies, the difficulties in locating and ascertaining concrete spots on a territory, and the inability to discern between real and fictional places. These subjects are, in fact, clearly related to the paradoxical nature of the mirror: an object of the in-betweens, in the interstice between utopias and heterotopias.

Individually, each individual sheet physically resembles a mirror, and all of them, in spite of their different sizes, look like each other. Not only do the metal sheets have evocative or associative implications, but they operate as veritable non-static, flexible sonic mirrors able to reflect, warp, and reformulate the materials played through the transducer speakers. On many occasions, the processes of bending are identical between the metal sheets, both in synchronous or asynchronous temporal contexts. This creates visible symmetries on the stage: mirroring arches and contours determined by the different processes of manipulation. This is also easily observable in the actual score due to the graphic notation utilized to transcribe the different bending positions and the different techniques applied to the metal sheets. (See Examples 3 and 4.)

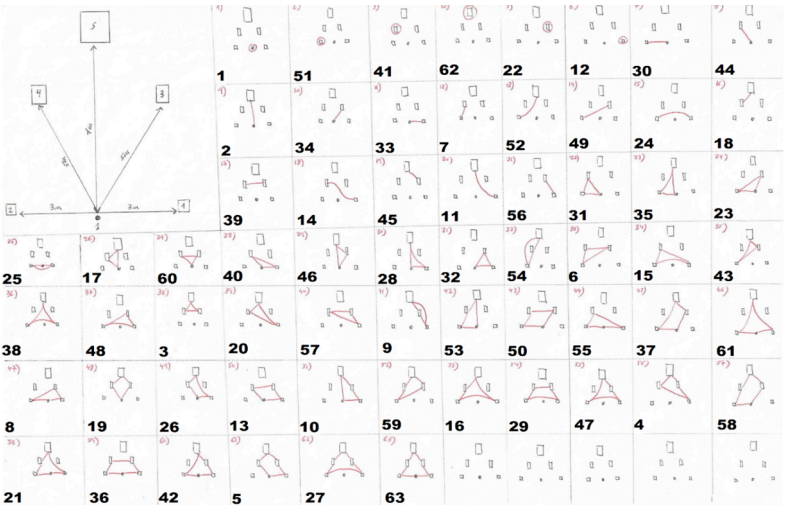


EXAMPLE 3: HUELLA Y HORIZONTE (BAR 297):
SYMMETRICAL BENDING POSITIONS OF ALL THE METAL SHEETS



EXAMPLE 4: *HUELLA Y HORIZONTE* (BARS 52–59):
USE OF IDENTICAL SHEET BENDING POSITIONS IN A NON-STRICTLY SYNCHRONIZED WAY

Specific configurations of curves and planes delineate the visible architecture of each of the 63 sections of the piece (Example 5). As exposed before, the processes of curvature applied to the metal sheets are organized in a symmetrical manner within each of the piece's sections. This outlines visible correspondences between two or more metal sheets in the space of performance. While these local processes are mostly dynamic (the metal sheets are always physically manipulated) and their arrangement responded exclusively to intuitive decisions carried out during the process of composition, a global plan of the specific spatial combinations and interactions between the metal sheets was devised before the process of composition started. This particular plan determined, in a cartographic way, all the possible combinations between the metal sheets and the saxophone. These combinations were later arranged in such a way that the global structure of the work would be entirely symmetrical from a spatial point of view. Consequently, this involved a pre-compositional segmentation of the work's temporal structure, which resulted in an equally symmetrical organization of the sectional durations. The decision to explore all the possible spatial combinations responds, among other things, to the degree of



EXAMPLE 5: PRE-COMPOSITIONAL SKETCH OF *HUELLA Y HORIZONTE*, INDICATING THE SET OF 63 POSSIBLE INSTRUMENTAL COMBINATIONS AND THE ORDER IN WHICH THEY APPEAR IN THE SCORE (SKETCH BY THE COMPOSER)

sameness of the metal sheets. Even if their size is considerably different (the smallest sheet has an area of $0.5\text{m} \times 1\text{m}$ while the largest has an area of $0.75\text{m} \times 1.75\text{m}$), they are visually analogous due to their identical rectangular shape. The material they all are made of (non-galvanized steel) adds an additional layer of shared consistency to their texture and visual appearance.

Additionally, the distribution of the metal sheets on the stage is arranged according to perspective. The smaller sheets are placed on the front side of the stage while the larger ones are on the back, determining a somewhat uniform visual perception of the object's size from the audience's position. It is precisely this sense of uniformity (both from a visual and sonic perspective) that motivated the design of an ever-changing array of spatial relationships between the saxophone and the metal sheets. This constant change of spatial relationships creates an impression of diversity in the musical discourse. Different areas of the stage are sonically excited by similar or identical objects; a feeling of variation is thus built upon a combinatory process in which each metal sheet becomes the signifier of a concrete space, of a specific region within the stage.

During this work's composition process, I was particularly interested in Robert Smithson's *Yucatan Mirror Displacements (1–9)* (1969). This artistic project was characterized by the placement of twelve-inch square mirrors in different sites of the Yucatan peninsula (the same project would be later replicated in other parts of the world with differently sized mirrors). These sites included a quarry, a field of ashes, a beach, mangrove trees, a river island, etc. The projects were short-lived as the setup of mirrors would immediately be dismantled after they were photographed. The mirrors reflected the surrounding objects and the environmental elements, altering and displacing the form and consistency of the sites on which they were placed. They break the spatial continuum by inserting—displacing—bits of reflected landscape into the landscape itself. This process of spatial displacement is a temporal one as the succession of reflected images is a consequence of the passage of time. However, both the mirror and the photograph are outside temporality: the mirror functions as a timeless object that frames the process of reflections while the photograph itself suspends time. Smithson captures this idea in the description of his *third mirror of displacement*:[3]

> In the side of a heap of crushed limestone the twelve mirrors were cantilevered in the midst of large clusters of butterflies. . . . For brief moments flying butterflies were reflected; they seemed to fly

> through a sky of gravel. Shadows cast by the mirrors contrasted with those seconds of color. A scale in terms of "time" rather than "space" took place. The mirror itself is not subject to duration, because it is an ongoing abstraction that is always available and timeless. The reflections, on the other hand, are fleeting instances that evade measure. Space is the remains, or corpse, of time, it has dimensions. (Smithson 1996, 122)

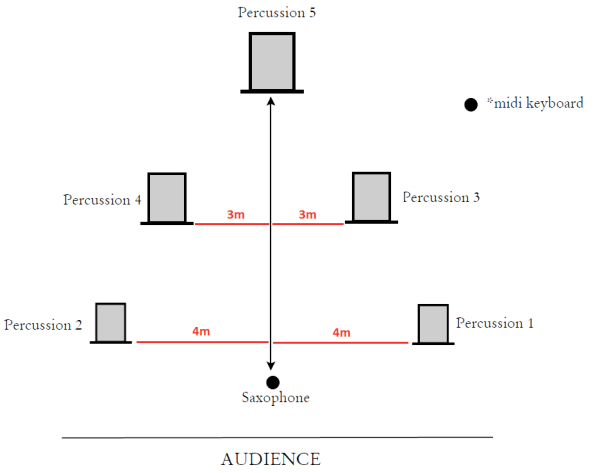
Smithson's notion of the mirror as a place of displacement is remarkably close to the function of the metal sheets in *Huella y Horizonte*. These objects reflect the sound of the saxophone, which could be metaphorically regarded as a prominent sonic signifier within the hall's specific soundscape. The saxophonist plays with the back to the audience, projecting his/her sound towards the back of the stage. This is, in turn, reflected by the hall's rear walls. This acoustic process—sound traveling from the front towards the rear of the stage and then being thrown back in the opposite direction—is fractured by the presence and activity of the metal sheets.

The sheets are always positioned facing the audience. As opposed to the saxophone, their sound is aimed towards the public. The metal sheets, as already discussed, could be regarded as mirrors onto which the sound of the instrument is projected. This process displaces the saxophone's sound to other parts of the stage and, simultaneously, breaks the instrument's unidirectional process of sonic projection. To a certain extent, the metal sheets operate as Smithson's mirrors as they insert or transfer bits of the reflected materials (recordings of the saxophone) into the work's general soundscape, generating a sense of discontinuity. The metal sheets are also, from a comparative point of view, non-durational objects that frame time-based reflections, even if their non-static nature—due to the percussionists' manipulation processes—adds a supplementary layer of complexity to their role in the piece.

Smithson's notion of enantiomorphs was particularly inspiring for the composition of *Huella y Horizonte* and some other works. In science, enantiomorphs are described as each of the two crystal forms of a substance that are mirror images of each other. Smithson applied this particular notion to the layout of objects and materials in several of his works for the purpose of disrupting traditional models of perception. By creating two identical objects, the vanishing point, the illusion of oneness towards which the binocular focus of our eyes converges, is split in two. This enhances a stereoscopic perception of the work or, as Smithson would put it: an "enantiomorphic vision" (1996, 359).[4] This phenomenon could be described in more simple words as "seeing double."

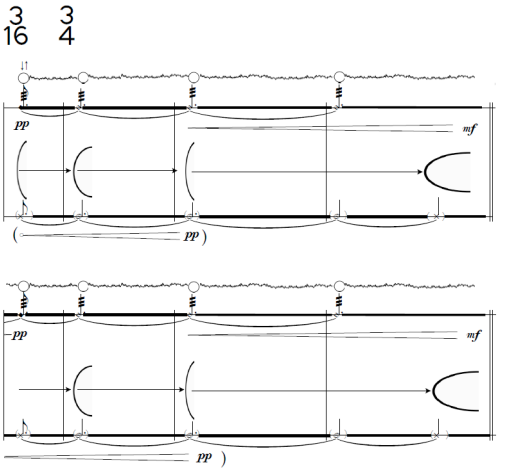
The division of *Huella y Horizonte*'s setup operates in a similar way. The setup is split into two symmetrical halves. The metal sheets on the right side are identical in size to their counterparts on the left (1 = 2 and 3 = 4, see Example 6). Similarly, the distance from the central axis is identical between these pairs of metal sheets. This particular symmetry produces a comparable effect to that of Smithson's enantiomorphic works, suggesting a stereoscopic visual perception of the piece's spatial organization.

This is especially obvious in passages where the lateral metal sheets (the ones located on the right and left sides of the setup's triangle) interact with their identical counterparts on the opposite side, or when the four lateral sheets are manipulated at the same time. This usually coincides with a simultaneous process of stereophony, which is created by the use of identical audio samples played through the transducer speakers fixed to the sheets' surfaces. The concurrent use of stereophonic and stereoscopic effects is particularly effective in creating a feeling of duplication. This convergence helps to create mirror-like relationships on the stage and obliterates a feeling of visual and aural centrality. Additionally, the potential number of observable vanishing points increases, generating an impression of multiplicity and displacement. On some occasions, the bending actions applied to the lateral metal sheets are coincident (see Example 7), enhancing an even

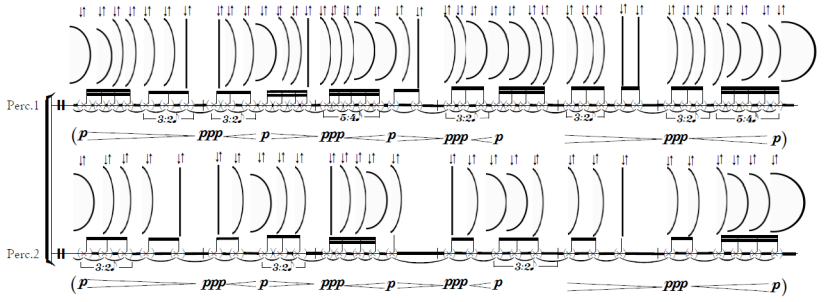


EXAMPLE 6: SETUP OF *HUELLA Y HORIZONTE*, INDICATING THE DISTANCES BETWEEN THE LATERAL METAL SHEETS (GRAPH BY THE COMPOSER)

clearer feeling of stereoscopy and a concomitant stereophonic result. In other cases (see Example 8), the bending processes between the metal sheets are slightly different, allowing microscopic differences in the sonic outcome and the observable structure of changing arches generated by the performers' actions. Nevertheless, their identification as doubles is emphasized by the use of identical audio files and the imitative, quasi-canonic treatment of the bending movements.



EXAMPLE 7: BARS 394–97, PERCUSSION3 & PERCUSSION4



EXAMPLE 8: BARS 274–79

From a visual perspective, the role of the saxophonist in this work is defined by a sense of disconnection and disengagement from the audience. Due to his/her position with their back to the audience, his/her performative gestures and expressive features are never clearly observable. This produces an explicit visual and communicational detachment from the listener. This is also corroborated by the instrument's sound projection, always oriented towards the rear of the hall. The saxophonist's position is also conditioned by the semi-elliptical metal-sheet setup, which "reflects" the instrument's sound and directs it towards the audience. The lack of visibility of the instrumentalist's face and actions creates an impression of depersonalization. The performer is dissociated from any clear gestural or interpretative connotations; he/she is somehow objectified. This allows the audience to concentrate almost exclusively on the instrument's sonic identity.

Additionally, and returning to Smithson's *Mirror Displacements*, the saxophone's sound operates as a tool for suggesting spatial displacements. The pre-recorded materials are sonically transferred to the surface of the metal sheets and, as a consequence, distributed across the performance space. This outlines a network of sonic reflections, which is rarely confirmed by the visible presence of the actual instrument. The sound of the saxophone also becomes the generator of an auditory framework that is often discontinued and interrupted by the action of the metal sheets. In fact, the work's title, *Huella y Horizonte* (literally, *Footprint and Horizon*), makes reference to the notion of spatial and sonic discontinuity often explored in the piece. The horizon could be metaphorically associated with the role of the saxophone (its sound projected towards the rear, towards the "horizon line" of the stage) while the metal sheets operate, from an allegorical point of view, as footprints on the landscape, as visual and aural discontinuities within the performance space.

Isla y Continente: Portals, Imperceptible Asymmetries and Tarkovsky's *Mirror*

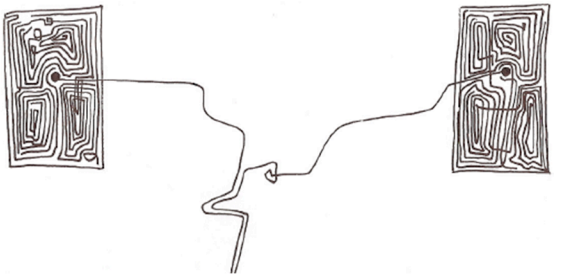
My work *Isla y Continente* (2015) addresses, to a considerable extent, similar issues to those investigated in *Huella y Horizonte*. This work, scored for two large metal sheets with transducers fixed to their surface, explores architectural, gestural, and acoustic duplication through the use of an extremely austere instrumental setup.[5] The metal sheets are handled in several ways: bending them to various levels of curvature, applying different beaters and resonators to their surface, etc. The sound produced by the transducers is conditioned, modulated by the

acoustic properties of the metal sheets once they are manipulated. Again, these operate as sonic screens, as distorting surfaces capable of altering the nature of the original materials played through the transducers to a considerable extent.

A single common audio sample is played simultaneously by the two transducers. This sample consists of a thirteen-minute-long sine wave that slowly delineates a melodic line (an unrecognizable, greatly stretched quotation from Guillaume de Machaut's ballade *Tres douce dame que j'aour*). This melodic line is also recreated by the use of ten bowed, microtonally tuned tuning forks, fixed to the upper side of the sheets. These are also acoustically conditioned by the different bending positions applied to the metal sheets. In this particular work, the issue of mirroring is challenged by the absence of a referential instrument, a sonic "signifier" such as the saxophone in *Huella y Horizonte*. The materials projected onto the metal sheets are not identifiable; there are no references to an observable instrument or concrete source. The single audio file—transmitted simultaneously to the two sheets' surfaces—is perceived as a somewhat extraneous acousmatic source.

The simplicity of this work's setup (Example 9) is, however, particularly effective for the observation of the different bending positions applied to the sheets. This often implies the creation of mirror-like architectural relationships: concurrent (or quasi-concurrent) delineation of duplicated curves, planes, and arches.

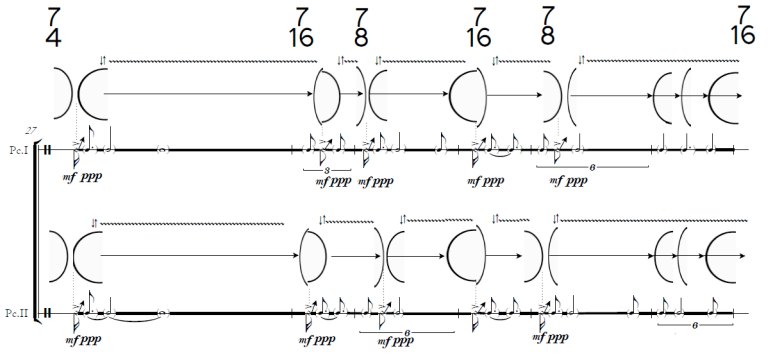
This context of changing configurations is often intended to create visual analogies and mirrored structures on the stage. The malleability of the metal sheets allows a direct and observable imprint of physical gestures onto their surface. As a result, these gestures have a direct effect on the alteration and modulation of the sound produced by the transducers. This particular setup suggests, in a much more evident



EXAMPLE 9: *ISLA Y CONTINENTE*'S SETUP (SKETCH BY THE COMPOSER)

way than *Huella y Horizonte*, a conjunction between stereoscopic and stereophonic effects, which is also easily observable in the score due to the graphic notation used to symbolize the specific degrees of curvature and other techniques (Example 10).

In this work, the issue of distance and visibility is particularly important. Ideally, the piece should be "seen"—experienced live—to fully appreciate the spatial and sonic interactions established between the two metal sheets. These should be placed as far as possible from each other, but allowing visual communication between the performers. The distance between the sheets is consequently variable, depending on the specific conditions and features of the space in which the work is performed. As a result, the amount of separation left between the metal sheets (and the position of the audience in relation to the stage) conditions, to a large extent, the visual experience and general reception of the piece. Either an "enantiomorphic" vision of the two metal sheets is suggested or, if these are greatly separated (in such a way that a general view of the setup becomes impossible), a more focalized yet potentially shifting process of observation is naturally expected. This visual shift from one metal sheet to the other implies a certain disruption in the work's general perception: the sense of symmetry generated by identical and simultaneous (and/or slightly desynchronized) bending processes is only comprehensible if both metal sheets are observed at the same time. This phenomenon, however, is contested by the stereophonic nature of the piece (the transducer speakers always play the same audio file even if the techniques or bending positions applied to the sheets are not always entirely coincident). As such, the listening process consolidates the



EXAMPLE 10: *ISLA Y CONTINENTE*, BARS 27–32; SIMULTANEOUS AND IMITATIVE BENDING PROCESSES APPLIED TO THE METAL SHEETS

general experience of the piece, while the absence of a simultaneous visual "confirmation" of the two sheets may generate a feeling of discontinuity. Thus, the audio-visual experience of the piece is entirely dependent upon the (potentially mutable) distance established between the two metal sheets.

Hypothetically, this issue could be counteracted by the use of video during the work's performance. If the image of each of the two players were recorded and simultaneously projected onto the same screen, the sense of physical distance would immediately disappear. In such a way, the process of gestural duplication would be visually highlighted while the impression of acoustic spatialization would remain intact. This possibility will certainly be explored in future performances.

In *Isla y Continente*, the absence of an observable object of reflection reformulates the sheets' mirroring function. They no longer operate as mere reflecting surfaces, as distorting sonic mirrors, but rather as portals or windows to an alternative space and sonic realm. The sound projected on the metal sheets (an undulating sine wave) exists as an unattainable object, which is only accessible through the sheets' flexible and modulating surfaces. In a Foucaultian sense, the two metal sheets operate as heterotopian devices, as openings or orifices in the continuum of space. In this regard, I was particularly interested in Andrei Tarkovsky's usage of mirrors and reflections in some of his films. In *Mirror* (1975), this object can be regarded as a gateway to alternative spaces and times, occasionally related to the characters' existential dimension. Mirrors operate as access points to one's inner space, dreams, and memories. Usually, they are used to produce an impression of fragmentation and spatial/temporal discontinuity in the film's narrative. They become objects of spatio-temporal dislocation. As Skakov observes:

> Mirrors and reflections do not perform the function of spatio-temporal "stabilizers" in *Mirror*. On the contrary, they seem to displace, disorientate and confuse the notions of space and time. (Skakov 2012, 104)

The use of metal sheets in my work responds to somewhat analogous principles. The audio file played by the transducer speakers suggests an alternative, parallel sonic realm. In this regard, the quotation of Machaut's ballade is not literal but responds to my personal recollection of the melody (the original score was never consulted for the elaboration of this sine wave). Memory operates as a filter of the original material, which in turn is filtered by the acoustic properties of the metal sheets. The metal sheets operate as gateways, as distorting points of access to the underlying melodic material.

Interestingly, in *Mirror*, Tarkovsky utilizes different kinds of mirrors, defined by various sizes and degrees of definition, reflectivity, and convexity. These produce reflections of different qualities, operating as filters of the mirrored images.

> There are multiple mirrors that produce different types of reflection with different textures. . . . In some scenes, mirroring surfaces are not crystal-clear, and the reflected images they produce are blurred or distorted. . . . Water, dust or refractions of light undermine the linearity of reflections, and the characters must confront slightly disfigured versions of their own appearance. In other scenes, the camera reveals the presence of a mirror in a shot (either by focusing on its surface instead of on a mirrored image or by showing a mirror with the boundaries of its frame); but then the reflected images start to dominate the screen and appear to be not reflections but fragments of filmed reality (the camera changes its focus from the mirror's surface to the image, or it zooms in and "hides" the mirror's frame). (Skakov 2012, 104–05)

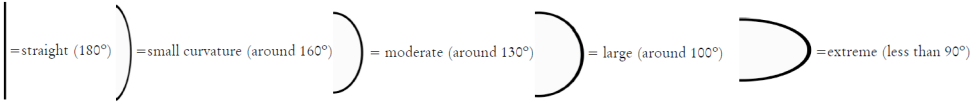
Similarly, in *Isla y Continente*, the different techniques and degrees of bending applied to the metal sheets operate as filters of the materials played through the transducer speakers. Different resonators (bows, SuperBalls, coffee cups) are applied to the surface of the sheets, generating unconventional sonic effects. The bending processes, however, are particularly significant for the delineation of architectural relationships between the two metal sheets. Several degrees of concavity/convexity are explored in this piece, all of them producing different acoustic effects (distinct overtones are excited depending on the level of curvature of the sheets and the specific pitch played through the transducer speakers). These observable bending levels also appear in other pieces where the metal sheets are utilized (e.g., *Huella y Horizonte* and/or *Gyre and Gimble*).

As Skakov mentions in the last lines of the previous quotation, Tarkovsky's process of zooming in and out of the mirror is used to create a feeling of ambiguity between reality and reflected reality, between real and parallel spaces. Tarkovsky deliberately plays with the presence or absence of the mirror's frame to generate an impression of uncertainty between the inside and the outside. Simultaneously, the process of zooming in on a particular thing often results in a less recognizable version of the thing itself, depending on the angle of the camera and the distance from the object (a technique often utilized by Tarkovsky to reformulate or decontextualize the function and appearance of particular objects). The process of zooming in and out may be

compared to the actual bending movements applied to the metal sheets. The vertical position signifies a framed mirror: the sonic materials projected through the transducers are hardly acoustically modified by the actual sheet. In this case, the sheet's role is purely reflective. However, once the degree of bending increases, the metal sheet's overtone structure becomes gradually more compressed. This produces an increasingly distorting effect on the materials projected through the transducer speakers, which are filtered through a progressively narrower overtone spectrum. Occasionally, the original materials are hardly recognizable as a result of the high degree of curvature applied to the metal sheets. This bending motion could be compared to the gradual process of zooming in with a camera, to the point at which the object of focus is no longer recognizable due to the process of optical magnification. An additional property of the metal sheets is their reversibility: they can be bent forwards and backwards with regard to the vertical axis. This implies that all of the possible positions and curvature degrees applicable to the sheet in one direction can be equally performed in the opposite direction. This increases the number of possible interactions and spatial relationships between the two metal sheets. (See Examples 11 and 12.)

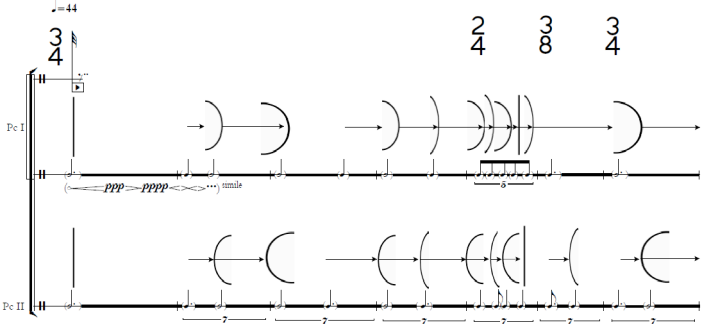
Three different bending strategies are used to generate mirror-like, symmetrical, and asymmetrical structures between the metal sheets. The first is based on a purely imitative process (the metal sheets are curved to the same degrees following a canonic or successive structure). The second strategy is also based on imitative processes (the sheets reach identical curvature degrees), but these are performed in opposite directions, either towards the performer or away from him/her (Example 13). This outlines symmetrical, reverse spatial relationships. The third possibility is defined by the use of non-coincident bending positions, creating a sense of asymmetry between the two metal sheets (Example 14).

The processes of bending applied to the metal sheets are often organized according to imitational or quasi-canonic procedures. With the exception of the passages in which completely asymmetrical relationships are delineated, the rest of the work explores symmetrical structures in a slightly temporally desynchronized fashion, implementing minimal temporal gaps between the crystallization of identical positions. This lack of simultaneity aims to create a feeling of deviation from a perfect form of symmetry, a certain misalignment that breaks the linearity of the mirror-like processes. The lack of simultaneity between the parallel bending motions generates an impression of imperfect symmetry, a certain irregularity in the outline of mirrored arches and planes. In this regard, Morton Feldman's description of Anatolian rugs is particularly appropriate: the configuration of symmetries is neither exact nor predictable.

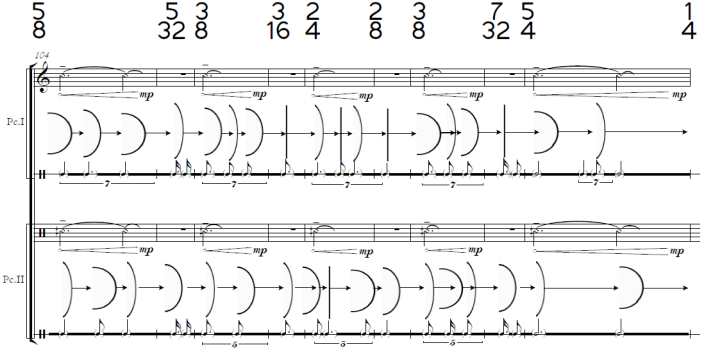


EXAMPLE 11: NOTATION OF METAL SHEET BENDING DEGREES
(WITH THE METAL SHEET'S VERTEX POINTING AWAY FROM THE PERFORMER)

EXAMPLE 12: NOTATION OF METAL SHEET BENDING DEGREES
(WITH THE METAL SHEET'S VERTEX POINTING TOWARDS THE PERFORMER)



EXAMPLE 13: *ISLA Y CONTINENTE*, BARS 1–7; CONTRARY BENDING MOTION



EXAMPLE 14: *ISLA Y CONTINENTE*, BARS 104–12; ASYMMETRICAL CONFIGURATION OF BENDING POSITIONS

Small irregularities in the rug's patterns create observable variations that do not obliterate the general perception of symmetry.

> In Anatolian village and nomadic rugs there appears to be considerably less concern with the exact accuracy of the mirror image than in most other rug-producing areas. The detail of an Anatolian symmetrical image was never mechanical, as I had expected, but idiomatically drawn. Even the classical Turkish carpet was not as particular with perfect border solutions as was its Persian counterpart. (Feldman 2000, 134)

From a comparative point of view, the way in which symmetry is produced in these rugs is similar to the configuration of mirror-like structures in *Isla y Continente*. The two halves of the rugs may be symmetrical in shape but not in color or texture, depending on the particular process of weaving and pattern design. Likewise, in my work, the processes in which identical shapes are reached by the two metal sheets are often slightly divergent, unaligned, and desynchronized. A general impression of symmetry is, however, always preserved. This may be explained by our sense of peripheral vision when applied to bilateral symmetry. As Cucker points out (2013, 129):

> 1. We rarely notice minor deviations from symmetry.
>
> 2. There are a number of elementary feelings associated with the various forms of symmetry which are perceived by the observer even in the presence of deviations, as long as these are noticed as such.
>
> 3. Artists made (and still make) use of the fact that these feelings are perceived by the observer even in the presence of noticeable deviations from strict symmetry to convey them without fully subjecting to the boredom of an excessive order.

From a perceptual point of view, a sense of symmetry is also generally imposed onto non-symmetrical patterns. This is perhaps a result of acquired tendencies related to the observation of the surrounding environment.

> There are still many mysteries of right and left, on the large scale of the structure of the universe, on the small scale of elementary particles, and at all levels in between. Rotational symmetry is found almost everywhere, often combined harmoniously with

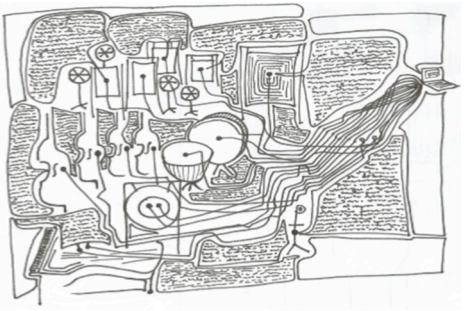
> reflection. We find it in snowflakes, domes, flowers, stained glass windows and pottery. This relation between symmetry and art is more than just pleasing to the eye: it reinforces our tendency to look for symmetry, and even to find it, where it does not belong and may not exist. (Hargittai 1989, 3–4)

Interestingly, the use of asymmetrical bending processes in my work responds to this apparent paradox: the artificial construction of a sense of symmetry in contexts where it does not really happen. In this respect, *Isla y Continente* fluctuates between the clear suggestion of mirroring structures (even if slightly unaligned and non-synchronized) and passages where asymmetrical structures take shape but symmetry is artificially constructed by our own perceptual mechanisms. Thus, due to their ductility and flexibility, the metal sheets are particularly appropriate devices for the observation of these bending processes. The issue of distance between the two metal sheets, as mentioned before, adds a supplementary layer of complexity to the piece's spatial domain, determining an either global or more confined visual reception of the work.

Gyre and Gimble: Doubles through the Looking Glass

My large music theatre work *Gyre and Gimble* (2016) investigates, once again, the delineation of acoustic and visual mirrors on the stage as well as the creation of hybrid acoustic realms.[6] This work is composed for a large ensemble of singers (four soloists plus a small choir), four percussionists, strings, and a number of small installations defined by a number of prepared air fans and unplayed instruments: tam-tam, various metal sheets, grand piano, and several membranophones (Example 15). These instruments are always sonically excited by transducer speakers. *Gyre and Gimble* explores, in a perhaps more comprehensive and multifaceted way than the previous examples, the Foucaultian sense of confluence between utopian and heterotopian realms; the creation of sonic mirrors that reflect and displace the identity of the singers' voices (transferred through transducer speakers to the surface of different instruments and objects).

This work is inspired by one of the first scenes of Lewis Carroll's *Through the Looking-Glass*. The providential moment in which Alice crosses the mirror is reenacted in this piece by the assignment of four differentiated musical, spatial, and psychological profiles to the main vocal soloists. These singers operate as metaphorical "Alices," observing and commenting on the contexts and situations they are involved in. This particular passage of Lewis Carroll's book was particularly inspiring



EXAMPLE 15: SKETCH OF *GYRE AND GIMBLE* (DRAWING BY THE COMPOSER)

for the spatial configuration of *Gyre and Gimble*. Alice does not only cross the looking glass but notices that

> What could be seen from the old room was quite common and uninteresting, but that all the rest was as different as possible. (Carroll 1993, 142)

This little observation implies a feeling of broken symmetry. The interior of the mirror reflects the room that Alice has just left. Gradually, however, the observable analogies, the original impression of spatial parallelism starts to fade, determining an alternative universe with a different set of rules and logic. For the conception of *Gyre and Gimble*, I was particularly interested in Alice's initial moment of spatial awareness. The mirror becomes a fluid membrane, a place that can be accessed and exited, blurring the limits between the reflecting surface and the reflected object. In this regard, the mirror does not only become an object for visual multiplication but it is transformed into a multidirectional gateway, a flexible surface that impedes a clear sense of location and orientation. This is beautifully described by Deleuze in the *Logic of Sense*:

> Alice, from her height, apprehends the mirror as pure surface, a continuity of the outside and the inside, of above and below, of reverse and right sides. (Deleuze 2004, 272)

In this piece, I decided to create four versions of Alice according to her position in relation to a virtual mirror. Each of the singers (soprano, mezzo-soprano, tenor, and baritone) inhabits a particular

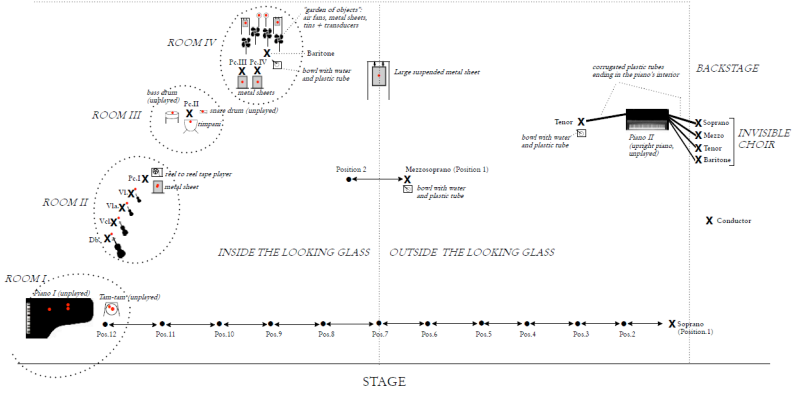
region of the stage (or moves between them). These regions are located on either side of this metaphorical looking glass and have an effect in the singing techniques and particular psychological profile of the different versions of Alice. Along these lines, the soprano embarks on a long journey into the mirror—crossing the entire stage and stopping in several islands along the way (the journey lasts for the entire duration of the piece). This singer almost never sings. She operates as a "voice thief": a loudspeaker hidden among her clothes plays the distorted recordings of her fellow singers while she silently emulates their speech and singing articulation. Eventually, at the very end of her journey across the stage, she finds her voice and indulges in about twelve seconds of solo singing.

The mezzo-soprano inhabits both the outside and the inside of the mirror. She constantly crosses the invisible membrane that separates the two realms. This is represented by a change in the treatment of her voice: inside the mirror she sings/speaks into a bowl of water through a long plastic tube but she returns to standard singing/speaking once she goes back to the other side. This singer is constantly assessing the fragility of memory, represented by the time inversions and discontinuities that take place inside the looking glass.

The tenor remains permanently outside the mirror, pondering what the other side would look like. He typically sings into a corrugated plastic tube that ends in the interior of a wedged grand piano (thus benefiting from the natural resonance of the instrument and creating an artificial feeling of acoustic dislocation). This corrugated tube, wrapped around his body, prevents him from reaching the other side of the mirror. Like the mezzo, he also occasionally sings/speaks into a bowl with water through a long plastic tube. Contrarily, the baritone inhabits the space inside the looking glass, examining the paradoxical differences between the exterior and interior of the mirror. He is located among a "garden" of objects, an installation consisting of prepared air fans and several percussion instruments with transducer speakers fixed to their surface. (See Example 16.)

The space located behind the hypothetical looking glass is divided into four rooms. Each of these rooms is defined by different installations and small ensembles of musicians. Each room relates directly to the voice of each singer. These voices are projected onto the surfaces and sound boxes of the instruments through transducer speakers.

Room I is defined by the presence of an unplayed piano (with transducers fixed to the lower strings) and a large tam-tam (with a transducer fixed to its surface). This parallel room "reflects" the voice of all the singers and signals the soprano's final destination.



EXAMPLE 16: SETUP OF *GYRE AND GIMBLE* (GRAPH BY THE COMPOSER)

Room II is characterized by a small ensemble of string players (mostly performing with transducers instead of bows) and a percussion player (using a metal sheet with an affixed transducer and a reel-to-reel tape player). This room is associated with the voice of the mezzo-soprano. Sonic hybrids are determined between her voice and the acoustic identity of the instruments of the ensemble.

Room III, associated with the tenor's voice, is defined by a small collection of membranophones (snare drum, bass drum, timpani) with transducers fixed to their drumheads. One large timpani (C1-A1) is performed by a single percussionist; its pedal used as a filter or modulator for the materials projected through the transducer.

Room IV, related to the baritone, consists of a small garden of objects (metal tins and plates with attached transducers, prepared air fans) and a couple of percussionists playing metal sheets (also with affixed transducers). All the audio samples, which consist exclusively of recordings of the main singers speaking and singing, are triggered from an invisible MIDI controller keyboard. Additionally, a lateral choir (mirroring the main cast of singers on the stage) operates as a utopian, unreachable collective voice. Like the tenor, the singers of this choir sing into long corrugated tubes that end in the piano's interior.

The design of four different rooms responds, to a certain extent, to the initial scene of *Through the Looking-Glass*. Each singer, embodying a different version of Alice, is associated with a potential room behind the mirror. Here, as opposed to some of the previous works, the sense of reflection is not based on the creation of identical setups (still-life-like representations) but is mainly suggested by sound. The singers' pre-recorded voices are reflected on the specific instruments of each particular room. These are sonically excited by the pre-recorded vocal materials, which simultaneously define the specific sonic nature of each room and demarcate a particular acoustic territory. Metaphorically, in *Gyre and Gimble*, the object of reflection is no longer a drawing room but the singers' own voices. By extension, one could argue that it is in fact their vocal identity that activates and signifies each particular space. Additionally, the objects within each room operate as filters and modifiers of the projected voices, distorting to different degrees their original sonic nature. This may be compared with Alice's initial description of the room behind the mirror: a space in which the reflected elements start to lose their original aspect and identity, and in which irregularities and discontinuities start to alter the impression of similarity and correspondence between the two parallel rooms.

> For instance, the pictures on the wall next the fire seemed to be all alive, and the very clock on the chimneypiece (you know you can

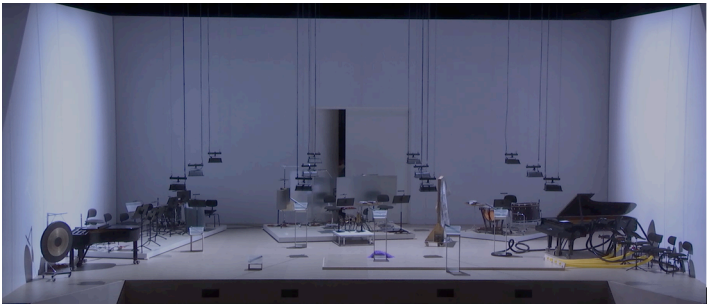
> only see the back of it in the looking-glass) had got the face of a little old man. (Carroll 1993, 142–43)

Throughout the piece, the singers constantly look for their identity, for their genuine voice (which is often filtered, displaced and altered to an unrecognizable level). They often behave as lost, disoriented, and perplexed individuals, unaware of their position in relation to the mirror: are they outside, inside, or exactly on the line of demarcation between two sides of the looking glass? This is particularly evident in the case of the two singers who roam between different positions (soprano and mezzo-soprano), suggesting, in an ambiguous way, different potential crossing points between the two sides of this virtual mirror, different gateways through this figurative dividing membrane. These "Alices" may be regarded as stage wanderers, as erratic explorers of the surrounding territory. This sense of geographical unawareness, disorientation, and displacement is observable everywhere in *Through the Looking-Glass*. Alice is not only the subject of drastic geographical dislocation, perspective shifts, and size alterations. She simultaneously becomes a signifier of the spaces she goes through, of their specific behaviors and characteristics. In other words: she defines the nature of space itself.

> Alice progressively conquers surfaces. She rises or returns to the surface. She creates surfaces. Movements of penetration and burying give way to light lateral movements of sliding. (Deleuze 1998, 21)

As discussed above, each specific room on the stage is sonically related to the voice of an individual singer. Ideally, these rooms should function as independent, self-contained units within the stage, creating a certain feeling of discontinuity in the spatial realm. These rooms are also characterized by the families of instruments and objects that populate them: membranophones, metal instruments, strings, resonating piano and tam-tam, etc. Apart from the sonic duplication established between the singers' voices and their corresponding rooms, there are a set of instruments that create particular symmetries and parallels between the extremes of the stage as well as within the specific rooms. (See Example 17.)

The two grand pianos on the left and right sides of the stage create an impression of symmetry on the stage. In addition to establishing a visual analogy, these pianos play similar musical roles: they are conceived as amplifiers for the voice of the singers. This is achieved by utilizing the instruments' particular resonating properties (the sustain pedal is always kept down with a wooden wedge) and their internal geography (strings and metal plate). The piano situated on the left of the stage amplifies the recordings projected onto its low strings



EXAMPLE 17: STAGING OF *GYRE AND GIMBLE*'S FIRST PERFORMANCE; FERIENKURSE FÜR NEUE MUSIK DARMSTADT (STAATSTHEATER DARMSTADT, 31 AUGUST 2016) (PHOTOGRAPH BY THE COMPOSER)

through a couple of transducer speakers. The piano on the right side of the stage, however, amplifies the voices of several singers, "poured" into the circular holes of the internal metal plate through long corrugated tubes. The pianos become specific sonic containers in their own right, places of sonic displacement that often engage in quasi-antiphonal processes of sonic exchange. From a metaphorical point of view, they could also be considered mirrors. They reflect the voice of the main singers and the choir in different ways: acousmatically—through the use of transducers speakers—or by the direct physical projection of the singers' voices. They also add a sense of symmetry to the configuration of the stage. These instruments are particularly effective in creating a feeling of sonic dislocation and deterritorialization. There is a clear impression of topological displacement between the original sources and the pianos. These become "destination points" to which the voice of the singers is transported. This is particularly evident in the case of the piano on the right side of the stage: the corrugated tubes create an intricate network, a number of observable channels through which the voice is transmitted. This form of dislocation has resonance, to some degree, with Walter Benjamin's well-known notions of reproducibility of the work of art:

> Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be . . . the here and now of the original is the prerequisite to the concept of authenticity. (Benjamin 2013, 220)

In this context, the "original" (the singer's voice) is simultaneously present and displaced. Its source (the singer) is observable, but the sonic result is transported, delocalized. In this respect, the pianos operate as apparatus of sonic dislocation. However, the work as a whole suggests a more ambiguous realm, where the relationship between the "original" (the voice of the singer) and its "reproducibility" (the process of sonic displacement and projections) is mostly explored in a simultaneous, concurrent fashion.

In this piece, some of the instruments (the two grand pianos, some of the drums, the tam-tam, and the hanging metal sheets) function as installations, as inert objects sonically activated by transducer speakers. These installations, however, are not necessarily perceived as mere reproducers of the singers' voices. In fact, they operate as middle-ground, intermediate objects: they evidently display a referential character but, at the same time, create unique sonic and visual environments. In such a way, the different installations on the stage, even if they belong to a theatrical context, may be experienced as unique signifiers of space and time. This, returning to Benjamin, contradicts the notion of reproducibility, which is based on the possibility of iteration and the nullification of "aura," the unique spatio-temporal presence of an artwork. In this sense, a parallelism could be drawn between these staged installations and other kinds of installation works.

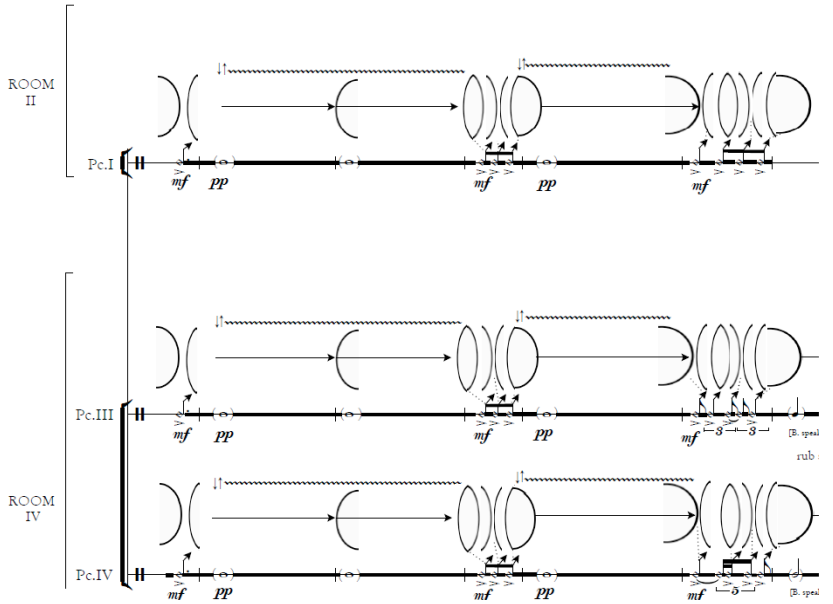
> Installation art . . . operates as a reversal of reproduction. The installation takes a copy out of an allegedly unmarked, open space of anonymous circulation and puts it—even if only temporarily—in a fixed, stable, closed context of a topologically well-defined "here and now." . . . Artworks in an installation are originals for one simple topological reason: it is necessary to go to the installation to see them. (Smith, Enwezor, and Condee 2008, 74)

One of these stage installations, situated in Room IV, consists of a large number of differently sized hanging metal sheets that, together with a set of prepared air fans, constitute a small garden of metallic objects. All of these sheets are individually excited by transducer speakers fixed to their surfaces. Three of the four percussionists physically manipulate metal sheets, which may be perceived as active prolongations of the actual installation. The manipulation of these metal sheets operates in a similar manner as in *Huella y Horizonte* and in *Isla y Continente*. The percussionists outline parallel bending processes, generating symmetrical arches and planes. Simultaneously, a significant number of techniques are performed on the sheets' surface (bowing,

rubbing different objects, etc.). Correspondingly, during the process of bending, the pre-recorded voices played through the transducer speakers are acoustically modified. The particular bending processes applied to the metal sheets are mirrored between the two percussionists in Room IV and the percussionist in Room II. This generates an immediate feeling of parallelism and visual correspondence between these two geographical points (Example 18).

In room IV, the metal sheets are used both as static and as malleable objects. The played metal sheets engage in an imitational bending process while the hanging sheets remain immobile for the whole duration of the piece. Once again, the metal sheets operate as sonic mirrors: both as static and as flexible reflecting surfaces. The audio files played through the transducer speakers—mainly consisting of recordings of the baritone's voice—are identical between all the metal sheets and are, invariably, triggered simultaneously.

Returning to Lewis Carroll and to a more metaphorical realm, these metal sheets could be regarded as mirrors within the mirror, as potential gateways to a multiplicity of parallel spaces. Alternatively, since this



EXAMPLE 18: *GYRE AND GIMBLE* (BARS 223–28); SIMULTANEOUS AND IDENTICAL BENDING POSITIONS BETWEEN METAL SHEETS

collection of "mirrors" is intended to surround the baritone, they could be interpreted as corporeal extensions of the singer himself. In my original conception of the piece, both the baritone and the metal sheets were considered integral elements of the same indivisible installation. The singer's voice would be transmitted to the metal sheets demarcating a particular area, a particular territory on the stage. In this manner, the sheets could be regarded as continuations of the baritone's physiognomy, as extensions of his bodily presence and sonic identity.

The conception of this particular installation was influenced to a considerable extent, by Francis Bacon's pictorial representation of mirrors. Bacon utilizes mirrors as containers of figures and bodies. Mirrors do not always have a clear reflecting function—in fact many of them are intentionally non-reflecting. However, they are often used to encompass or enclose the body, either in its entirety or parts of it (face, limbs). In this respect, Bacon conceives mirrors as holders of matter rather than as reflecting surfaces. Occasionally, they operate as extenders of the body itself, generating an impression of material continuity between the body and its supposed reflection. The figures are simultaneously inside and outside the mirror; there is no physical distance, no material separation between example and reflection: they are one and the same.[7]

Deleuze describes Bacon's mirrors as permeable spaces, as potential containers of figures and bodies:

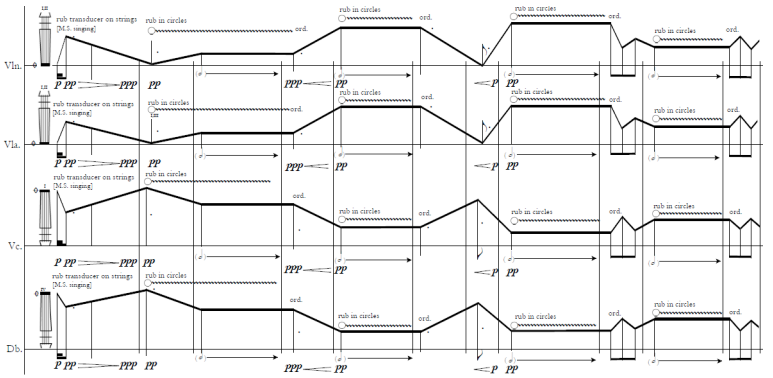
> Bacon's mirrors can be anything you like—except a reflecting surface. The mirror is an opaque and sometimes black thickness. Bacon does not experience the mirror in the same way as Lewis Carroll. The body enters the mirror and lodges itself inside it, itself and its shadow. Hence the fascination: nothing is behind the mirror, everything is inside it. (Deleuze 2003, 13)

In *Gyre and Gimble*, the role of the installation of metal sheets is clearly related to the encapsulating and corporeal nature of Bacon's mirrors. These metal sheets operate, in my eyes, as prolongations of the baritone's sonic and physical identity. They do not function as mere reflecting surfaces but as spaces of enclosure, as particular demarcations of the baritone's sonic identity. This feeling of physical interdependence and correlation between this singer and the surrounding installation is precisely generated by a sense of proximity, by the physical integration of the baritone within this specific realm.

A certain impression of duplication is also established in rooms II and III, in this case by the use of instruments from the same family

(strings, drums). Room II is characterized by the presence of a string quartet (violin, viola, violoncello, double bass) and a percussionist. The string instruments are mostly played and sonically excited with transducer speakers. The transducers replace the bows and are rubbed on the strings and other areas of the instruments, determining, through the process of friction, sonic hybrids between the pre-recorded materials and the instruments. These recordings consist mainly of the mezzo-soprano's voice. Here, spatial duplication is suggested, not only by the physical similarities of the string instruments (in spite of the obvious difference in sizes), but also by the use of often imitative and coincident transducer-rubbing processes. This outlines similar, parallel trajectories and movements of the transducers on the fingerboards and bodies of the instruments (see Example 19). In this work, the geography of the string instruments (fingerboard, bridge, body) is conceived as a map, as a diagram on which the transducers are positioned. The transducers become signifiers of particular geographical points, which are sonically excited by the transmission of pre-recorded materials. When rubbed, these speakers move between concrete points of the instrument's geography, delineating routes and trajectories—e.g., linear movements between specific spots on individual strings, left-to-right and right-to-left rubbing motions on the bridge's wood, etc..

Interestingly, in some sections of the piece these rubbing motions are mirrored between the instruments, producing a feeling of symmetry and parallelism. These correlative rubbing processes produce quite



EXAMPLE 19: *GYRE AND GIMBLE* (MEASURES 95–105); IDENTICAL RUBBING MOVEMENTS APPLIED TO DIFFERENT STRING INSTRUMENTS

distinct acoustic effects due to the instruments' differences in size and materials (string lengths, textures, densities, etc.). Nevertheless, the same gesture is often replicated and reproduced simultaneously by all the performers. Thus, these string instruments do not only "reflect" the voice of the mezzo-soprano from an acoustic perspective but often engage in processes of gestural mirroring. The magnitude and intensity of this gesture increases according to the size of the instrument. In such a way, the double bass implies a much larger amount of spatial displacements, with larger distances between specific positions than the violin or the viola. This could be metaphorically regarded as a succession of magnifying mirrors, all of them displaying a progressively larger version of the same gestural structure. Subsequently, this effect of gradual magnification is enhanced by the position of the musicians on the stage: the double-bassist is located closer to the audience, then followed by the cellist, violist, and eventually by the violinist. This generates a sense of gestural duplication "in perspective," as if the diminutive gestures applied to the violin's fingerboard and body were amplified by a series of consecutive magnifying lenses or mirrors.

Generally, from a perspective of linguistics, "quotable gestures" are directly associated with specific meanings. Quoted gestures are regarded as conveyors of a particular semantic content that is universally understood by the receptor (e.g., nodding and shaking our head, particular hand gestures, etc.):

> In both their forms and their meanings, quotable gestures are as conventional as words, and they can convey referential meanings that are as well defined as words. (Burlings 2007, 42)

Benjamin describes the phenomenon of gestural quotability in relation to epic theatre. For Benjamin, a sense of interruption is generated by the act of quoting as the context of a particular text is altered once it is displaced. Benjamin maintains that this is a particular feature of epic theatre, and it is equally applicable to gesture. These gestures do not necessarily imply a particular symbolism or have universally understandable connotations, but may refer to any specific scene or moment within the play. This adds structural cohesion to the actual play by means of repetition.

> "Making gestures quotable" is one of the essential achievements of epic theatre. The actor must be able to space his gestures as the compositor produces spaced type. This effect can be achieved, for instance, by the actor on stage quoting a gesture of his own. (Benjamin 1998, 19)

In my work, this process of gestural quotation is related to the impression of visual perspective. The performative gesture is magnified the closer it gets to the audience (and so does the size of the instruments). Here, the use of gestural quotations is not temporal but spatial. The "compositor's spaced type" could be metaphorically compared to the feeling of distance established between the instrumentalists of my piece and the suggestion of spatial depth. An impression of gestural transferability is generated by this somewhat artificial delineation of perspective. Gestures are perceived as being transferred from one instrument to the next, being simultaneously "enlarged" or "reduced" depending on our point of observation.

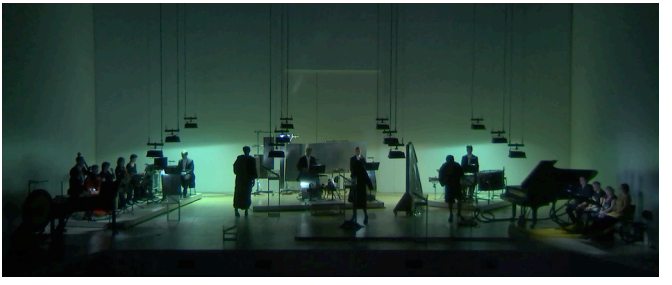
Room III is characterized by a collection of membranophones (timpani, bass drum, and snare drum). A form of visual duplication is somewhat suggested by the use of a set of instruments from the same family. These are sonically excited by transducer speakers placed on their respective membranes. The bass and snare drums remain unperformed while the individual timpani is utilized as a modulator for the materials played through the transducers. This is carried out by gradual pedal changes and different techniques applied to the timpani's head. Due to the simplicity of their sound boards, the drums operate as particularly clear, crystalline sonic reflectors. The pre-recorded voice of the tenor (who is typically associated with this particular room), is transmitted to the drums simultaneously; the three instruments are sonically activated at the same time.

As with *Isla y Continente*, during the process of composition of *Gyre and Gimble*, I was again thinking of the role of mirrors in Tarkovsky's *Zerkalo* (*Mirror*). Tarkovsky's reflecting surfaces are always different. They create diverse degrees of clarity, opacity, blurriness, and distortion: different textures that condition the nature and identity of the reflected images. Similarly, in my piece, the instruments operate as unique sonic mirrors. They generate particular levels of distortion and alteration in the audio materials projected onto their respective surfaces and sounding boards. More interestingly, in Tarkovsky's film the functionality of the mirrors is manifold. They operate as gateways to different spaces and times, as physical frames for specific scenes, as membranes between dreams and reality, as creators of distortion or asymmetries between the reflected image and the original, as mere image reflectors, etc. In general lines, Tarkovsky's mirrors function as observable discontinuities, as fractures of the spatio-temporal continuum.

> The looking glass, as an object, is one of the most resonant aesthetic devices, able to overcome the imposed homogeneity of

> space as perceived by the human eye. It is a natural means of displacing spatial categories. Even a straightforward reflection reverses, at the very least, the right-left axis—a mirror always reflects distortion back to the subject. In addition, the point of view in relation to the mirror . . . inevitably tilts the reflected object; the resulting image is bound to misrepresent its physical source. (Skakov, 103)

The use of audio-visual mirrors in *Gyre and Gimble* is comparable in many respects. The role of the instruments may also be interpreted in a multiplicity of ways: as pure sonic reflectors, as modulators and filters, as sonic containers, as visual duplicates, as prolongations of the sonic and physical presence of specific singers, as indicators of potential parallel spaces, as creators of a sense of displacement, and more generally, as generators of discontinuities and intermittences in the audio-visual continuum.



EXAMPLE 20: STAGING OF *GYRE AND GIMBLE*'S FIRST PERFORMANCE AT THE STAATSTHEATER DARMSTADT (PHOTOGRAPH BY THE COMPOSER)

Notes

1. Audio recording of this work: http://www.abelpaul.net/huellay horizonteaudio.htm
2. Unlike standard loudspeakers, surface transducer loudspeakers (from now on generically referred to as "transducers" or "transducer speakers") lack a diaphragm that moves back and forth, pushing the surrounding air to create sound waves. Instead, surface transducers incorporate a pad, which conducts the vibration (audio signals transformed into mechanical energy) onto the surface against which they are pressed. In such a way, any particular resonant surface or object can be excited by the transducer's vibration. Consequently, the object's oscillation causes alterations in the surrounding air pressure generating sound waves.
3. Photographs of Smithson's works can be found on the artist's official website: https://holtsmithsonfoundation.org/artworks-robert-smithson. The configuration of some of the *Mirror Displacements* (especially *Mirror Displacement (Grassy Slope)* [https://holt smithsonfoundation.org/mirror-displacement-grassy-slope]) is particularly similar to the spatial setup of *Huella y Horizonte*.
4. This idea is clearly materialized in *Enantiomorphic Chambers 1965/2003* (https://www.artandaustralia.com/file/smithson012jpg).
5. Audio recording of this work: http://www.abelpaul.net/islay continenteaudio.htm.
6. Video recording of this work: http://www.abelpaul.net/gyre &gimblevideo.htm.
7. An interesting example of Bacon's representation of mirrors, which was particularly inspiring for the conception of *Gyre and Gimble*, is *Figure Writing Reflected in Mirror* (1976) (http://andipa.com /artist/francis-bacon/figure-writing-reflected-mirror).

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