

The Unknowing Side of the Algorithm: Decolonising live coding from Latin America

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In this article we discuss and critically analyse some colonial assumptions of live coding from the Global North in contrast to the practice of live coding in Latin America (LATAM). To do so, we first look at different colonial problems that arise from different contemporary approaches. This results in a recommendation to consider more complex conditions of power that exist in the Global South and shows how live coding can put into practice greater complexity in the social system of art that could contribute to the structural reinforcement of the *next society*, as well as a critique of the inherited tonality in different *media*. We then proceed to criticise other sound colonial assumptions by using the decolonial praxis-theory from LATAM live coders and propose different forms of sound decolonisation. Finally, we propose a way to reconcile the convergence of interests between live coding in Latin America, the ‘methodology’ of Black studies, and the ‘theory’ of *sonic fiction*. In the conclusion, we pose several critical questions that could serve as the basis for further investigations.

1. INTRODUCTION

While the author won’t die, we might begin to view authorship in a more conceptual way: perhaps the best authors of the future will be ones who can write the best programs with which to manipulate, parse and distribute language-based practices. Even if, as Bök claims, poetry in the future will be written by machines for other machines to read, there will be, for the foreseeable future, someone behind the curtain inventing those drones; so that even if literature is reducible to mere code—an intriguing idea—the smartest minds behind them will be considered our greatest authors. (Goldsmith 2011: 11)

Sound studies in the Global South have been largely neglected, with a disproportionate focus on Western technologies and cultures. According to Feld (2018), 95 per cent of sound studies are dedicated to the West. Similarly, the study of live coding has been largely centred around European and American institutions, as evidenced by most publications on the topic in the conferences and reunions of New Interfaces for Musical Expression (NIME) (where live coding is a boosted practice) (Martinez et al. 2022). Furthermore, in the West, sound has been conceptualised as a secularised autonomous object, isolated from other

senses (Steingo and Sykes 2019: 7) and individualised by the introduction of technological devices in the Western popular culture of the twentieth and twenty-first centuries (Großmann 2008: 123). NIME, in particular, has been characterised by a technological fetishism that prioritises ‘cutting-edge technologies (such as maker processes, high performance computing, machine learning)’ (Morreale, Bin, McPherson, Stapleton and Wanderley 2020: 162).¹ In addition, live coding faces both ‘internal’ and ‘external’ challenges. Internally, it is burdened by the colonial legacy of Western tonal notation. Externally, it is used as a tool to meet the needs of programmers in urban centres, while also affirming a cultural form that presupposes the complexity of algorithms and invisible machines. We will revisit each of these points in further detail.

For these reasons, this article aims to provide reflections on the state of sound and live coding in the Global South, drawing on the praxis of live coder composers from Latin America (LATAM). In addition, we will theoretically analyse the issues surrounding sound and live coding from three main, somewhat irreconcilable, currents, namely *media* theory, *actor-network* theory and *system* theory. We are following the recommendations put forward by auditory culture scholars, who suggest the integration of different approaches, including ‘Discourse analysis and media-theoretical ... include systems theory ... as well as approaches such as actor-network theory, the perspective of the dispositive’ (Großmann 2015: 24) to reveal diverse problematics within the practice of live coding. Our aim is not to cherry-pick concepts to fit our arguments, but rather to demonstrate how different issues become visible through different theoretical lenses. For example, we can consider the categorisation of phonographic/cinematographic media, such as sound carriers and film, as a *second-*

¹This assertion is made by the NIME participants themselves, who also begin to create an incipient identity and unity in relation to the political practice of the same participants. They ask themselves ‘if we’re not bound by capitalistic ideology, why do we as a community have an enduring focus on novelty?’ (Morreale et al. 2020: 163).

order media-technical orality, which both carries cultural memory and enables a modernised abstraction of personal transmission and local culture (Großmann 2008: 124).

In our point of view, the differences between the musical practices of the folkloric Global South and the Global North are not simply a matter of distinct *auditory cultures*, but rather stem from fundamentally different *constitutive logics*. This is the fundamental point of whether we want a live coding that is only anti-colonialist or de-colonialist. In the first case, one's own position would always be defined based on the counterpart, it would be a *derivative logic* as an 'objective relation of borders' (Laclau and Mouffe 1987: 221), and in the second case, not only would the ontological limits of the hegemonic part be rejected and would be shown as contingent, in which there 'are not objective relations but a kind of relation in which the limits in the constitution of any objectivity are shown' (Laclau 2006: 114) but also the elements of a new articulation practice should be completely new that imply extirpating the preceding logic in favour of a *creatio ex nihilo* in which both parties are 'reciprocal subversion of its contents' (Laclau and Mouffe 1987: 221). That is the reason we should construct antagonisms or decolonialisms practices as '*constitutive* and not *derivative*' logics (Laclau 2006: 104–5). Moreover, we can also '[interpret] the system theory in a Left-Luhmannian way' (Mahnkopf 2006: 212)² or not, but what matters is that we leverage complex theoretical approaches to question and comprehend how the Global North is attempting to impose a new logic based on more sophisticated dynamics in shaping the *next society*. In this respect, we will not delve into the similarities or incomparable differences among these theories. Rather, we aim to demonstrate that if we seek to criticise and find alternatives, we need to decolonise all aspects, including the *signal*, the *sign*, and the *Sinn* (*meaning* in English).³

With the preceding objectives in mind, live coding is a very opportune object of study, although we understand live coding not as an object, but as an action 'that people do', in which also sociocultural,

technological, psychological, physiological and cognitive boundary conditions count (Seibert 2016: 12). Live coding serves us as a probe to compare the way in which sound is theorised in the Global North and South. Live coding also allows to look 'at how "global" technologies are localized' (Steingo and Sykes 2019: 14) in the South. We hold that there is *no line of continuity* between the use and praxis of the same technology and programming language in LATAM as in the West. It is therefore about *constitutive logic* and not *derivative colonial logic*. Which is the same as recognising the diversity of sonic ontologies (ibid.: 4) and the *deco-ontologies* of the political praxis of LATAM livecoder groups (Schulze 2020: 81).

2. DE-CONSTRUCTING LIVE CODING

Historically it is said that the origin of live coding can be traced to Cage's contributions, since from then on objects began to be transformed into instruments, which laid the foundations for collective sound and subcultures such as circuit bending and live coding, which consolidated 'DIY (do-it-yourself), DIWO (do-it-with-others), and DIT (do-it-together)' (Salter and Saunier 2020: 417).⁴ The main connection that can be traced in Cage's works is the exploration of new instrumental possibilities of objects and the foundation of the 'scientific-technological-aesthetic hybridity' era, in which he was one of the pioneers. These distinctions between object, inventor and artist, as well as between the social and technical aspects, are blurred by Cage's works. These distinctions will be accentuated even more with live coding, which blurs the composition, instrument and performance distinction (ibid.: 427; Magnusson 2019: 182).

Thus, live coding was originated in the centre of modernity at the end of the twentieth century and the beginning of the twenty-first century as a scientific and interdisciplinary artistic project per se, since it produces music programmed with positions or paradigms of computer science: in which there is a nest between mixed binary machine (the computer) with the symbolic artistic human (Gerloff 2018: 64a). Likewise, live coding belongs to a medial musical practice (as opposed to non-medial ones) (Großmann 1997: 231), because it could be conceptualised as an instrument, as the input of the 'activity of writing [parts of] a program while it runs' (Salter and Saunier 2020: 427) and can create and redefine the instruments at the same time they are played (Magnusson 2019: 245)

²If 'systems theory is interpreted in a left-wing Luhmannian way. As Marx already suspected, one must first have traversed society, grasp it theoretically in its entirety, grasp its logic (its functioning) in order to be able to criticize it immanently' (Mahnkopf 2006: 212) and not just reactionarily reject it for being a theory of Global North. We could learn strategies that subordinates have carried out for a long time ago, such as Apaches. They did not know horses before colonisation and conquistadors acknowledge that Apaches 'are as good or better riders than the Spaniards' (García de Leon 2017: 42). We should use the system theory horse as a Trojan one. All translations from German and Spanish are our own.

³*Sinn* in this sense means the way *soziale Systemen* reproduce autopoietically *meaning* based on the operation of *communication*. There are attempts to reconcile media and system theory (see Barth 2020). For the attempts to reconcile network theory and system theory, see Mautte and Webb 2013, and Braun 2017.

⁴Heinz von Foerster remarked on Cage's transdisciplinary interest in an interview where Cage expressed interest in doing *computermusik* with him and Lejaren Hiller while he was directing the biological computing laboratory at the University of Illinois (2001: 198–9).

but also function as a *media* where the data and information are collected, reproduced and transmitted.

On the other hand, in LATAM, the history of live coding can be traced to the opening of centres such as the Altos Estudios (CLAEM) at the Instituto Torcuato Di Tella (ITDT) in Argentina and to the work of pioneering musicians in the field, such as the Colombian Jaqueline Nova,⁵ who sensed that all the sounds of the world would come from the machines, just like Gilles Deleuze and Friedrich Kittler admired synthesisers as a post-structuralist machine (Großmann 2015:17).⁶

3. DECOLONING THE SIGN

At this point we would like to introduce the political side of live coding that could be overlooked at least generally and explain the political differences between the Global North and the Global South. For example, it is mentioned that live coding in Germany contributes to the consolidation of a technical culture of the urban centres and their increasing need of a supply of programmers (Gerloff 2018: 65a). In this sense the introduction of live coding in the artistic medium functions as a creativity dispositive (Estrada and Agudo 2011: 47), particularly conceived as a creative economy (Gerloff 2018: 65b). So, an affective-perceptual is added to programming languages to integrate it into contemporary digital culture and thus introduce it to commercial social-individual nexus (ibid.: 79a–79b). According to Gerloff, the central objective behind promoting live coding is to conceal the reality that, in practice, programming activity is encouraged primarily to meet the growing demand for skilled workforce in this field, while the discourse emphasizes the artistic aspect of it. As we will see further in the LATAM live coders section, we would partially agree with this.

However, this hypothesis is true in general in the Global North and probably is a way to introduce culturally the programmers by the art system, that is, to introduce the personal figure (and expectations) of the programmer in the society through a *creative device* within the economic context of creative cities so

they are no longer seen as the misunderstood nerds that no one invites to parties (ibid.: 65a). This is something that we agree with but it should at least be nuanced in the case of live coding in LATAM. Regularly in LATAM, the states in the periphery of modernity⁷ cannot even apply the legal abstract code, since the political one predominates, which is blurred in patron/client relationships (Luhmann 2009: 25; Zamorano 2010: 918). The law seen from this perspective works from the stabilisation of expectations using the legal/non-legal code that is coupled with the political system (Zamorano 2016: 310). The problem is that, for example, in Mexico this code is traversed by a series of intermediary institutions such as the figure of the caciques, who are local bosses who ‘control the town’ and ‘caciques ... incite [illegally] violence and the disruption of everyday life’ (Boyer 2019: 24, 90). It is more challenging for them to introduce government dispositive in the Foucauldian sense, that is, in relation to governmentality, which is a power relationship form between an institutional framework and subjectivities, through which subjects could ‘govern themselves’ and therefore become governable. This way of exercising power is more subtle and suggests ‘to structure the possible field of action of others’ (Foucault 2002: 341).

That is why it is more likely to find sonic manifestations, where ‘logics of superfluity and abandonment’ (Steingo and Sykes 2019: 16) of bare life (*homo sacer* as Agamben also calls it (Laclau 2008: 110)) and neo-colonial logic predominate, in which cruder extractivist social formations can be traced than in the centre, where, for example, ‘rivers become spaces of contestation against forms of dispossession and epistemic violence’ (Blackmore and Gómez 2020: 7). In this sense, for the study of live coding in LATAM, more complex contexts must be considered, where different logics predominate and in which social agents may be ‘neither subject to direct rule nor recognised as full members of the states’ system’ (Hindess 2005: 246).

Live coders on the periphery of modernity are not focused on using the latest cutting-edge technology (Martinez Avila et al. 2022: 26). Instead, they intentionally seek out old hardware to repair and repurpose in order to avoid having to purchase new equipment due to limited financial resources. Live coding in LATAM is an act of activism, protest and criticism, seeking to ‘materialize some still imaginary constellation of an implex into actual social progress’ (Schulze 2020: 53).

⁵For Jaqueline Nova, see https://en.wikipedia.org/wiki/Jacqueline_Nova (this and all links from here onwards accessed 10 February 2023).

⁶The idea of a poststructuralist machine follows the *archeological media turn* from Kittler’s theory, now that for him the fundamental element of sound is *noise*, which is left out from any textual discourse because of the use of the *alphabet media* (Haffke 2019: 26). That is why just machines (in this case synthesisers) could grasp the sonic phenomenon and why Kittler thinks that *synthesisers* have since long taken over the *synthetic* judgements of philosophers. (ibid.: 35). Nevertheless, Dirk Baecker points out that ‘Only those who know and reflect on the [media] essay recognise the adventurous liberality of the electronic [and digital] media’ (Baecker 2018: 63).

⁷We use Global South as a synonym of periphery of society (or modernity) or Global North as the centre of the *next society*.

4. DECOLONING THE *SINN*

Live coding functions as a creative dispositive that introduces us to forms of order where the composition of elements from increasingly heterogeneous origins is promoted. One of the main points of the system theory is that societies look for cultural forms to face the surplus of meaning (*Sinn*) provoked by the introduction of a new diffusion media. We need to be cautious because we are discussing the *diffusion of communication*, not in a technical or material sense as we will do later. Moreover, *media* are initially used for storing or supporting society's memory before they are employed as communication diffusion media (such as the Bible's original intention, which the church could not prevent people from reading other materials and comparing them).⁸ Additionally, the art system has the possibility to experiment with uncertainty in a way that other subsystems cannot afford for their selves (Baecker 2007: 88). Following this perspective, art is the only type of communication *media* that could break the normal world references of meaning (*Sinn*) to force it as something possible inside the world (Luhmann 2019: 244). Art function is a type of pivot that simultaneously opens a manifold of *distinctions* that are offered to partake in this perception instantly but then is closed in the further communication of the perception as it must follow a sequential order.⁹

However, the big difference between the past media introduction in society and the introduction of digitalisation, algorithms and in general calculator machines is that the meaning could be elaborated by these machines, and not anymore only 'by people who speak, write, print, send and post' (Baecker 2018: 20). Although it is not clear who exactly is trying to communicate something, or who is writing and who is reading, it is almost impossible to control who the message reaches, under what conditions and with what type of information. The main point of this perspective

⁸Therefore, when language was introduced to tribal societies, creating a *border* between the familiar and non-familiar was invented to cope with the surplus of references. For noble societies, where writing was used as a communication medium with a surplus of symbols, the concept of *telos* reconciled the social strata's ranks. Finally, with the introduction of the press (with the surplus of criticism), the functional systems developed an appropriate cultural form based on the *restless and auto-referential balance* of each subsystem (Baecker 2018: 66–7).

⁹Unlike Kittler, Luhmann believes that art cannot be captured in communication. This is not just because perception is operatively excluded from communicative autopoiesis. Moreover, there is a simultaneity of distinctions in perception that can only be elaborated sequentially by communication or thought. From a communicative standpoint, this can only be done by departing from one side of a distinction but not from both sides or in more than one distinction at a time. Of course, different observers can perceive it differently at the same time. For consciousness, this was also made clear by Husserl, who stated that neither tone nor melody can be perceived: 'but is constituted by the time-fixed abilities of consciousness, which also always only operates in concrete present times' (Nassehi 2019: 76–7).

is that the *next society* or the *network society* which 'by itself: combines things, people and moments that have nothing to do with each other' (ibid.: 70) finds a temporary *form* that consists of a diverse heterogeneity of elements in which the form of synchronisation is the 'disintegration and recomposition of all the elements involved' (ibid.: 83). Live coding as an artistic practice also exploits this form since the building complexity and the self-modification of the programs and algorithms designed to this end challenge the meaning dimensions and blows up the object/ subject distinction, now that, for example, the Neumann logical Betablocker computation 'can be viewed as a companion for live coding that one has the opportunity to get to know, collaborate with, and – sometimes – work against' (Bovermann and Griffiths 2014: 59). This means that live coding not only achieves perceptual heterogeneity as an artistic practice, as discussed earlier with regard to sound perceptions, but also relates a diversity of heterogeneous elements.

Sally-Jane Norman mentions that live coding is comparable to live action programs or real-time arts, which could be thought of as performances too (Norman 2016:118). However, according to some authors, live coding is beyond performative practice, from public performative rehearsals, collective improvisations, or individual explorations of sound as a scientific method (Bovermann and Griffiths 2014: 40). We think that live coding goes beyond performative practices in live action because it uses different times. The time of the computers that transcend bodily-social ones, that is, computational time, since even live coding works on a 'false simultaneity' in which time is treated as data (Villaseñor 2017: 74). What is relevant is not the separation of times, since what makes live coding relevant is how it interacts with social time simultaneously (e.g., when a concert is delayed because the times of the machines do not coincide or because they cannot control a program, and all that remains is to turn off the machine), different to the time of the body – of how quickly the bodily memory of the shortcuts or of the written programming can react to what is heard, the built-in memory (Magnusson 2019: 10). The intertwining of these times (machinistic, physiological, psychic and social) is what makes live coding particularly different from any performative practice such as the theatrical one to which Sally-Jane Norman refers.

Finally, this fascination for invisible machines and displays (Luhmann 1997: 304) is comparable only to the surface of divinatory signals, in that what remains divine are the invisible intentions and the ornamental surface of the deep motivational conditions of art (Baecker 2018: 20). Live coding must therefore question whether the idea of 'complexity' as the cultural *form* of the *next society* (ibid.: 69) is the only one, and how

implementing this kind of *technopoiesis* legitimises, stabilises and supports a social behaviour that functions only as long as it is not subject to inquiry (ibid.: 57). And in this regard, we cannot deny that this practice has attracted a lot of attention since the digitalisation of society has extended into all social areas: ‘digitization in the broader sense of the word . . . is the development and testing of countable and calculable data in the medium of analog contradiction’ (ibid.: 59).¹⁰

5. DECOLONING THE SIGNAL

On the other hand, according to the actor-network theory, live coding could be understood as inscription in the sense of material *Quasi-Objekte* (Luhmann 1995: 81–2), which function as glue holding communication, norms and social institutions together, and not vice versa. According to Latour, ‘scientific fact is the product of average, ordinary people and settings, linked to one another by no special norms or communication forms, but who work with inscription devices’ (Latour 1983: 162); for him, the technology of inscribing is the principal cause of the possibility of the ‘cognitive’ (ibid.) self. In our case, this would mean not only the process of programming, executing and in general coding for sound/musical purposes or within the modern conceptualities of musical abstractions (musicological/ethnomusicological/sociological, including what we are doing now), but also the epistemic possibilities of the artefact’s materiality. This way of seeing live coding as a *Quasi-Objekte* with capacity of non-human agency not only means that it could (and would) transform into a musical instrument itself (Großmann 2016: 382–3), but also that it can be seen as an *epistemic artefact*. This epistemic particularity is exemplified by Magnusson when he talks about the bone flute, in which a subtle theory of pitch organisation is made material (Magnusson 2019: 4–5). It is worth mentioning that non-human agency is not opposed to human agency, as human agency is also material and not just cultural/discursive. The idea of speaking of non-human agency is not only to attribute agency capacity to extra-human actors but also ‘to rethink the notion of agency, and to understand the agential practices through which the human and the nonhuman are differentially constituted’ (Barad 2007: 445–6). On the other hand, ‘there is no consensus on non-humans’ (Ihde 2004: 104–5), although at this point, we refer more to the notion of non-human as a group of associations in which there

¹⁰This happens, for example, when a mail is sent and we hear the ‘wooshing’ sound of it being sent or a picture being taken with a smartphone or the output sound of a vintage drum while writing a code in SuperCollider: ‘These series of contradictory events happening simultaneously—compatible and disjunctive, logical and absurd, present and absent, real and artificial—are evidence of ways in which the infrathin permeates our online lives’ (Goldsmith 2016: 41).

are a greater number of translations and enrolment of its human and non-human elements (Latour 2001: 234). In relation to live coding, the ability of non-humans to behave more as *mediators* than *intermediaries* is of interest (Latour 2008: 63). This characteristic of epistemic artefact opportunely highlighted by Magnusson would let us trace how the tonal system permeates many recording and reproduction *media*, including digital ones. Not only, for example, that the microphones which are supposed to recreate human hearing (since they function similarly to the eardrum in relation to the vibrations caused in its membrane) were created and tested only with the male voice,¹¹ but also that historically all these devices have sought to recreate, imitate and emulate the tonal system inherited from the European culture of musical notation. Thus, for example, melography, in the case of the coded rolls for the automata player, is an adaptation of the ‘tone arrangements’ (Großmann 2022: 86). Similarly, the shaving of phonographic vibrations into bits in the ‘arbitrary code’ of a MIDI data also emulates the Western tonal system.¹² One of the problems of the MIDI protocol is that it divides all sound phenomena into 127 and does not support microtonality,¹³ which represents a very large reduction in sound complexity and excludes many non-Western genres. This scheme of tonal thinking also permeates Artificial Intelligence (AI); for example, the AIVA project, which is an ‘Artificial Intelligence Virtual Artist’ as well as a commercial project. However, the problem with this project is that ‘AIVA does not hear sounds but reads notes or files in MIDI format or in similar formats in which tones are described as events in note parameters’ (ibid.: 88).

The same can be said about digital audio workstation (DAW) programs created by softsynth designers, sample content creators, and audio tool creators from the West that reproduce this tonal system. This situation was very clear for Kittler, who argues that classical music depended on an aesthetic based on and dependent on a specific media and material form (Haffke 2019: 4). Although for him, any artefact that reproduces discrete values, regardless of whether they are phonemes (e.g., typewriter letters as a programmatic binary language), represents the other of the

¹¹This information was taken from a Copenhagen’s seminar, where Jo-Anne Velin’s project *the gendered microphone* was presented: <https://artsandculturalstudies.ku.dk/research/sound-studies-lab/calendar/the-gendered-microphone/>.

¹²Files in MIDI format or similar formats in which tones are described as events in note parameters’ (Großmann 2022: 88).

¹³If one listens, for example, to Lee Morgan’s improvisation on Wayne Shorter’s song ‘Black Nile’, one can hear many ‘out of tune’ notes. This can be heard using programs such as Amazing Slow Downer but it cannot be programmed, since at least a large part of the decisions in improvisations depends on the body-consciousness arrangement and Morgan’s body memory.

noise, of the *jam*. However, we argue that in some cases, if live coding is conscious and avoids reproducing the Western culture or tonal system, it has the possibility of creating from this notion of Klitterian noise (ibid.: 26). As for the persistence of this ballast in live coding, we will discuss this further in the next section.

6. LATAM LIVE CODER'S DECOLONIAL PRAXIS-THEORY OF SOUND

We must also decolonise music/sound theory in general. We should not only think of sound in terms of waves, since it is related to and arises from the notion of energy, which was developed in its beginnings in physics by its petroculture.¹⁴ When sound is studied in science, it is automatically related to the movement of a wave (Holland 2018: 1). When some physicists think about energy, they relate it to the ability to do something and the possibility of reproducing that work (Pielou 2001: 1).¹⁵ The relationship of sound in terms of waves with petroculture may seem counterintuitive, but in physical terms, waves are also *energy* that is transmitted as 'local pressure changes in a medium (usually air)' (ibid.: 188) and energy is defined as work in a circular concept: 'work requires the expenditure of energy, and energy spent performs work' (ibid.: 5). And despite the fact that the energy in the form of acoustic waves in physical terms is usually the residual energy or waste energy of a kinetic energy interchange (as in the case of hammering a nail, most of the energy is transferred from the hammer to the nail until the friction stops it and the sound remaining is a physical effect of that action; ibid.: 189) and cannot be exploited so effectively as other kind of energy sources, the notion of wave as energy indeed is a ballast of the worldview of petroculture.

In this sense, sound must be thought of beyond its physical qualities. This is so also because, on the one hand, sound can not only be thought of as the 'energy of any noise ... proportional to the squares of the heights' (ibid.: 190) that are dissipated in a physical medium, but sound can and should also be thought of beyond its physical properties as something that, in

fact, does not dissipate but 'as a kind of connective tissue, a socio-sonic *accumulation*' (Steingo and Sykes 2019: 16).

As we have shown, in order to decolonise sound theory, at least the relevance of pitch within sound must be removed now that the idea of sound as music is related to 'the dictatorship of notation culture' (Großmann 2008: 123) and represents exercises of power and 'cosmogonic listening' according to live coder composer Laura Zapata (personal communication, 6 March 2021). In fact, Sonic Pi, although an open-source project programmatic environment for live coders, uses presets loaded with European musical tradition, both rhythmical and tonal (Gerloff 2018: 79a).¹⁶ Presets in the strict sense were a factory pre-configuration, the *default* of various technical artefacts (Meerhoff 2018: 137a). Later, at the end of the 1980s, the 'preset' loses its sense of being simply a technical name and becomes impregnated with human, semiotic and cultural intentions. Thus, for example, preset 49 that indicates the 'detroit techno' of a groovebox display is not just a number but is loaded with 'a series of prejudices and rules that are also associated with this word, which has been supposed to denote a genre for almost thirty years' (ibid.: 137b). As shown by Gerloff (2018: 79a), Sonic Pi's presets are loaded with Western music and its hegemonic tonal system, such as electronic music styles, as well as sample timbres from popular electronic culture. These arrangements in Sonic Pi allows beginners to achieve pleasant short-term results in the context of Western-hegemonic popular music culture. Furthermore, Sonic Pi according to Emre Dündar, 'becomes a video game that influenced the music world not in a creative way: since existing contents are used just for changing the places, which in a certain way is yours but in reality, it is a kind of computer game' (personal communication, 25 December 2022). This has further problems, limiting the user because 'the content is prepared by others, the samples and materials, the live coder is limited with these toys: and as average programmer/musician you will be a prisoner of that material' (ibid.). This is why many live coders prefer to program their own presets.

In this sense, live coders from LATAM try to rescue *rhythm*, which is a fundamental aspect that contrasts to some extent with the practice of live coders from the Global North. First, because rhythm contradicts quantisation, it can never be exact data, at least not

¹⁴Petroculture is mainly the way in which regimes extract mainly oil and hydrocarbon but also any form of energy extraction (e.g., nowadays lithium, silver and natural gas). Petroculture strongly permeates 'habits, habitats, values, affects, cultural attachments, subjectivities, and political possibilities in the modern world. Oil saturates modern life' (Williams 2020). The way of understanding sound as a wave (energy) arises alongside this petroculture, from the implementation of physics and other sciences (e.g., mechatronics, engineering) in favor of eighteenth-century industrial revolution.

¹⁵An alternative thinking of energy is presented by Ania Mauruschat, who thinks that Sonic agency is an alternative energy, which could be seen as activating energy and pacifying energy: creating a positive energy atmosphere when a crowd protests against climate change. See www.soundingcrisis.eu/.

¹⁶The same could be said too for most Ableton presets configuration. According to the experience of Turkish composer Emre Dündar, who has worked a lot with Ableton for his compositions, Ableton works like 'a Lego in which the pieces are put, if it is not exploited and its operation is largely known since Music became something that you are putting the objects already prepared from somebody else: like Tetris. These practices are heavily influenced by American and European pop music: since it is clear who the clients are, i.e., the pop producers' (personal communication, 25 December 2022).

easily programmable. Second, the Latin music is nothing quantisable, and if it were quantised, *it would die*, as Emre Dündar recognises: ‘it is slightly humanizing: all bars are equal, in real live music all bars could never be the same’ (ibid.). At this regard, for example, a group of Colombian live coders carried out ‘algorumbas’ seeking to position Colombian folk genres in opposition to the ‘algoraves’ carried out by European live coders steeped in electronic music.¹⁷ In Latin genres, from *son jarocho*,¹⁸ through reggae (Hutchinson 2020: 79–83), such as playing Yoruba *batá* drums (ibid.: 74),¹⁹ rhythm is essential, and tonality is almost completely irrelevant. Not to mention the *neozapatist jungle corridos*,²⁰ which seeks to take advantage of the mnemonic qualities of music, making it an important component of the neo-Zapatista movement. Each of these seemingly simple songs has lyrics that are related to complex events and political episodes of the neo-Zapatista movement, both in terms of its founding and its demands and indigenous heritage.

In addition, another step to decolonise sound would be to think about it in a radically counterhumanist way. The monohumanist, liberal and colonial biocentrism that the concept of human beings has, must be recognised and rejected (Wynter and McKittrick 2015: 38–9). In this sense we should think about the sound also beyond the human correlate and not tie it only to the perception of the biocentric human. Instead, we should think about the thresholds to which the very agency of the sonic phenomenon directs us or follow the instrument rather than the actor (Pinch and Bijsterveld 2004: 639; Steingo and Sykes 2019: 17–18). In such a way, for example, *geontologies* extend the life to many entities such as the rocks ‘Two Women Sitting Down’ and ‘Old Man Rock’ that are catalogued by the original population as alive and in that geotology the life/non-life distinction is extended (Povinelli 2016: 36–44). Also, many animals such as elephants and whales communicate through infrasound or

ultrasounds (e.g., mice, moths, cicadas bats, beetles, corn and corals) that humans cannot hear (Bakker 2022: 2). The Darwinian biocosmogony, defined as the ‘*selection/dysselection* and *eugenic/dysgenic* codes—the *incarnation of symbolic life*’ (Wynter and McKittrick: 2015: 37) must be challenged because the main conception is that we are first biological beings who then create culture, when we have always been ‘*homo narrans*’ first (ibid.: 75, 25).

In this sense, we should not avoid letting people communicate about the listening of machines or any other type of entity from a system theory approach. Indeed, communication can make the perceptions of others ‘accessible’, ‘it can *designate* perceptions, but what it designates remains operationally inaccessible to communication’ (Mahnkopf 1998: 582–3, our italics). Although it talks about them all the time, we must consider it as something possible to unfold and figure it out. As we discussed, playing the *batá* drum involves communicating with the gods and listening to the signals they send back.²¹ Furthermore, one could even deny language itself. Laura Zapata points out that ‘language is like a colonizing technology insofar as it proposes order and orders of thought’.²² If we consider how perception works and how far away is from any *discrete value* (here in the sense of coded communication), it is something that we cannot communicate using language anyway: ‘There’s a whole generation who’re grown used to thinking of sensory emotions without having a language for them yet’ (Eshun, cited in Pelleter 2020: 305).

In the same way that the Mexican live coder Marianne Teixido²³ maintains that the knots, colours, and twists of the fabricate woven by the Incas contain binary codes and data and therefore present an epistemic equivalent practice to the current coding of programmers. This idea is very similar to Schneider’s book *Textiles Prozessieren*, which shows the centrality of the silk weaving trade. Schneider mentions that this craft art form was an early process of information with punched cards, to which,

¹⁷See the participation of Marco Valdivia: ‘Conversatorio 12 de octubre. Nada que Celebrar: Live coding anticolonial y antifascista’, <https://youtu.be/p3C2IjUDbD8> lap time from 30:12 to 34:36.

¹⁸The *son jarocho* that derives from the *fandango* festival is composed from different non-human actants of different provenance such as *jarana* and stage from Spain and African and indigenous instruments and elements. (García de León 2006: 27–42).

¹⁹To play *batá* you should learn 23 rhythms of the Santería, the so-called *oru seco* (it is also called *oro seco*). These rhythms imply the invocation of 23 different deities (Aldama 2012: 22). Playing this drum still implies a connection to Santería religion.

²⁰As an example, see the essay by Lara Mendoza (2022), which offers a historical analysis of the songs of a neo-Zapatista group called ‘los originales de san Andrés’. The *Corridos de la selva*, which are part of the music of neozapatismo, belongs to second world music. This ‘sonic circuitry of socialism’ (i.e., the music from countries that are or were part of socialism) is another field that remains almost totally unexplored by Western academics, except for honorable exceptions (see Hutchinson 2022).

²¹A good example of this attempt is presented by Rolf Großmann in ‘Hören, was die Maschine hört’ (Großmann 2022).

²²See ‘Conversatorio. 12 de octubre. Nada que Celebrar. Live coding anticolonial y antifascista’ <https://youtu.be/p3C2IjUDbD8> lap time from 54:26 to 1:07:00. This idea also coincides with that of Luhmann, who had already pointed out that thoughts are, so to speak, already colonized: ‘Thinking is a performance ... that did not arise as a specific quality of the human being, but as a social performance ... Instead, the capacity of perception is placed beyond the last corner of the construction of thoughts’ (Luhmann 2002: 204). However, we could communicate without language. We can use the sound output as a resource to convince people, change their expectations and invite them to partake in the communication of perception (Baecker 2007: 327).

²³See ‘Conversatorio. 12 de octubre. Nada que Celebrar. Live coding anticolonial y antifascista’, <https://youtu.be/p3C2IjUDbD8> lap time from 35:36 to 42:40.

according to her, digitisation owes its existence (Haffke 2019: 21–2).

7. SOME DECOLONIAL METHODOLOGICAL REFLECTIONS

To decolonise sound and knowledge, it is essential to not make other types of knowledge invisible that are not white, European or scientific (Mota Díaz 2016: 10) and to recognise that we are all *humanoid aliens* (Schulze 2016) who can theorise about sound and this is not just the privilege of academics (Steingo and Sykes 2019: 4). This was also recognised some time ago by academics, because it means acknowledging these *double hermeneutics* (Giddens 2006: 62) and assuming that it is the agents themselves (as have we tried to do in this article, letting the composers to speak by themselves) who decide on the relationship of what is included and excluded and not previous academic decisions (Luhmann 2006: 22), that is to say, the task of scientists must be more humble, and it is up to them to follow the series of associations and substitutions between *human/non-human actants* (Latour 1998: 126) and not decide on them beforehand. To decolonise live coding, it is important to incorporate qualitative methods and apply horizontal methods (Mota Díaz 2016: 26). It also follows some practices of live coding where the power of hierarchies is removed, and where we can talk also about ‘democratic voting systems, mixing algorithms that make sure performers have equal play time, and other playful algorithmic means of challenging established conventions’ (Magnusson 2019: 190). One way to support this is offered by Black studies that see the method as a compilation of ‘narratives, fictions, whispers, songs, grooves’ (McKittrick 2021: 3) in which scientific and non-scientific knowledge are *storytellings*, of which the first represents a *weak objectivity* because it is intrinsically racist and biologically deterministic and is part of the circuit institutions of global capital (ibid.: 7). The second type of story is seen as the practice of Black life that invites involvement, curiosity and collaboration, in addition to representing a *strong objectivity* because it starts from the point of view of the marginalised (ibid.: 7; Willey 2016: 17). In this order of ideas, one of those who developed a *fiction theory* who also makes use of narratives and poetics and rehearses this type of strategy is Kodwo Eshun (Schulze 2020: 85). Eshun developed a direct interaction with structural patterns of sound synthesis and phonographic writing, to which he gave sound design a level of abstraction and a quasi-scientific character. For example, in DJ practice, sounds are investigated, cut, isolated and torn out of the context of their musical tradition, thus capturing their motion (Großmann 2013: 168). One way to

interact with structural patterns is through the *loop*. The loop allows the sound elements to be recontextualised and could be played ‘like, two or three days. . . . When you do something like that, you get to hear all different . . . elements of it that you never really heard before (Akiem, cited in Großmann 2013: 169). On the other hand, the phonographic work refers to the use of second-hand records by hip hop culture (*crate digging*) in which the sedimented cultural forms that are being looked for are no longer tonal (in the Western motivic thematic work) but rhythmic and sound substance that are archived phonographically (ibid.: 170). This practice is like the use that live coders make of sound bases (drum kits, loops and a lot of sound packages from different source) in which structural patterns from various traditions are investigated and then are refunctionalised in a new design. It is in this sense that the DJ becomes ‘*Klangforscher*’ (ibid.: 168).²⁴ Eshun invites us to reverse the theory/practice binary, that is, if we test theories with practices and not vice versa – ‘and the way you can test them out is to actually play the records’ (Eshun, cited in Schulze 2020: 90). This idea can be thought of as an alternative epistemology, in which an experiential constellation and mixtures can be expressed by their own actors (ibid.: 98).

8. CONCLUSIONS: LIVE CODING IN LATAM AS SEARCH FOR AN ALTERDESTINY

Although we tried to highlight the negative and unknown side of the algorithm, not everything is lost. Music/sound programs such as SuperCollider, Max or Python allow programmers/musicians to create their own sonic worlds, their own *sonic fictions*.²⁵ For LATAM live coders, these sonic fictions implies a political practice, as Laura Zapata says, ‘live coding is the baby of hacktivism: it bets on technology, and free access software; necessarily, one who does live coding has a political stance’ (personal communication, 6 March 2021).²⁶ This sonic fiction also implies reaching an AlterDestiny that involves a political position, now that sonic fiction points out ‘*the infinite task of cultural decolonization*’ (Schulze 2020: 77, italics added). This AlterDestiny comes from the desire to imagine a different society that involves the ‘sensibility of implexes’, which could work with the use of fiction in different concepts (ibid.: 53). Live coding could also

²⁴In English, *Klangforscher* means ‘sound researcher’.

²⁵Also Spawn the AI baby from Holly Herndon presents an artistic way of interacting and connecting with the artistic practice of a particular individual. For more about this project, see www.hollyherndon.com/.

²⁶Live coders have already implemented the use of algorithms to generate *counter-bots* to, that is, control access to chats discussion or ‘to prevent tracking some data such as date or time of their private chats’ (note field of a chat from ‘Toplap Bogota’ in Telegram).

let us imagine a new and more inclusive sonic world that is implicitly negated by white non-inclusive aurality European practices (ibid.: 63–4).²⁷

Live coding has a disruptive power because it finds new ways to share culture and sonic concepts that is constantly reworking in its character as an epistemic artefact. Live coding as epistemic artefact, as way of storing, reproducing, self-sabotaging and regaining sound, could also be seen as ‘capable and versatile enough to indeed carry valid messages, artistic performances and cultural representations’ (ibid.: 66). Such practices, so ‘apt for travelling and cultural exchange’ (ibid.), also present numerous sonic possibilities, as well as non-sonic ones for connecting people, places and cultures. This fact means that we should not assume that live coding just represents a sound-artistic paradigm but that it could also unfold a new auditory cultural political practice. As we propose in this article, the way to do this is by avoiding the hegemony of the pitch and focusing on the rhythm or whatever entity it is proposed by the cultural sound practice. This could be achieved by learning by hearing, as Libertad, another Mexican live coder composer describes it:

I don’t think much when playing ... I listen more than I think ... I listen to them and then I try to locate myself at some point sonically based on what I had already worked on before ... From what I already know that I bring, that I already know how it sounds, I try to locate it. (Villaseñor 2017: 66)

As Rachel Cusk said, ‘I had found out more, I said, by listening than I had ever thought possible’ (Cusk 2018: 243). Sonic fiction should function as an ‘auditory (de)ontological test balloon’ (Pelleter 2020: 397).

Finally, live coding can be seen both as a medium and as a message. Or like the famous cited quote of Marshall McLuhan ‘the medium is the message’ or as Friedrich Kittler put it, ‘The content of a medium is always and strictly ... another medium: in the case of the typewriter the handwriting, in the case of the feature film the novel, in the case of the gramophone the voice and in the case of entertainment radio the record industry’ (Kittler 2002: 14). In our case, is live coding an artistic co-product of the introduction of coding in the acceleration digitalisation of the *next society* and its surplus of *control*?²⁸ Is live coding in LATAM a

medium of political contestation of the destructive, neo-extractivism and neo-colonial logic in the *next society*? Should the live coding in LATAM be the *antagonism noise*, the *jam à la* Friedrich Kittler, and avoid focusing on the symbolic part of the live coding, instead focusing in the sonic fiction output that it involves and keep blurring everything as an the infinite task of decoloniality?²⁹ ‘blurring the traditional performer–audience spatial divide ... blur most concepts of established musical discourse, such as composer, performer, and audience; instrument, score, and piece; composition, performance, and improvisation; stage and auditorium; and instrument and tool’ (Magnusson 2014: 14)? These questions and inquiries should be addressed in further investigations. This small article tries to contribute to the live coding discussion and to go beyond the European experience’s usual provisionalisation and experimentalisation of sound/technical phenomena.

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²⁷Another way to do it, according to Schulze, is by relativizing through the notion of *medial culture* because that way the provincialisation of non-European experiences is avoided: which would avoid presupposing a colonial logic, see <https://youtu.be/RRBkyUnRgkQ>.

²⁸As we showed with regard to *supra*, the problem with electronic and digital *media* is no longer the surplus of *reference* (language), the surplus of *symbols* (writing), nor the surplus of *criticism* (printing) but the *control* surplus through memory, networks and computer algorithms (Baecker 2018: 54).

²⁹Just like the Black jazz musicians did when they invented the free jazz, which was the latest rebellion against the pop culture appropriation of Black jazz by a dominant white America (Baecker 1996: 145).

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