Re-Alimentaciones-Cruzadas: Procesos de Re-imaginación entre Epistemologías Acústicas/Cross-Feedback: Re-Imagining processes between Acoustemologies

by

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Re-Alimentaciones-Cruzadas: Procesos de Re-imaginación entre Epistemologías Acústicas/

Cross-Feedback: Re-Imagining processes between Acoustemologies

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ABSTRACT

This compilation of texts actively revisits and develops poetical mythologies through notions of reverberation and feedback to transcend juxtapositions. Re-imagining two mythological snakes, the Amphisbaena, and the Ouroboros, the reader is invited to revalue their placement in intricate post-colonial realities by imagining metaphysical circuits connecting different spaces and times.

The work presents a series of contrasting essays reflecting the mouths and body of the Amphisbaena, the two-headed snake.

The first essay focuses on the littoral region of Perú during the transition from a viceroyalty into a republican state. Here we find a shapeshifting musical tradition engaging with percussive idiophonic—or self-resonating— instruments. Traditions get confined into the visual realm to capture a new multicultural identity.

Lost in transduction, how, via sound, does one create circuits which transform bodies, space, and time through reverberation?

The second essay narrates the history of acoustic feedback as the birth of an *ouroboric*, self-eating cycle. By deconstructing/reconstructing a series of artworks, the text becomes a tale of metamorphosis of the ouroboros, getting into notions of active practice, later into an amphisbaena regarding notions of material resonance, and finally into concrete poetry in the processes of analyzing the development of consciousness around the artwork.

The work ties two sonic practices from different times, cultures, and locations by building sculptural self-resonators activated by auditory feedback. The repercussions of transforming spatial configurations via sound prove that sonic practices can alter how we approach our nomadic circulations. The sound created by contrasts blurs the borders of sense and perception, giving us a space for subjective interpretation and leading to new imaginaries.

This work reflects sonic feedback—dichotomous diaphragms, some idiophonic, some membranous, that have learned via the artwork to resonate together, accentuating relations, creating circuits, and shortening distances that once seemed far away.

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Author's Note

With the work, I intend to explore my ideas around notions of post-colonial realities by re-imagining the tools and material used in my artistic practice. I hope to focus on my dualities during the transformational processes of reverberation. The concepts behind how I am thinking of dualities inside the ideas of post-colonial realities started resonating when studying the decolonial practice from sociologist Silvia Rivera Cusicanqui and ideas behind the Aymara terminology of *Ch'ixi: "Gris con manchas menudas de blanco y negro que se entreveran."*[1] The artworks propose a way of acoustemologically understanding juxtapositions in the same way sound can harmonize contrast through the material it resonates: by inhabiting it.

The instruments from my artistic practice have worked on my mind and restructured my thoughts. Contrasting experiences and knowledge have fed back into each other and resonated together. Hopefully, with the use of feedback, we imagine different approaches to circulation, evoke mythologies of movement and poetics of relation, shortening the distances within oneself. As I write, the words of Atahualpa Yupanqui echo in my mind: "*¿A qué llamamos distancia? Eso me habrán de explicar, sólo estan lejos las cosas que no sabemos mirar."*[2]

[1] Silvia Rivera Cusicanqui, La sociología de la imagen: Miradas Chíxi desde la Historia Andina, (Ciudad Autónoma de Buenos Aires: Tinta Limon, 2015), 326.
Translation: Grey with tiny intermingling spots of black and white.
[2] Ataualpa Yupanqui, "A Que Le Llaman Distancia," Track 7 on *Grabaciones Completas,* Universal Digital Enterprises 2018, CD.
Translation: What do we call distance? They will have to explain that to me, only the things that we do not know how to look at are far away.

Methodology

The work begins with an ethnomusicological study titled **Re-imagining instrumentality through idiophonic cultures from the coast of Perú**, which offers a retrospective of the origins of the emblematic Peruvian folklore instrument, *the cajón,* an idiophonic —or self-resonating — percussion instrument. The research focuses on the early beginnings of the *cajón* as an acoustemology—meaning that understanding sonic practices around the instrument can portray different modes of perception within particular sociocultural contexts. In its origins, the instrument did not possess a uniform shape but had a social function in rituals and recreational gatherings as the designated percussion instrument.

The instrumentality of the predecessors of the *cajón* depended on the instrument maker/performer as the one with the imagination to transform objects from their environment into percussive instruments; instrumentality becomes material through intention. This work aims to offer a survey of the shapes (and sonic traditions) that this instrument adopted since disembarking in Perú with the enslaved African brought to colonial territory, including (and not limited to) the challenges and transformations it underwent with Perú's transition from viceroyalty into a republic. Despite the idiophonic cultures beginning as a subaltern Afro-Peruvian acoustemology, the poetical structures are drawn from the master's language, and the physicality of it reflects the subversion of the master's house.

The second essay, **Uróboros: Acoustemologias de Realimentación Cruzada**, presents another shapeshifting sonic phenomenon, acoustical feedback. Although it was developed in a different context from the one of the *cajón*, as a result of concepts of representation of instrumentality in the Western canon of classical music, feedback gets quickly excluded from another architectural structure, the concert halls. It is not long before sonic feedback is quickly

used as a subversive tool to break down the same ideas of instrumentality that excluded it. By exploring metaphysical bridges between sonic movements within geographically distant places, feedback blurs concepts of identity and ownership and offers new possibilities for inhabiting post-colonial realities. The idiophones have a similar story: to re-imagine a national identity.

By creating poetical relations between sonic feedback and idiophonic cultures, this work ends with a series of re-imaginations of these two concepts, illustrated utilizing sonic sculptures built by the author. Evoking the two heads of the amphisbaena[3], the idiophones from the Peruvian littoral and acoustical feedback share the same body with the common attribute of self-resonation. Through the artwork, one is invited to imagine what was left out from the visual depictions of the early idiophones in the Peruvian littoral: the transformation of spatial configurations and shared embodiments within durational periods.

The structure of this work is a reflection on the *title Re-Alimentaciones-Cruzadas*/Cross-Feedback. By conceptualizing these ideas, we can imagine a process of bidirectional feedback, a circulatory exchange, created by the resonation of juxtaposition: a configuration of poetical relations which offer new ways of imagining resonant bodies as complex entities within post-colonial societies.

[3] In Greek mythology, amphisbaena comes from the word *amphis*, meaning "both ways," and -*baena*, from *bainein*, meaning to go. The mythological creature is usually portrayed as a snake with a head on both ends of its body. The creature is not exclusive to classical mythology, but it was also commonly depicted in pre-Columbian cultures, some, in the regions of Perú.

[Mouth 1]: Re-imagining instrumentality through idiophonic cultures from coastal Perú

In Phillip Alperson's article "Instrumentality of Music," the author emphasizes how "the idea of the musical instrument is central to our understanding of the musical art."[4] Alperson suggests that to understand the philosophy of music, we should implement the study of the ontology of instruments within their historical contexts. Additionally, the author calls us to adopt "value pluralism," meaning that we need to accept that the value of music resides in both the aesthetic and non-aesthetic. Alperson's strategy consists of implementing tools from different disciplines relating to musical studies: philosophy, ethnomusicology, and sociology. Together they can give us a robust understanding of the instrumentality of music.

With the previously mentioned strategy, this writing seeks to explore the Instrumentality of the *cajón peruano* to prove its acoustemological values in particular Peruvian cultures.[5] We must understand the *cajón* as a musical instrument, a central element of cultural production, and a key contributor to a sonic practice based on experimentation, improvisation, and transformation. We will analyze the *cajón* in historical and contextual relationships with its performers, located at a convergence center for several identities that feedback and shape the musical arts. We will see how the environments in which the *cajón* circulated over time give a clear sense of how the music and the instrument developed through several values. While conflicting at times, they were all equally fundamental toward forming its acoustemology. The coexistence of contrasting values in the *cajón's* folklore keeps this art form in constant

[4] Philip Alperson, "The instrumentality of Music" *The Journal of Aesthetics and Art Criticism Vol.66,* no. 1, (2008), 37.
[5] The term acoustemology merges the word acoustic and epistemology together. First used by anthropologist Steven Feld to theorize sound as a relational way of knowing.

movement and transformation. The *cajón's* ontology is *re-alimentativa*/cross-feedbacking—a series of transformations and cross-appropriations of different cultures with conflicting values. Most importantly, from its start, the understanding of the *cajón* challenges one's definition of a musical instrument; the *cajón* transcends ownership, structures, and materiality, and its core purpose is to keep cultural production alive by challenging the power of the imagination.

In this research, we will analyze the context of the *cajón peruano* from the Peruvian viceregal period into the forming of a republican nation. This period proves a historical relation between the structuring of the instrument and the structuring of national identity. Throughout time, the *cajón* can be portrayed, at best, as a subversive tool that has historically been at the center of artistic experimentation and a provocative promise for a multicultural society.

The *cajón's* origin is hard to track because of its origins as a subaltern culture—meaning that oral traditions account for most of the knowledge of its early appearances. Rafael Santa Cruz and Chalena Vasquez have been keen on researching the chronology of the instrument even before it had a predetermined physical structure; their work provides the context for understanding "value pluralism." In their historical work, we can tie the aesthetics of the *cajón* and its folklore as part of a rhizomatic culture originating in Africa. Non-aesthetic values can also be found in relation to the trauma and transformation of the practice: The conditions that enslaved Africans and their forced migration to work in the Spanish colonies. Besides the oral representations of the *cajón*, we can also find the first visual representations of the proto-instrument during the 19th century—the depictions of a percussive instrument resembling the sonority and technique of the *cajón* can be found in the early *costumbrista* painters[6] after

[6] Costumbismo refers to artistic movements which depict traditional customs and manners from societies in a particular geopolitical location.

Peruvian independence. During this period, the *cajón* and its folkloric arts are shown in a moment of a cultural junction, portraying the early visual representations of Peruvian post-colonial identity.

The outcome of this essay is to portray the predecessors of the *cajón* as the main inspiration for the artistic framework explored throughout the thesis. The *cajón* has not only a history of improvisatory assemblage, but it also is the product of a co-existence of different worlds; by the implementation of a technique, the *cajón's* shapeshifting properties allowed the instrument to appropriate the forms of different objects, and in time, it became central to multiple musical arts. Different acoustemologies assimilated the cajón, and bi-directionally, the instrument did the same to the musical arts.

Shapeshifting Instrument: *El cajón afroperuano* as an intention

Rafael Santa Cruz describes the *cajón* in his book *El cajón afroperuano* as an *"instrumento idiófono percutido, tambor xilofónico, simple paralelepípedo de madera con un orificio de salida en la parte posterior"*[7]—a description as complex as it is meticulous: more than an instrument, the *cajón* embodied a percussion technique brought and developed around different regions of the Americas by African populations at the time of the colonial regime. Defining the physicality as eloquently done by Santa Cruz would have been impossible during the viceroyalty. Regardless of form, the techniques developed by African descendants were

[7] Rafael Santa Cruz, *El cajón afroperuano,* (Lima: RSANTACRUZ E.I.R.L), 83.
Translation: "percussive idiophonic instrument, a xylophonic drum, a simple parallelepiped with a rear exit hole."

essential in creating *música criolla,* an acoustic assemblage[8] of Andean, African, and Spanish acoustemologies.

[8] Developed by ethnomusicologist Ana María Ochoa Gautier the term describes bidirectional interactions between a multiplicity of sonic, practices, entities, and traditions commonly found in post-colonial realities.

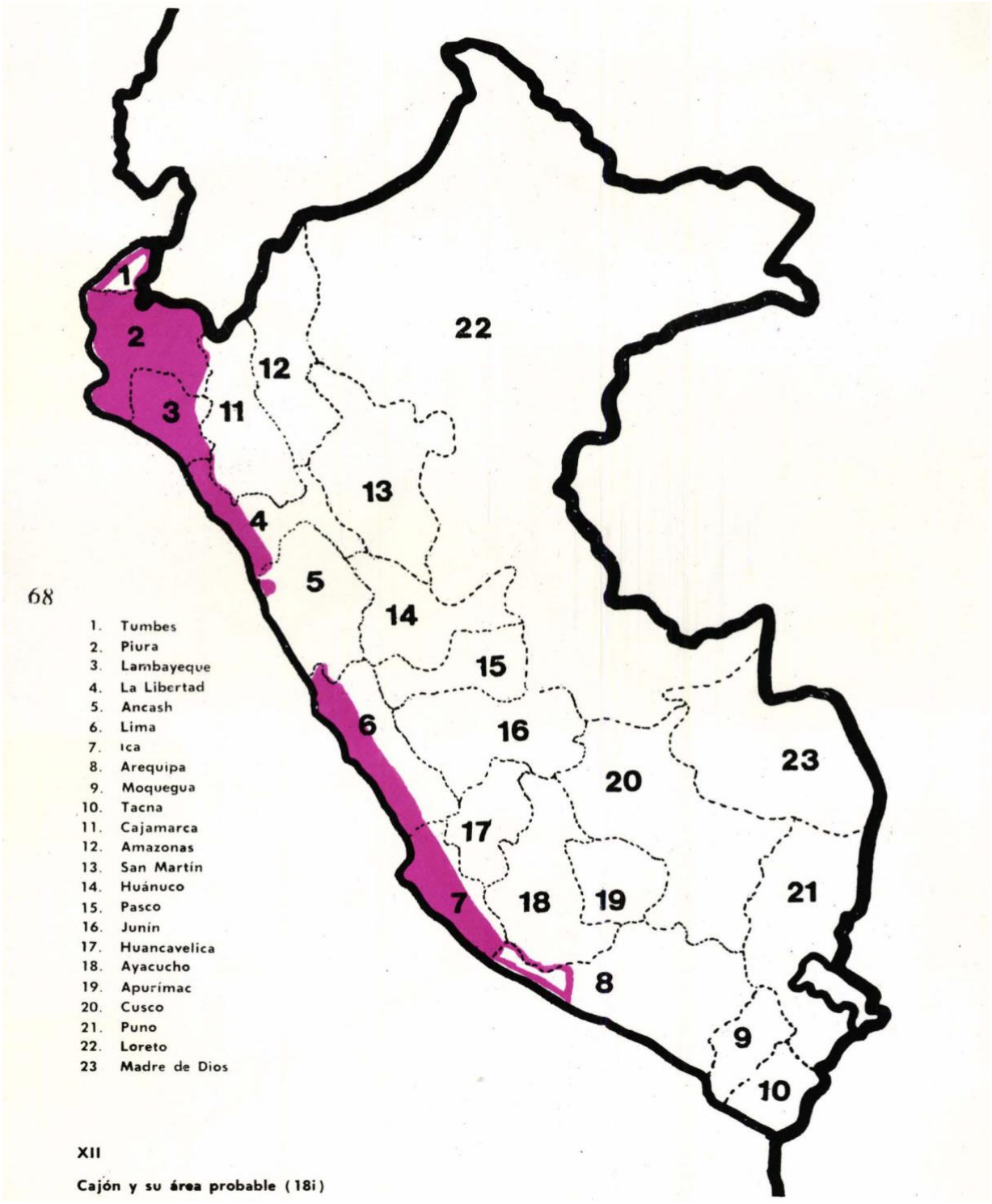


Figure 1: Pineda, García, Salazar, and Bolaños, Mapa de los Instrumentos Musicales de uso Popular en el Perú. The image shows a study by La Oficina de Música y Danza del El Instituto Nacional de Cultura which shows the regions of the cajón within its populated areas.[9]

[9] Josafat Roel Pineda, Fernando García, Aliada Salazar, and Cesar Bolaños, *Mapa de los Instrumentos Musicales de uso Popular en el Peru* (Lima: Oficina Nacional de Mùsica y Danza, 1978), 68.

During the Viceroyalty, Spaniards brought enslaved Africans to work around Perú's coastal area. They were forbidden to play music in their free time. The Spanish, devoted to Catholicism, prohibited anything resembling idolatry. The sovereign state saw drumming as an act of satanic worship and profanity; the membrane drum became indexical to paganism. Through the translation of form and technique, daily objects became the medium in which musical traditions could keep existing and developing—among them, the *cajón.* Peruvian musicologist Chalena Vasquez suggests that, besides accessibility, the main reason behind the chosen objects was how easily these performers could restore them to their day-to-day uses. In her written presentation for Santa Cruz's book *El cajón afro peruano*, which she titled "*Las manos en la madera: repique de la memoria"* she notes:

> *Recordemos que luego de la prohibición expresa hecha por los colonizadores, de que los afrodescendientes tocaran sus tambores, se interpretó música en todo tipo de objetos de madera: sillas, cajones de embalaje, el cajón de la mesa o de los roperos... de tal manera que una vez usados estos objetos volvían a su uso cotidiano; este hecho hace suponer que los cronistas o estudiosos de la cultura no los hayan considerado como instrumentos musicales.*[10]

Besides the subversive aspect of appropriating objects to have a musical instrument temporarily, it was vital that the colonizers would overlook the hidden potentials of these objects. The lack of information about these practices by colonial chronologists and historians serves as proof today of these communities' success. Moreover, the African populations managed to use their imagination to subvert colonial structures. A non-aesthetic rupture found in the

[10] Chalena Vasquez. "Las Manos En La Madera: Repique De La Memoria." Last modified May 28, 2016. http://www.chalenavasquez.com/articulos/las-manos-en-la-madera-repique-de-la-memoria-chalena-vasquez
Translation: "Let us remember that after the express prohibition made by the colonizers, that the Afro-descendants played their drums, music was played on all kinds of wooden objects: chairs, packing crates, the drawer of the table or of the wardrobes... in such a way that once these objects were used, they returned to their daily use; This fact suggests that the chroniclers or scholars of culture have not considered them as musical instruments."

acoustemology is within the appropriation of foreign structures to produce musical culture. Musicians improvised on Spanish architecture by using chairs, drawers, and other types of wooden furniture to create a parallel reality which—according to Chalena Vasquez— Spanish chronologists were incapable of understanding.

There is a strong bond between musicians as agents of culture and musical instruments as the tools for cultural production. Santa Cruz uses percussionist Freddy Lobatón's composition *"señores, ¡murió el cajón!"* as a proof of this strong bond. Based on a true story, the composition follows the tragic story of the destruction of the author's *cajón*.

Señores, ¡murió el cajón! (excerpt)
by Freddy Lobatón
Señores, ¡murió el cajón!
lo acribillaron a golpes
me destrozaron el alma
se me rompió el corazón,
me destrozaron el alma
señores, ¡murió el cajón![11]

At first, it is essential to point out that Lobatón wrote these stanzas in the present tense; his *cajón* was probably a wooden parallelepiped with a rear exit hole. Freddy Lobatón proves, with his couplets, the strong attachment between the musical instrument and its performer. Alperson's theories concerning the relationship between the musical instrument and the performer's body could explain the effect of such affect towards one's instrument. He notes: "What is less often noticed is that we may extend this insight about the embodied aspect of

[11] Rafael Santa Cruz, *El cajón afroperuano,* (Lima: RSANTACRUZ E.I.R.L), 143.
Translation: "Gentlemen, el *cajón* died! They bombarded it with blows; they destroyed my soul, my heart got broken, they destroyed my soul, Gentlemen, el *cajón* died!

musical instruments to conventionally understood musical instruments, where the line between body and instrument also frequently blurs."[12] A simple example could be the voice as the most embodied instrument; while using this instrument, we materialize sound using our vocal cords and our body as a resonating structure. If the embodiment of the voice as a musical instrument starts internally and then becomes external, the *cajón's* embodiment would be the opposite. From the different configurations we do with our palms to produce variations of sounds, to sitting on top of an instrument which transduces vibrations that travel from the instrument into our hands and buttocks while performing. The embodiment happens around the central element of the idiophonic drum. [13] Still, during the process, two bodies are sonically one.

In understanding the relationships between the instrument and the body performing it, we also need to consider the idea of the instrument maker. In the case of the *cajón's* early structures, instrument making would have a different approach than a conventional luthier or fabricator today. The art of instrument making within the early ages of the *cajón* would be similar to sculpting with found materials. Makers would still have a process of material recognition and selection, but as the materials were objects embedded in the architecture, the selection process would be more focused on imagining what could be used as an idiophonic drum. Alperson would argue that within this type of instrument-making, the human intention implied in the process makes found objects instruments. If we insist that musical instruments require instrument makers, we can consider that the "making" of such instruments involves the

[12] Philip Alperson, "The instrumentality of Music" *The Journal of Aesthetics and Art Criticism Vol.66,* no. 1, (2008), 39

[13] From the ancient Greek *idio-* meaning personal, and *-phone,* meaning voice, sound, or vibration, idiophonic is a term used for self-resonating instruments. This category excludes instruments requiring airflow, plucked strings, or membranes to resonate.

intention to use an object as a musical instrument. This intention might have joined the role of instrument maker and performer.

Furthermore, the intentionality to play an idiophonic drum has a specific duration in which the attachment of the performer with its instrument is temporal, in this case, only while inhabiting a foreign structure. The making of an idiophonic drum would happen through translating musical traditions, manifesting in the embodiment of a material form. An immaterial intention transforms into the act of inhabiting a material object, which we could identify as the technical framework of performing. Via the physical implementation of a technique, the object becomes a vessel for the musical instrument; once the duration is over, the musical instrument dematerializes again, and the daily object loses its status by transforming back into a mundane one. In short, the performer's intention and affection toward embodying a musical instrument would temporarily transform the environment filled with colonial structures. Of course, in time, one could argue that these intense, transformative processes went both ways, as the musical arts were also affected by their development in foreign structures. The *cajón* is living proof. Once the Republic of Perú was formed and the abolition of slavery happened, the wooden idiophonic maintained its position at the center of the musical arts.

According to Santa Cruz, different aesthetical choices regarding the sonority of the self-reverberant instruments depend on the region. He starts comparing it to Cuba, where "*las orquestas de cajones se forman con instrumentos de diferentes tamaños y sonidos"*[14] changing the sonority of each *cajón*, possibly the choice could be in relation to other Afro-Cuban traditions, and the different sizes of the drums could resemble the collective playing of the *Bátas*,

[14] Rafael Santa Cruz, *El cajón afroperuano*, (Lima: RSANTACRUZ E.I.R.L), 99.
Translation: "the *orquesta de cajones* are formed by different instruments of different sizes and sounds"

which are two-faced drums, traditionally consisting of three drums and three performers. In contrast, in Perú, the *cajón*es playing together have different roles. One *cajón* is called *llamador*, referring to the one that maintains the rhythmic base, and the other one *repicador*, which is the one that performs the solos, replicating a "call and response" musical form which, like many others, brought back to multiple musical structures from Africa. Both the techniques of changing the size of the drums and having different dynamic roles between players are standard in membrane drum orchestras. The contrasting modalities of the *conjuntos de cajones* suggest that both in Cuba and Perú, the practices are drawn from preexisting musical forms from Africa. The main difference is that in Perú, the study of multiple cajones focuses on rhythmic complexity with a limitation of timbres; in Cuba, the opposite is explored.

Understanding the translation of cultural production from membrane drums to idiophonic drums reveals "value pluralism" in the acoustemological values this reflects on the playing techniques and the limitations found in translation. Alperson states: "The notion of the musical instrument, as an object with sonic and musical possibilities and limitations and with its history of development, shapes our understanding of the taxonomy and genres of music."[15] Based on its general form, we can assume the limitations of the *cajón* in comparison with membrane drums. The technique of playing any idiophonic wooden surface consists of a simplification of hand drum techniques. Due to idiophonic hand drums being less resonant than skin membranes, they have a technique consisting of two rudimentary sounds. These are known as *graves*, referring to the lower-pitched sound one gets by striking the center of the structure, and *agudos*, a high-

[15] Philip Alperson, "The instrumentality of Music" *The Journal of Aesthetics and Art Criticism Vol.66*, no. 1, (2008), 39

pitched sound one gets by slapping the edges of the instrument. [16] Within the limitations of form and tone, tremendous possibilities are hidden for the imagination. In his research, Santa Cruz identifies 16 popular ways of enhancing the two rudimentary strikes on the instrument and identifies different technical approaches to the sonority of *the cajón* depending on different regions and folklore. The research proves, once again, that the acoustemology explored is closely related to sonic and material experimentation and relies heavily on the implementation of the imagination. Technical frameworks can provide the embodiment and transformation of the previously mentioned colonial structures.[17]

[16] Usually skin hand drums utilizes at least three rudimentary sounds: open stike (*agudo*), slap and base (*grave*).
[17]The technical framework of the sonic practice was a means of materializing the intention into Spanish objects and transforming them into idiophonic instruments. The subversion of the Spanish structures happened because these objects— turned into idiophonic resonators —would become tools for cultural productions which under the viceregal rule would be considered profane and were strictly prohibited.

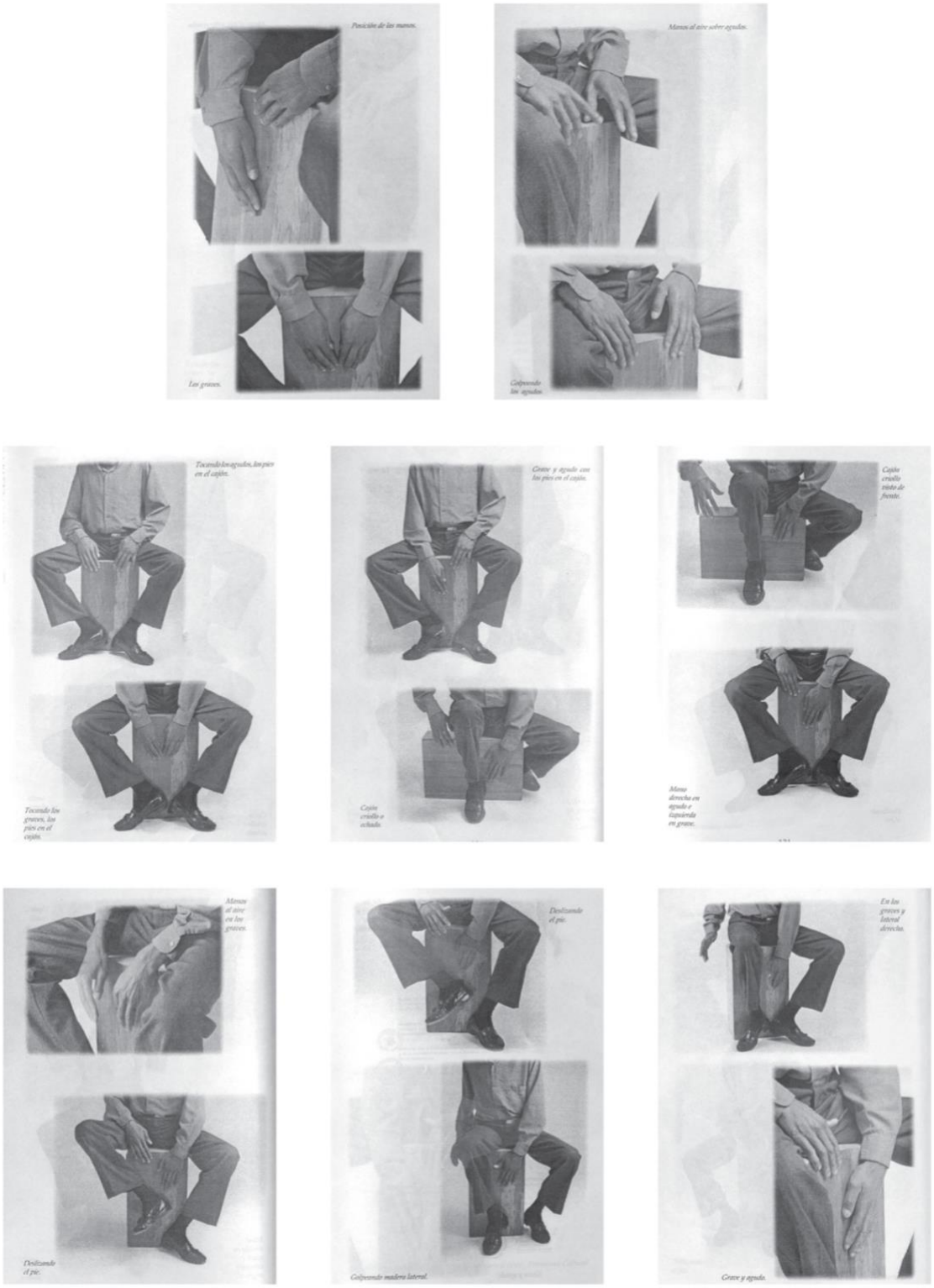


Figure 2: ".Rafael Santa Cruz, El cajón afroperuano. The image shows 16 variations of "graves" and "agudos".[18]

[18] Rafael Santa Cruz, *El cajón afroperuano,* (Lima: RSANTACRUZ E.I.R.L), 127-134.

Figure 3: Martínez Compañón, *E 159*, *1782–1785*, watercolor, 228/250 x 360 mm. *Divided into two, we can see musicians playing one harp by plucking strings and hitting the surface. In the lower image, we see two couples dancing to music.*[19]

[19] Baltasar Jaime Martínez Compañón, *E 159*, 1782–1785, watercolor, 228/250 x 360 mm, Real Biblioteca del Palacio Real Madrid, Spain, https://www.cervantesvirtual.com/obra-visor/trujillo-del-peru--volumen-ii/html/966bf129-a181-4dd1-996b-ac44db7844e2.html.

(Figure 3) portrays an example of a transformational process of a Spanish object painted by Bishop Baltazar Martínez Compañón of Trujillo during the 18th century.[20] Here we can see an example of transforming a harp—as a European instrument—into an idiophonic drum. Interestingly, in the depiction, the instrument is being performed by two musicians, one playing the harp as a chordophone —producing sound by vibrating strings— and the other performing the harp as an idiophonic percussion instrument. The visual depiction by the former Bishop of Trujillo proves that different cultural sonic realities started to crossfeed in this period, creating acoustic assemblages. In her book *Aurality*, ethnomusicologist Ana María Ochoa Gautier describes the concept:

> the mutually constitutive and transformative relation between the given and the made that is generated in the interrelationship between a listening entity that theorizes about the process of hearing producing notions of the listening entity or entities that hear, notions of the sonorous producing entities, and notions of the type of relationship between them.[21]

In addition, she states that acoustic assemblages are bidirectional circulations engaging the different sonic practices involved in creating "transformative processes of inscription of sound that interrelate listenings and sounding *objects*."[22] The image above shows the union of techniques from two different sonic traditions cross-feedback and resonate within the same material instrument. The harp, in this case, becomes an amphisbaena, a structure with two different consciousnesses vibrating through the same body.

[20] Trujillo is located in the department of La Libertad which can be found in (Figure 1) as department no.4.
[21] Ana María Ochoa Gautier, *Aurality: Listening and Knowledge in Nineteenth-Century Colombia* (Durham, NC: Duke University Press, 2014), 22.
[22] Ana María Ochoa Gautier, *Aurality: Listening and Knowledge in Nineteenth-Century Colombia* (Durham, NC: Duke University Press, 2014), 23.

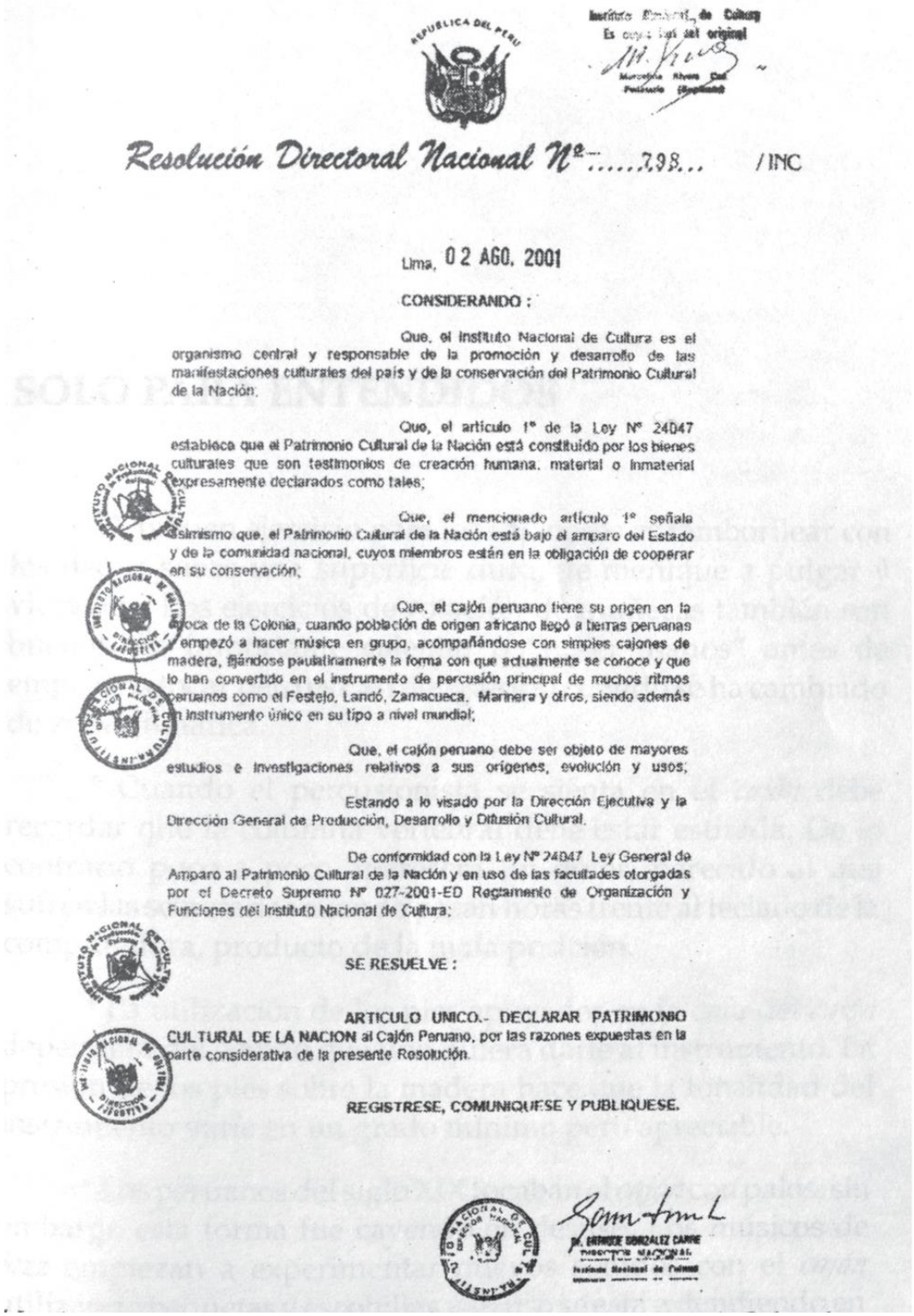
Material Representations of Idiophonics: depictions of "post-colonial" realities

Today, the *cajón* is considered a national patrimony.The Instituto Nacional de Cultura del Perú[23], proclaimed the *cajón* national patrimony, in the official statement they declare:

> *el cajón peruano tiene su origen en la época de la colonia, cuando la población de origen africano llegó a tierras peruanas y empezó a hacer música en grupo… fijándose paulatinamente la forma con la que actualmente se conoce y que lo han convertido en el instrumento principal de muchos ritmos peruanos.*[24]

The statement proclaims that the cajón has a predetermined form crucial for "Peruvian" cultural production. Both the materialization of the instrument and its vitality create a Peruvian cultural identity that can be traced back to the transition period from the colonial period to a democratic republic.

[23] Now the Ministery of Culture of Perú.
[24]Rafael Santa Cruz. *El cajón afroperuano.* (Lima: RSANTACRUZ E.I.R.L), 135.
Translation: "the Peruvian cajón has its origin in colonial times, when a population of African origin arrived in Peruvian lands and began to make music in a group… gradually establishing the form in which it is currently known and that has turned it into the main instrument of many Peruvian rhythms"



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CONSIDERANDO :

Que, el Instituto Nacional de Cultura es el organismo central y responsable de la promoción y desarrollo de las manifestaciones culturales del país y de la conservación del Patrimonio Cultural de la Nación;

Que, el artículo 1º de la Ley Nº 24047 establece que el Patrimonio Cultural de la Nación está constituido por los bienes culturales que son testimonios de creación humana, material o inmaterial expresamente declarados como tales;

Que, el mencionado artículo 1º señala asimismo que, el Patrimonio Cultural de la Nación está bajo el amparo del Estado y de la comunidad nacional, cuyos miembros están en la obligación de cooperar en su conservación;

Que, el cajón peruano tiene su origen en la época de la Colonia, cuando población de origen africano llegó a tierras peruanas y empezó a hacer música en grupo, acompañándose con simples cajones de madera, fijándose paulatinamente la forma con que actualmente se conoce y que lo han convertido en el instrumento de percusión principal de muchos ritmos peruanos como el Festejo, Landó, Zamacueca, Marinera y otros, siendo además un instrumento único en su tipo a nivel mundial;

Que, el cajón peruano debe ser objeto de mayores estudios e investigaciones relativos a sus orígenes, evolución y usos;

Estando a lo visado por la Dirección Ejecutiva y la Dirección General de Producción, Desarrollo y Difusión Cultural.

De conformidad con la Ley Nº 24047 Ley General de Amparo al Patrimonio Cultural de la Nación y en uso de las facultades otorgadas por el Decreto Supremo Nº 027-2001-ED Reglamento de Organización y Funciones del Instituto Nacional de Cultura;

SE RESUELVE :

ARTICULO UNICO.- DECLARAR PATRIMONIO CULTURAL DE LA NACION al Cajón Peruano, por las razones expuestas en la parte considerativa de la presente Resolución.

REGISTRESE, COMUNIQUESE Y PUBLIQUESE.

Dr. ENRIQUE GONZALEZ CARRE
DIRECTOR NACIONAL
Instituto Nacional de Cultura

Figure 4: Rafael Santa Cruz, el cajón afroperuano. The image shows a copy of the official document declaring the cajón a Peruvian cultural patrimony in 2001.[25]

[25] Rafael Santa Cruz, *El cajón afroperuano.* (Lima: RSANTACRUZ E.I.R.L), 135.

In 1821 the freedom fighter Jose de San Martin proclaimed the independence of Perú as an autonomous state. Consequently, different racial and sociopolitical groups spent most of the 19th century attempting to overcome their colonial identities. This task was especially challenging in the capital city of Lima, which still had a solid viceregal presence in this period.[26] Consequently, we witness how the practices around the idiophonic drums started to leave the plantations and create more open cultural interactions in the cities; in this process, it also gets portrayed by the technical reproduction of imagery by a Peruvian school of *costumbrista* painters.*[27]* Through the depictions of the painting, we start to see how the *cajón* gets instrumentalized by artists as a multicultural index. By doing so, the instruments transform from an intention of instrumentality into physical instruments with rigid forms.

While *the costumbrismo* movements were influential during the independence period of the Americas, the form existed much before the American republics; in his research paper titled Costumbrismo of the American Enlightenment: The Peruvian Case. Original images in the era of technical reproduction," Fernando Villegas notes:

> *Siempre que se ha analizado un fenómeno como el costumbrismo americano, se ha cometido el error de verlo a través del inicio de los estados nacionales, que se fundan a lo largo del siglo XIX en Latinoamérica. La creación de imaginarios de las nuevas repúblicas, aunadas al espíritu romántico traído por los pintores viajeros del periodo, hace que cada país busque una diferenciación basada en sus peculiaridades.*[28]

[26] Lima and many other settlements in the coastal region were viceregal from the start. For example, Cuzco was an Inca city before the Spanish conquerors arrived in 1533 after defeating the Incas and capturing their leader Atahualpa. The city had a Precolumbian identity, which was colonized and built on top. In comparison, The Spanish settlers built Lima in 1535 to create a capital for the Viceregalty of Perú, giving the city, culturally, a viceregal identity.

[27] Costumbrismo movements in Latin America became prominent throughout the region's independence processes. The artistic movement consisted of executing — mainly via writing and painting styles—artworks that would focus on the customs of specific cultures within given locations. Unsurprisingly, this movement became popular as the newly formed republics were trying to figure out independent cultural identities.

[28] Fernando Villegas, "El costumbrismo americano ilustrado: el caso peruano. Imágenes originales en la era de la reproducción técnica" *Anales del Museo de América 19,* no.1 (2011): 7.

According to Villegas, there was nothing new about the urge to portray the American continent's realities; representations had been going on since colonization as far back as the early 16th century. Echoing Villegas, the changes in the imagery we see with the Peruvian *costumbristas* focus on creating a new imaginary rather than a new form of expression. Once again, we are dealing with appropriating a colonial structure; by applying a new imagination, people start to portray different values, creating a folklore tradition. According to *"El Museo Afroperuano de Zaña,"* some early depictions of the instrument in the Peruvian nation can be found in two paintings by the *costumbrista* Ignacio Merino, the first titled: *Copla Criolla* (1846) and *Jarana en Chorrillos* (1857).[29] In these two oil paintings, we find an instrument called a *checo,* a percussive idiophonic drum made from a hollow pumpkin with a rectangular exit hole on one side of the structure. For various reasons, we can deduce that the *checo* comes from the same origin as the *cajón*. Primarily, "El Museo Afroperuano de Zaña" explains that the *checo* was a tool regularly found in households used for daily chores; therefore, playing the *checo* required the same imagination to transform colonial tools into musical instruments. Also, similar to the *cajón,* when playing the *checo,* the performer plays between two contrasting sounds, "*grave*" y "*agudo*," by changing the position of your hand. Consequently, the *checo* uses the same idiophonic technique to make the transformation possible.

[29] *El Checo Musical De Zaña, YouTube* (YouTube, 2011), https://www.youtube.com/watch?v=abMHX2ETdgA&t=1s.
Zaña is located in the department of Lambayeque which can be found in (Figure 1) as department no.3.

Figure 5: Merino, Ignacio. *Copla Criolla*, 1838-1855, Oil on Canvas, El costumbrismo americano ilustrado: el caso peruano.[30]

[30] Fernando Villegas, "El costumbrismo americano ilustrado: el caso peruano. Imágenes originales en la era de la reproducción técnica" *Anales del Museo de América 19,* no.1 (2011): 57.

Figure 6: Merino, Ignacio. *Jarana en Chorrillos*, 1857, Oil on canvas, 129 x 97cm, Museo Nacional de Arqueología Antropología e Historia del Perú, Lima. [31]

[31] Ricardo Kusunoki, *Ignacio Merino Pintor de historia 200 años* (Lima: Municipalidad Metropolitana de Lima, 2017), 45.

(Figure 5) depicts what the author calls a *copla criolla (creole couplet)* featuring two musicians —a *mulato* (someone of mixed Spanish and African descent born in Perú) and an Afro-Peruvian— playing a *checo*. (Figure 6) shows a similar configuration, but this time surrounded by a larger group of people. By comparing both paintings, we can see the drastic change of societal value towards the acoustemology in observation; it went from being out of frame—unimagined by chronologists—into the painter's frame in Fig 5, and finally at the center of attention, gazed at by everyone in the streets of the capital city of Lima in Fig 6. [32] In both works, Merino tried to portray early musical contacts between cultural realities that developed parallelly throughout the colonial period. These interactions would later form a new genre, *criollismo* (*criollo*-ism), focusing on the acoustic assemblage of Afro-Peruvian, Andean, and Spanish traditions.

For a moment, let us analyze the paintings solely using Villegas's notions of the imaginary of the *costumbristas*. We could attribute the ongoing, durational transformation of the *checo* from a labor tool into a musical instrument as the creation of a new republican imaginary by the painter Ignacio Merino, then ideally, *criollismo* could represent a new hybrid acoustemology in a "post-colonial" republic; unfortunately, that was not the case. In her article *"La identidad ch'ixi de un mestizo: En torno a La Voz del Campesino, manifiesto anarquista de 1929"*, Silvia Rivera Cusicanqui emphasizes a hard truth regarding Andean countries: *"El horizonte colonial incluye las décadas de vida republicana y se condensa en un presente de opresiones vividas, compartidas por pobladores del altiplano andino y de las ciudades*

[32] Lima city is located in the department of Lima which can be found in (Figure 1) as department no.6.

enclavadas en su territorio: "[33]. We can add to Cusicanqui's statement the African populations in the coastal cities of the former Spanish viceroyalties. In support of this claim, we can analyze Nicomedes Santa Cruz's poetry in *"Canción del Campesino,"* written in 1970. Nicomedes, uncle of Rafael Santa Cruz, was a member of the *Nueva Canción* movement. The recognized *cantautor*[34] suggested that the prolonging of colonial structures happened during the early consolidation of the republic as an oligarchic state: "Three centuries of colonialism, century and a half plutocracy, my people suffered in disgrace for savage slavery."

[33] Silvia Rivera Cusicanqui, "La identidad ch'ixi de un mestizo: En torno a La Voz del Campesino, manifiesto anarquista de 1929" *Revista Ecuador Debate,* No.84 (2011): 197.
Translation: "The colonial horizon includes the decades of republican life and is condensed in a present of oppressions lived, shared by residents of the Andean highlands and cities embedded in their territory"
[34] Term commonly used to describe musicians in the *Nueva Canción,* to describe songwriters which compositions have an intense poetical value and critics.

Canción del Campesino (Excerpt)
by Nicomedes Santa Cruz

Señores, pido licencia
para contar una historia
que no inventó mi memoria
pues vivimos la experiencia.
La poesía es mi ciencia
que amo y trato con respeto;
y si algún crimen cometo
no es mi justo protestar
sino el quererme expresar
siendo casi analfabeto.

Nicomedes Santa Cruz
es mi nombre verdadero.
Soy agricultor, cañero
y mi patria es el Perú.
Toda América del Sur
tiene esperanza en mi tierra
pues libramos dura guerra
contra vil oligarquía
que impuso su tiranía
en la Costa, Selva y Sierra.

Tres siglos de coloniaje,
siglo y medio 'e plutocracia
sufrió mi pueblo en desgracia
por esclavismo salvaje…
Hoy le rindo mi homenaje
a Nuestra Revolución.
Y al iniciar mi canción
a nombre mío y mi gente
doy anticipadamente
mil gracias por la atención. [35]

[35] Nicomedes Santa Cruz, *Canción del campesino*, Recorded 1971, on *Cantantes de la tierra sin patrones*, Direccion de Promoción y Difusion de Reforma Agraria, 1971, 33 1/3 rpm.

Canción del Campesino was recorded and circulated by the *Dirección de Promoción y Difusion de Reforma Agraria* as part of the propaganda for the agrarian reform from the Revolutionary Government of the Armed Forces directed by General Juan Velasco Alvarado.[36] In Velasco's famous speech in 1969, where he announced the same reform, the former dictator proclaimed: *"Al hombre de la tierra ahora le podemos decir en voz alta, inmortal y libertaria, como Túpac Amaru: "¡Campesino, el patrón ya no comerá más de tu pobreza!"*[37] Like Nicomedes Santa Cruz, in his speech, Velasco automatically disregards any assumptions that there was a post-colonial society in Perú before his government. Velasco's narrative situates his struggle for revolution directly related to the fallen *Casique*[38], who lost his life in his coup against the Spanish Crown in 1781. If Merino was instrumentalizing the *cajón* as part of a series of diagrammatic paintings within an optimistic portrayal of the 19th century— as a new age of cultural hybridity and unity— Velasco promises unity a century later, this time negating the very notions of post-colonial identity stated before. Velasco's narrative portrayed colonial structures which had been prolonged, and with his agrarian reform, finally, the people would surpass the colonial model into a proletarian post-colonial society.

[36] The reform consisted in a redistribution of agricultural lands from the Peruvian aristocracy and give it back to the people who worked the land

[37] Orin Starn, Degregori Carlos Iván, and Robin Kirk, *The Peru Reader History, Culture, Politics* (Durham, NC: Duke University Press, 2005), 284.
Translation: To the men of the land, we can now say in the inmortal and liberating voice of Tupác Amaru: Peasent: the Master will no longer feed off your poverty!

[38]Casique was a term actively used in the Spanish colonies of the Americas. The terminology refers to indigenous leaders —commonly descendants of the native ruling classes—who had authority over communities. Spanish quickly resorted to gaining control over Casiques as an instrumental component in controlling native populations. Tupac Amaru's popularity came as he famously rebelled against the Spanish viceroyalty, which shortly after ended in his execution.

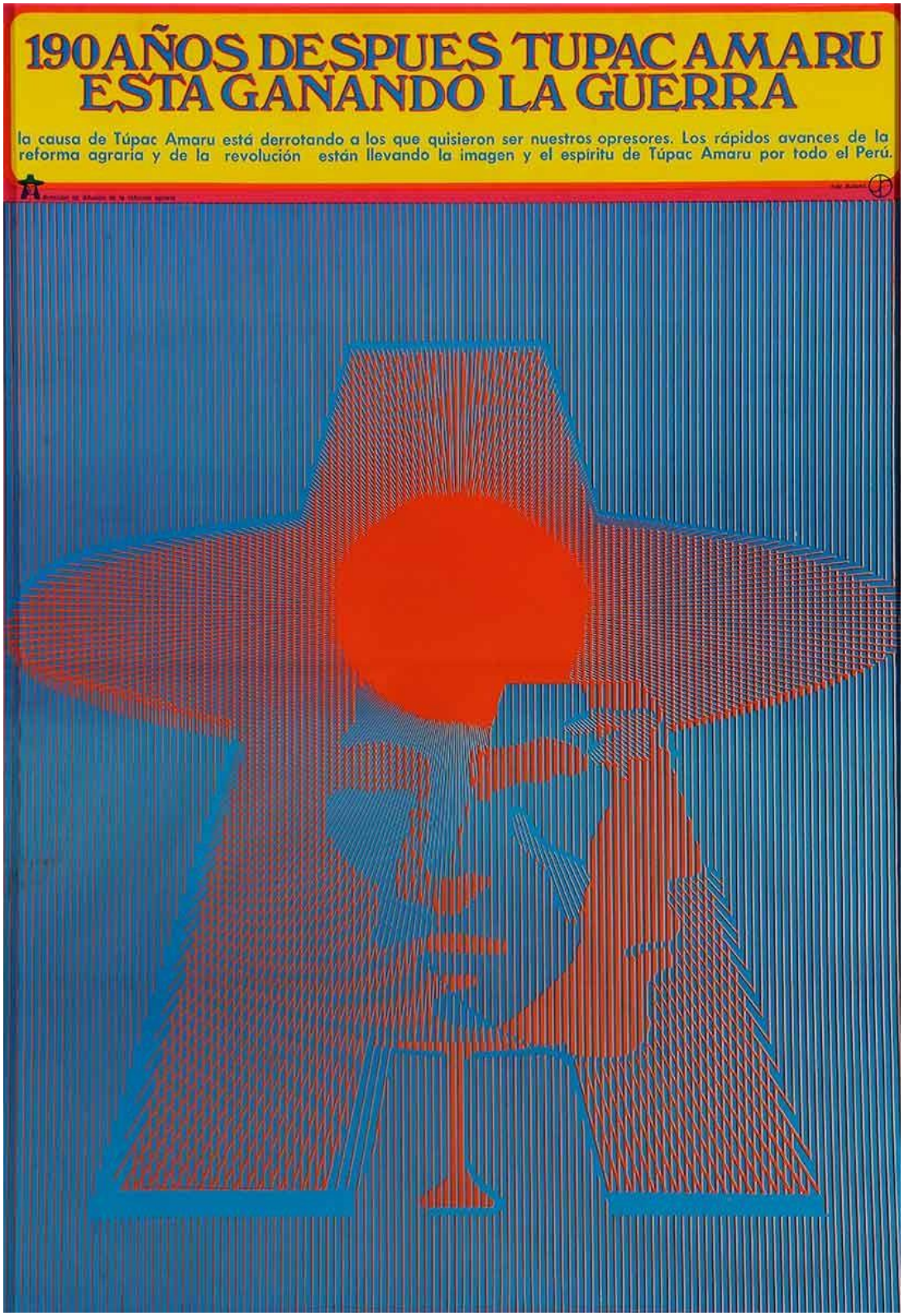

Figure 7: Jesús Ruiz Durand, Reforma Agraria, 1968-1873, print 100 x 70 cm, Museo de Arte Latinoamericano de Buenos Aires, Argentina. © All rights reserved MALBA 2023.[39]

[39]Jesús Ruiz Durand, *Reforma Agraria* 1968-1873, print, 100 x 70 cm, MALBA, Buenos Aires, Argentina. https://www.malba.org.ar/jesus-ruiz-durand-sobre-su-serie-de-afiches-reforma-agraria/.

The title of (Figure 7) translates: 190 years after Túpac Amaru is winning the war. The subtitle translates: Túpac Amaru's cause is defeating those who wanted to be our oppressors. The rapid advances of the agrarian reform and the revolution are taking the image and spirit of Túpac Amaru around the whole region of Perú.

The image above by artist Jesús Ruiz Durand can be compared to Merino's paintings *Copla Criolla* and *Jarana en Chorrilos*.[40] This time Durand's image transcends *costumbrismo* and focuses on the united struggle of the working class —which represents the majority of the population— against the *hacendados* (*l*andlords), still the Masters of a prolonged colonial system.

To further understand the bias in Merino's paintings, it is essential to understand the artist's context in relation to the artworks and then deduce his intention. Art historian Ricardo Kusunoki Rodriguez commemorates the painter in his book *"Ignacio Merino Pintor de Historia 200 años"*. In it, we learn that Merino was born in 1817, during the independence war; he later studied painting in Paris and returned to Perú 1938 after the independence, where he dedicated his career to the drawing of Lima. Kusunoki mentions Merino's influence in the Peruvian *costumbristas :*

> *Como ningún otro compatriota suyo había hecho antes, emigró muy joven a Europa para hacer carrera a mediados del siglo XIX como pintor en París, que en aquel momento era el centro del arte mundial. Merino se convirtió así en una figura clave para entender las transformaciones que experimentó nuestro país tras la Independencia. Su actitud manifestaba, en realidad, un anhelo compartido por la elite peruana en las primeras décadas de la República: superar definitivamente el pasado virreinal, cuyas manifestaciones culturales empezaban a ser consideradas como provincianas y anticuadas.*[41]

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[41] Ricardo Kusunoki, *Ignacio Merino Pintor de historia 200 años* (Lima: Municipalidad Metropolitana de Lima, 2017), 11.
Translation: As no other compatriot of his had done before, he emigrated to Europe at a very young age to pursue a career in the middle of the 19th century as a painter in Paris, which at that time was the center of the art world. Merino thus became a figure vital to understanding our country's transformations after independence. His attitude

Indeed, Merino sought a new imaginary to portray the former viceregal city as a modern cosmopolitan center. One place where the artist found this landscape was in the Afro-Peruvian acoustemology that had developed around the coastline of the new Peruvian nation. Beyond the artist's fascination regarding the transformative aspect of the instrument—from a quotidian house tool into an idiophonic instrument— Merino managed to depict the fascinating scene of an acoustical assemblage: a bidirectional circulation between two ways of embodying sound which had existed in parallel throughout the colonies, opening the musical arts into something completely new. It is essential to point out that the scene that Merino depicts is not the issue; the issue is how language still encapsulates the arts into a colonial structure. Again, Silvia Rivera Cusicanqui expresses this phenomenon in her book *Ch'ixinakax utxiwa: Una reflexión sobre prácticas y discursos descolonizadores* where she states:

> *Los temas retornan pero las disyunciones y salidas son diversas; se vuelve, pero no a lo mismo. Es como un movimiento en espiral. La memoria histórica se reactiva y a la vez se reelabora y resignifica en las crisis y ciclos de rebelión posteriores. Es evidente que en una situación colonial, lo "no dicho" es lo que más significa; las palabras encubren más que revelan, y el lenguaje simbólico toma la escena.*[42]

What is unsaid in Merino's imagery is the harmonious coexistence of contrasting acoustemologies through artistic communication and experimentation; what is said is the labeling of these interactions as having something to do with being *criollo*. While *criollismo,* in the form of musical arts, encompasses Andean, African, and Spanish acoustemologies, its name

showed a desire shared by the Peruvian elite in the first decades of the republic: definitively overcome the viceregal past, whose cultural manifestations began to be considered provincial and old-fashioned."

[42] Silvia Rivera Cusicanqui, *Ch'ixinakax utxiwa : una reflexión sobre prácticas y discursos descolonizadores (*Buenos Aires: Tinta Limón, 2010), 13.
Translation: The themes return but the disjunctions and exits are diverse; it returns, but not to the same thing. It is like a spiral movement. Historical memory is reactivated and at the same time it is reworked and resignified in subsequent crises and cycles of rebellion. It is evident that in a colonial situation, the "unsaid" is what means the most; words cover up more than they reveal, and symbolic language takes center stage.

derives from the term *criollo*, used to describe a Spanish descendant born in the colonies. Language shows that although Perú has a hybrid, conversing identity, colonial structures survived the transition period and were institutionalized within the modern republic.

In the essay "*El discurso abolicionista en la prensa peruana, 1800-1850: Una aproximación al tema,"* author John Rodriguez Asti explains how difficult abolition was in the early Republic of Perú:

> *En los primeros años de vida republicana, los negros esclavos estuvieron a la expectativa de mejoras por las promesas recibidas durante la Independencia. Sin embargo, aquellas medidas dictadas para otorgar la libertad a los que participaron en las filas patriotas, a la larga no se llevarían a la práctica, debido a que primaron los intereses económicos de los hacendados.*[43]

Abolition did not happen in Perú until 1854, eight years later than Merino's painting *copla criolla*, suggesting conflicting values within Merino's imagery. Previously, we read Kusunoki's words saying that Peruvian elites wanted to overcome the old-fashioned viceregal image. Still, Rodriguez's essay also states: *"el discurso racista que prevaleció fue una parte importante de los esfuerzos de las debilitadas clases altas para reconstruir las bases de su poder después de la Independencia."*[44] In short, there were attempts to change viceregal imagery while maintaining colonial systems of oppression. Rodriguez even shows how when abolition finally

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[43] John Rodríguez Asti, "El discurso abolicionista en la prensa peruana,1800-1850: una aproximación al tema," in *Etnicidad y Discriminación Racial en la Historia del Perú*, ed. Jose Luis Carrillo Mendoza (Lima: Instituto Riva Agüero, 2003),153.
Translation: In the first years of republican life, enslaved African people expected improvements through promises received during independence. However, those measures issued to grant freedom to those who participated in the patriot ranks, in the long run, would not be put into practice because the interests which prevailed were purely economic and from the *hacendados* (landlords).

[44] John Rodríguez Asti, "El discurso abolicionista en la prensa peruana,1800-1850: una aproximación al tema," in *Etnicidad y Discriminación Racial en la Historia del Perú*, ed. Jose Luis Carrillo Mendoza (Lima: Instituto Riva Agüero, 2003),154.
Translation: The racist discourse that prevailed was an important part of the efforts of the weakened upper classes to rebuild the foundations of his power after independence.

happened it was still under the terms of the *hacendados*: *" Lo cierto es que entre 1854 y 1860 se manumitieron 25.505 negros esclavos, lo que significó que el Estado indemnizara a sus amos con 7'651.500 pesos."*[45]

Conclusion

Throughout this essay, we re-imagined concepts behind instrumentality by studying the predecessors of the *cajón*, the idiophonic drums from the Peruvian littoral. By applying Phillip Alperson's philosophy about the "Instrumentality of Music," we unveiled the musical instrument's complex ontologies, revealing that the instrumentality behind the *cajón* is one of the intentions. These intentions are about imagining possible configurations of architectures to create tools for cultural production, intentions to resonate with and embody foreign infrastructure, intentions of subverting colonial regimes, and intentions of shapeshifting, morphing, and creating acoustic assemblages.

Furthermore, we analyzed the instrumentalization of the Afro-Peruvian acoustemologies surrounding the *cajón. Costumbrista* painter Ignacio Merino creates diagrammatic paintings to portray a "post-colonial" Perú. The paintings intend to portray a multicultural Peruvian identity to differentiate from the colonial structures that haunted the republic's early stages. Merino's utopian view focused on cultural harmonization; via the depictions of acoustic assemblages, the paintings try to blur racial boundaries and propose different gatherings, which would not have been possible during the colony. The essay proved that while it could have been Merino's reality,

[45] John Rodríguez Asti, "El discurso abolicionista en la prensa peruana,1800-1850: una aproximación al tema," in *Etnicidad y Discriminación Racial en la Historia del Perú*, ed. Jose Luis Carrillo Mendoza (Lima: Instituto Riva Agüero, 2003),163.
Translation: The truth is that between 1854 and 1860 25,505 black slaves were manumitted, which meant that the State compensated their masters with 7,651,500 pesos.

it was not a shared one; other art movements of the late '60s and' 70s— some supported by the government of Velasco-Alvarado—[46] completely disregarded Merino's approach towards a "post-colonial" identity.

In contrast to the visual representations of the acoustic assemblages from the region, Nicomedes Santa Cruz proved with his couplets that the subversive nature of the acoustemology is still present in its core. He reveals social discrepancies because of the same feudal systems of the *haciendas* and plutocracy which were in place since Merino's paintings. Durand's visual representations place Velasco in direct relation to Túpac Amaru, indicating that what Nicomedes Santa Cruz called out in his rhymes were prolonged colonial systems. In contrast to the Peruvian *costumbrismo* movement, Durand's and Santa Cruz's promises of post-coloniality are not focused exclusively on cultural harmonization but via Marxist notions of labor.

While Merino's visual depictions of the idiophonic culture lose the shapeshifting form and encase the acoustemology in the form of the *checo* —which later became the *cajón*— his depiction still shows the acoustemology bidirectionally feeding back and forming acoustic assemblages via sonic experimentation. To a certain extent, the work shows acoustemologies coexisting in harmony. Silvia Rivera Cusicanqui's theories about the coexistence of juxtapositions —within the *Chi'xi* identity— proposed that colonial structures are found in what is said, while true meaning is found in what is unsaid. *Criollismo*, while in language suggesting an emphasis on Spanish structures, shows us the experimental nature of the acoustemologies embedded within. Tradition has always been in circulation, rather than static.

[46] Not all the proletarian movements from this period were supported by the Military government. For a broader recollection of different movements from the time, refer to Ángel Rodríguez Ordoñez, *La Lira Rebelde Libertaria Breve recopilación de poesía libertaria peruana*.

Mouth 2]: Feedback as a Sonic Artifact: Technical and Conceptual

This essay explains the bases of acoustic feedback from both a technical and a conceptual standpoint. To analyze the technical framework of the project, we will examine the discovery of acoustic feedback by the Danish scientist Soren Absalon Larsen in the early 20th century. Despite Larsen's discovery, scientific research did not discuss feedback until the 60s. The phenomenon reappeared in Paul Boner's acoustical research focused on subtracting the feedback from concert halls. To understand structures that acoustical feedback faced in the concert hall, we will analyze the acoustemology inside the space through musicologist Emily Dolan. Her research on the modern orchestra aids us in distinguishing feedback as a dismissed opposing structure— making it a form of Sonic Surrealism. Afterward, we will note examples of artistic work with acoustical feedback. We will prioritize historicizing the phenomenon in relation to how artists attempted to disrupt the Western classical canon throughout the second half of the 20th century. Finally, the last section analyses the subjectivity of feedback through noise and proposes a new interpretation of the phenomenon in line with the concept of *realimentaciones-cruzadas*/cross-feedback.

Understanding the Phenomenon: a technical approach to acoustic feedback

The categorization of feedback loops splits the phenomenon into two groups, negative feedback, which refers to self-regulating systems, and positive feedback, referring to self-reinforcing systems. Negative feedback is found in complex electronic systems, which is achieved by establishing a threshold relationship between two variables. An example of negative

feedback in audio technologies is found through feedback compression[47].

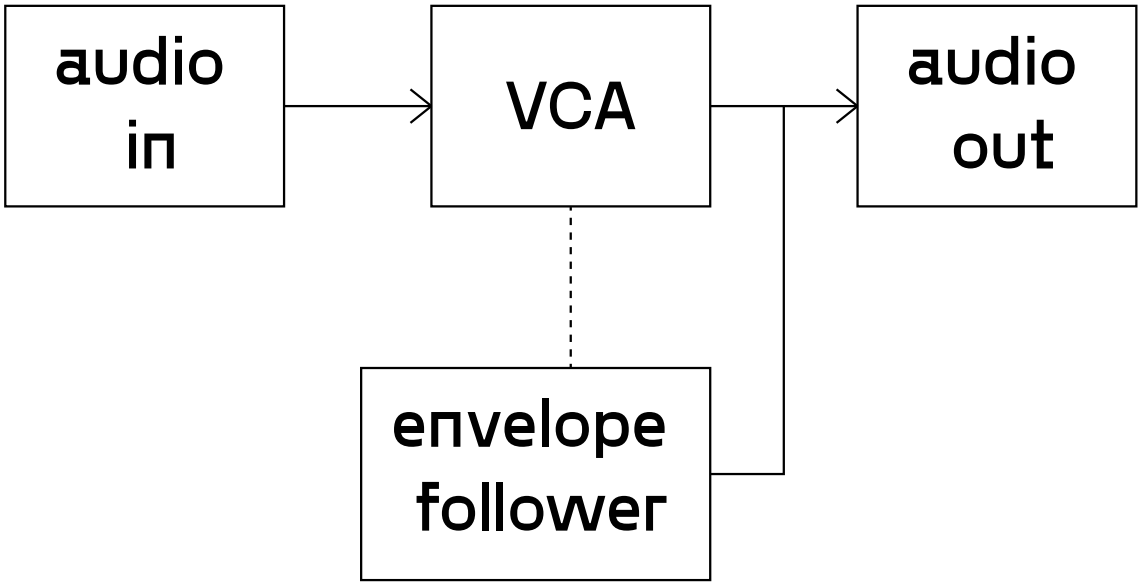

Figure 8: Signal flow chart giving an example of feedback compression.

In the circuit illustrated in (Figure 8), the audio enters and passes through the voltage-controlled amplifier (VCA).[48] Then the signal feedbacks into the envelope follower, converting the audio signal into a controlled voltage signal, which returns a sidechain process into the amplifier.[49] The result is a negative feedback system where the outputting signal's amplitude regulates the amplifier's overall amplitude of the system.

Positive feedback circuits emphasize a trait within the system in contrast to how negative feedback systems self-regulate.

[47] Feedback compression is a negative feedback system where the amplified signal is fed back into the gain (amplitude) stage of the same system, acting as a —self-regulating— gain reduction element.
[48] VCA is an amplification circuit where the gain is controlled by an external voltage.
[49] Sidechain processing refers to a technique that allows a signal to exert some regulating control over another signal.

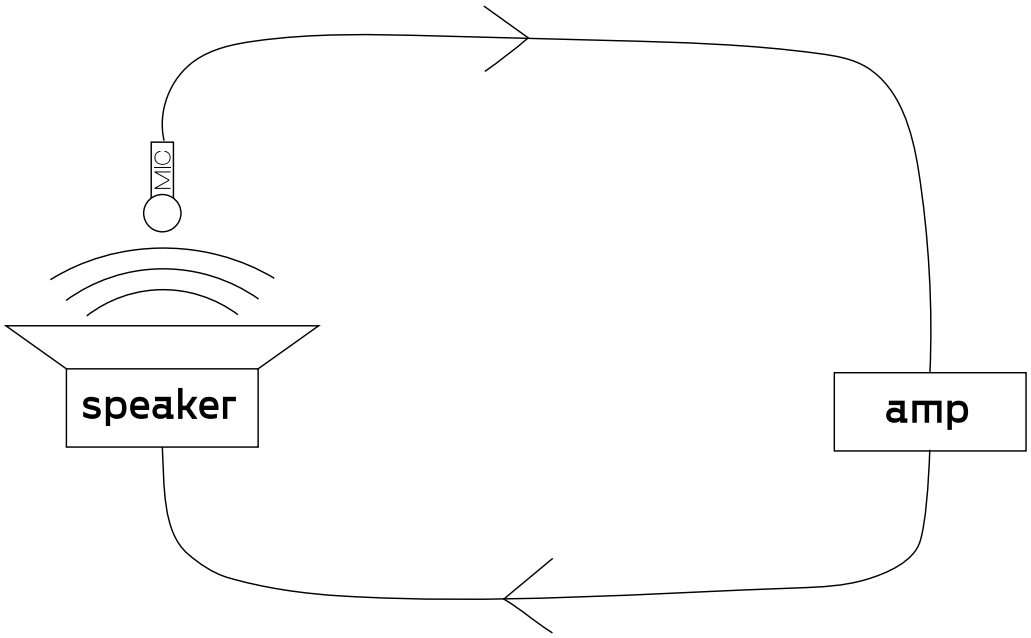

Figure 9: illustrates a signal flow chart of a positive acoustic feedback system.

(Figure 9) produces feedback by pointing a dynamic microphone directly into a guitar amplifier. The amp will already output a low-amplitude signal preexisting in the sonic circuit. Sound systems inherently produce a sound that can manifest as a humming tone from a tube amp or a slight noise coming from the connections within the system at the edge of audibility. Directing the microphone input scope into the amplifier's range will capture the faintest signal produced throughout the system. The signal will get amplified by passing through the circuit. As the cycle repeats, the signal's loudness increases exponentially each time it circulates through the system. Self-reinforcement will push the audio system to its edge.

Early Appearances: The Discovery of Acoustic Feedback

The history of acoustic feedback loops dates back to the early ages of amplification at the start of the 20th century. When discovered, acousticians quickly gravitated their research to subtracting the phenomenon from artificial sonic architectures. In her book *Between Air and Electricity, Cathy Van Eck* comments on the initial focus of feedback loops in the 20th-century acoustical studies: "Not surprisingly, scientific research on amplifying audio signals has concerned itself in avoiding feedback."[50] Early research on acoustic feedback was performed by scientist Søren Absalon Larsen in 1911, when the scientific name *"effect Larsen"* was derived. Though it was discovered in the 1910s, extensive studies on audio feedback were not conducted until the 1960s. Acoustician Paul Boner introduced the sonic equalization technique to avoid the Larsen effect in concert halls.[51]

Boner's dismissal of the Larsen effect could be attributed to a functional approach towards the phenomenon. This approach is understood by analyzing the dominant sonic practices within the concert halls. While amplification research would seek to amplify musical instruments or the human voice, audio feedback was a collateral invention. The phenomenon was accidentally discovered via the invention of amplification systems, resulting in the categorization of acoustical feedback as interference and leading to its subtraction from artificial acoustical infrastructures.

[50] Cathy Van Eck, *Between Air and Electricity* (New York: Bloomsbury, 2017), 59.
[51] Equalizers reduce or increase specific frequencies of an audio signal by searching for the resonance frequencies and filtering them to avoid acoustic feedback.

Feedback as Sonic Surrealism: resistance in the concert hall

Through the analysis of the history of feedback, one could think of audio feedback as something which accidentally came into existence due to the creation of electrical sound amplification. Countering the need to subtract interference, sound artists have celebrated the phenomenon by constructing different understandings of the Larsen effect. A crucial contrasting approach toward the phenomenon would include the role of the not-knowing in artistic experimentation. [52] While with a particular perspective, feedback is comprehended as undesirable interference, in another context, its serendipitous creation exists as a fertile ground for countless experimentation, with immense subjective potential for creation.

Once again, it all comes down to the imagination. Similar to the acoustemology of the *cajón,* the difference between a mundane object and a musical instrument depends on the imaginaries we use to understand the structures around us. Through feedback, we can critique inherited tangible and intangible structures. In other words, through the artistic perception of feedback, we can focus on critiquing hierarchies within listening and thinking, reflected in our built environment. For example, the concert hall is an architectural reflection of a set of Western acoustemological principles— a space which, at first, was quick to disregard the Larsen effect from its sonic environment.

A reason for the neglect could be the radical difference the Larsen effect represented toward the aesthetical values of the Western classical acoustemology —which dominated the concert hall for most of the 20th century. Through timbre studies, musicologist Emily Dolan

[52] A term used by Donald Barthelme referring which talked about the creative process in relation to the unknown: the space of not-knowing is one where the mind is permitted to move in unexpected ways creating a space where art can be made.

offers an example of the aesthetical values during a crucial time of the consolidation of the modern orchestra. In her dissertation "An Idea of Timbre in the Age of Haydn," she explores the writings of philosopher Jean-Jacques Rousseau, among others, to learn about the relationship between timbre and its aesthetic role in the instrumentation of the orchestra. She notes: "In this period, instrumental sonorities began to be granted real value, but their value was nonetheless dominated by the aesthetic that held vocal music in the highest esteem."[53] Rather than analyzing the orchestra, composers from the time went through the individual properties of instruments to find out "aesthetically pleasing" values. The result is that in the 18th century, the most beautifully sounding instruments were the ones that expressed great flexibility and had similar characteristics to the human voice; more specifically, she points out throughout the writing that female voice-sounding instruments were regarded as beautifully sounding.

Intriguingly, feedback loops usually happen in mid-range frequencies, clashing with the ranges of the human voice and, therefore, "voice-like" instruments. Furthermore, we can categorize the timbre of the human voice and traditional instruments as sounds composed of complex periodical sound waves. The composition of multiple periodical waves produces harmonic complexity; this, along with the envelope of the sound, constitutes timbre, which throughout the 18th-century texts appears as the character of instruments.

In contrast, acoustic feedback acts as an electromechanical oscillator that outputs sound which lacks harmonic complexity—it is via the exponential reinforcement of the positive feedback loop that one can get complex harmonics through the overloading of amplification systems, which creates sonic distortion. While the invention of the modern orchestra focused on

[53] Emily Dolan, "The Idea of Timbre in the Age of Haydn," PhD diss., (Cornell University, 2006), 65.

making categories of instruments based on their representative functionality, feedback does not have the same representational aesthetics.

Furthermore, Dolan analyzes Ancelet's *Observations sur la Musique, les Musiciens, et les Instruments* to clarify aspects of the aesthetics of the given period:

> Rather than embracing an instrument for its particular characteristics, Ancelet sees any specific characteristics as limitations. His notion of instrumental sonority is therefore pragmatic—some instruments can be employed in all situations and are therefore very useful, and others that cannot, are therefore of limited use[54]

Then, to connect the aesthetical choices around instrumentality inside the concert halls with Western philosophy from the 18th century, Dolan remarks that

> philosophers who wrote about music viewed wordless instrumental music with suspicion: they believed that music needed a text to communicate clearly, without a text, music seemed vague, superficial, and incapable of imitation or expression, and therefore at odds with the way all the other arts were understood to behave.[55]

Criticism of musical art influenced the aesthetic values of the practice greatly, resulting in radical changes towards instrumental music.

A form of criticism came from philosopher Immanuel Kant, who categorized music as the "lowest of the fine arts", while ranking the visual arts as the "highest form of fine art." This criticism was due to Kant's formal theory applied to music, in which he states that music would be judged by its outward form. Furthermore, Kant characterized music as a play on sensations without discussing aspects of musical form, concluding that music could stimulate the mind as it was categorized as sensation. Still, it could not fuel cognition.

[54] Emily Dolan, "The Idea of Timbre in the Age of Haydn," PhD diss., (Cornell University, 2006), 72.
[55] Emily Dolan, "The Idea of Timbre in the Age of Haydn," PhD diss., (Cornell University, 2006), 138.

Dolan shows how Kant's criticism was in line with other 18th-century philosophers. While Kant could at least connect music to sensation, others could not understand it beyond a sonic perception. For example, Rousseau

> carefully separated musical elements that supply meaning from those that merely provide a pleasurable sensation. This is representative of the dominant 18th-century view that music's meaning lay in its extra-musical association—music should imitate or represent appropriate subjects or emotional states. Music that had no clear "meaning" or appeared to be "only" a play of sound had little aesthetic value—criticisms often leveled against instrumental music.[56]

Kant's ideas of formalism towards music and Rousseau's (among others) ideas of representative aesthetics did have a long-lasting effect on the ontology of Western classical music; Dolan also remarks how these thinkers "fueled a radical reevaluation of the musical medium from the point of view of philosophical aesthetics."[57] Because the concert hall is a space where the modern orchestra is predominant, and we know that formalism and aesthetics of imitation heavily influence its ontology, we could argue that acoustic feedback came to be seen as the sonic representation of interference.

As Western classical music advanced up to the 20th century, acoustic feedback existed inside rigid categorizations where sound needed to represent something more. This way, electroacoustic sound represents resistance toward the inherited structures from the 18th century. Feedback loops interfere with representational hierarchies within the instrumentation, with notions of aesthetics, ideas of gender and the voice, and the human environments. In a way, one could also interpret feedback as a form of sonic surrealism. In the first surrealist manifesto from

[56] Emily Dolan, "The Idea of Timbre in the Age of Haydn," PhD diss., (Cornell University, 2006), 144.
[57] Emily Dolan, "The Idea of Timbre in the Age of Haydn," PhD diss., (Cornell University, 2006), 145.

1924—between the discovery of the Larsen effect and before any known artistic experiments with it— André Breton exemplifies the ontology behind the new surrealist movement:

> ENCYCLOPEDIA: Philos. Surrealism is based on the belief in the superior reality of certain forms of previously neglected associations, in the omnipotence of dreams, in the disinterested play of thought. It tends to ruin once and for all other psychic mechanisms and to substitute itself for them in solving all the principal problems of life.[58]

The omnipotence of dream as a territory of the free rein of thought, and the omnipotence of acoustical feedbacking as the representation of interference —both show realities inherently dismissed, which stand in overcoming a particular functionality of thought. Acoustical feedback electromechanical oscillation radically overcomes all other sonic structures, creating a state where the imaginary can freely defy perceived realities.

Everything we can imagine through the subjectivity presented in this sonic surrealism comes from the mere act of questioning inherited structures of knowledge. To recall the poetic essay of Stéphan Mallarmé, "A Throw of a Dice Will Never Abolish Chance," any act of knowing cannot avoid the not-knowing. Feedback is the unknown in electronic sound systems; it is a paradox of the uncontrollable form from a controlled environment, the unimagined form that took control over the concert halls. One of many dichotomies we can imagine through feedback structures is how they invert the technologies that try to abolish them. The same electroacoustic techniques used by Boner in the concert halls to subtract feedback are present in later artworks to emphasize the phenomenon.

[58]André Breton, *Manifiestos del surrealismo*, trans. Aldo Pellegrini (Buenos Aires: Argonauta, 2021), 47.

Artist & Feedback: a historicization of the Practice

Historically, artistic experimentation approached the Larsen effect with a completely different perspective. While Boner's paper on the equalization of acoustical feedback titled "Behavior of Sound System Response Immediately Below Feedback" came out in 1966, artistic experimentation already questioned notions of instrumentality and representational aesthetics inside the concert halls.

Even before Boner's publication, John Cage's 4'33 was performed by pianist David Tudor in Woodstock and New York by 1951. By emphasizing sounds other than the ones discussed and categorized inside that concert hall, Cage provided a framework that would break the structures of the modern orchestra while breaking with the aesthetics provided by Rousseau and Ancelet. Cage premiered "Electronic Music for Piano" in Stockholm in 1964, a piece for Piano, microphones, and loudspeakers. Later, David Tudor composed a whole album with feedback loops released in 1973 titled "Microphone," a work derived from a work done at the Pepsi Pavilion in 1970 in Osaka. Tudor recalls the project, saying:

> the number of loudspeakers in the space was 37, and eight input channels could contain modifying equipment. Each of the eight-input channels has a program card which routed them to the 37 loudspeakers in different ways so that one could make circles and squares... Now, the modifying equipment gave me gating possibilities, since by simply pointing the microphones in space and then having the sound moving between the loudspeakers at certain speeds, the feedback would occur only for an instance.[59]

In this piece, Tudor connects feedback loops with spatialization techniques. The composer adds speakers around the space, increasing the possibility of creating multiple instances of feedback based on the performer's position in the room. Tudor adds another plane of

[59] Dario Sanfilippo and Andrea Valle, "Feedback Systems: An Analytical Framework,"*Computer Music Journal Vol.37,* No. 2 (2013): 19.

circulation to the performance, the sonic circulation of acoustical feedback through microphones and speakers, and the performer's mobilization around the space, which adds variable duration to the phenomenon. Lastly, these experiments with feedback were not limited to microphones, amplifiers, and loudspeakers. Alvin Lucier brought the concept of the feedback loop into the realm of analog recording in his famous piece "I Am Sitting in a Room." In the piece, he recorded himself speaking in a room using one tape machine (#1)and fed the recording back into a second tape machine (#2), then back into the tape machine (#1), back into (#2), and so on. He achieved through this feedback to extract the sound of a room while at the same time blurring his voice into the given architecture. Via feedback, the space is forgiving and smooths up the voice's stutter.

The artist above has been instrumental in breaking structures of Western classical music and expanding both conceptual and electroacoustic experimentation. Despite their contributions, these are not representative of the totality of attempts to break sonic structures or the most radical in opposition to the Western classical canon. In his essay "Music after 1950: Afrological and Eurological Perspectives," composer and improviser George E. Lewis criticizes John Cage. In his critique, he presents Cage as a composer with a “multicultural” background which would completely dismiss specific cultural approaches to sonic experimentation. **“**It is clear that Cage has drawn very specific boundaries, not only as to which musics are relevant to his own musicality but as to which musics suit his own taste.” Lewis further explains how avant-garde composers like Cage, recognized for their attempt to break the Western classical composition canon, simultaneously revamped and positioned themselves as part of it.

> The work of John Cage presents an explicit challenge to this fixed notion of composition. Like Bird, the activity of Cage and his associates, such as Christian Wolff, David Tudor, Morton Feldman, and Earle Brown, had profound and wide-ranging influence not only in the musical, literary, and visual domains but socially and culturally as well. The musical and theoretical work of these composers can be credited with radically reconstructing Eurological composition; the trenchancy of this reconstruction involved in large measure the resurrection of Eurological modes of real-time musical discourse, often approaching an explicitly improvisative sensibility.[60]

In the spirit of recapitulating the previously discussed values of Western classical acoustemology observed by Dolan, we could argue that the work mentioned above would challenge imitative aesthetics in classical music, such as the ones proposed by Rousseau. The direct effect of this work would open up the spectrum of sound considered inside their canon by adding feedback and other electroacoustic sounds into concert halls. It also freed up composition and reproduction of music with indeterminacy. It dismantled certain representations in classical music, giving space for conceptual imagination and also influencing and making a relation to the world of visual arts.

Despite all of this, we could agree with Lewis, as the frameworks presented would still closely relate to how Kant perceived music; the role of the composer as the organizer of sound is still crucial. The point of analysis is rooted in the outer structures of the organizations of given sounds, while some forms of music, as Lewis mentioned, are ranked higher than others. Furthermore, Lewis's article demonstrates how African American improvisers were breaking the canon in a much more radical way and with little influence of eurocentric traditions: "bebop's combination of spontaneity, structural radicalism, and uniqueness, antedating by several years the reappearance of improvisation in Eurological music, posed a challenge to that music which

[60] George E. Lewis, "Improvised Music after 1950: Afrological and Eurological Perspectives," *Black Music Research Journal 16,* no. 1 (1996): 96.

needed to be answered in some way."[61] The article points out the studies of anthropologist and improviser Georgina Born which show how "some of the main elements of experimental music practice improvisation, live group work, the empirical use of small, commercial electronics in performance were pioneered in the jazz and rock of the 1950s and 1960s,"[62] adding another possible approach towards writing the history of experimental music. We could phrase Born's and Lewis's claims as alternate histories of sonic experimentation as proposed by the Western canon, which took over the academization of experimental music. While composers rebuilding the canon in the U.S. could be considered the mainstream of sonic experimentation, improvisers and rock musicians also experimented with electronics through other platforms.[63]

Acoustical feedback also appears later on in history at underground Noise scenes. Noise would push electroacoustic experimentation, even defying the possibilities of improvisation within free forms. In the late '80s, Noise music started as a feedback loop between Japan and New York. While influenced directly by composers John Cage, David Tudor, and German Krautrock, Japanese Noise experiments destroyed the notion the Western musical canon proposed. It parts with Rousseau's aesthetic of music, and it would even overthrow Kant's formal theory towards music, and Cage's perspective of organized sound. Noise goes further to break ideas of not only music within specific structures but into defying the principles of music itself. An example of sonic obliviation can be seen in Merzbow's work. In *Beyond Unwanted*

[61] George E. Lewis, "Improvised Music after 1950: Afrological and Eurological Perspectives," *Black Music Research Journal 16,* no. 1 (1996): 100.
[62] George E. Lewis, "Improvised Music after 1950: Afrological and Eurological Perspectives," *Black Music Research Journal 16,* no. 1 (1996): 101.
[63] Examples outside the canon's range from Jimi Hendrix using feedback as sustained tones within his guitar toimprovisations to George Lewis's work improvising with computers which offer a counter to Cagian notions of algorithmic composition with indeterminacy and chance.

Sound, musicologist Marie Thompson points out how Merzbow's work shows excessiveness in sonic quality:

> With Merzbow, sound veers towards the threshold of unlistenability. When performed, Merzbow or Merzbow-style harsh noise is felt and heard: it bombards the listening body, perturbating the internal organs, the skin, and even the eyes. It transforms the sensory registers of the listening body by turning the stomach into an ear.[64]

Merzbow's listening style expands the aesthetic possibilities of sound in unconventional ways. How do we categorize sounds into long-lasting canons when forced to listen with our stomachs? What function do the composer's "trained ears" have at the overload of loudness and at the edge of unlistenability? Whenever someone covers their ears in a Merzbow-style harsh noise performance, the poetics of transgression come into play as a political manifestation, a paradigm shift of the role of sound and listening in a "musical" sense.

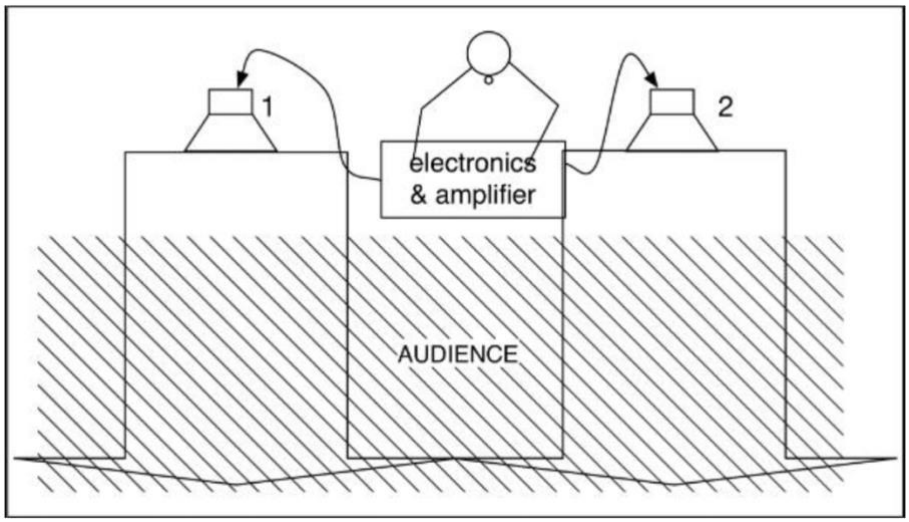

Figure 10: Cathy Van Eck,), Scheme 4.15, Between Air and Electricity[65]

[64] Marie Thompson, *Beyond Unwanted Sound: Noise, Affect and Aesthetic Moralism* (New York, NY: Bloomsbury Academic, an imprint of Bloomsbury Publishing, Inc, 2017), 146.
[65] Cathy Van Eck, *Between Air and Electricity* (New York: Bloomsbury, 2017), 121.

(Figure 10) depicts a piece by Merzbow in which the artist explores listening to "inaudible" vibrations through the body. The piece amplifies low-pitched sound at an extremely high level. Air pressure waves become perceptible to the audience in front of the speakers.

Feedback and Noise: The subjective potential of interference

During his studies of Japanese Noise music, ethnomusicologist David Novak identifies acoustical feedback as a crucial tool in the noise arts context. He uses the subjective potential of the Larsen effect to represent, through feedback, how Japanese Noise music challenges notions of circulation. In *Japanoise: Music at the Edge of Circulation*, Novak states:

> Even as I describe Noise through its circulation, I want to challenge the comparative models of exchange that represent circulation as something that takes place between cultures. I privilege the concept of feedback to emphasize that circulation itself *constitutes* culture. Feedback is a critique of cultural globalization, a process of social interpretation, a practice of musical performance and listening and a condition of subjectivity.[66]

We differentiate between circulation and feedback in the work presented in this thesis. The subsequent can represent a state of a rootless circulation, a sonic representation of an entity that maintains itself, not based on roots but on movement.

Furthermore, Novak states: "Feedback is circulation at an edge. An edge is a special kind of being-in-place; it marks the transition between something and nothing. Edges are limits, and shape-defining margins."[67] In tune with portraying feedback and noise as sounds that transcend notions of locality or the global, edges can symbolize Gloria Anzaldua's *Fronteras*. The edge of circulation not only represents a physical border but epistemological and linguistic borders as

[66] David Novak, *Japanoise: Music at the Edge of Circulation (Durham*: Duke University Press, 2013), 17.
[67] David Novak, *Japanoise: Music at the Edge of Circulation (Durham*: Duke University Press, 2013), 19.

well. Feedback is not representing an idealization of multiculturalism or globalized circulation. It transcends into the realm of metaphysics, the edges of sonic surrealism. To echo Breton, it "tends to ruin once and for all other psychic mechanisms and to substitute itself for them in solving all the principal problems of life."[68] The edge could represent the complex realities of an acoustemology of those in feedback loops, a way to understand how to inhabit different consciousnesses. In her essay "*La conciencia de la Mestiza/* Towards a new consciousness," Gloria Anzaldua states:

> It is not enough to stand at the opposite river bank…At some point, on our way to a new consciousness, we will have to leave the opposite bank, the split between the two mortal combatants somehow healed so that we are on both shores at once and, at once, see through serpent and the eagle eyes.[69]

In short, while feedback deals with opposites, input/output, mouth/tail, and the snake/eagle eyes, it does not exist in contrast but through it. Again, let us think of feedback in relation to *realimentación cruzada/*cross-feedback in the instrumentality of microphones and loudspeakers. We can see the resonant embodiment of Anzaldua's idea of transcending duality as it comes to two opposing diaphragms resonating with each other to create feedback that is not in contrast to the opposing structures but dependent on their resonation.

[68] André Breton, *Manifiestos del surrealismo*, trans. Aldo Pellegrini (Buenos Aires: Argonauta, 2021), 47.
[69]Gloria Anzaldúa, "La conciencia de la mestiza/ Towards a New Consciousness," in *Borderlands: The New Mestiza – La Frontera* (San Francisco: Aunt Lute Book Company, 1987), 78.

[Body]: Uróboros: Acoustemologias de Relimentación Cruzada

The *Uróboros* are a series of idiophonic sculptures which, through reverberation, aim to explore ways to subvert the architecture of our beliefs toward the embodiments of sound. Other shared notions include the artist's role in dealing with found materiality and the imaginary, analyzing spatial transformations through durational states, and activating transformation through vibration. At the core of the sonic sculptures developed for the thesis, we find an acoustical feedback loop produced by the *Uroboro's metabolic circuitry*[70].

Bringing back the mythology of the amphisbaena, the role of this essay within the thesis is to connect notions of instrumentality and resonation from the first essay **[Mouth 1],** with the feedback loop as a sonic artifact explored in the second essay **[Mouth 2].** The sculptural work serves as the shared body for these two different sonic practices, a new acoustic assemblage and creating a *Re-Alimentaciones-Cruzadas: Procesos de Re-imaginación entre Epistemologías Acústicas*/Cross-Feedback: Re-imagining Relations between Acoustemologies.

[70] The metabolic circuitry of the Uróboro sculptures consist in a auditory circuit which creates a feedback loop using a piezo mic, an amplifier and a loudspeaker. When a loop is created through the closing of the system, positive feedback starts to overload into the physical structures appropriating and resonating (metabolizing) them.In the idiophonic instruments previously studied in this thesis, performers would use their hand drum technique to transform material, in the *Uróboros* this happens through the metabolic circuit.

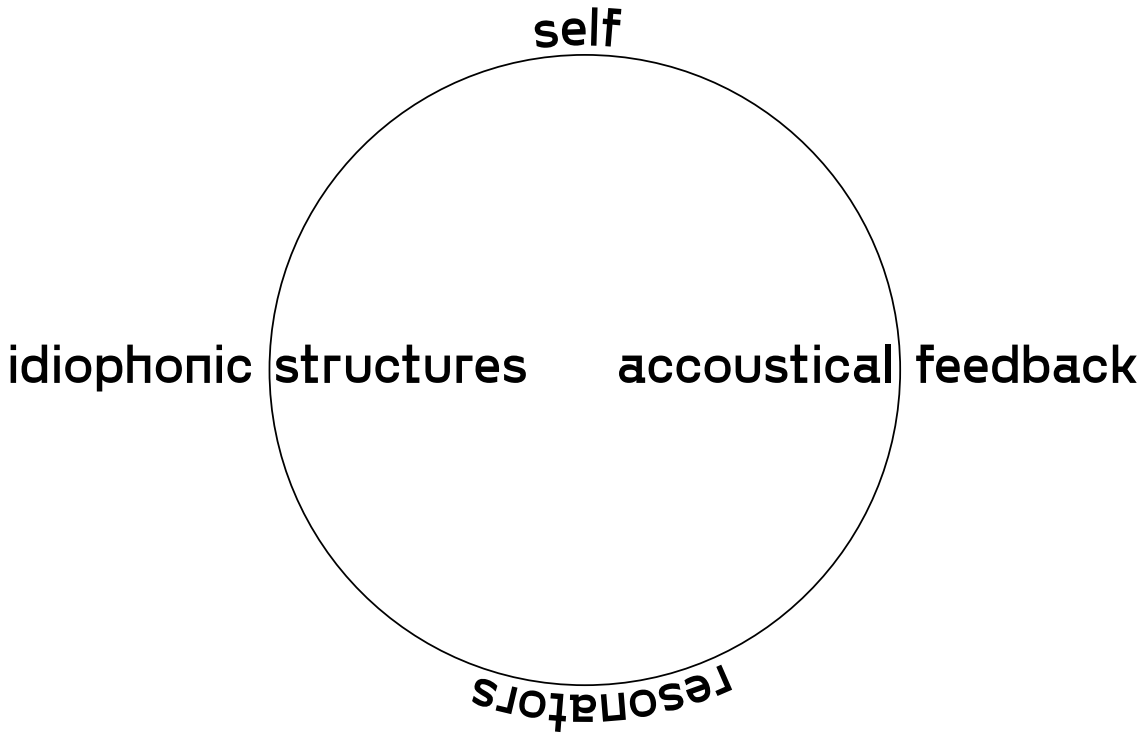

Figure 11:Diagram visualizing the common trait from the two sonic practices proposed through the work.

Uróboro, Spanish for ouroboros, is derived from the Ancient Greek *ouro,* meaning **tail**, and *boro*, meaning **eating**. The following research narrates an artistic methodology as a tale of the metamorphosis of a mythological creature which starts as an ouroboros, then transforms into an amphisbaena, and lastly transforms into a language in the form of concrete poetry. The methodology is conceptualized and executed through notions of acoustic feedback and theorizes around the transformative forms of the ouroboros. This methodology is executed by building metabolic circuitries and attaching them to idiophonic surfaces to create sound sculptures—dichotomous assemblages — accentuating self-resonations, material, electronically, and culturally.

The term *Acoustemologias de realimentación-cruzada* draws from Steven Feld's terminology (acoustemology) and encapsulates the ideas of bidirectional feedback, a codependent process based on the feeding of contrasting structures, but at the same time reinforcing them.

The first section of this essay is titled **The Creation of a Method: Ouroboros as an Art Practice**. Throughout the section, we will probe further into the ouroboros metaphor and explore ideas concerning notions of research and artistic practice. By drawing ouroboros, we can see that while the language used to describe the creature provides us with two contrasting elements— *ouro* = **tail** and *boro* = **head** — it does not show us the third and most important variable: **movement**. Considering uncounted variables in mythology presents the ouroboros as a cyclical inquiry process instead of a meaningless task. Furthermore, the section revisits and reimagines more concepts related to the cyclical process; the first is through different interpretations of the Myth of Sisyphus through the idea of the meaningless task. The section reimagines both mythologies to examine cycles in the way research practice operates, according to Deleuze and Guattari's *What is Philosophy?* Through them, we can portray the ouroboros as practice, a research methodology focusing on the cyclical moving processes rather than linear work production. The section will also show how the notions of active processes are present in other disciplines, proving the possibility of an intersection between different research practices. Finally, the way Deleuze and Guattari's planes of research operate with the not-knowing present the ouroboros as a shapeshifting entity rather than a rigid structure; through this realization, the form of the ouroboros will start to transform within the process of the thesis.

In the second section of the essay: **Emotion, Materialization, and Sensing: Transformation of the Ouroboros,** we will follow processes of transformation in the concept of

the ouroboros—they will transform from concepts towards physical artworks, from sonic to material vibration, from analog to digital to analog again and from the artwork, sensation, to emotion and consciousness. The first part of this section will see the mutation of the concept of the ouroboros to an amphisbaena while the work processes are materialized into sculptures.[71] Furthermore, we will discuss the idea of transformation through the process of perception in relation to the artist, the artwork, and the audience. By comparing Muriel Rukeyser and Kandinsky's writing regarding the perception of the artwork, we will show how the work serves as a medium to transduce emotions through the senses. Also, an underlying consciousness feeds back into all three (artist, the artwork, and the audience), altering emotion transduction and adding subjectivity to the understanding of the artwork. Finally, we will analyze the sonic and physical structures of the artwork in relation to the underlying consciousness within the work. The concepts of the ouroboros and the amphisbaena transform again, this time into language structures. By doing so, different ways of sensing get conveyed through the physical structures, creating the concept of *realimentación cruzada*.

The third section of the essay, titled **A Conclusion: Performing Through the Contrasts; Idiófonos, Uróboros y Anfisbenas** will offer a connecting conclusion for the thesis in the form of imaginatively analyzing documentation of performances that happened throughout the whole process of the thesis. Here the reader is invited to imagine the multiple connecting points from the mouths and the body of the amphisbaena.

[71] At first, we defined the Amphisbaena as Greek mythology. We now define it as non-exclusive mythology, also found in pre-Columbian cultures. In the Pre-Inca cosmology, the Northern Peruvian culture of Chimú, the snake is portrayed between dualities, like the day/night or the sky/earth. A way to understand the duality through the Amphisbaena is to think of it as separate/independent consciousnesses (heads) that still inhabit a common body.

The Creation of a Method: Ouroboros as an Art Practice

The first conceptualization of feedback in this research comes in the form of ouroboros. By evoking the mythology of the snake in this particular configuration, one can expand the subjective potential of the feedback loop, creating an artistic methodology. One can relate to oscillation with the ouroboros —the back and forth of the sound wave that travels through air pressure. It also represents notions of feedback, two contrasting elements, one mouth and the other tail, and one input and another output. The relation to contrast in the ouroboros comes in the attempt to cannibalize itself, resulting in the production of movement by an abrupt reaction toward opposites. The ouroboros attempts to eat its tail; in amplification systems, sonic feedback happens because of self-recognition.

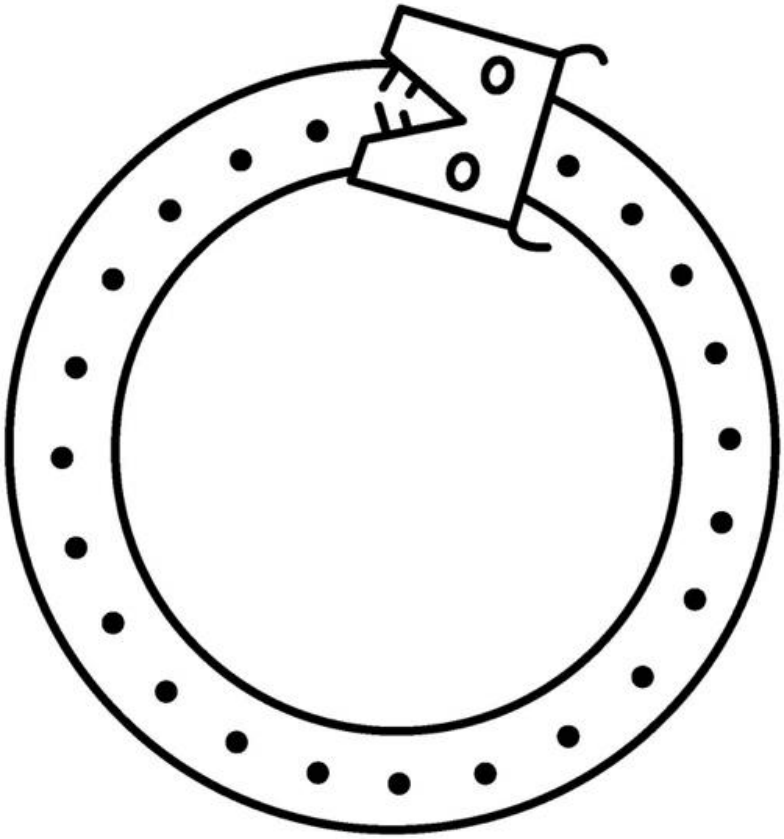

Figure 12: An Ouroboros, a serpent-like figure with its mouth open and its own body inside its mouth.

To further expand on the concept of Sonic Surrealism —in which we use imaginative structures to explain and understand reality— the ouroboros evokes forms of inhabiting by movement. At first, one could see the image of the ouroboros as the representation of a meaningless task; throughout the following pages, we will explore how the conception of the ouroboros can shift. Focusing on the process itself rather than the end goal, the ouroboros presents a methodology of constant durational movement; this means that the method of the ouroboros is fluent. By the end of the section, we will present not only the ouroboros as a process-based entity, but also as one that has the potential to transform cyclically.

Homer's character, Sisyphus, shows how the process of his task repeats itself without end. Likewise, the snake will move in a circular motion attempting to devour its tail, but its movement will prevent the possibility of it ever happening; the process becomes self-preservation. On the other hand, In Albert Camus's depiction of Sisyphus, the philosopher decides to focus on the character's cognitive process rather than the rock. “At each of those moments when he leaves the heights and gradually sinks toward the lairs of the gods, he is superior to his fate. He is stronger than his rock."[72] Camus suggests that the peak of consciousness within the character happens in this tragic moment when he realizes the chore is not completed and decides to descend again to repeat its process, making his will stronger than the task itself and sustaining faith in the work. However, it will never be completed, in the same way, that the ouroboros will never finish devouring itself.

Both the Sisyphean task and the ouroboros relate to the act of research. The cyclical nature of these processes reveals the oscillations of the knowing and the not-knowing. In their

[72] Albert Camus, *The Myth of Sisyphus and Other Essays*, trans. Justin O'Brien, (New York: Vintage Books, 1991), 23.

book *What is Philosophy?*, philosophers Deleuze and Guattari discuss humans' relationship with the notion of chaos. They explain how individuals require a minimum amount of order to protect themselves from the infinite *variabilities* of chaos. Order comes in the form of constant rules and opinions, forming an "umbrella" that shields us from nothingness. In contrast, science, philosophy, and art transcend a single being, demonstrating a more complex relation to chaos: they require more:

> art, science, and philosophy require more: they cast planes over the chaos. These three disciplines are not like religions that invoke dynasties of gods, or the epiphany of a single god, in order to paint a firmament on the umbrella, like the figures of an *Urdoxa* from which opinions stem. Philosophy, science, and art want us to tear open the firmament and plunge into the chaos. We defeat it only at this price. And thrice victorious I have crossed the Acheron. The philosopher, the scientist, and the artist seem to return from the land of the dead."[73]

While *Urdoxas*[74] propose rigid structures, the planes that science, philosophy, and art cast into chaos are fluent in form. The possibility of multiplicity within the interaction of the disciplines can come back three times triumphant over chaos, meaning that they can provide variabilities in knowledge.

The process described by Deleuze and Guatarri can also be imagined as the cyclical process of revealing and obscuring. To relate once again with Stephan Mallarmé's prose poem, "A Throw of the Dice Will Never Abolish Chance," every attempt to plunge ourselves into chaos and every retrieved knowledge in our search for enlightenment will ultimately reveal more of the endless unknown.

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[73] Gilles Deleuze and Félix Guattari "Conclusion: From Chaos to the Brain," What is Philosophy?, trans. Hugh Tomlinson and Graham Burchell (New York: Columbia University Press), 202.

[74] The term Urdoxa popularized by Edmund Husserl and deriving from the German (*ur)* meaning first and the ancient Greek, (*doxa)*, meaning free opinion, in this occasion the authors are using it to convey a notion of a "higher opinion", or "fixed opinions", that could also be seen as a rigid set of believes.

Suppose we see the practitioner as a single attempt to plunge into the unknown and back; this envisioning would not represent the reality of any research discipline, and it would suggest that the end goal of the practice is the production of artwork. If we analyze the story of Sisyphos as a performance, we can transform the actions of the myth into gestures. During the performance, he drives the rock up the hill portraying notions of retrieving knowledge from the realm of chaos, but this time the rock stays still on top of the hill. If we go back to Camus's analysis of Sysiphos, we do not see the stronger will of the character within the end product of the task; it is only in the severe pause that the proletarian hero is most conscious that he has to do the task again, here is the realization that one has not rescinded chaos; quite the contrary, one reveals more of it. The slow, determined descent from the mountain reveals how practitioners have an *ouroboric* relation to chaos; it is in the descent when the artist decides to plunge back into the unknown that the practitioner is genuinely triumphant toward chaos. Rather than a curse, Homer's myth suggests the endless possibilities of discovery and interaction of the disciplines. Applying the myth to Deleuze and Guattari's notions of chaos reflects Barthelme's process of not-knowing and requires the practitioner to focus on the active process rather than an end goal.

By proposing the ouroboros as an artistic practice in relation to the mythology of Sisyphus within the scope of performance art, we can start reclaiming the idea of art from a market-oriented practice and instead focus on the practice of art. In his performance arts Manifesto, *"Lxs artistas no hacemos obras. Inventamos Prácticas."* artist Silvio Lang proposes how, collectively, artists reclaim art via practice;

> It is about talking less about artworks and more about practices. It is here where Capital shivers. Because capitalism pays us for artworks— a delusion of the

> commodity fetish and the hourly wave—but not for inventors of practices which lays out its cis-heteronormative and inclusive world.[75]

If we focus on a market that pays for artworks as products, we devalue our artistic processes.

Furthermore, the *ouroboric* cycles representing art practice can also intersect with science and philosophy. Silvia Rivera Cusicanqui, in her book *La Sociologia de la Imagen* states: *he hecho profesión de fe de que la descolonización sólo puede realizar en la práctica. Se trataría empero de una práctica reflexiva y comunicativa fundada en el deseo de recuperar una memoria y una corporalidad propia."*[76] The ouroboros as an artistic practice is an ongoing process of plunging into chaos and coming back; it proposes labor not only of production but of imagination and reimagination of consciousness.

Silvia Rivera Cusicanqui is clear that a process of active practice is crucial for both artists and theorists—for the sociologist, decolonization can only happen through practice; in her work, practice takes the form of communicative reflections that seek to reclaim memory and corporeality. To relate these concepts to Cusicanqui, the ouroboros as a methodology proposes to the practitioner to concentrate on processes of reimagination and transformation —with abrupt pauses before plunging back into chaos— it is the process as the artwork. *Urdoxas* are not the reality of research disciplines. The ouroboros represents fluent planes in constant movement, which interact and form themselves as an infinite not-knowing.

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[75] Silvio Lang, *Lxs artistas no hacemos obras. Inventamos practicas, (*Montevideo: Microutopías, 2022),4.
[76] Silvia Rivera Cusicanqui, La sociología de la imagen: Miradas Chíxi desde la Historia Andina, (Ciudad Autónoma de Buenos Aires: Tinta Limon, 2015), 28.
Translation: I have made a profession of faith that decolonization can only be achieved in practice. It would, however, be a reflective and communicative practice founded on the desire to recover one's own memory and corporeality.

[El Uróboro, el feedback, la improvisación y la práctica artistica son verbos: se hacen vividos por el proceso.]

Emotion, Materialization, and Sensing: Transformation of the Ouroboros

As the exploration of the ouroboros started to take material forms, the concepts around the ouroboros started to mutate. The work's transformation happened through the notions of *realimentación cruzada/cross-feeding.* In this section, we will analyze how, by building and installing the artwork, the concepts of the ouroboros discussed in the previews section start mutating. Every time the artwork engages in the process of plunging into the unknown and back, an *ouroboric* cycle returns to its original state, but the work comes back transformed. With the portrayal of feedback loops as a form of Sonic Surrealism, the *Uróboros* intend to break rigid structures — later in this section, the material processes of the work start to reveal *Urdoxas* within the perception of senses. We saw in the **ouroboros as an artistic practice** how notions of feedback can serve as the starting point of inquiry towards consolidating an artistic methodology that keeps a subjective potential for shape-shifting. Even though, within this section, the concept of the snake transforms, ideas of the *ouroboric* process will still prevail. The *Uróboros* are vehicles to create through the not-knowing.

Idiophonic feedback, materiality, and planes of duration

The material structures hosting the acoustical feedback loops have multiple transformation processes simultaneously. With these processes, we can start comprehending the structures assembled as artworks. We can categorize these processes according to the medium

they occur and the durational aspects. These, which occur with reverberation and material decay, are intended to be closely related to notions of instrumentality previously discussed in Afro-Peruvian idiophones. The process of assembling feedbacking idiophones starts by recognizing the environment and later translating a sonic tradition into found materials. Idiophonic drums in Perú translated membrane drums into a more reproducible and plastic form, creating a culture of resistance, which later consolidated and created acoustic assemblages with other regional cultures. This series of sculptures seek to translate the idiophonic resonance into different environments, consolidating further assemblages. In this particular iteration, the environment and materials take an industrialized form by using large amounts of steel plates discarded and found around Kendall Square in Cambridge Massachussets.

The first durational mutation in work happens via the embodiment of reverberation within space —the same transformational processes were discussed earlier in the analysis of Afro-Peruvian folklore, concluding that these occur through the deployment of a specific technique. These sculptural works are possible by implementing metabolic circuitries, which produce feedback. In the artwork, these "metabolic circuits" are the glue of the sonic and material elements of the work— Let us think of the resonation of feedback structures in relation to the materiality of the circuits. We can see that the sound created, while sounding like an electrical oscillator, is happening because of a unified kinetic movement of the diaphragms found in both microphones and loudspeakers.

While creating an electrical sound, the metabolic circuitries attached to material structures transform the assemblage of found materials into embodied tactile electro-mechanic oscillators. These cyclical transformation processes become a ritualistic cycle — those in contact with the vibration and the artwork directly share embodiment and disembodiment processes

when resonating. At the same time, feedback has the power to appropriate all material structures exposed to the circuit, but it can also renounce them. This way of deployment of circuits also challenges ideas of material value, focusing on the active processes of art rather than a material work of art. The assembled structures are only an artwork when engaged in cyclic operations of reverberation, defining the work as a cyclical process instead of thinking of the artwork as a product. Metabolic circuits are highly reproducible and can be installed, de-installed, and translated into different environments. The artwork oscillates between the ritualistic transformation of both bodies and space; subsequently, it challenges notions of the material value of the work with the electromechanical reproduction of its core.[77]

Furthermore, by following notions of instrumentality portrayed by philosopher Philip Alperson, we can re-think how we create musical instruments through traditions of utilizing found objects as instruments, re-defining the role of the instrument maker: "what makes an object an instrument is the human intention which is applied to the process."[78] Both the wooden idiophones in Perú and the subsequent sculptures re-think notions of making, from material craftsmanship to conceptual intention and human imagination. The materials found, bent, and treated become the artwork only by interpreting different processes of this first durational transformation.

[77] An Oscillating thought regarding ritualistic attachment/detachment of the artwork through Walter Benjamin's Art in the Age of Mechanical Reproduction. While the work can evoke ritualistic aspects , it can also materially detach from then to take a political stance regarding the material value of the artwork.
[78] Philip Alperson, "The instrumentality of Music" *The Journal of Aesthetics and Art Criticism Vol.66*, no. 1, (2008), 38.

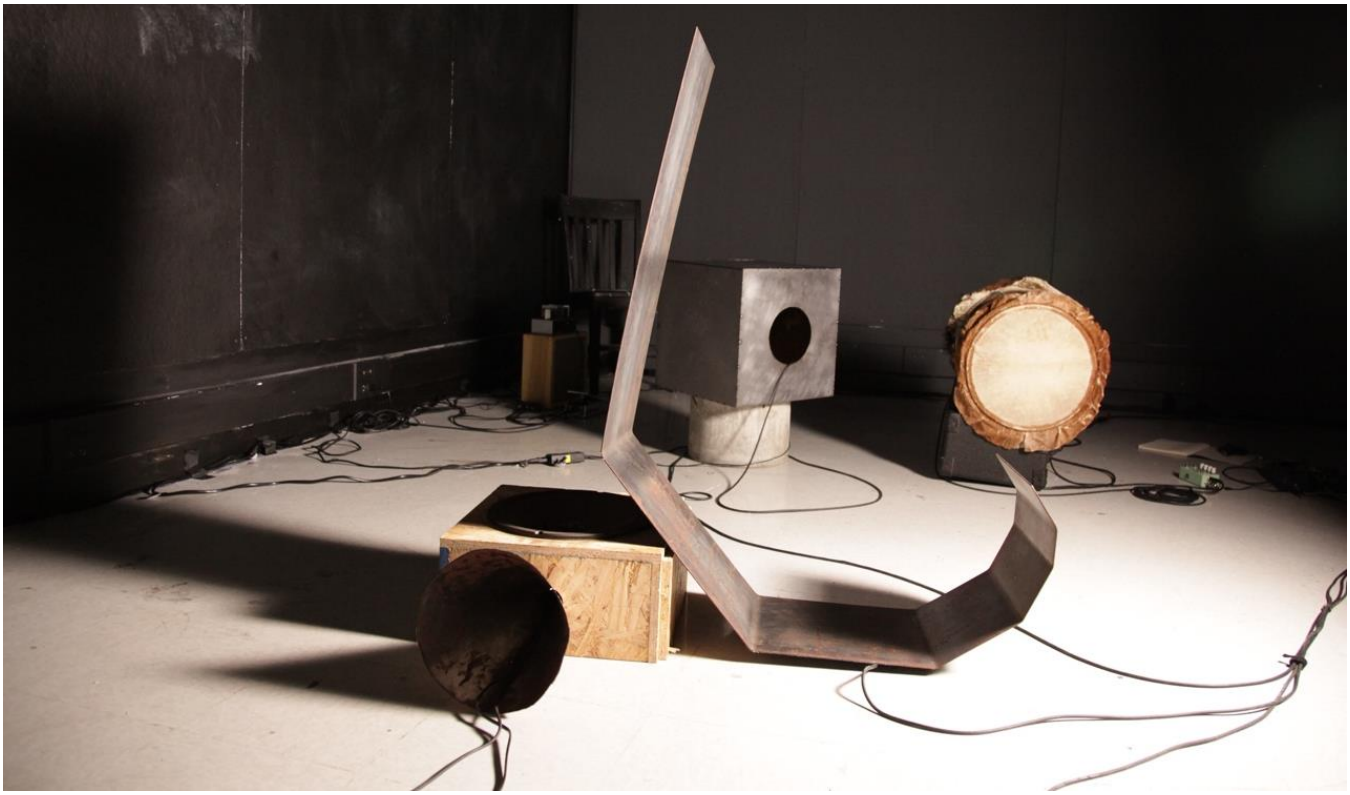

Figure 13: The first iterations of the Uróboros: Instrumentos de retroalimentación cruzada in the process of installation. Even though there is a membrane drum in this iteration, it was still explored and resonated as an idiophonic through acoustical feedback. Photograph by Gearóid Dolan.

Figure 14: Second iteration of the work. Two 4 ft x 8 ft steel plates with a tactile speakers setup transform into an eight-channel feedback installation titled Anfisbena. Photograph by Gearóid Dolan.

The second durational transformation happens because of treating the material of the sculpture to reflect the first process of transformation visually into the structures. The treatment consisted of applying citrus acid and later protecting the metal with a coat of natural beeswax until human interaction starts to wipe out the beeswax and the surface starts to mark over a prolonged period. Adding this treatment to the metal structures transduces the relationship between material and vibration into the visual realm. While the first transformation processes happen through the resonation of bodies, vibration is not material. In the book *Sense of Vibration,* author Shelley Trower states: "Vibration is not itself a material object at all, but it is bound up with materiality: vibration moves material and moves through material."[79] Adding this treatment to the metal structures transduces the relationship between material and vibration into the visual realm. The vibration bound to the metal sculptures is the source for the first transformational process, similar to the relationships between an idiophonic drum and its performance; when in physical contact, these two become one body. When these interactions happen on the beeswaxed metal, they leave traces of human interaction and expose areas of the material surface, resulting in oxidation. The question remains regarding the long-lasting effects of reverberation on the material. Still, the artwork attempts to connect sonic embodiments to a visual index; the metal undergoes a long-lasting oxidation wherever it is touched, transforming the material not by resonation but because of it. Through resonation, both the artwork and those exposed to it share a common body. The mythology of the ouroboros starts to transform into one that can encapsulate notions of multiple entities sharing a material basis—an amphisbaena.

[79] Shelley Trower. *Sense of Vibration. (*New York: Continuum, 2012), 6.

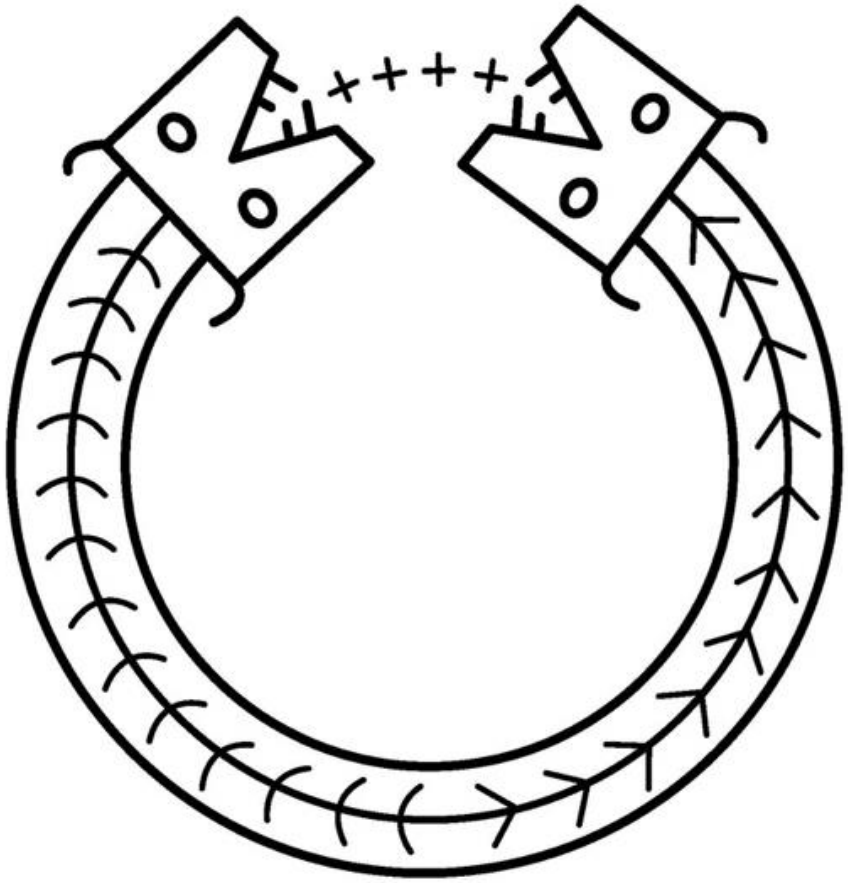

Figure 15: Amphisbaena, a legendary serpent with a head at each end of its body.

More *amphisbenic* transformations happened by re-understanding the sonic processes of the work during its first iterations—when they were thought of as installations. A fascinating duality happened through thinking of digital/analog processes in work. For the sound to be transduced from a loudspeaker into a metal structure— in the case of the *Uróboros: Instrumentos de alimentación Cruzada* (Figure 6)— resonant points were found by sweeping sine wave frequencies through the material. In this way, one can learn which frequencies make materials resonate. Once we find the resonating frequencies of the material, we invert Boner's concepts of

equalization to accentuate rather than attenuate feedback to ultimately bind the sound into the material, provoking reverberations in those responsive frequencies and creating vibration.

Figure 16: EQ from fabfilter Pro-Q 3. The image shows a graphic equalizer used to accentuate resonant frequencies in the process of finding resonant frequencies in the Uróboros.

While installing the pieces in the MIT Art, Culture, and Technology gallery, a new approach was required to solve the problems presented. The instability of acoustical feedback made it unattainable to create a self-regulating sound installation where the feedback would be controlled by digital processes of equalization and frequency shifting. By attempting to create self-regulating sound circuits, positive feedback loops are replaced by negative ones. Similar to Boner's studies, the acoustic phenomenon would be muted by one trying to regulate feedback through equalization. Another experiment done was through the process of frequency shifting. Edgar Berdahl and Dan Harris's "Frequency Shifting for Acoustic Howling Suppression" paper proposes a solution to controlling an unstable phenomenon: "Acoustic feedback is capable of

driving an electroacoustic amplification system unstable. Inserting a frequency shifter into the feedback loop can increase the maximum stable gain before instability."[80] Within these specific artworks, resonating materials have to be added as a variable to the equation to achieve transduced, vibrational feedback. While a small degree of frequency shifting could control feedback in the sound system, in the case of the sculptures, the sound still needs to be transduced to finish the circuit. Because the input of the metabolic circuits has piezo microphones—which capture sound by pressure— without clear transduction into the material, the piezo will not grab the outputted signal, and the circuit cannot be finished and repeated.

Suppose one would rethink the electro-acoustical research portrayed above using the lens of artistic procedures. Through artistic research, one could focus on the acoustic problem portrayed as a manifestation of the artwork, which is executing an independent operation that the artist has to learn to listen to. The agency of the artwork is resisting the transformation from a positive feedback system to a negative one through digital self-regulation. The artwork then evolves into the planes which plunge into chaos—a self-aware circuit of mechanical sound inviting the artist back into the not-knowing. Through actively declining a functional relationship towards research, the artist has to listen to the artwork's manifestations to plunge back from chaos. The ouroboros, a representation of the art practice, through the work comes to life and refuses to be regulated by replacing its head.

With the realization of the agency of the artwork to resist digital regulation, a new approach emerged to understanding self-aware mechanisms. In the analysis of Artaud's *To Have*

[80] Edgar Berdahl and Dan Harris, "Frequency Shifting for Acoustic Howling Suppression," CCRMA, 2010, https://ccrma.stanford.edu/~eberdahl/Papers/DAFx2010BerdahlHarris.pdf, 2.

Done with the Judgment of God, critic Évelyn Grossman points out the poet's approach towards reproducing sound —in this particular work, dealing with analog tape machines.[81]

Artaud imagined that the role of machines that produced mechanical sound was to be thought of the same way as the performing artists in his plays, which sought to evoke ritualism. The mechanical sound device and the human body are trying to achieve authentically organic operations. When analyzing the *Uróboros* with Artaud's framework, one realizes that the work must be shown in another medium. Once the artist can see the artwork as a separate body, new imaginative forms of interaction can occur. The analog circuitry and the independence of each *Uróboro* made them unpredictable for installation: the artwork operations called for human interactions rather than the confinement within digital boundaries.

Considering the inclination of the artwork to be treated as performance work, we can return to the manipulation of feedback noise. While returning to a similar frequency-shifting process, the focus was on technologies oriented toward performance. The work called for an ode towards noise performers with the implementation of guitar pedals as versatile processing circuits, which helped to give extra controls like sliting it into two or overloading the systems into violent resonations by overloading the amplitude thresholds of the amplifiers. The first performances of the *Uroboros* counted on a pitch-shifter[82] pedal and a distortion/fuzz pedal to the circuit. With the pitch-shifter, one controls how much signal gets processed and self-regulated through a dry/wet signal.[83] The pitch-shifter lets us split the signal into two, the

[81]Antonin Artaud, *Para terminar con el juicio de dios*. *El Teatro de la crueldad*, trans. Silvio Mattoni (Buenos Aires: El Cuenco de Plata, 2013),11.
[82] Pitchshifter pedals serve as digital pitch transposition tools. In the case of this project, it transposed in and between Western musical intervals.
[83]Dry/Wet is a terminology commonly used in sound effect processing representing the percentage of the signal being processed. Dry refers to the unprocessed signal, while Wet refers to the processed signal. For example, Dry: 50% and Wet: 50% would indicate that half of the signal passing through the effect processor is getting processed.

positive feedback loop and the negative one, which gets bound into materiality by means of transduction. The gain pedal regroups both signals and further drives the artwork's amplification to its edge by adding more amplitude to the output system.

The technique mentioned above reveals once again an *Amphisbenic* character in the artwork. We can imagine categories of feedback systems as *heads:* head-one, the self-reinforcing system in acoustical feedback (positive feedback). *Head-two*: the self-regulated sound transduced and bound into material structures. The proposed technique for sound processing transcends this duality: instead of replacing one head of the snake, we added a new one. Around 50% of the original signal gets processed and transposed, then summed again and overloaded in distortion. Later the signal converts into vibration, binding to the material and transforming the assembled structures into the artwork. Materiality becomes the self-regulating agent of *head-two.* Through the sonic overload caused by distortion, *head one* still bleeds the signal into the material and gets transduced again, creating (Fig 9).

Transduction of Emotionality: feedbacking consciousnesses

Previously we discussed Silvia Rivera's Cusicanqui's ideas of active practice as communicative reflections. A similar process can be described with the material forms of the artwork —which can also serve as imaginative, communicative reflections. The artwork does not solely intend for the practitioner to convey processes of re-imagination; it should also be subjective enough to invite the audience into their processes of re-imagination. Muriel Rukeyser explains the relationship process between the artist, artwork, and audience in her book *The Life of Poetry: "*A work of art is one through which the consciousness of the artist is able to give

emotions to anyone who is prepared to receive them."[84] The artist conveys knowledge via emotion; it comes back to the possibility of imagining; it is not only essential to think about how emotionally intensively the communicative reflections of the artwork feel to the artist as this needs to get transduced to the audience's emotion through sensing. An evocative artwork gives the audience the liberty to feel, and art that leaves open the possibility for the audience's imagination has a higher potential for a reception.

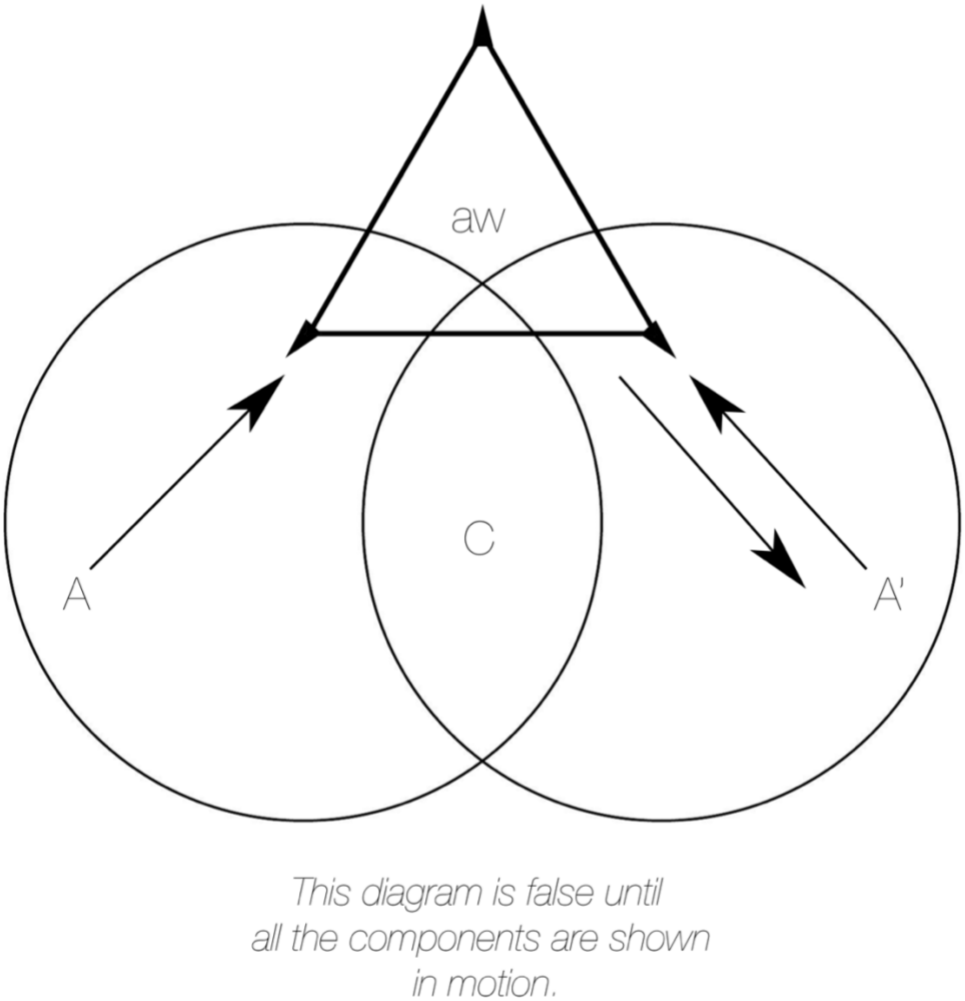

Figure 17: Muriel Rukeyser, Artist, Artwork, and Audience. 1949, Life of Poetry.[85]

[84]Muriel Rukeyser, *Life of Poetry*, (New York: Current Books, 1949), 50 .
[85] Muriel Rukeyser, *Life of Poetry*, (New York: Current Books, 1949), 51.

Rukeyser breaks down the diagram: "A is the artist A' the audience, or witness, and C the consciousness of both, their common factor through which they communicate and share. In the diagram, *aw* is the artwork, seen in motion, and the vector is the relation to it."[86] Even though the poet later disregards her own diagram as one that quickly breaks down, it still shows the flow of communication between the artist and the audience and the artwork, which she portrayed as something constantly in motion. We could reinforce this diagram with Kandinsky's writing about a similar process:

> As long as the soul remains joined to the body, it can, as a rule, only receive vibrations via the medium of senses, which form a bridge from the immaterial to the material (in the case of the artist) and from the material to the immaterial (in case of the spectator). Emotion—sensation—the work of art—sensation—emotion.[87]

While Kandinsky arranges a straightforward process of materialization, immaterialization, and the transduction of emotion, it is missing a crucial point from Rukeyser's diagram. While we can claim the importance of sensation to translate emotion, Muriel closes the circuit by adding a feedbacking element: a shared consciousness in the artist, the artwork, and the audience, influencing each's emotionality and sensations.

The *Uróboros* seek to transform infrastructure to create common grounds for the audience, the artist, and the artwork to give feedback on their emotions and imaginations. The way the work activates the transformation of the space is very similar to reverberation studies of idiophonic drums in Afro-Peruvian acoustemologies (which we analyzed in Section 1). Using the

[86] Muriel Rukeyser, *Life of Poetry*, (New York: Current Books, 1949), 51.
[87]Wassily Kandinsky, *Kandinsky: Complete Writings on Art*, ed. Kenneth C. Lindsay and Peter Vergo (Boston, MA: G.K Hall & Co., 1982),87.

same questions around instrumentality, the sculptor or instrument maker, the performer, and the audience can subvert the structures around them only with one's power to imagine.

Along the process of the *Uróboros*, we can portray similar circuits to the ones suggested by Kandinsky and Rukeyser, this time conveying the circuits of transduction between media and senses. The first circuit comes as the consciousness transforms towards the visual sense when the practitioner implements imaginaries into the collection of possible materials. Then, it focuses on aurality when testing found objects as idiophonic surfaces by resonating them. Later it incorporates material thinking, from sculpting to thinking of materiality in sound; later, it transduces into the body and consciousness within the improvisations performed with the sonic sculptures, where the audience gets exposed to a durational transformation of space through the activation of the metabolic circuits inside the sculptures, in the hope of transducing emotions and processes of reimagination of structures. Finally, the tactile interactions —guided by sound— become visual indexes from past interactions as the metal structures start to show deterioration in the form of rust. While consciousness is highlighted twice in the process, it is feedbacking in every step of the circuit; this is thought in these ways on purpose so one can attempt to alter the starting point of the circuit.

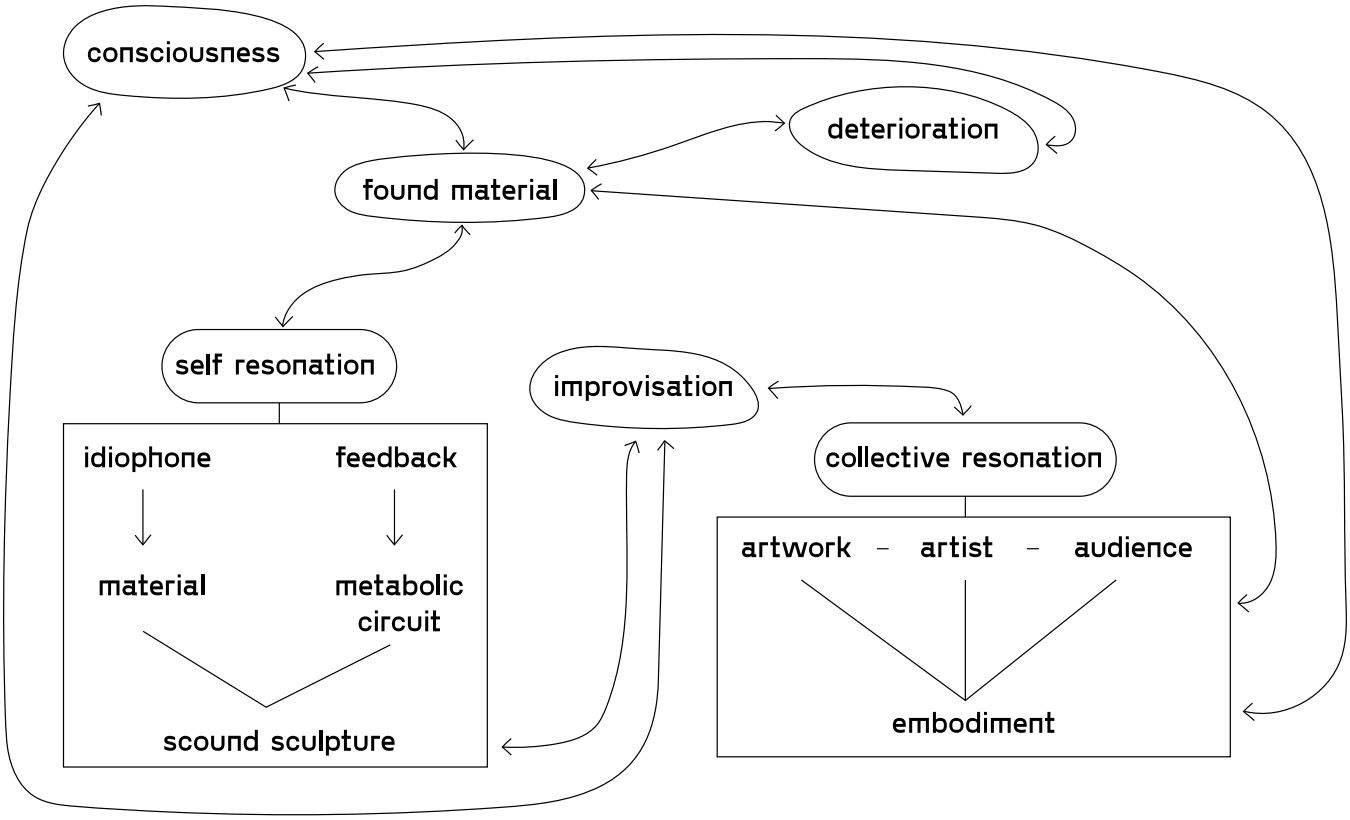

Figure 18: Illustration of circuits of transduction through the process of the Uróboros

Categories of structures: bidirectional movements of perception

Throughout the building process of the sculptural vessels for acoustical feedback, *Urdoxas* appeared concerning ways of perceiving sound. **[Mouth 2]**, we saw how the discovery of acoustical feedback was serendipitous to the process of inventing electrical amplification systems— an excellent example of the relationship between research and chaos. The notion of amplification can be seen as a possibility of overloading sonic cultures. Echoing Rukeyser's ideas of an underlying consciousness feedbacking into the artist, audience, and artwork's emotional processes, a growing question comes to mind: How do subtraction

techniques affect the underlying consciousness shared by the artist, the artwork, and the audience?

Also, **[Mouth 2]** reinterpreted the histories of subtracting feedback from the concert halls, suggesting that the acoustemology of feedback is a subaltern to early notions of amplification in (eurological) concert halls. Feedback is the natural sonic structure in circular configurations of sound amplification; by subtracting feedback from its own space, the artist prioritizes the amplification of specific voices while constantly displacing others.

The dichotomies towards subtractive approaches to amplification can be seen through the lenses of Marxist theory within the concept of *false consciousness*[88]. Let us use an example of the concept within the perception of electroacoustic sound in semi-circular configurations. When subtracting feedback from its natural state—let us suppose as an unconscious decision—the artists would conform with inherited structures of sonic perception, therefore feeding *Urdoxas* into the artwork and limiting the audience's sensory experiences. By means of a reflective process on the very notions of amplification, we are allowing the reimagination of spaces and disentangling structures to transform space for creative processes to occur. In the documentation portrayed in the conclusion will see how adding feedback loops into performance can also serve as a space of not-knowing. The artwork takes the performer's omnipotence and signals it back into the work.

While building the first iterations of the *Uróboros*, one could start to identify how, because of inherited notions of sense, we understand sound as limited perceptions. In line with

[88] The notion of false consciousness sparks from Marx and Engels's ideology focus. The term initially focused on picturing distorted beliefs held by those in society, creating ideology. Systems of beliefs deluded ideologists, giving them a false consciousness. This essay draws the term from the perspective of the Frankfurt School thinker Georg Lukács who focused on the problem within epistemologies. In this case, we could say that the problem is portrayed within acoustemological structures.

Sonic Surrealism, every time the process reveals an *Urdoxa*, we can use the artistic process as a communicative reflection, reimagining how we perceive structures around us. In the *Uróboros*, the hierarchical structure of sensing sound was revealed, and the reflective process invited the reinterpretation of notions of listening. Through this process, the artwork presents as a vessel for artistic research—via the artwork, the artist plunges into chaos—
replacing *Urdoxas* with *ouroboric* planes, which are fluent and transformational.

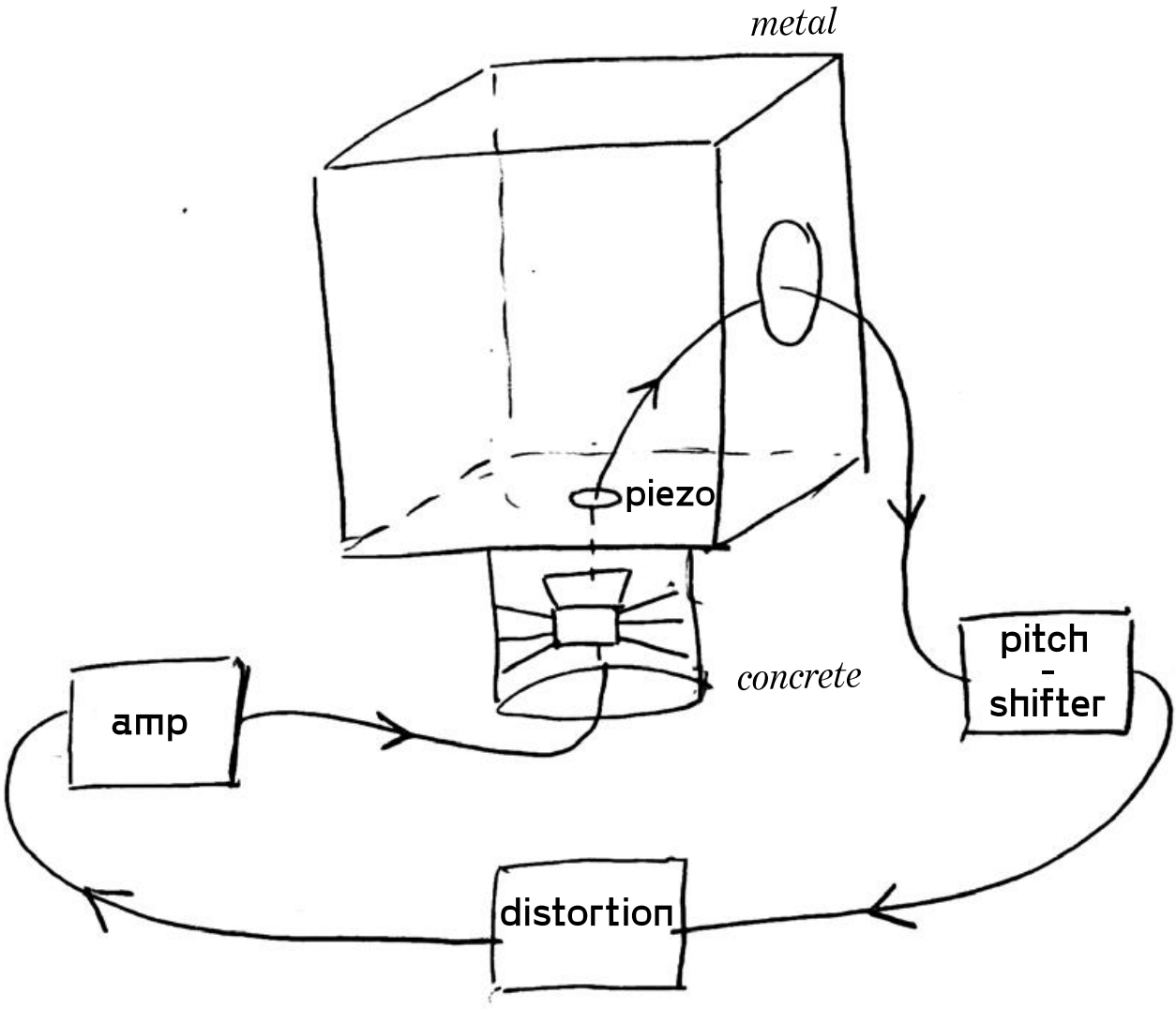

Figure 19: The first diagram representing the sonic processes of the Uróboros.

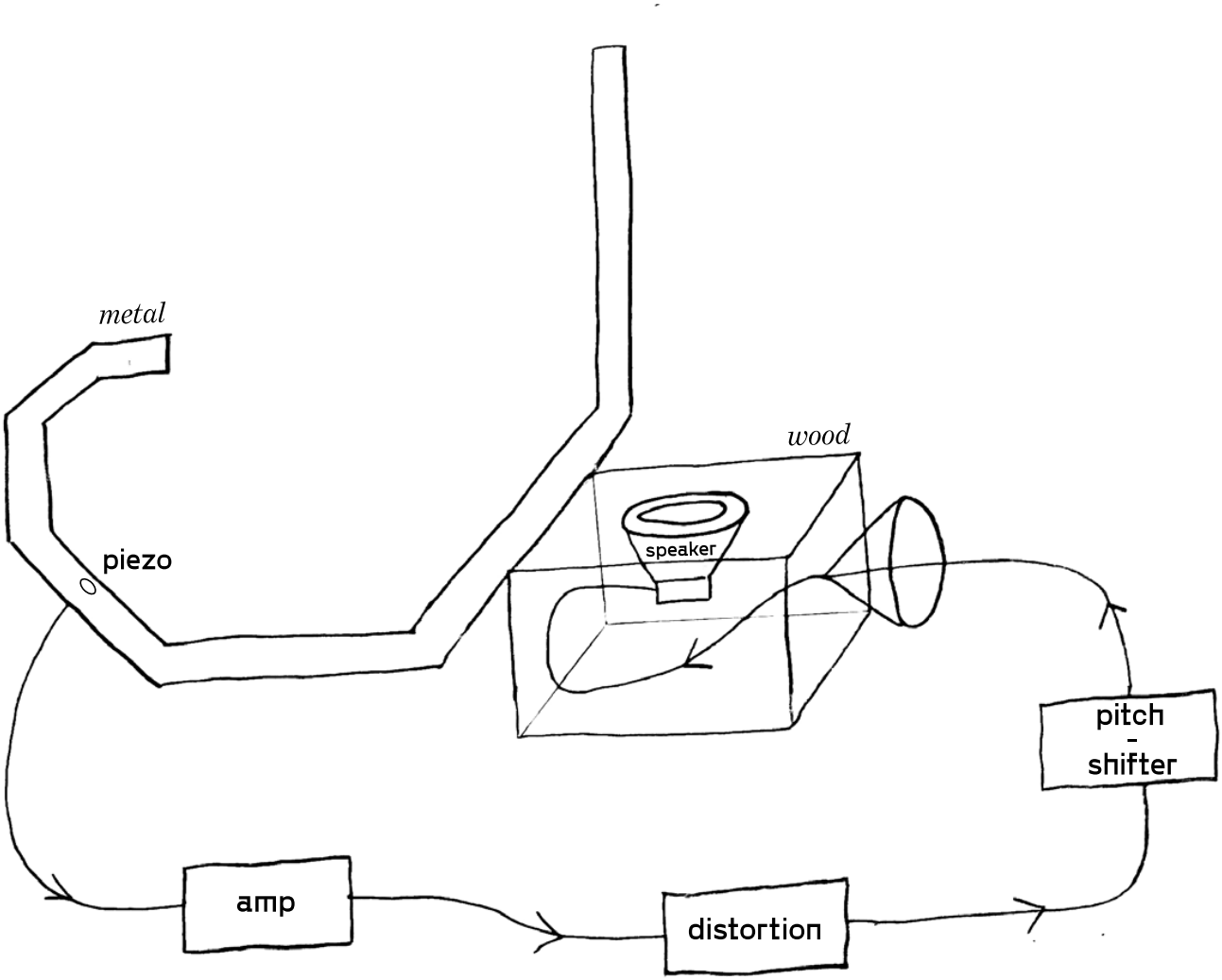

Figure 20: The second diagram representing the sonic processes of the Uróboros..

While diagraming the *Uróboros*, two sub-structures came to mind: a **base,** which contains an amplifier and a loudspeaker, and the **exciter,** which contains a contact microphone. The **base** would be considered the snake's *tail*, a place of constant generation of sound with a loudspeaker, and the **exciter** would be the *head*, as the structure in charge of controlling the sound production. Recalling Rukeyser's words from her diagram; this interpretation also breaks down at once because this representation was a result of creating an *Uróboro* with an inherited structure of listening. One could argue that the structuralist analysis portrayed above comes from prioritizing sensing a feedback loop using the ears. In contrast, somebody who prioritizes touch as their primary listening apparatus could invert the structure, perceiving the **base** as a *head* and the **exciter** as a *tail.* By dividing the artwork in two one could be allegorizing to the Marxist feedback loop between culture and production; the superstructure[89]. In his article "False Consciousness and Ideology in Marxist Theory," sociologist Roy Eyerman draws a connection between false consciousness and the superstructure: "in traditional terms, the problem of false consciousness and ideology is limited to the realm of the superstructure, the state and the 'cultural forms,' from which the working class is, by definition, excluded."[90] So, to transcend a hierarchical approach toward the production and perception of sound in the *Uróboros*, the snake needs to transform from a unidirectional structure to a bidirectional one. This way, the works transcend the form of the ouroboros in the material plane by contrasting ways of sensing sound and vibration. To accomplish the transformation, one must first transcend the labels of *head*/*tail*, **base/exciter**.

[89] For Marx, the idea of the superstructure is portrayed as a predominant structure in society, usually not associated with production but still dependent on it. Representing the physical structures of the *Uróboros* in a heterogenic opposite could implement a similar feedback loop as it proposes one structure is dependent on the other when in reality, both are equally dependent on the feedback of the other.
[90]Ron Eyerman, "False Consciousness and Ideology in Marxist Theory," *Acta Sociologica* 24, no. 1-2 (1981): 44.

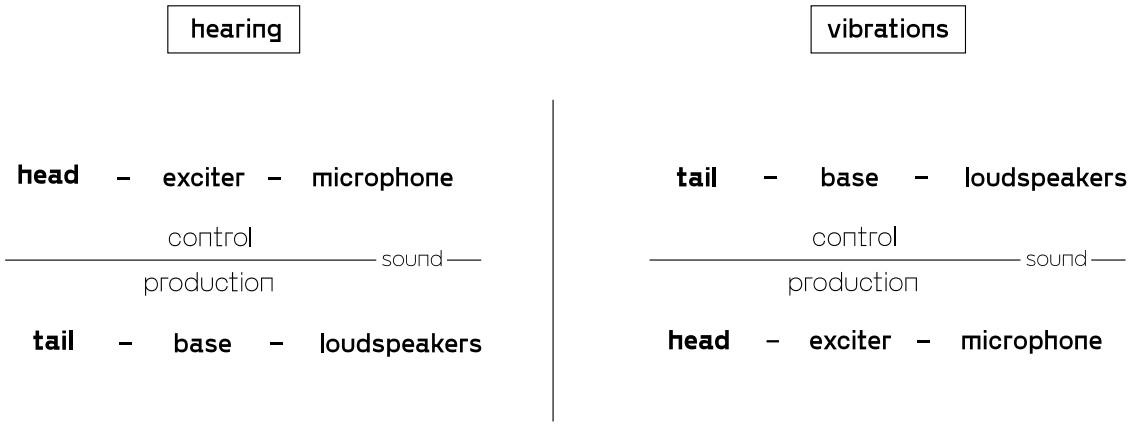

Figure 21: Illustrations of categorizations of listening as superstructures.

If we resonate once again with Anzaldua's essay "*La conciencia de la Mestiza/* Towards a new consciousness," we can think of consciousness that interacts with the artist, the artwork, and the audience as bidirectional. It is on both shores at once and resonates both at once.

Both directions of the structure of the *Uróboros* are equally valuable as forms of perceptions as well as for the durational resonation of the work. The bidirectional interpretation then represents a superior structure of the work rather than the idea of feedback. The different material structures in the work are in the process of *alimentación cruzada/cross-feeding*, which we can interpret with a concrete poem: **mouth** = **mouth.**

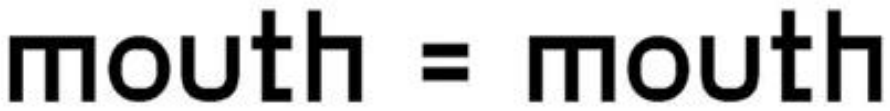

Figure 22: Concrete poem representing the bidirectional nature of realimentación cruzada/cross-feedback—the snake of the ouroboros transforms into language.

Lastly, the concept of **mouth** = **mouth** could also include the different transductions of the work. First, the sound in the sculptures traveling via air pressure, solid materials, and electricity, between art, science, and philosophy, and forms of interaction between the artist, artwork, and audience, creating a second poem: ←mouth→ ←mouth→←mouth→.

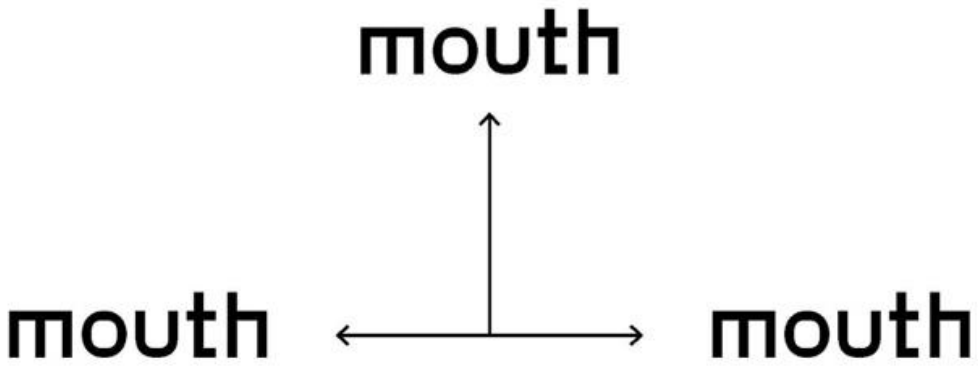

Figure 23: Concrete poem representing the multiple forms of transduction — the snake transcends dualism and portrays multiplicity.

[Al revaluar categorías estructurales, le quitamos omnipotencia al artista sustrayendo Urdoxas y dándole agencia a la obra.]

A Conclusion: Performing Via Contrasts; *Idiófonos, Uróboros y Anfisbenas*

We seek to keep up with the ouroboros as an art practice, focusing on ongoing cyclical processes rather than working towards a concrete ending. While conclusions typically present a summary statement of the work presented, this conclusion allows the reader to create their circuits between **[Mouth 1] = [Mouth 2]**.[91]

A limitation explored in**[Mouth 1]** was how Merino's painting lost information in the transduction of media, leaving us with the question: how, via sound, does one create metaphysical circuits which transform bodies, space, and time through reverberation?

Throughout this thesis, we have used diagrammatic figures like those analyzed in **[Mouth 1]** to theorize concepts concerning the sonic realm. While this disjunction could be seen as a limitation— or a copy of the instrumentalization techniques used by artists in the past— it is the aim of this thesis for the work to speak by itself and for the reader to imagine the intentionality behind any kind of instrumentalization found in the work.

Instead of diagramming with drawings, paintings, prints, poetry, or prose—as done throughout the thesis—the imagery of the conclusion comes in the form of a survey of photographs depicting the different performances in which the artwork is engaged in durational periods of transformation. Through the images, the reader can imagine the processes of movement and embodiment, which connect the idiophonic resonators from **[Mouth 1]** with the electroacoustic feedback in **[Mouth 2]**.

[91] Refering to many points in time and space that the thesis has connected between the different essays creating the amphisbaena.

The transformations of the work can be seen as an *ouroboric* displacement, which challenges the cognitive understanding of inhabiting by proposing a back-and-forth *amphisbenic* metamorphosis. The creation of assemblages is perceptible in the sonic realm, binding bodies in space through sonic vibrations; metaphysical in the conceptual, connecting different circuits in time and space; and finally, *amphisbenic* in the physical, creating shared bodies within the flesh and the architecture.

> *[la metamorfosis de nuestros mitos, ritos y folklores sigue en proceso. Las transformaciones del Uróboro no son definitivas, cada diagrama en esta tesis puede ser ignorado, modificado o puesto al revés, al fin de cuentas todo puente construido aquí es bidireccional.]*

Figure 24: Juxtapositions between electromechanical oscillators with electrical oscillators from an analog synthesizer. Formas (Configuración 2), Photography by Weihan Jiang.

Figure 25: More juxtapositions between electromechanical oscillators with electrical oscillators from an analog synthesizer. Formas (Configuración 2), Photography by Weihan Jiang.

Figure 26: Same as Figure 3, the Uróboro is resonated idiophonically through a metabolic circuit while the performer plucks strings connecting the two membranes of the drum (chordophonic). Formas (Configuración 2), Photography by Weihan Jiang.

Figure 27: Performer embodying a feedbacking idiophonic. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 28: Changing the angle/face changes the resonant frequencies. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 29: The performer's body and the sculpture resonate e as one. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 30: Amphisbeanic Idiophonic vibrating as an electromechanics oscillator through feedback and as an idiophonic drum with a wooden stick. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 31: The sculpture resonates on one side by the tip of the fingers and on the other with the wooden stick; the amphisbenic depiction happens here through the performer and artwork interaction points. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 32: Distortion stage controlling the threshold between listenability/unlistenability. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 33: Uróboros resonating with the same hand drums techniques used for the cajón. Formas (Configuración 3), Photography by Weihan Jiang.

Figure 34: Creating feedback circuit to resonate separate 2D idiophonic plates. Uróboros/Anfisbenas, Photography by Weihan Jiang.

Figure 35: Feedback joins the two resonators two-dimensionally. Uróboros/Anfisbenas, Photography by Weihan Jiang.

Figure 36: While the performers move in an X and Y axis, feedback gives depth to the sculptures, creating a z-axis that transforms the plates into three-dimensional sound sculptures. Uróboros/Anfisbenas, Photography by Weihan Jiang.

Figure 37: Feeding a series of Haikus to the sculptures. The first one goes: Remolinos de viento/ Invisibles al ojo hoy/ las hojas revelan… Uróboros/Anfisbenas, Photography by Weihan Jiang.

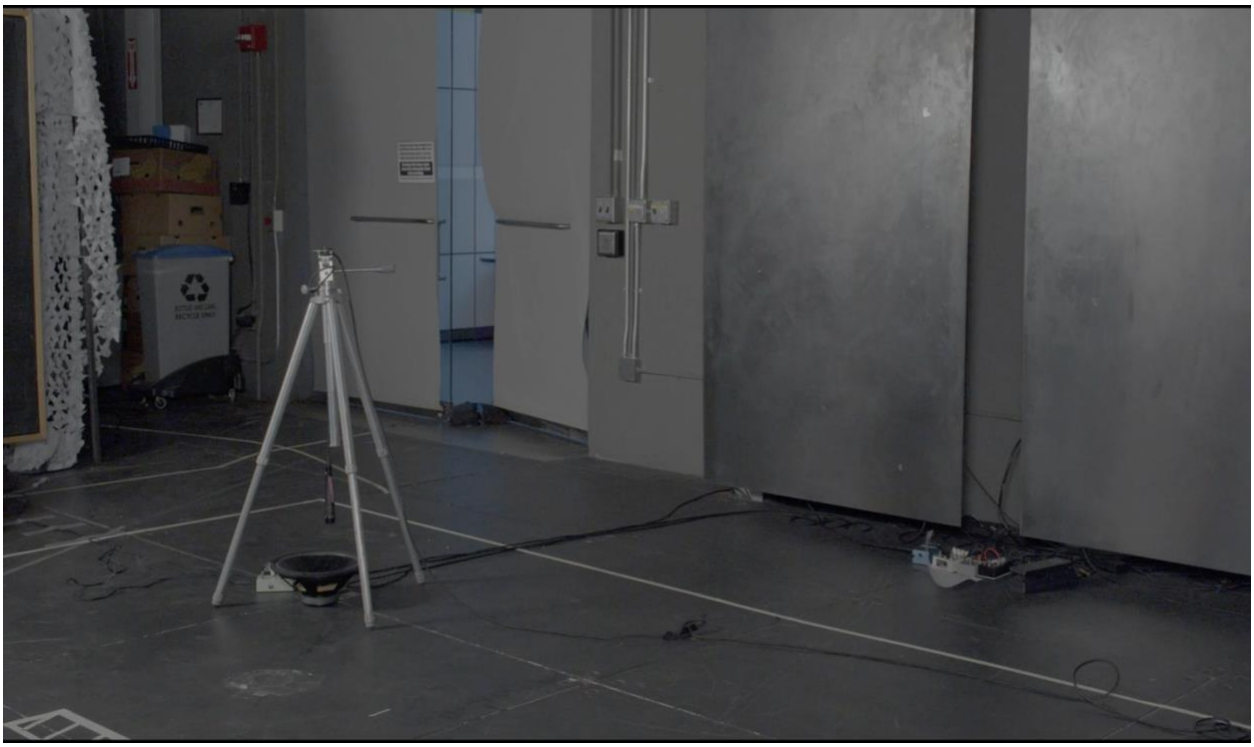

Figure 38: The performer is out of the frame, but the idiophonic resonators remain resonated by the poetry. The last one goes: Fragmento de mi/ por siempre aquí/ por cada poema/ que en papel escribo. . Uróboros/Anfisbenas, Photography by Weihan Jiang.

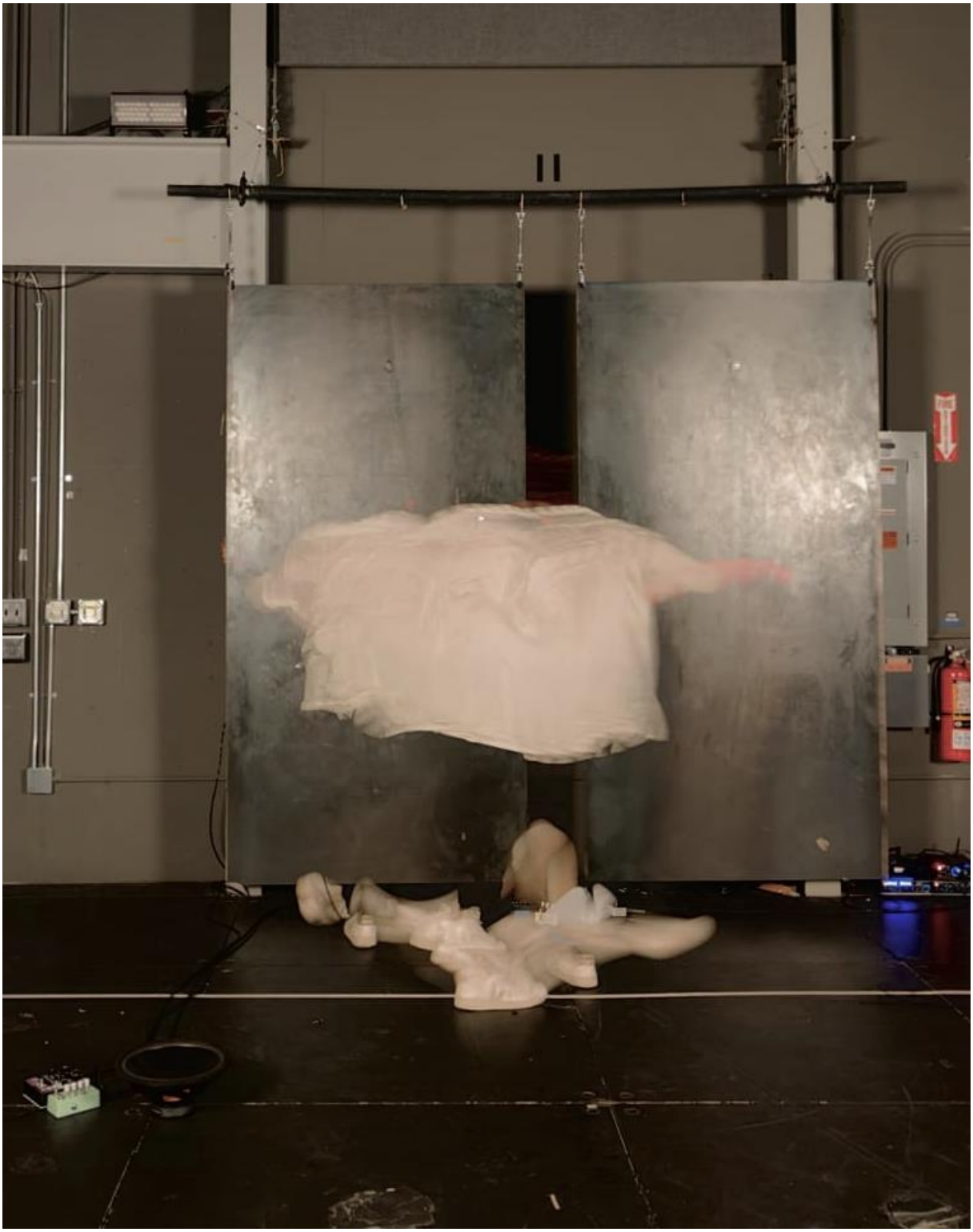

Figure 39: A long exposure shot reveals the uroboric cycles the performer engages in, creating connecting circuits between the sculptures... Uróboros/Anfisbenas, Photography by Manaswi Mishra.

Figure 40: the embodiment of the sculpture with the performer. Uróboros/Anfisbenas, Photography by Javier Anguera Phipps.

Table of Figures

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