

THE PROBLEM OF ARCHIVING SOUND WORKS

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This essay discusses the problem of archiving sound works. The case study on which it is based concerns the Sound Archive Project, designed and implemented by the digital arts foundation NOMAD and Istanbul Technical University Dr. Erol Üçer's Center for Advanced Studies in Music (MIAM). The Sound Archive Project seeks to collect and present sound works by young composers, as well as to encourage interaction between artists and listeners. Thus, the archive functions not only as a research facility, but also as a place where performances, workshops, and panel discussions take place.

The conceptual framework of the Sound Archive Project inevitably raises questions about the meaning of archive, sound work, and archiving sound works: What is an archive? Is it silent storage? If so, how can it be turned into a dynamic platform? What does archiving suggest as a technique? What does sound work imply? Is it possible to define or describe sound work as a category? And how can sound work be archived? Accordingly, in this essay I engage and elaborate upon these issues.

Reflections on Archiving and Historicity

"Every archive...is at once institutive and conservative. Revolutionary and traditional."

Jacques Derrida

The word "archive" comes from "arkhé," which means "the originary, the first, the primitive," and from "arkheion," which is "initially a house,

a domicile, an address, the residence of the superior magistrates, the archons, those who commanded" (Derrida 1996:2). Accordingly, archive works as an institutional memory, a "starting place" for all, where commands are written, read and internalized. It is between home and institution, "home and museum," as Derrida says. Between "home" and "institution," between private space and public space, archiving is a technique of commanding, writing, speaking, articulating. It is a technique of constructing memory. Through archiving, archive becomes a medium where the external is incorporated and where the internal is unveiled. Archive offers a voyage between the external and the internal via which the already known can be lost and the unexpected can be encountered. Yet it is also interpreted as a place where nothing seems lost. In other words archive indicates conservation of records. It is a silent storage, as Derrida argues.

Drawing on Freud's psychoanalytic theory, Derrida interprets "destruction drive," "aggression drive," and "death drive" as "archive fever." Death drive integrates with fear of loss. Perhaps, for this reason, death drive provokes conservation of the passed that is preserving the passed as present, making the passed always sustained. This conservation introduces dead bodies into silent shelves, which let the passed neither become lost, nor live its life in its own way. However conservation itself highlights the fear of loss. The fear of loss always remains. It cannot lead to silence. It rather calls for a "hide and seek" game. Therefore death drive threatens silence. It transforms the lost object into the object of pleasure. The lost object activates the oscillation between home and its outside through which memory is written. The plasticity of mental and physical voyage makes memory already open to rewriting. Death drive destroys memory, the representation of memory, archive, as Derrida puts it:

"...The death drive is above all anarchic, one could say, or archiviolithic. It will always have been archive-destroying, by silent vocation...As the death drive is also, according to the most striking

words of Freud himself, an aggression and a destruction (Destruktion) drive, it not only incites forgetfulness, amnesia, the annihilation of memory, as *mnémé* or *anamnésis*, but also commands the radical effacement, in truth the eradication, of that which can never be reduced to *mnémé* or to *anamnésis*, that is, the archive, consignment, the documentary or monumental apparatus as *hypomnéma*, mnemotechnical supplement or representative, auxiliary or memorandum. Because the archive...will never be either memory or anamnesis as spontaneous, alive and internal experience. On the contrary: the archive takes place at the place of originary and structural breakdown of the said memory” (Derrida 1996:10-11).

Beyond “the annihilation of memory,” destruction provokes becoming, transformation, construction of memory, and of archive. It is true that memory suggests a live process. However, archive cannot be considered a plain documentation or conservation of memory. It rather operates as a medium, which does not simply function as storage but also incites an active process of appropriation of the outside. This involves an internalization of the external, which already implies a possibility not simply to translate but also to write memory: “no archive [exists] without outside” (Derrida 1996:11). Emphasis on the outside can be extended to where outside penetrates into inside, and how inside transforms outside. This invites understanding how the collective and the personal encounter each other. How is the collective memory incorporated with the personal memory? How does “collective knowledge,” “stored knowledge” alter personal knowledge, self-knowledge? In other words, how is “self-knowledge” invented?

Inventing knowledge becomes imaginable when stored knowledge is transformed into an object of analysis. This provides the possibility of making stored knowledge open to interpretation, and of producing “self-knowledge.” Inventing knowledge indicates historicity, appropriating or rewriting history “with existents,” in Ricoeur’s words. Paul Ricoeur conveys historicity not as a method to reach “the static factuality” but as a

process to face “contingent realities”: “the question of historicity is no longer the question of historical knowledge conceived as method. Now it designates the manner in which the existent ‘is with’ existents” (Ricoeur 2004:9). Ricoeur reminds the reader of the “ontology of understanding,” and “being.” With reference to Heidegger’s term *Dasein*, Ricoeur describes understanding as “*Dasein*’s ‘project’ and of its openness to being” (ibid.). Knowledge can be produced via Being’s open projects and its openness to understanding and interpreting.

Categorizing knowledge and creating objective blocks of knowledge cannot be treated as pre-given or fixed. Knowledge demands self-discovery. It must be questioned in relation to its situation of being “with existents,” which is neither universal nor objective. The state of “with existents” implies contingency, and the involvement of personal history and personal time. Thus “with existents” can be considered as interpretation, appropriation, and transformation, which prevent direct translation. Instead, every becoming includes the conflict of translating and communicating meaning, which multiplies meanings and subsequently categories.

Let us discuss an example. What makes a piece romantic? Is it merely its expressive elements? Or is it the sum of its thematic and formal qualities? What is the difference between a 19th century romantic piece and a 20th century expressive piece? How do the categories of “Romanticism” and “Expressionism” work to help us “understand” a piece? Historicity, reading with existents, operates as a conceptual tool to compare. Referring to their particular contexts, pieces become objects of analysis, inviting contextual readings and enabling self-discovery. This process provokes one’s creative faculty, and encourages one Self to construct personal connections to art works. Self-discovery is the result of an authentic reading, keeping one at a safe distance from the trap of easy generalizations.

Archive provides a medium for potentially pursuing authentic readings. It is not silent by itself. It does not conserve dead bodies. It is not

merely storage. Archive is rather a safe place, where death drive conserves the lost, the pleasurable. Archive presents an empty space to transform conserved documents into open texts. That way, it encourages interpretation that is reading and writing “with existents.” This also provides the possibility of unveiling the *différance*, in Derrida’s terms, which indicates the hidden kernel of Self that is lost and found, and thus perpetually reinvented. Through the lost, one confronts the contingent, integrates her/his personal time with existent time, and produces authentic readings.

Reflections on Sound Work

How can “sound work” be defined? Is it a specific term? Is it a genre? Is it a category of art or/and music? Historically speaking, sound work derives from contemporary music or so-called “new music” and contemporary art practices. Specifically, sound work refers to a sound sculpture and/or sound installation, via which the physical and the experiential relationship between sound and space, sound and music, and sound and image are explored. Accordingly, sound work involves a sonic experience whereby “sound” itself cannot exist as “itself,” but continually becomes.

How can sound be defined? “Sound involves changes in the pressure of the air, and travels as waves in the air,” explains Charles Taylor (2000: 34-65). Sound travels in time, fusing the temporal and the spatial, and producing reflections and echoes in hearing and understanding. Sound is fluid, transitory, and mutating. Its beginning and ending points are not discrete. In that respect it is lost and open to change, challenging the “first” and the “foremost” (Bulut 2002: 2). Sound does not belong to one single fixed body and space. It rather circulates between bodies and between spaces. That nomadic quality makes sound transform bodies and spaces. As Irigaray describes: “sounds give density to space while letting it stay free, owned by no one...they open and re-open a space outside

bodies, in bodies and between them” (Irigaray 2004:139). Sound does not guarantee a whole body, but suggests many spaces between appearance and disappearance, between presence and absence. It promises multiplicity of other sounds and spaces due to its incompleteness. In this sense, sound works do not exist, but rather they “become.” They create an imaginary presence that implies loss, catalyzing the becoming of a third entity. Said entity is the result of the interplay of the sonic and the spatial. In this transient scenario, sound work is neither complete nor self-contained, and must be understood as a “site-specific” phenomenon, contingent upon the enigmatic interplay of the sonic and the spatial.

“No Touristik No Egzotik Live at Berlin CTM.03” and “Personal Crisis”

Ctrl_alt_del was a sound art festival realized by NOMAD and MARRES in Istanbul in 2003. The festival created a public space for the exhibition and discussion of sound works. Renowned musicians such as Merzbow, Scanner, and Kim Cascone participated in the festival, along with younger musicians. As part of the festival production, NOMAD and MARRES released a CD compilation of the works. “No Touristik No Egzotik Live at Berlin CTM.03” by Serhat Köksal and “Personal Crisis” by Erdem Helvacı_lu are two pieces among the sixteen that were performed in the concerts and included in the CD. Both pieces are considered sound works, for they interrogate the relationship between sound and space, sound and music, and sound and image. “No Touristik No Egzotik Live at Berlin CTM.03” and “Personal Crisis” present different musical elements and structure, and suggest different sonic atmospheres.

“No Touristik No Egzotik Live at Berlin CTM.03” brings melodic and rhythmic patterns to the foreground. It draws on stereotypically “oriental” melodies and easily recognizable rhythmic patterns, thereby

presenting a distinctively audible unity. At a surface level, it seems to make the “oriental” its “différance,” in Derrida’s words. However, the background sound, a cacophony of sound effects, does not add up to a coherent unity. It rather interrupts and deforms the melodic and rhythmic unity of the orientalized tune. The background sound deconstructs the foreground into fragments. Thus, while the orientalized tune and the easily recognizable rhythmic patterns operate as a referential text in the piece, this text is opened by the background sound. The presence of an open text implies the integration of self with the actual space and time, through which one self constructs the real. This inevitably demands reading and writing of what is perceived, interpreting the experience.

Interpretation already denotes deconstruction, as Joseph Margolis argues. While articulating how the personal, the hidden, or the différance, the alterity is reinvented by interpreting, Margolis refers to Grammatology: “Note that grammatology, in Derrida’s sense, is the “science” of “presence” or “writing” – the strange capacity to propose given structures in order to reverse and enrich the force of given structures, precisely when there are none absent [merely] in the decoder’s sense of alterity, in order to recover that radical alterity that we cannot capture in any system” (Margolis 1985: 145). Accordingly, interpreting offers a potentiality of constructing a presence, and deconstructing the already present. It is on the one hand a subversive act, and on the other hand a productive process of Being, which promises change.

“No Touristik No Egzotik Live at Berlin CTM.03” plays with the foreground, with the given structures. It encourages the audience to deconstruct the foreground –the melody and the rhythm– and pushes the audience into the background, into a more uncertain sonic atmosphere, already incorporated built into the sound work’s actual time and space. Therefore, “No Touristik No Egzotik Live at Berlin CTM.03” suggests a sonic experience that is situated within a personal time and space.

“Personal Crisis” offers a similar experience, but follows a different trajectory. The piece neither emphasizes a melodic or rhythmic pattern nor

presents a dichotomy between the background and the foreground. Instead, it highlights small sonic patterns that are related and constantly evolving. The sonic patterns are not fully referential by themselves, but become referential through the flow of other sounds. The movement of sonic patterns in “Personal Crisis” suggests two important dimensions: “sound image” and “sound narrative.” It would be necessary to differentiate the image of sound from the term “sound image,” and the narrative of sound from the term “sound narrative.” Sound image refers to an image between appearance and disappearance, which is coterminous with the aforementioned definition of sound. Sound narrative emphasizes what sound itself narrates, instead of narrating a story through sound. In short, neither sound image nor sound narrative operates as a tool that can fulfill a pre-planned schema.

Though they do not function as a tool to “retell” a pre-found story, sound image and sound narrative cooperate to insinuate a story. Finding a story depends on “projection,” as Graeme Nicholson puts it. Nicholson uses the term “projection” to accentuate the linkage between “seeing” and “interpreting.” He begins his article, “Seeing and Reading: Aspects of Their Connection” by asking: “why is our seeing interpretative? Because it is not really a passivity and receptivity, because in all our seeing we are making projections” (Nicholson 1985:34). The act of seeing includes projection, which always already implies an internal reading, as Nicholson argues. However, the object that is seen, and the appearance of the object are external. Thereby seeing is projecting the internal into the external, which is “not an event immanent to our organism” as Nicholson (1985:37) states. Sound image does not bring an external material object, but encourages a pattern, a shape, which can be transformed into an intangible material object through projection. Once it is transformed, sound image becomes referential to narrate a story.

Sound narrative is traced by sound images. What does sound narrate? It of course depends on one’s own projection and invention of sound image. However, projection is associated with introjection. Reading

demands appropriating the external, the material into the internal, and writing requires reprojecting the internal onto the external. Since sound is precarious and nomadic, reading and writing what sound narrates - one's process of projection and introjection through sound - are obliged to the actual context, which depends on the personal experience with existents. "Personal Crisis" opens up a space for experiencing the actual context in depth, for reading and writing what sound narrates, and for constructing a personal story.

Promise of "the new": "mental voyage"

The beginning of the 20th century can be considered as the time when "the new" has become a historical category. Dahlhaus refers to Bloch, while examining "the new" as a historical category:

"The concept of the 'new' which Ernst Bloch has said is in a bad way, is, taken as a historical category, as unavoidable as it is precarious. It is unavoidable in the trivial sense that the matter of history is that which changes, and not that which is static or that which repeats itself in the same form. It is precarious because the principle which states that history is to be understood as continuity urges the historian to trace the new, if at all possible, back to the old" (Dahlhaus 1988: 2).

Ernst Bloch encourages the reader to ask: "what has changed? And what is new about this?" New music in the 20th century has become "new" with the transformation of an historical context through which a "new" aesthetics can be observed: new structural possibilities have come into existence; the idea of pitch has been replaced by the idea of timbre; sound has become central; concrete sounds and everyday life have been used and transformed; new technologies have given way to new media to produce and consume music. The 20th century presents a vivid period of interaction and cooperation between different styles. Similarly, the plastic arts underwent significant transformation; extensions of form and style,

ready-made objects, reconsideration of body, of space and time, of image and word sparked debate on "contemporary" art "practices."

What is contemporary is open to change. What is new is not complete by itself. It is "completely absorbed in history," says Dahlhaus:

"New music...is completely absorbed in history, the further progress of which it thereby ensures. It is so to speak swallowed up, whereas the classical...survives in the shape of an isolated, self-contained work. The new on the other hand, does not continue in itself, but is subsumed in the events which it brought about" (Dahlhaus 1988: 2).

Sound work is not complete in and by itself. It is already swallowed up, instead of being isolated. Sound work is site-specific. The interplay of the sonic and the spatial is already open to change, and to loss. Thus the new in sound work promises perpetual motion, and transformation of sound, of space, and of empty Self. Sound work encourages the openness of Dasein's project of being and understanding. It penetrates into Self immediately. Thereby sound work does not simply suggest a "philosophy of consciousness" but also a "philosophy of reflection." Ricoeur explains the two as such:

"The cogito is not only a truth as vain as it is invincible; we must add, as well, that it is like an empty place which has, from all time, been occupied by a false cogito. We have indeed learned, from all the exegetic disciplines and from psychoanalysis in particular, that so-called immediate consciousness is first of all "false consciousness." Marx, Nietzsche, and Freud have taught us to unmask its tricks. Henceforth it becomes necessary to join a critique of false consciousness to any rediscovery of the subject of the cogito in the documents of its life; a philosophy of reflection must be just the opposite of a philosophy of consciousness" (Ricoeur 2004:17).

False consciousness and philosophy of reflection take a place between the conscious and the unconscious. Sound work encourages a sonic

experience via this place, and then fills in the empty subjectivity. It brings both detachment from the actual time and space, and attachment to it. This can be interpreted as a contemplation of the mind, which is dematerial. Lyotard questions dematerialization as the “new opportunities for intensification and for the extension of tensors”:

“Where there is a message, there is no material. Adorno said this admirably for Schoenberg: the material, he explained, in serialism does not count as such, but only as a relation between terms. And in Boulez there will be nothing but relations, not only between pitches, but also between intensities, timbres, durations. Dematerialization. Here a long examination is necessary: is this dematerialization the equivalent of what capital does in matters of sensibility and affect? Is it also simply an abstraction of pieces of the pulsional band, its dissection into comparable and countable parts? Or is it under cover, and as a result, of this squaring off, indiscernibly, an opportunity for a refinement and an intensification of the passages of affects? And if this is the case, then is this ‘dematerialization’ not, in the same space and time, the cartography of a material voyage, of new regions of sonorous, but also chromatic, sculptural, politic, erotic, linguistic space, being, as a result of the *mise en signes*, conquered and crossed by the trails of influxes, offering the libido new opportunities for intensification, the fabrication of signs through dematerialization providing material for the extension of tensors?” (Lyotard 1993:44).

Lyotard articulates the enigmatic spaces of hidden meanings, and of possibilities of reading and transforming the material through the dematerial. The term “*mise en signes*” implies the “mental voyage” to discover the new boundaries to “fill in” and to “extend” Self. Thereby Lyotard’s “dematerialization” relates to Ricoeur’s “philosophy of reflection,” a false cogito which “occupies the empty space,” in Ricoeur’s words. As mentioned above, false cogito is the bridge between the conscious and the unconscious. Its “false”ness (immediacy) maintains the continuity of everyday life. False cogito makes the material the dematerial, the public the personal, the actual the real.

Due to its invisible physicality, sound becomes uncertain and insecure. Due to its direct penetration into body, sound becomes invisibly - immediately- already present. Due to sound’s becoming –the process between the sonic, the spatial, and the temporal- sound work encourages “dematerialization.” As an already empty space, sound work demands false cogito to fill in, which carries oneSelf to a sonic experience, to a “mental voyage,” to the promise of the new.

Reflections on Archiving Sound Works

“There is no perfect point of hearing; only interpretations”
Kruth and Stobart (2000:4)

My reflections on sound work do not aim at defining how sound work ought to be categorized. Though terms like sound installation, sound poem, sound performance, sound video, and sound sculpture are often used, “sound work” does not function as a general category. As discussed above, what makes a sound work is not necessarily a multimedia logic or an interaction between aural, visual, and spatial elements. What makes a sound work is the interplay between the sonic and the spatial, and its offer, which is perpetual change through sound. Discovery of the interplay pushes the audience into historicity and authentic reading, via which the audience can on the one hand keep a distance and objectify sound, and on the other hand, allow sound to penetrate itself to change its Being. This encourages the audience to interpret and to internalize “the conflicts of interpretations.” Ricoeur conveys this process as such:

“To the extent to which the aim of structuralism is to put at a distance, to objectify, to separate out from the personal equation of the investigator the structure of an institution, a myth, a rite, to the same extent hermeneutics buries itself in what could be called “the hermeneutic circle” of understanding and of believing, which disqualifies

it as a science and qualifies it as mediating thought. There is thus no reason to juxtapose two ways of understanding; the question is rather to link them together as the objective and the existential” (Ricoeur 2004:30).

The combination of objective and existential position reveal the impossibility of one single definition of sound work, and of sonic experience. The audience may repeat the listening experience. The object of sound, and the experience inside may change in each listening. This highlights a process of repetition, which results in transformation. What is repeated does not remain the same. It does not become complete. What is repeated changes with the context. Referring to Hume, Deleuze describes repetition as a “contemplation of mind,” which “does not change the object itself,” but which “changes the mind” and which brings the “no-in-itself” that is “the essence of modification” (Deleuze 2004:90).

The essence of modification can be thought of as the essence of sound work. Continual modification threatens putting sound works into order. What does “putting into order” suggest? And how does modification abandon naming, describing, classifying? Modification is involved in experience. It is not completely existent. It is not completely solid either. The “no-in” of modification is like a chemical that easily dissolves and penetrates into the body. It is like electricity that easily flows from one channel to another. Perhaps, modification itself brings the virus, the earthquake- in Derrida’s words— which confuses order:

“...Putting into order: What comes under theory or under private correspondence, for example? What comes under system? under biography or autobiography? under personal and intellectual anamnesis? In works said to be theoretical, what is worthy of this name and what is not?...In each of these cases, the limits, the borders, and the distinctions have been shaken by an earthquake from which no classificational concept and no implementation of the archive can be sheltered. Order is no longer assured” (Derrida 1996:4-5).

Since sound is lost and refers to many, it can be thought as an “earthquake from which no classificational concept and no implementation of the archive can be sheltered” in a sound archive. Sound can be read as a threat against order. Tracing back Derrida’s reading on archive and death drive, it would be applicable to stress sound as death drive itself, which threatens silence and eradicates the idea of archive as “silent shelves.” Sound enlivens the fear of loss. Consequently, sound works lead to the lost, to the continually changing, and encourage various readings, depending on the context, facing “contingent reality.” Therefore, conventional genre rubrics do not adequately “comprehend” sound works. In other words, those “adjusted” categories do not work to produce “self-knowledge” or “authentic readings.”

Comprehension involves bodily reaction. It physically and mentally moves mind and body. Sound is comprehended. It physically and mentally penetrates the body. That is why sound cannot be treated simply as wordy, substantial, objective, complete, present. It is almost always in between. It almost always suggests “before and beyond any word,” as Irigaray puts it: “sound waves reach us without any mediation. They are not only what allows sound to exist- as in the case of luminous waves for what we see - they merge with sound itself. They make us be vibrant, they talk to us without the necessary mediation of an object, of a representation external to what they are” (Irigaray 2004:139). Irigaray discusses the potential of communication “before and beyond words.” As she argues, sound and music already include a “silence” through which oneSelf can touch the other. Unlike “linguistic universe,” sound naturally flows and communicates. According to Irigaray, if it becomes wordy, it only “repeats a message already spoken”:

“When it does not arise from a silent ground, music repeats a message already spoken and which does not fit the moment in which it is produced. It is then in some way unfaithful to its genius, which consists in touching Being in the present, in gathering together earth and sky,

both within and outside each one, thus creating continuity between them. Music allows a becoming but also a return to the self, within the self, because of its ability to express and touch, in everyone and in the living universe, each element or stage of what they are, without arousing an ecstasy from which it is not possible to return, at least without a guide” (Irigaray 2004:137).

Irigaray expresses the power of sound in music, its power of transformation and becoming, when it “arises from its silent ground.” The question is how and/or when sound leaves its silence, and becomes wordy. When does it represent a thing? When does it become loaded with words so that it can be “understood” and “explained”? Yet do words help to communicate? Do they not lead to more confusion? Is sound always restricted to words? Is it not already “before and beyond words”? Does it not refer to the many, challenging the one and the only? Does it not become multiple and continuous while bringing fragmented scenes of the imaginary?

Finally, where does the archiving of sound works stand in this picture? Since the archive is not a type of silent storage, archiving a sound work cannot order and classify it. The goal should be neither to put sound works into wordy cages, nor installing silent shelves for sound works. Instead, the goal should be to provide a medium, a place where sound works can unfold and be encountered, a place where sonic experience is encouraged, and a place where personal knowledge can be constructed.

References

- Bulut, Zeynep. 2002. “Introduction.” *Sound Work as a Contemporary Art Practice*, 1-27. Istanbul: Sabanc&Mac245; University.
- Dahlhaus, Carl. 1988. *Schoenberg and the New Music: Essays by Carl Dahlhaus*. Translated by D. Puffett and A. Clayton. Cambridge:

Cambridge University Press.

- Deleuze, Gilles. 2004. “Repetition for Itself.” In *Difference and Repetition*. Translated by P. Patton, 90-164. New York: Continuum.
- Derrida, Jacques. 1996. *Archive Fever*. Translated by E. Prenowitz. Chicago: University of Chicago Press.
- Heidegger, Martin. 1999. *Being and Time*. Translated by J. Macquarrie and E. Robinson. Oxford: Blackwell Publishers.
- Irigaray, Luce. 2004. *Luce Irigaray: Key Writings*, edited by Luce Irigaray. New York: Continuum.
- Kruth, Patricia and Henry Stobart, eds. 2000. *Sound*. Cambridge: Cambridge University Press.
- Margolis, Joseph. 1985. “Deconstruction; or The Mystery of the Mystery of the Text.” In *Hermeneutics and Deconstruction*, edited by H. J. Silverman and D. Ihde, 138-152. Albany: State University of New York.
- Nicholson, Graeme. 1985. “Seeing and Reading: Aspects of Their Connection.” In *Hermeneutics and Deconstruction*, edited by H. J. Silverman and D. Ihde, 34-43. Albany: State University of New York.
- Lyotard, Jean-François. 1993. *Libidinal Economy*. Translated by I. Grant. London: The Athlone Press.
- Ricoeur, Paul. 2004. “Existence and Hermeneutics.” In *The Conflict of Interpretations*, edited by Don Ihde. Translated by K. McLaughlin, 3-27. New York: Continuum.
- _____. 2004. “Structure and Hermeneutics.” In *The Conflict of Interpretations*, edited by Don Ihde. Translated by K. McLaughlin, 27-61. New York: Continuum.
- Taylor, Charles. 2000. “The Physics of Sound.” In *Sound*, edited by P. Kruth and H. Stobart, 34-65. Cambridge: Cambridge University Press.