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Part of Computer Music History … (Trust Me, Latin America Has Always Been There!)

Abstract: The political and economic instability in most Latin American countries has been profoundly affecting the lives of its inhabitants for decades. Support for artistic activities has usually been postponed to solve urgent social problems. Despite that, the development in these countries of the electronic arts, in general, and electroacoustic and computer music, in particular, is astounding. Mauricio Kagel, Reginaldo Carvalho, Hilda Dianda, Juan Amenabar, Horacio Vaggione, Jorge Antunes, Jocy de Oliveira, José Vicente Asuar, and Juan Blanco are only some of the many names in the ocean of electroacoustic music creativity that has always been Latin America. Archiving and disseminating electronic art—and working on a revised version of its history—is crucial to comprehend the present and build our future. The Latin American Electroacoustic Music Collection, hosted by the Daniel Langlois Foundation for Art, Science, and Technology in Montreal, has over 1,700 digital recordings of compositions created between 1957 and 2007 by almost 400 composers. The Collection has recovered and made visible (and listenable) the creative work of many composers otherwise almost forgotten. It has defied the hegemony of the computer and electroacoustic music history narrative, helping to break barriers and widening the way their history is understood.

The Guardians of Knowledge

The guardianship of knowledge, creativity, the (version of) history as it happened, the way the art world is to be thought and understood, and from there, all the rest: Who owns it?

What we do not know: Does it not exist? Is what we don't understand necessarily wrong? It often seems that some sources are always reliable, whereas others require repeated checks before being accepted as valid. We are afraid to share, lest our territory might be occupied, and we try to maintain hard-won hegemony, control, and monopoly. Like lighthouses that guide us to avoid crashing against unperceived rocks, certain cities, cultures, societies, institutions, or individuals show us the right path; the one we need to know how to follow in order to understand. And if not, what path should we walk or open up? If the weeds do not let us see the lake, maybe it is not the fault of the weeds; perhaps it is we who did not know how to search, look, and see. We learn at every moment. And life shows us that there are unexpected worlds to discover, of all dimensions. And that fear of the dark is transformed into science to alleviate our anxiety (to paraphrase Jorge Wagensberg) as we try to unveil so many mysteries. Thus, science comes to the rescue, seeking to explain and tell us that everything has its reason for being. And sometimes art deals with that very thing, although on so many other occasions it is concerned with that which we do not manage to delimit and describe with total clarity and efficiency—but which nevertheless exists, by the way.

Between art, science, and those technologies that astonish us (or that we sometimes think have always been almost at hand), history is happening, not only in one place but in many, and within models and structures that we cannot always understand.

The combination, coordination, and articulation of certain sounds made for human beings (although, perhaps, not only for them), spoken communication, is something almost given, like a gift. As if it had not been a very long process that brought us here for it to happen, in the way we experience it today. And as a wake-up call, sound tells us a great deal. It points us the way—it signals us, it warns us, it guides us, it alerts us, it amuses us. When organized in what we call music, those sounds reach a remarkable degree of abstraction, attaining an unthinkable depth that touches our feelings and our way of acting, both individually and collectively.

And among all this, sound art, what it represents, and what it means for different people, groups, communities of specialists, upstarts, creators and curious, audiences and participants, connoisseurs, and makers. Some authors place music in the concert hall and sound art beyond it. Others demarcate it

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broadly, indicating that it encompasses everything that (around an artistic proposal that uses sound) cannot be included under the concept of music. Undoubtedly, many thinkers, musicians, and artists have been paving the way, and inevitably John Cage must be named as someone who left indelible marks in this sense. But then there are also movements such as Fluxus and Dada, and creators such as Raymond Murray Schafer, Pauline Oliveros, Iannis Xenakis, Pierre Schaeffer, and so many more who sowed the seeds of what we are living today.

There always seems to be a missing link, however, and sometimes even several, and we don't know much about why or how this happened—though sometimes we don't want to know either. The effort required to learn about the history in some regions of our planet, or even take a few steps in that direction, is still remarkable today. Even if some people firmly believe that what is not on the Internet today (at least mentioned) does not exist, research and the experiences of some of those who read these lines seem to indicate that this is not the case. In computer music and sound art, we barely know of some initiatives and developments, experiments and creations, primarily recent, of what has happened during the last decades in the Spanish- and Portuguese-speaking regions of Latin America. Far from pretending to be exhaustive, this text is, on the contrary, only an example of the vast field that opens up when we decide to start looking at, and listening to, some of the many creations produced in the region. Either from a purely artistic perspective or through exploring technological tools developed for sound generation, processing, storage, or control. This article offers an opportunity to approach computer music, sound art, and music technology from a broad perspective, mainly linked to Latin America, in one way or another.

Looking to the Other Side

Who tells history? Who knows it? Who has the opportunity to make it? We can find multiple versions of computer art and music history, most of them with subtle differences, but it has been unusual—until recently—to find references pointing outside a small group of European and North American countries. Inequalities have always existed, and if we want to see a change, we will probably need to work hard ourselves to produce new results. Many lost and hidden stories about computer art probably should be part of the official history and not just left aside. There have been people, ideas and concepts, works of art, discoveries, and inventions, and we expect someone will take care of keeping the memory of all that for us. But sometimes it simply doesn't happen, and when we look around after a while, it seems that the history has not been the one we thought it was, nor what we remember, but a different story that is being told by others.

Memory's death could benefit some people, as much as the desire for immortality could block the way to innovation naturally open to new generations. Computer art memory has been partially dead, or perhaps deaf or blind or simply looking to the other side, maybe to avoid the perception that the so-called digital revolution has reached most of the known world and that history does not happen only in a few "central" countries. The desire for immortality and for being a cultural lighthouse as much as the guardian of the right values and significant music should not lead us all to mistake that intelligence and sensibility belong to a few.

How many histories can be told about the same subject? To whom is their narrative directed? Then, today the digital divide could not be linked to who has access to the Internet but to who conquers the inclusion of content or develops the strategies to keep our attention on certain places and not others. It looks like we are bombarded with cues guiding us to consider that the art conceived by some cultures is the only one to be recognized as valid.

The journey from cultural memory and ethical concerns to the practical strategies for preservation, and the impact of disseminating knowledge generated by computer art and music, has navigated, and continues to navigate, a sinuous road. Between the obsession for archiving everything and the difficulty and strong responsibility of deciding what to preserve, the opportunity to archive computer music forces us to face a challenge involving technical issues to political, social, cultural, and economic aspects.

Where Were You?

About 45 years ago, while living in Argentina, I started to look for electroacoustic and computer music from around the world to learn about the field, its history, and current trends. Although finding information and music from certain countries was challenging but not impossible, uncovering what had happened in Latin America—and even in the country where I was born—was full of obstacles. Little was written, documented, or recorded. Over time, while I was tracking down information about past or current activities, or music recordings, I started to disseminate it in classes I was teaching in my personal lab and later at Argentina's National Conservatory of Music and the Buenos Aires Municipal Conservatory of Music, as well as in concerts and in radio series I conducted at the National Radio of Argentina and the Municipal Radio of Buenos Aires (e.g., Electromúsica, Música Electroacústica y por Computadora, and Música y Tecnología). I was also frequently writing reports about the Latin American computer music scene for the newsletter of the Computer Music Association (now the International Computer Music Association, ICMA) when it was primarily based in the United States. At the time, it was almost exotic, something like this, coming from the south of the Rio Grande. Years after, I had the opportunity to curate and compile CDs with music by Latin American composers, first for *Leonardo Music Journal* (1994), then the disc *From the Other Side / Desde el Otro Lado* (1998), and finally for *Computer Music Journal* (1999). CD covers are shown in Figure 1.

In early 2000, UNESCO commissioned me to write an extensive report on the history of Latin American electroacoustic and computer music, to be published in the online portal of their worldwide project Digi-Arts. An extensive English version was produced first (Digi-Arts 2007a), followed by a complementary, somewhat shorter Spanish version (Digi-Arts 2007b). Despite all those efforts, the music was still hard to find, even for those living in Latin America, except for music by those composers from Latin America living in Europe or North America and whose works were being recorded and performed regularly.

After decades of gathering recordings, it was only in 2003 that I was able to start the Latin American Electroacoustic Music Collection at The Daniel Langlois Foundation for Art, Science and Technology (FDL 2014a) in Montreal, a leading organization focused on studying theoretical aspects related to preserving electronic and computer art and actually archiving it. They developed or hosted a number of major projects, including the Steina and Woody Vasulka Fonds, the Nine Evenings: Theatre and Engineering Fonds, the Collection of Documents Published by EAT, and the Latin American Electroacoustic Music Collection (FDL 2005a), among others.

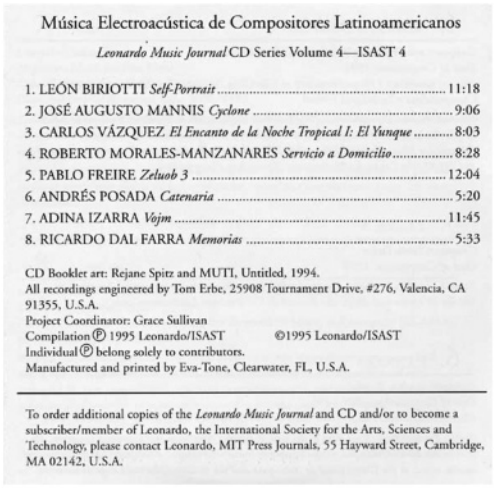
The South Existed Before, Too

The political and economic instability in most Latin American countries has profoundly affected the lives of its inhabitants for decades. Support for artistic activities has usually been postponed to solve urgent social problems. Despite that, the development of the electronic arts and, in particular, electroacoustic and computer music in the region is astounding. To name but a few examples: Mauricio Kagel (Argentina, 1931–Germany, 2008) composed eight electroacoustic studies in Argentina between 1950 and 1953, according to the *International Electronic Music Catalog*, compiled by Hugh Davies (1968). Kagel was one of the pioneering composers laying the foundations of a rich history of experimentation and creation in the region. Reginaldo Carvalho (FDL 2005b) and Jorge Antunes in Brazil, León Schidlowsky and Juan Amenabar (FDL 2005c) in Chile, Joaquín Orellana in Guatemala, and Horacio Vaggione in Argentina, are only some of the many names in the ocean of electroacoustic music creativity that has always been Latin America.

In Brazil, Reginaldo Carvalho composed "Sibemol" (1956) for tape. José Vicente Asuar composed his piece "Variaciones Espectrales" (1958–1959) in Chile using only electronic sound sources. The Estudio de Fonología Musical was created at the University of Buenos Aires by Francisco Kröpfl and Fausto Maranca at the end of 1958. César Franchisena experimented with electronic sound sources

Figure 1. CDs with electroacoustic and computer music by Latin American composers, curated by Ricardo Dal Farra and published in the 1990s by Leonardo Music Journal *(a), OOdiscs (b), and* Computer Music Journal *(c).*

(a)



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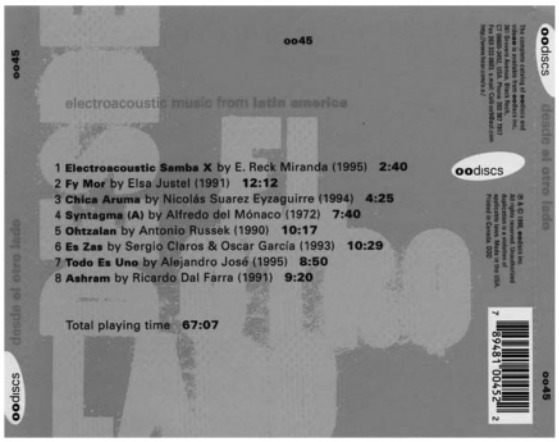

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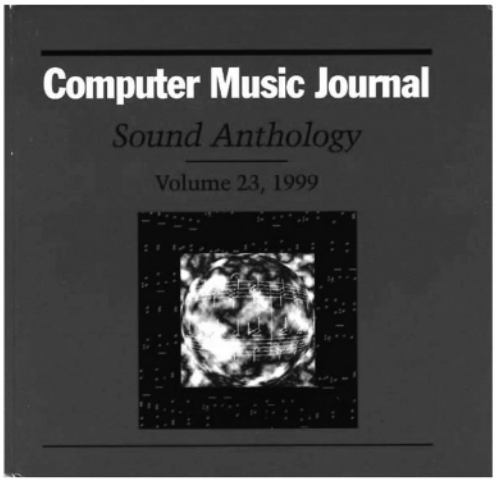


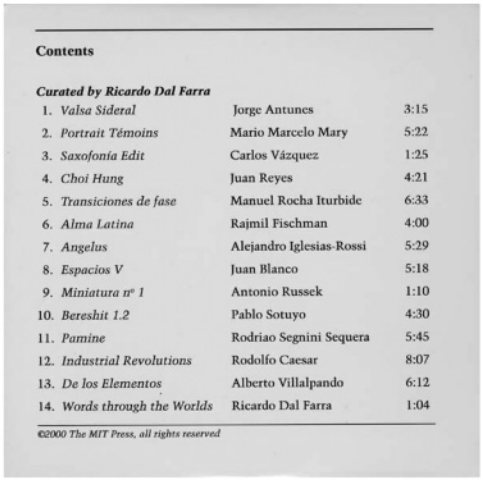


Figure 2. The Electronic Music Laboratory at Centro Latinoamericano de Altos Estudios Musicales (CLAEM) in 1964. (Photo by César Bolaños. Copyright The Daniel Langlois Foundation for Art, Science, and Technology, used with permission.)

at the National University of Córdoba radio station, also in Argentina, during those same years. There, he composed *Numancia* (1960), ballet music on tape.

A landmark in the history of new music in Latin America was the Electronic Music Laboratory (see Figure 2), created in 1963 in Buenos Aires at the Centro Latinoamericano de Altos Estudios Musicales (CLAEM) of the Instituto Torcuato Di Tella, founded in 1962 and directed by the Argentinean composer Alberto Ginastera. This became a meeting point for students and composers from all over Latin America. They had the opportunity to learn and exchange ideas with some of the most exciting composers of the time, many of them coming from Europe and North America, such as Luigi Nono, Iannis Xenakis, Bruno Maderna, Aaron Copland, Olivier Messiaen, Vladimir Ussachevsky and Luigi Dallapiccola. Peruvian composer César Bolaños composed "Intensidad y Altura," the first tape piece produced at that lab, in 1964 (FDL 2005d).

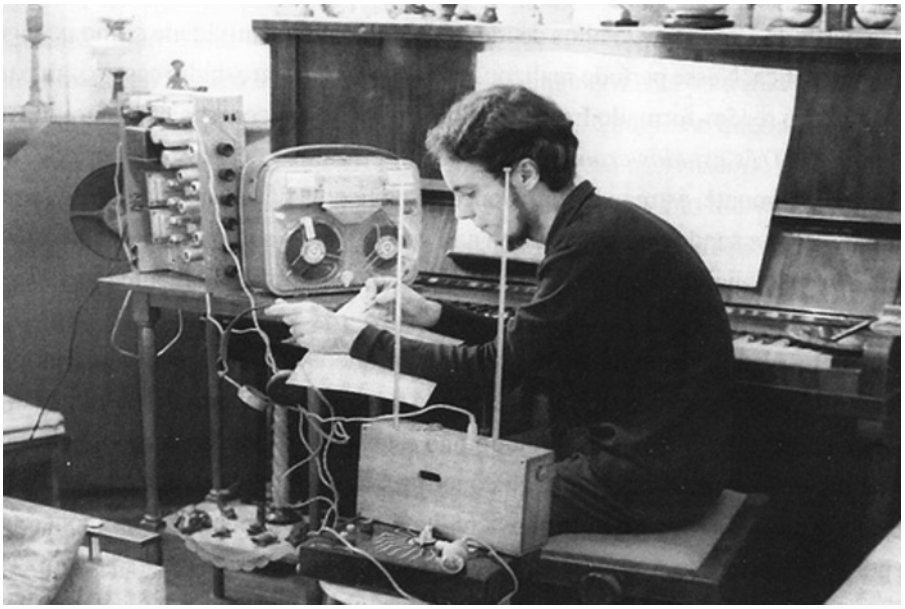
In Cuba, Juan Blanco composed "Música para danza" (1961) for tape, "Interludio con máquinas" (1963) also for tape, and "Texturas" (1963–1964) for orchestra and tape between (FDL 2005e). Blanco composed around a hundred works using electroacoustic media, including music for mass public events and large venues, like the five-track tape piece "Ambientación Sonora" (1968), played for 30 nights along La Rampa Avenue in Havana.

In Mexico, Carlos Jiménez Mabarak composed "El paraíso de los ahogados" (1960) for tape.

Jorge Antunes produced his first electroacoustic pieces working at his home studio in Brazil (see Figure 3); after "Pequena peça para mi bequadro e harmônicos" (1961), he composed "Valsa Sideral" for electronic sounds (1962; cf. FDL 2005f).

Engineer Raúl Pavón built the prototype of a small electronic musical instrument featuring an oscillator with multiple waveform outputs, a white noise generator, filters, an envelope generator, and a keyboard in 1960. Pavón called his instrument the Omnifón, it was among the earliest voltage-controlled electronic sound synthesizers. Well before that, in the early 1940s, composer Juan Blanco designed an innovative electronic instrument similar in concept to the Mellotron. His Multiorgan was based on twelve loops using magnetophonic wires (see the blueprint in Figure 4). It predated

Figure 3. Jorge Antunes in the early days of electroacoustic music in Brazil. (Photo by Jorge Antunes.)



both the Mellotron, considered the precursor of the digital sampler, and the Chamberlin by several years.

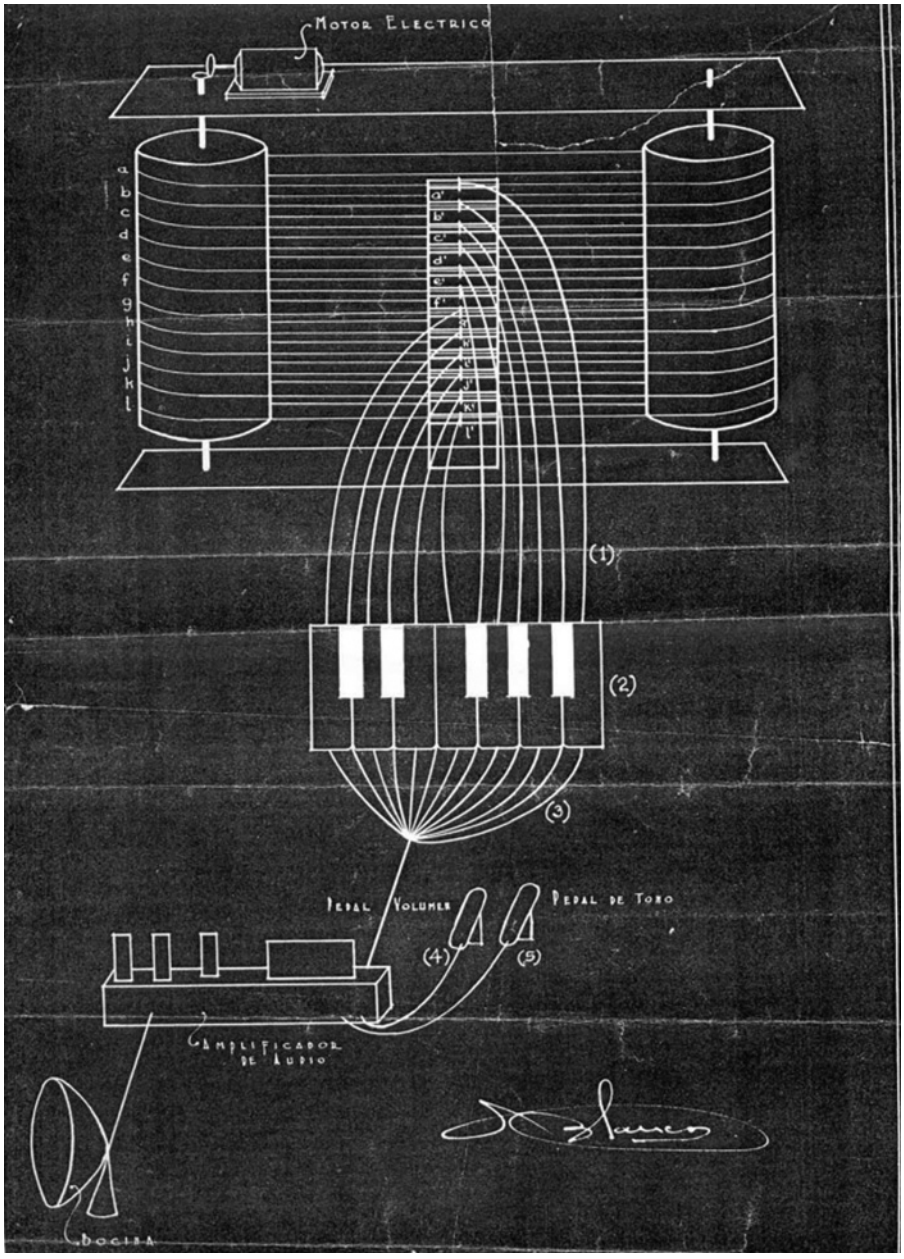
In the 1960s, in Argentina, Fernando von Reichenbach invented the Analog Graphic Converter (see Figure 5). This instrument transformed graphic scores, made from pencil drawings on a paper roll, into electronic control signals that were adapted to work with analog sound equipment. He redesigned CLAEM's Electronic Music Lab (see Figure 6). Reichenbach also invented several other devices, such as the keyboard-controlled polyphonic third-octave and octave filters, and a touch-controlled patchbay (see Figure 7) that helped composers simplify some cumbersome processes in the studio. Today, his inventions are starting to be recognized internationally.

It is worth mentioning the experiences of composer César Bolaños with the mathematician Mauricio Milchberg in Buenos Aires. During the late 1970s, they experimented with computers to organize compositional materials. Those works led to the creation of two pieces: "Sialoecibi (Esepco I)" for piano and one reciter-mime-actor and "Canción sin Palabras (Esepco II)" for piano with two performers and tape (both 1970). An excerpt from the score to the latter piece is shown in Figure 8.

José Vicente Asuar produced a hybrid analog–digital computer system in Chile in the mid 1970s, exclusively devoted to creating music. He designed and built a musical instrument based on the Intel 8080 microprocessor, the Computador Musical Digital Analógico Asuar (COMDASUAR), and composed several pieces with it.

Brazilian composer and pianist Jocy de Oliveira (see Figure 9) has been a soloist under the baton of Igor Stravinsky and had pieces written for her and performed premieres of works by Xenakis, Cage, Cláudio Santoro, and Luciano Berio, among other well-known composers. She has composed electroacoustic music, *musique mixte* (i.e., music using traditional instruments alongside electroacoustic sounds), electronic operas, and multimedia performances since the mid 1960s. A few examples of her artistic production include "Estória I" (1966), an acousmatic piece; "Estória II" (1967) for female voice, percussion, and electroacoustic tape; *Polinterações* (1970) for video, sculptures, projections and electronics; "Wave Song, Version I" (1981) for piano and live electronics, in collaboration with Ron

Figure 4. Blueprint of Juan Blanco's Multiorgan, dated 1942. (Courtesy of Emmanuel Blanco.)



Pellegrino; and *Music in Space* (1982–1983), a planetary opera for voices, electronic violin, electroacoustic means, bass guitar, percussion, laser, projections, and holography. At the time of this writing she is still active in creating musical projects.

The Latin American Electroacoustic Music Collection

As mentioned earlier, the unavailability of musical recordings, bibliography, and almost any basic reference to electroacoustic music activities developed

Figure 5. Fernando von Reichenbach and his Analog Graphic Converter, invented in the 1960s to transform graphic scores to control voltage signals. (Photo with permission of Luca von Reichenbach.)

Figure 6. Partial view of the CLAEM's lab, redesigned in 1966 by Fernando von Reichenbach. (Photo by César Bolaños. Copyright © 2005 The Daniel Langlois Foundation for Art, Science, and Technology. Used with permission.)

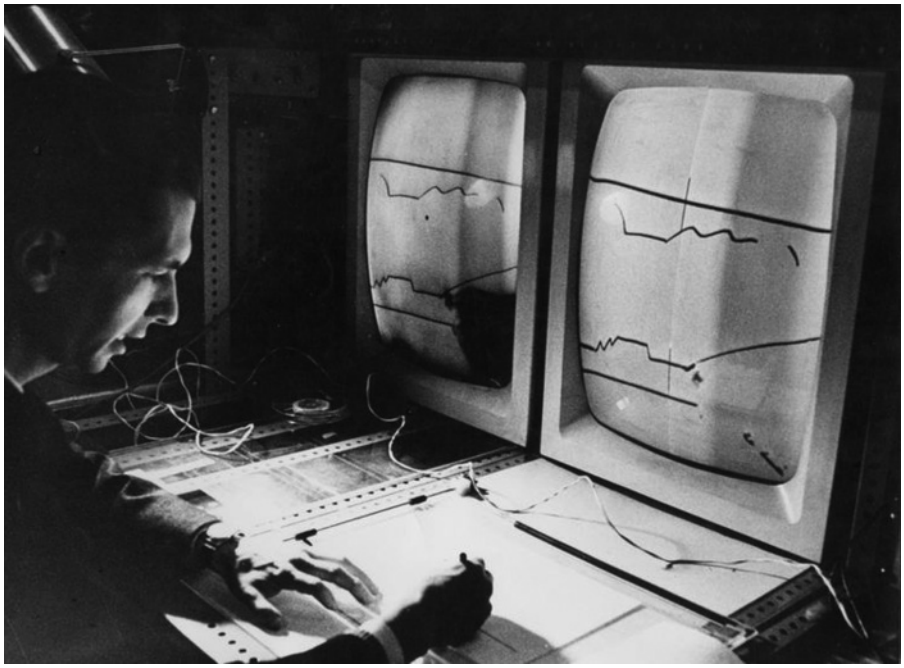


Figure 5.

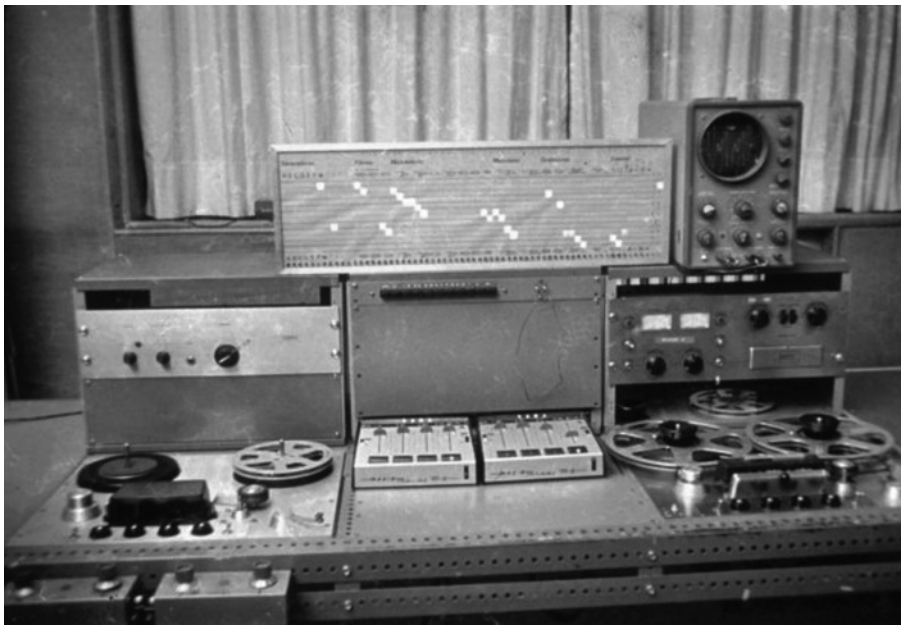
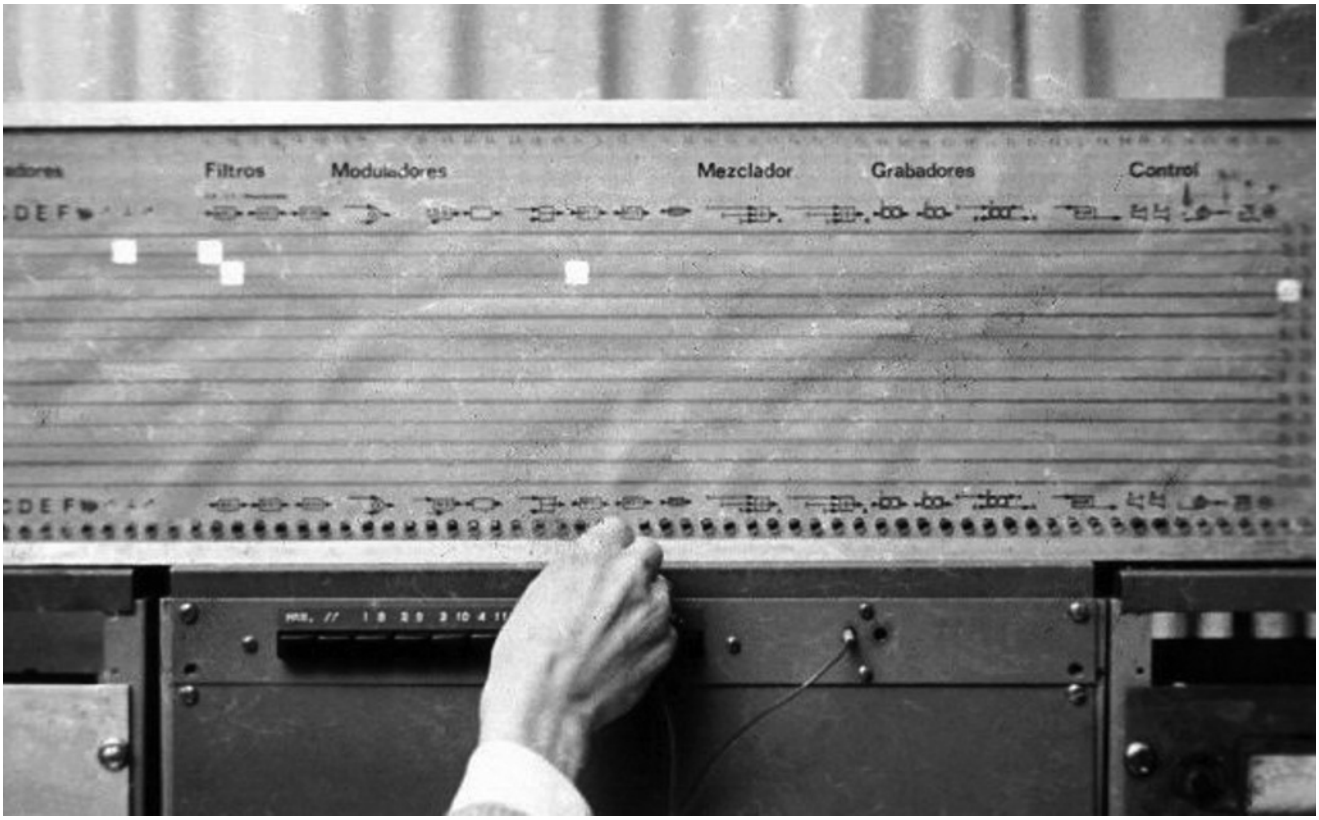


Figure 6.

Figure 7. Touch-controlled patchbay developed by Fernando von Reichenbach at CLAEM, built with spare parts from a telephone company. (Photo by César Bolaños. Copyright © 2005 The Daniel Langlois Foundation for Art, Science, and Technology. Used with permission.)



since the early 1950s in Latin America was commonplace even in the mid 1970s. That situation changed only little in the following decades.

Universities, state organizations, and some major private foundations in several Latin American countries have taken initiatives to support art research and the use of new media already in the early 1960s. Still, most have stopped before developing the resources to document their processes and preserve the results. For example, many early tape compositions have been lost, or the master recordings have become damaged.

The Latin American Electroacoustic Music Collection has digital recordings of over 1,700 compositions by almost 400 composers. The Collection also has photographs, scores, interviews, a trilingual historical essay, and a copious collection of texts in its database (FDL 2004). It represents an example of the relevant role that the archival of artworks and its public access can play in having another perspective on history. This is a key resource, consulted extensively by people worldwide, including researchers, composers, performers, musicologists, historians, artists, curators, radio producers, and more. The Collection could also help transform the usual perception of "ownership" that exists in some countries about electronic and computer music history.

This collection includes compositions originally produced for fixed media (tape, DAT, CD, HD, etc.) and recordings of mixed works for acoustic instruments or voices and fixed media or live electronics and interactive systems. There are also some multimedia pieces in the database. In the case of compositions for fixed media and other sound sources (e.g., *musique mixte*), full recordings as well as "tape only" parts (i.e., fixed media) were preserved and cataloged. The archive also has

Figure 8. "Canción sin palabras" (ESEPCO-II) for piano and tape by César Bolaños in collaboration with Mauricio Milchberg, 1970. Score excerpt: initial minutes.

Figure 9. Brazilian composer, pianist, and new media artist Jocy de Oliveira with Luciano Berio in 1961 (a) and performing with Igor Stravinsky in 1966 (b). (Photos permission of Jocy de Oliveira.)

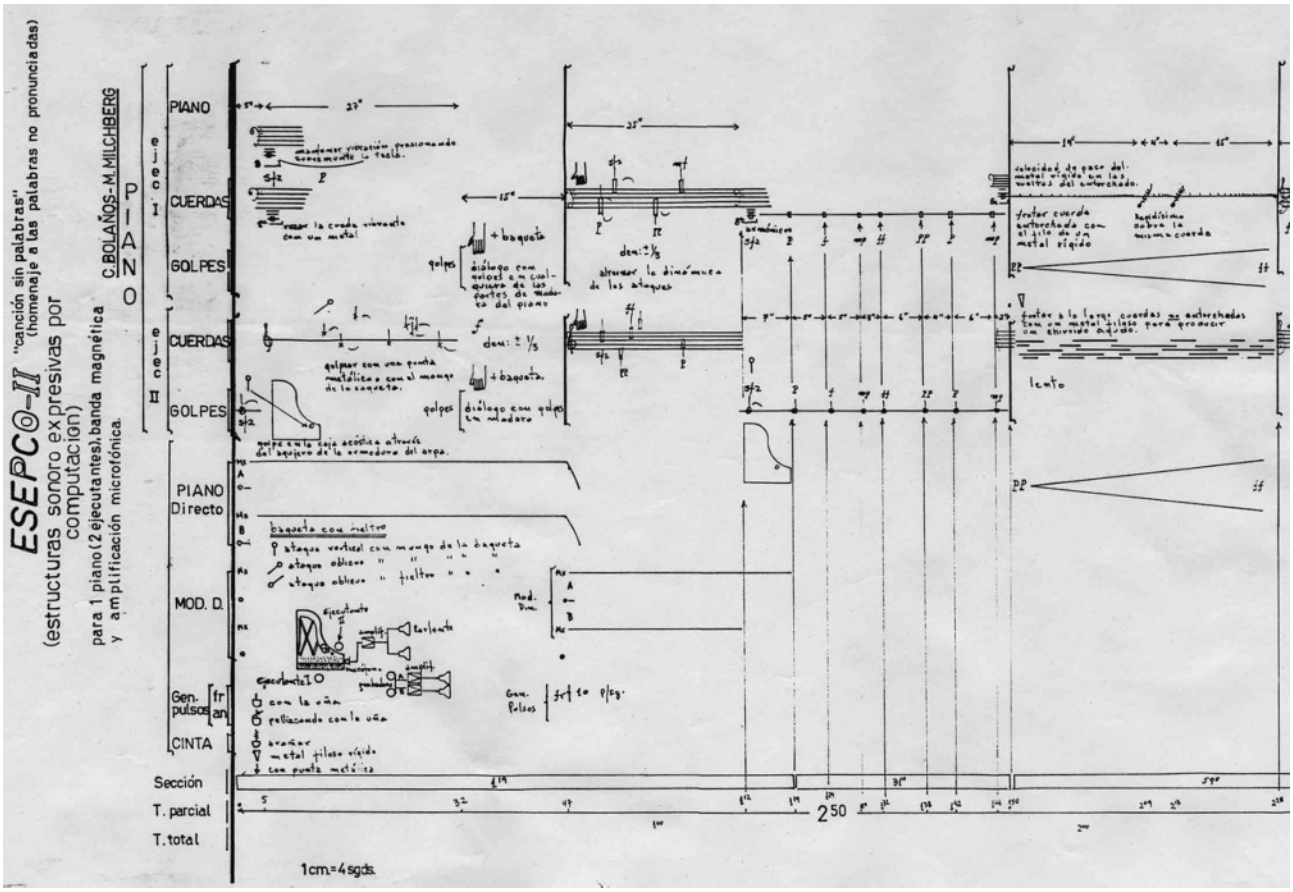


Figure 8.

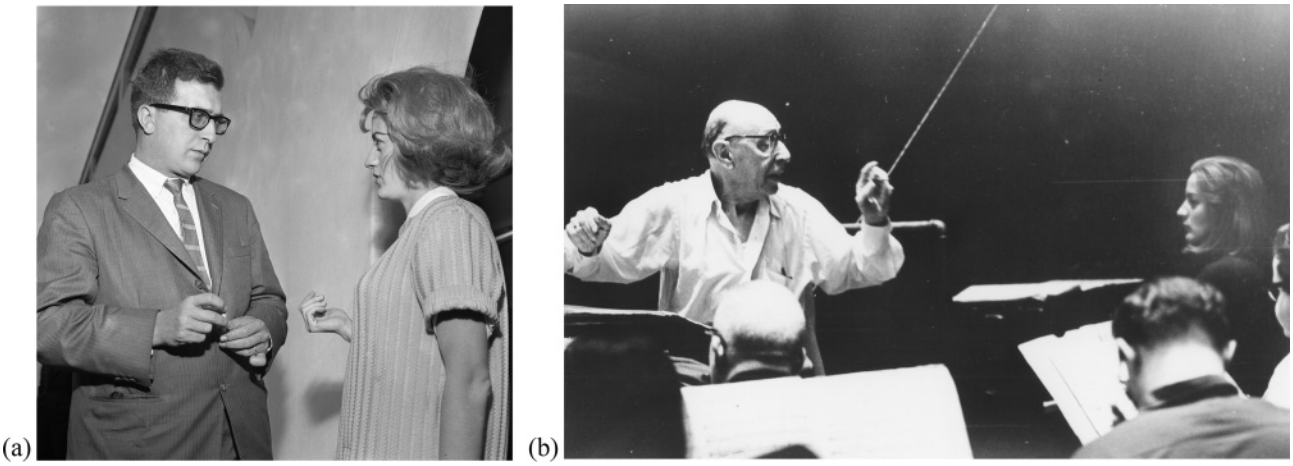
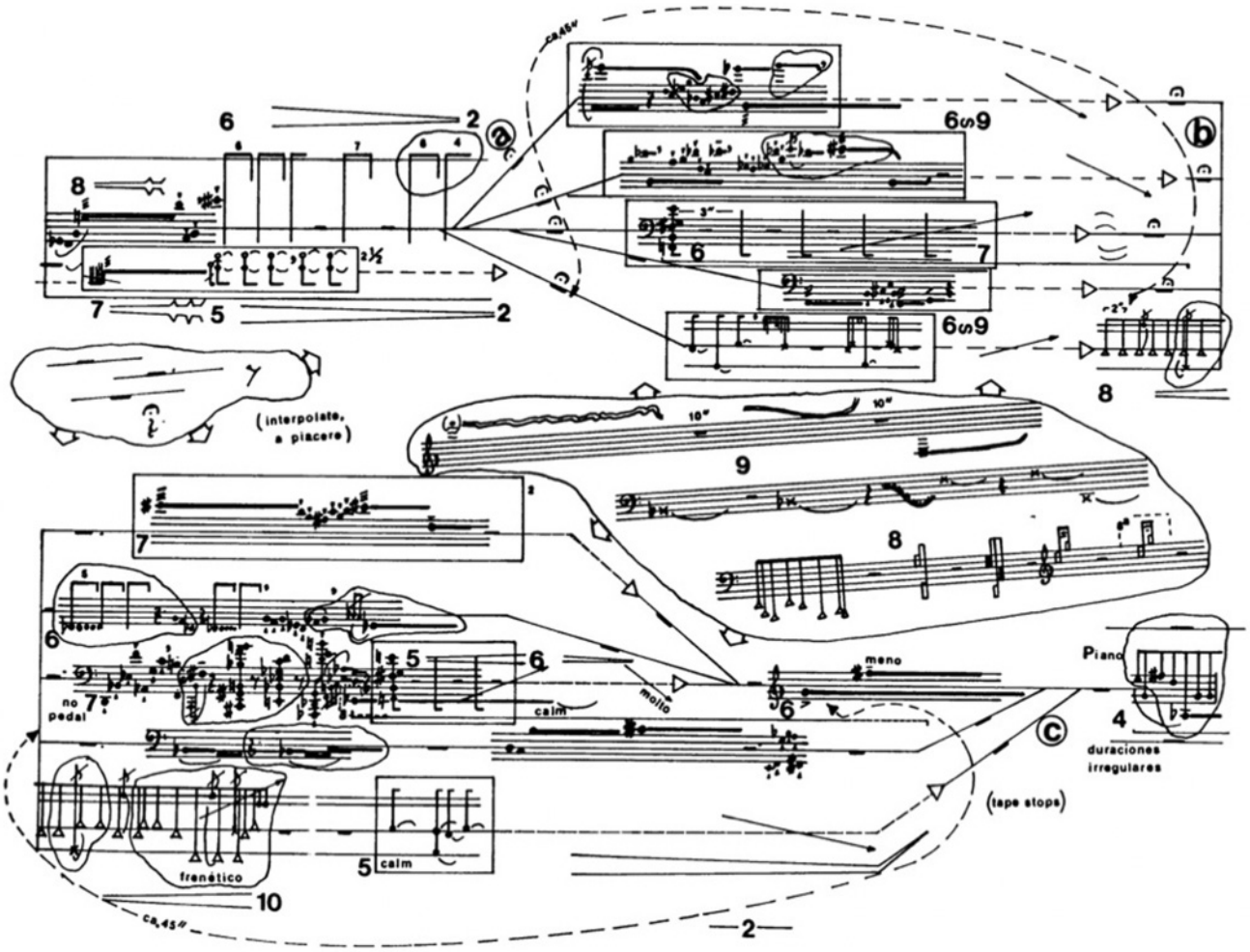


Figure 9.

Figure 10. "Interferences III" for chamber ensemble with electronic and computer sounds by alcides lanza. (Score excerpt: page 2. Courtesy of the composer.)



audio and audiovisual recordings of interviews with composers and technical innovators (e.g., Manuel Enriquez from Mexico, Alberto Villalpando from Bolivia, Edgar Valcárcel from Peru, and Alfredo del Mónaco from Venezuela) as well as photographs, videos, and some scores (such as those by alcides lanza from Argentina—see his score excerpt in Figure 10—as well as Javier Alvarez from Mexico, Milton Estevez from Ecuador, and Edson Zampronha and Jônatas Manzolli from Brazil). Some of the works in this Collection can be considered sound art pieces (FDL 2005g).

From a technical perspective, archival of audio material went through myriad problems: recovering from massive hard disk crashes, finding analog tape recorders with old track formats, redigitizing material to correct problems of DC offsets in brand-new equipment, computer operating systems, and FireWire and USB conflicts, etc. Defining how best to work with old, noisy recordings was another challenge: A few pieces were processed using an advanced denoise system to reduce hiss while preserving the original recording and following the composer's intent. The bulk of the process was done

between 2003 and 2005 at the Langlois Foundation, working with three different computers simultaneously and nine hard disks to manage the audio and visual files, the database, and a large amount of information, together with daily international communications with composers and institutions.

Although the recording quality of some music stored on old analog tapes suffered through the years, digital technologies for recording storage presented the greatest challenges. For example, some DATs lost part of their recordings with only a passage of loud digital noise in place of the music. In those cases, the problem was not only a poor quality (e.g., because of hiss or the loss of high frequencies) but a complete lack of the recorded music, without any possibility of recovering the original material.

There are 1,723 compositions preserved as CD-quality digital audio in the database. All are available for listening to researchers by contacting the Langlois Foundation for an access code (to avoid copyright infringement), 558 works from those are already freely available online to be listened to by the general public. As expected, there are multiple ways to find the information in the database. The digital audio recording of a composition can be found by title, composer's name, the country linked to that composer, the year or decade when the work was composed, etc. (cf., for instance, FDL 2005h). Also, there are two playlists to access and listen to the compositions: one sorted alphabetically by composer's last name, the other sorted chronologically, following the year the piece was composed (FDL 2014b).

Program notes, instrumentation, production studio, version, composer biographies, and much more have also been included for each work when the information was available. Part of that comes from the two reports commissioned by UNESCO mentioned earlier (Digi-Arts 2007a, 2007b). They were published online and are still available through UNESCO's Digi-Arts knowledge portal (although the site is no longer actively maintained, most information is still accessible). These texts include references to hundreds of composers who were born or pursued a portion of their professional careers in Latin America.

The Latin American Electroacoustic Music Collection is one of the most-frequently visited and consulted collections of the Daniel Langlois Foundation.

Making Space for a Different Story: Sound Art

Of course, new works are being created while I am writing this text. Electroacoustic music is now an established field in Latin America, with a long history and many composers active in creating new work.

Artists come from a diversity of disciplines, at times from points where the performing and visual arts intersect, as well as some composers, and all working in what we now call sound art.

Brazilian artist Guilherme Vaz performed his pioneering sound art piece "Musica para Folha de Papel" at the VIII Biennale de Paris in 1973, repeatedly claiming that his piece was a musical composition (a video can be viewed at https://youtu.be/1p8RsvF-xHc). Active in various art fields, Vaz has worked in *musique concrète*, jazz, experimental music, film scoring, and other genres. He was also participating when conceptual art was starting in Rio de Janeiro.

Some artists have created works and have written extensively about sound art, such as Mexican composer Manuel Rocha (www.artesonoro.net). Among many other musical creations involving electronics, Rocha composed pieces like "Los números de Pitágoras" (1988) for computer-generated sounds; "Frost Clear Energy Saver" (1991) for refrigerator, double bass, and digital tape; "Bandas de pueblo" (1992) for French horn, trombone, tenor saxophone, soprano saxophone, trumpet, percussion, Mexican village band, and digital tape; and "SL-9" (1994) for tape. He is also widely known today for his work as a sound artist. Some of Rocha's recent sound art work includes "The Extended Tension" (2013), which has an electric guitar hung in the middle of a room, connected to an amplifier, and a set of extended wires connected to the surrounding walls; "Cinco líneas con clavos" (2014), a sound installation using five eight-meter-long lines of hammered nails and including a recording of the action that took place producing the piece; and "Transition," from 2016,

with different types of broken guitars spread on the floor, and five audio tracks whose sounds are spatially distributed from inside the broken bodies of the instruments.

Mauricio Bejarano, from Colombia, has an extensive catalog of works using electroacoustic media (Bejarano 2012). He has composed electroacoustic music and created radiophonic artworks and sound installations. Bejarano has also explored other creative fields, including graphic arts, painting, poetry, and sculpture. Among his early works: "Aparato I" (1990) for tape; *Cage* (1992), with Ricardo Arias, Roberto García, and Juan Reyes, a three-hour-long radiophonic work produced at the National University Radio of Bogota; "Negro Liminar" (1995), an octophonic interactive work premiered at the Planetarium of Bogota; "Jagua(r)" (1995) for tape; and "D'agua," created in 1997 at Groupe de recherches musicales (GRM) in Paris, using the Syter. He wrote numerous articles and essays about electroacoustic music and sound art. Together with Roberto García and Juan Reyes, Bejarano produced the CD *33 Años de Música Electroacústica Colombiana*, a research work including historical pieces by composers González Zuleta, Blas Emilio Atehortúa, David Feferbaum, and Jaqueline Nova, together with music created by the new generation of Colombian composers. Also actively working as a sound artist, Bejarano has widely exhibited his pieces and received prizes for his creative work in this field. Among his sound art creations are "Tierra de Navegación" (1996), a multichannel installation; "Mapa Blanco (1998), an interactive octophonic installation; the installation "Gabinetes" (2000), proposing a sound gallery showing the evolution of sound art during the 20th century; "Tuba Textura" (2004), a site-specific action-installation; "Gris" (2006), a sound sculpture; "Papel de Colgadura Satie" (2006), an inaudible installation; the sound installation "Ojos de Agua" (2010); "New York, New York" (2010), a multichannel sound postcard series; and "Murmur(i)os" (2011), a sound sculpture–installation using 16 audio channels and 88 sound projectors.

Carlos Gómez is a musician, sound artist, and engineer (http://oyentes.net/category/proyectos). Born in Colombia, he lived in Spain for many years before returning to his native country. His work "Four Filters For Four Flies" (also known as FFFFF) decomposes the frequency bands of a series of recordings of insects, made in their natural habitat, and digitally generated highly noisy signals, recomposing them in the physical space of the sound installation using spatial techniques. "Uno en función del otro" was created by overlapping five soundscape recordings from the Baker River Basin in Chile. In "Sube o baja, según se va o se viene," Gómez reflects on the systems used for spatial sound diffusion, using a device that amplifies the performer's finger contacts and movements on a texturized physical interface. That interface is used to trigger soundscape recordings stored as fixed media on hard disk (see Figure 11).

From a younger generation, Jorge Bejarano Barco, also from Colombia, works in sound art, usually performing live with electronic instruments that he builds himself, as seen in Figure 12 (cf. also Barco 2017). Barco is interested in noise and its link to different cultures and societies. He defines himself as a "maker" and works with circuit bending as one of his preferred techniques. Among the many devices he created for performance are the Noise Machine and so-called Glitchmachines, (both 2012); Máquina Acusmática 1, a sound object (2013); and the Machine Wilderness, an oscillator and sequencer (2014). As a cultural producer, he has been instrumental in creating the conditions for having a space devoted to sound art at the Museum of Modern Art of Medellin, where he is the curator of special projects.

Chilean artist Claudia González Godoy defines herself as an independent media artist (http://www.claudiagonzalez.cl). She works with analog and digital electronics, exploring the links between "low" and "high" technology. González Godoy is an active supporter of the do-it-yourself (DIY) and open-hardware cultures. In her work "Chimbalab Broadcast Project" (2012), she uses discarded vegetables (from any large city market) to generate organic batteries for a DIY audio device whose sounds are also modified by using the vegetables as resistors. Another work, "Concertina: Máquinas de papel" (2014), is an electronic musical instrument with an oscillator, a frequency divider, and a sequencer, built on a 3-D structure of folding paper.

Figure 11. Carlos Gómez performing "Sube o baja, según se va o se viene" in Donostia, Spain, 2011. (Photo by Gómez.)

Figure 12. Jorge Bejarano Barco performing with his Skriabin machine during the Balance-Unbalance Conference in Manizales, Colombia, 2016. (Photo used with permission of the Festival Internacional de la Imagen.)

Figure 11.

Figure 12.

Also from Chile, Constanza Piña is a supporter of e-textiles, DIY, open hardware, and hardware hacking (https://constanzapinadossier.wordpress.com). Together with González Godoy, she cofounded the Chimbalab Art and Technology Lab, which was active from 2008 to 2012. She has developed a sound performance project "Corazón de Robota" using DIY synthesizers. Piña has given her instruments names

like Banana Punk, Robota, Mixer Love, Ratabari, Little Bass, Atari Punk, Chansi Random Machine, Theremingo, Clock Love, and SubaQ. Her work "Khipu," based on the pre-Hispanic native system using textiles as a recording device for storing data and performing calculations, received a Prix Ars Electronica Honorary Mention in 2020. According to the artist, the project involves sound to express how harmonious the universe's numerical proportions are.

Nicolás Varchausky, a composer and sound artist from Argentina, has produced interdisciplinary projects in public space, sound art performances, and interactive art installations (https://www.varchausky.com.ar). In his piece "Intervención Pública No. 1" (2002), four loudspeakers were hung around the four sides of a clock tower, facing one of the main train terminals in downtown Buenos Aires. Each loudspeaker played different, contrasting recordings. These included street preachers, ambulant vendors, police activity, and street musicians. His work "La Biblioteca Ciega" (2011), received a Prix Ars Electronica Honorary Mention in 2013. It is a site-specific piece created for the old reading room of Argentina's former National Library, once run by Jorge Luis Borges. The piece is structured in two parts: In the first, electronic pieces are presented in complete darkness and surround sound, using recordings of different consonants, and applying algorithmic processing to reveal their inner soundscape; for the second, members of an orchestra of blind musicians (Banda Sinfónica de Ciegos) used a series of instruments that, during live performance, turned light into sound. They were working with mechanical photosensitive devices and bars of light, among other things, to create three sound pieces based on live electronics.

Jorge Crowe, also from Argentina, is a sound and audiovisual artist who has, for years, performed concerts based on electronic toys, and who has created reactive sound objects and audiovisual devices for installations and exhibitions.

Luz María Sánchez Cardona is a Mexican artist and researcher whose work operates mainly in the social and political sphere (http://luzmariasanchez.com/obra). In her eight-channel sound piece "2487," the names of 2,487 people whose bodies were found along the border between Mexico and the United States are read aloud. Each name was recorded and stored separately; the recordings are then played randomly, with some played in isolation whereas others are overlapped. "V.F(i) n_1" is an asynchronous multichannel sound installation and sonic sculpture addressing violence from the perspective of ordinary citizens. The piece is assembled using 100 digital audio players, 3-D-printed in the shape of guns. Each player has a different recording of shootings captured in Mexico by people caught in confrontations between law enforcement and organized crime organizations. Among Sánchez's publications related to sound are "The Technological Epiphanies of Samuel Beckett" (Sánchez Cardona 2016) and *Samuel Beckett electrónico* (Sánchez Cardona 2017).

These are only a few among the many Latin American artists creating sound art. There is a wide variety of approaches to understanding and creating this work. Many artists in most countries of the region today are practicing sound art and presenting their work internationally.

Sound art is widespread all throughout the region of Latin America. It is present with hundreds of activities through multiple initiatives, including formal educational institutions, informal organizations, and artist collectives. These include Tsonami (https://www.tsonami.cl) in Chile; NuSom (https://www2.eca.usp.br/nusom) in Brazil; the Universidad Nacional de Tres de Febrero (http://untref.edu.ar) and the Universidad Nacional de Quilmes (http://www.unq.edu.ar) in Argentina; Remezcla tu Ciudad (https://www.remezclatuciudad.com) in Paraguay, Bolivia, Uruguay, Peru, and Chile; CMMAS (https://cmmas.org) in Mexico; Centro del Sonido (https://centrodelsonido.pe) in Peru; and Sonandes (https://sonandes.org) in Bolivia. These are names pointing to some of the amazing variety of approaches growing in the last few years in the field of sonic art.

Nonfinal Words… for a New Start

I wrote an article for *Computer Music Journal* over 25 years ago (Dal Farra 1996), ending with the words: "Perhaps, and only perhaps, someday composing

computer music in Latin America won't be an adventure, and perhaps, and only perhaps, Latin America's music won't be exotic music anymore but just music, and perhaps, and only perhaps, computer music will also be just music." I find these points to be, at least in part, still valid.

Since then, the Latin American Electroacoustic Music Collection has recovered and made visible (and listenable) the creative work of many composers otherwise almost forgotten. It has defied the hegemony of the electronic and computer art, and the narrative of music history, helping to break some barriers and slowly shifting and widening the way the history of electronic art and electroacoustic and computer music is understood.

Archiving and disseminating electronic and computer art—as well as working on a revised version of their history—is crucial to comprehending the present and building our future. Sound art, electroacoustic music, electronic art, media art, computer music, and the many other forms of expression we use, are all part of the rich fabric that extends beyond formal borders, encompassing societies sometimes living different realities. Still, we need to share more stories to build a new history, one that can better depict what that history has been and what it is now, hopefully helping us with improved communication and respect in the understanding of what we, as humans, are all capable of creating.

The main challenge is, perhaps, with the tools and experience we have now, how to build a much more comprehensive future history, knowing that too many things were almost forgotten, hidden, or lost in the past. We have the opportunity to do things better.

The References section includes a brief but useful list of online and printed publications cited in the course of this article, as well as three additional publications I authored (Dal Farra 2006a, 2006b, 2007). Together they refer further to hundreds of sources. Through them, it is possible to expand each aspect written here, with more names and dates, and with specific and contextual information on the history of electroacoustic and computer music by Latin American composers.

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