Border-Listening/ Escucha-Liminal

Volume 1, 2020

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edited by
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Published by
Radical Sounds Latin America in 2020
Berlin, Germany

www.radicalsoundslatinamerica.com

Studio sounds: Digital Tools and Technocolonialism

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Introduction

Douglas Kahn (2000) defines phonography as an epistemological and ontological rupture in the existence of sounds. Not only could sounds survive their ephemerality once recorded in material form, but such recorded sounds could only exist by dint of a profound technological mediation in their accomplishment. Sounds created and modified by technical means are an ancient phenomenon related to different human practices throughout history. The phenomena of amplification and reverberation of the sounds that surround us are two of the most common, experienced through the architectural projection of spaces such as amphitheaters and churches, and through the construction of resonant bodies, as in the case of musical instruments. "Natural" sounds and "transformed" sounds created by the use of such phenomena are hardly distinguishable. In fact, they should not be thought of as two opposing entities, but as somewhat flexible categorizations of our own relationship to technologies.

It seems curious that technically mediated sounds (specifically, recording and reproduction technologies) can be taken as a faithful reproduction of the original sound phenomenon. There are at least three problems with this assumption. Firstly, there is no verifiable original event to turn to for comparison: what remains from any sound is no longer that sound. Secondly, layers of specific meanings produced by the recording processes exist that already move the resulting sound away from a possible original source. Every recording is an overwriting process. In the third place, affirming the existence of an original sound implies, in a sense, an expectation that the various people exposed to the sound will perceive it the same way. Therefore, there would in fact be multiple "original sounds" as no sound exists without physiological mediation, and that mediation cannot be universally generalized.

The above considerations seek to establish some points of importance in the discussion explored later in this essay. In order to understand the power that technological solutions have to configure musical and sound practices, we must reconsider the notion that certain technologies are the best tools for a given purpose. More than

that, we must ask what other potential results are being set aside when a certain technological arrangement is chosen. Finally, we need to find out whether or not it is possible to abandon certain solutions, exchanging them for alternatives, and if that choice is even permitted to many of us.

Sound recording and reproduction technologies are seen as facilitative elements within the music production and consumption chain. In fact, any contemporary media arrangement considers constant technological "evolution" and the often-indiscriminate adoption of technical solutions at almost all stages in all processes to be indispensable. The question of technology must also be thought of as geared towards the standardization of tools and creative activities.

Standardization is a characteristic inherent in the development of tools or techniques in any activity. This essay aims to highlight the bias of sound practices in the search for increasingly sophisticated solutions – in particular those related to more consolidated industries, such as film and phonographic production –, and how this perspective has been constituted from a fetishistic adoption of technology, not only as a means, but also as an end in itself.

Film studios and technical control

Recordings are, at the most basic level, manipulation not only of sounds, but also of spaces, bodies and objects. Behind the act of recording is the idea that people, groups, instruments or other sound-creating objects have a "correct" sound. This organization of sonic bodies is firstly a spatial organization. In the first mechanical recordings, the distribution of sound-producing elements considered the possibility of an ideal listener. The privileged listening point, in that situation, was that of the metal horn that captured the sounds coming from the group of musicians. This group was placed close together, with solo instruments or those producing lower sound volume in the front row, as in the photo below.

Fig. 1 – Acoustical Recording. From Library of Congress National Jukebox Online Catalog. http://www.loc.gov/jukebox/about/acoustical-recording

The technical control of recordings was even more evident when, especially with the advent of electrical recordings, the positioning of musicians became a minor problem. The space of the recording studio was subjected to rigorous scientific investigation, and to technical modifications related to its acoustic properties. Recorded sound needed efficient recording techniques in addition to modern equipment, such as more sensitive microphones. That concern is clearly evident in a manual from the1930s:

> Probably one of the least understood and yet one of the most important problems in the recording and reproduction of sounds is the acoustic adjustment or control of the spaces in which the sound is recorded and reproduced (Knudsen 1931, 218).

What we might call a "macro" view in the recording process, i.e., the organization of musicians in the space in relation to an "ideal ear", is replaced by a series of "micro" instances, such as study of the acoustic behavior of frequencies and construction materials in both recording apparatuses and studio architecture. The improvement of the studio environment proved to be important to obtain a "perfect" sound – perhaps equally as important as the technique of instrumentalists and singers. The cultural industry, especially as the complex structure of recording studios developed, sought efficiency through technical control and the specialization of functions.

Cinema offers an example of how technically-mediated spaces, with the help of the technologies of sound, proposed different practices and perceptions of what could be considered "appropriate" sounds. The development of cinematographic activity in the first decades of the twentieth century, especially in the United States, but also in countries such as Italy, France and Germany, led to the emergence of major film studios. These self-sufficient structures had sound-adequate filming spaces equipped with state-of-the-art technology, facilities such as restaurants and security systems, such as their own fire department. These structures - of considerable size, and somewhat removed from the outside world - aimed to create a faithful representation of that same world.

> The very best thing we can hope to do is to produce rather imperfectly the illusion that the real thing is before us. If we can do this well enough to hold the auditor and to make him forget, even temporarily that he is not seeing and hearing the original we have gained our end (Miller 1931, 211).

Although the proximity between representation and represented is a crucial argument in the development of studio practices, relatively autonomous representation protocols were developed that aimed at improving some of the less realistic aspects of the cinematic experience. For example, for most sound engineers in the 1930s, images and sounds captured by the camera and microphones should maintain the same relationship, in terms of space, as the images that our eyes see and the sounds that our ears hear. There should be a parity between what technical devices perceive and how our physiology

naturally experiences live action. However, this argument is completely contradicted by the widespread practice in modern Hollywood films of always placing dialogue at the forefront of any soundscape, regardless of the characters' spatial location.

According to studio protocols, there are rigid technical parameters that must be carefully followed to obtain the expected results. Such technical discourse creates a very specific jargon used to refer to recorded sounds and the methods of recording them. Simultaneously with the development of this jargon, focused on aspects such as frequency range, dynamics, volume, and the reverberant or absorbent properties of different materials, the technical dynamics of studios compiled a very specific model of how objects should sound. Microphones, mixers and other apparatus used in film production developed a certain quality of sound associated with a filmic soundscape. Likewise, the background sound of the optical soundtrack (until noise reduction technologies such as Dolby Stereo emerged in the 1970s) created a sonic space from the background noise of the technical processes of recording, editing and mixing. Technically mediated sound not only defined the sounds of things, but also the space in which they sounded.

Music technologies and the construction of sound

Théberge (1997) points to a change in the ways music is made, the result of the introduction of new musical technologies. He argues that the very nature of the musical object is modified, and the relationship between musicians and the studio environment also, by the adoption of certain recording practices. The notion of music, thought of as the work of composers and instrumentalists, is gradually replaced by the broader term "sound". Even with a high level of indeterminacy and abstraction, the use of that term gives more prominence to the figure of the sound technician in studio creation processes. Technologies begin to abandon the idea of impartial mediation in order to record a musical performance, becoming a part of the performance themselves. Théberge's book focuses on technological changes between the 1970s and 1980s, a period which differs significantly from the digital environment common from the 1990s on. Even so, some similarities can be identified between those periods.

Within studio spaces, in which multi-track recording technologies transformed the dynamics of sessions, the role of the musician was also modified. Instead of being someone knowledgeable and trained in a certain instrument who, with that expertise, determined the progress of the different recording stages, the musician had to adapt to the logic of the machine. That logic was not necessarily aimed at saving time, since live recordings - at least theoretically - needed fewer takes. Recordings on several tracks meant that music consisted of parts to be worked on separately, implying the need for more work and more time in the studio. What really mattered to the studio production model, at that moment, was to transfer part of the responsibility for the final result to the technical mediation, less susceptible to failure and unforeseen events. Elements that were less important in live performance, although present in the daily training of musicians, such as a precise reference to metronomic time, became indispensable to this type of activity. Tempo was no longer agreed by joint negotiation during execution, but imposed impersonally by an unfailing time code-based click.

Thus, when music professionals start to think in terms of "sound", a redistribution of roles and a readjustment of musical practice within a rational production system is required. Especially from the mid-twentieth century on, the major effect of the music production process has been the circulation of "technically perfected" sounds.

Studios recondition the interaction between humans and sound machines. The term "sound machines" references the large number of devices designed to create and modify sounds, many of which are not easily perceived by a lay audience, despite having great influence on the result of recordings. Sound processing peripherals, miking techniques, editing and mixing processes are some of the additional layers of sonic depth that contribute to the construction of a specific sound based on parameters that are increasingly distant from the instrumentalist's technique or the spatial organization of instruments.

Technical knowledge and the technologies themselves function as important articulators of contemporary musical discourse, permeating all processes from composition to live performance. Studio producers are responsible for creating specific sounds, recognizable by

the public and linked to the work of certain artists. Let us consider two distinct figures - George Martin (producer to The Beatles) and Alan Parsons (sound engineer at the Abbey Road studio and producer of Pink Floyd's album *The Dark Side of the Moon*). Martin is seen as someone with great formal knowledge of music (a conductor), responsible not only for the organization of the recording sessions, but also for the orchestrations and for conducting the different instrumental groups accompanying the band. Parsons' designation as "sound engineer" denotes the type of sound investigation he pursues - namely, into the creative potential of sound machines. With the popularization of electronic keyboards, particularly in the 1980s, the importance given to synthesizer programmers highlights the role of technical literacy in the recordings of rock or pop music groups. Nonetheless, both producer perspectives are very important, albeit distinct, in the construction of twentieth century sounds.

Digital tools and technolocolonialism

Many studio professionals were historically self-taught in areas such as electronics and accustomed to repairing or modifying their equipment on their own. With the miniaturization and popularization of portable recorders and digital interfaces, the domain of electrical circuits or electronic components gradually loses importance, giving way to greater pragmatism in the articulation of more concise (and less subject to user intervention) systems. Software becomes the center of the digital studio, both for recording and for controlling other devices. Gradually, technical terms related to digital features such as *quantization*, *sample rate*, *virtual tracks*, and *tones* delineate other practices and other treatments of musical material. Software is thought of as a tool to replace tools, initially emulating the operation of analogue devices before eventually imposing its own logic. The adoption of graphic interfaces that resemble the layout of faders or knobs, or the different physical characteristics of peripherals, is a transition strategy, but one which is still based on a repertoire of knowledge music professionals already possess. The development of communication protocols between machines, such as MIDI, did however foreshadow an increasing autonomy of digital devices from their

human operators. The idea behind this generalized automation is to facilitate proceedings, but at the same time, to standardize a series of practices based on universal platforms.

The General MIDI, or GM, specification was created in 1991 to provide communication among different equipment connected via MIDI protocols. GM worked with a predetermined list of instruments, each of which was required to support 24-voice polyphony, respond to velocity values, and support 16 MIDI channels, presenting polyphony on each channel. The MIDI Manufacturers Association (MMA) and the Japan MIDI Standards Committee (JMSC) proposed a standardized GM specification in which each class of instrument would be associated with a specific channel. For example: various types of piano are situated between channels 1 and 6; organs start from channel 17; guitars start from channel 25; basses between channels 33 and 40; and so on, until the last available channel (128). This aim of this organizational structure is compatibility between MIDI files produced by any instrument and the sounds from different sound modules or VST plug-ins, in order to maintain the original instrumentation of each composition.

Interconnection between machines was seen as revolutionary when the MIDI 1.0 version was presented. However, one recurring criticism of the widespread use of MIDI was that, because it functioned better with keyboard instruments, it would limit the possibilities for working with other instruments. In addition to that, low resolution for the control of parameters such as velocity, pitch and duration was seen as limiting for musicians and producers. Despite all this, MIDI was widely accepted, especially by manufacturers of instruments and other digital equipment. Here is a very enthusiastic description of the functionalities of the protocol published online:

> Instruments and computers made by different companies could easily communicate with each other using this agreed to protocol, simplifying the creative process and giving musicians choice of what instruments to use. If you want to use a Roland or Yamaha keyboard, or an Apple or Microsoft computer, MIDI can work with all of them (Kopf 2020).

Version 2.0 of the MIDI protocol is currently being publicized by MMA as "the biggest advance in music technology in decades", promising a series of improvements, including higher resolution and greater compatibility with different families of instruments, as well as more comfortable reproduction of sounds that do not follow the Western standard. The same online article, commenting on MIDI 2.0, stresses: "We will have more individual control over each note" (Kopf 2020). This means that communication protocols between machines are all about greater control of creation processes. This control, however, meets quite exclusive parameters.

In addition to compatibility between products from different manufacturers, MIDI is largely based on the diatonic-tonal patterns of Western music. Any attempt at creation that avoids the tempered scale presents some difficulties for the composer/programmer. These Western-oriented features can be perceived in the list of instruments associated with each channel; the vast majority are part of the classical repertoire, and the few that are not are inevitably denuded of their unique character in their adaptation to the MIDI protocol. The tool's functionalities are more easily associated with the interests and visions of certain companies than with a de facto freedom of creation. Contemporary digital interfaces (both software and hardware) have become more intuitive, but present restrictions at many levels.

The standardization of digital production modes popularized a specific way of referring to music creation. This form is dependent on both a consolidated aesthetic model (Western tonal music) and a dominant economic model (a transnational global economy). The establishment of a standard for the compatibility and use of equipment promotes creative subjection to the corporations that develop such digital solutions. Dependency on technological solutions was always an issue, especially in developing countries, where there was a major lag between the release of new equipment and its availability. Despite this, the deadline of technological obsolescence was always elastic enough that, even with old equipment, music production in peripheral countries could still be creative and powerful. Additionally, many such countries tried, at some point, to create a local sound equipment industry at the initiative of more highly-skilled musicians

and technicians. Despite the inevitable comparison with international brands, where the technological superiority of the latter is usually highlighted, many such manufacturers have achieved a certain level of acknowledgement. Musician Cláudio César Dias Baptista, guitarist of the Brazilian band Mutantes, who dedicated himself to building instruments and studio equipment with quality comparable to that of the major international brands, is a case in point.

Now, the major problem is no longer about sound equipment dependency. In the case of digital solutions, the dependency on software necessitates a constant renewal of production tools. Compatibility between operational systems or application versions is a key element in stimulating demand for the latest version available. Software is a volatile element, in the main. The manufacturer dictates the need to update, and is the ultimate product owner. The music professional pays a license to use the software, but cannot interfere, adapt or customize more broadly. Direct modification of the architecture of digital devices is in any case much more difficult to accomplish in comparison with analogue equivalents, which makes them in some respects a black box, with very well defined functions, operating with a friendly appearance, but inaccessible to any use other than that previously programmed by the manufacturer.

The generality proposed by the new devices has great difficulties in meeting the specific needs of different cultures or aesthetics. Under the pretext of offering these locality-specific sounds to users in the global community, software companies sell pastiches of sounds from other countries through sample libraries. Sonic pastiche has been used for decades as a tool to expand markets, and Théberge (1997) reminds us that the companies selling these collections of exotic sounds promise a kind of "sonic tourism."

The global character of pop music, despite being praised as a sharing of cultural references between different countries, should be viewed with a little more caution. The inclusion of sound/musical elements from cultures other than those of the Global North occurs asymmetrically. Such elements provide local "color" to a product that is essentially shaped by hegemonic mechanisms. In a circuit of mutual feedback, digital sound machines stimulate certain musical forms

that, in turn, foment the production model of which these machines are also an output.

Conclusion

The weight of the European musical canon has greatly influenced the forms of musical production and recording techniques. However, the technical element, which controls not only the production mechanisms, but also creative flows, represents an even more serious obstacle to diversity of sound/musical manifestations. The structure of the globalized music production process favors a specific type of commodity, stimulating its circulation on a large scale. The use of "exotic" or "ethnic" elements meets the discursive demands of late capitalism, but that practice is also confined by, and must conform to, the vertically defined parameters of transnational conglomerates.

The fetish for technology (especially digital means of production) plays an important role in the dissemination of a specific model of creation. Adaptation to global technical parameters, and consequently to global aesthetic parameters, is a facilitator for the circulation of products within international markets. However, this does not diminish the brutal differences at many levels, including the political, economic and social. On the contrary, the widespread acceptance of technical and aesthetic hegemonic criteria may have the effect of accentuating the inequalities between different global realities.

At the same time, the possibility of production and, even more so, circulation of cultural products is subject to the adoption of universal protocols. Compatibility between file types, compression codecs, number of channels, and many other characteristics is decisive for the global digital model. Even some collective creation initiatives within Internet communities, using applications such as Avid Cloud Collaboration or Ableton Link, end up depending on platforms owned by large software companies.

Contemporary music production technologies that force the entire production chain to repeat the same logic, pragmatic and dependent on solutions developed by large corporations, are manifestations of colonial predominance. The effects of this may compare to those of classical European music and the consequent erasure of local cultures through the centuries, in the countries of the Global South.

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