



HAL
open science

Ubiquitous Music, Gelassenheit and the Metaphysics of Presence: Hijacking the Live Score Piece Ntrallazzu 4

Marcello Messina, Luzilei Aliel

► **To cite this version:**

Marcello Messina, Luzilei Aliel. Ubiquitous Music, Gelassenheit and the Metaphysics of Presence: Hijacking the Live Score Piece Ntrallazzu 4. CMMR 2019, Oct 2019, Marseille, France. pp.685-695. hprints-02321040

HAL Id: hprints-02321040

<https://hal-hprints.archives-ouvertes.fr/hprints-02321040>

Submitted on 20 Oct 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Ubiquitous Music, Gelassenheit and the Metaphysics of Presence: Hijacking the Live Score Piece *Ntrallazzu 4*

Marcello Messina¹ and Luzilei Aliel²

¹ Federal University of Paraíba, João Pessoa PB, 58051-900, Brazil

² University of São Paulo, São Paulo SP, 05508-020, Brazil

³ Amazon Center for Music Research (NAP), Rio Branco AC, Brazil

Abstract. Originally composed by Marcello Messina, *Ntrallazzu* is a cycle of pieces for live score and electronics built on Max, and involving various instrumental line-ups. In particular, *Ntrallazzu 4* was performed by Luzilei Aliel on the *pifano* and electric guitar in São João del Rei during the VIII UbiMus workshop. Aliel's particular setup also involved a further layer of processing: namely, the usage of Pure Data alongside Ableton Live in order to literally hijack the original piece and open a whole set of unforeseen possibilities that abundantly transcend the original intentions. In this paper, we signify our experience by means of the concept of comprovisation, while we situate *Ntrallazzu 4* within the domain of ubiquitous music. Furthermore, we make use of the Heideggerian concept of Gelassenheit and of the Derridean concept of Metaphysics of Presence (as reformulated by Joseph Pugliese) in order to make sense of the piece.

Keywords: Comprovisation, Live score, Gelassenheit, Metaphysics of Presence.

1 Introduction

The research in ubiquitous music (ubimus) provides theoretical and methodological alternatives to proposals focused exclusively on the concepts and technological adaptations of acoustic instruments. It is important to highlight important applications in the educational field, including activities aimed at formal education (Keller, Lima, 2018, Lima et al., 2018) and the development of support strategies for musical activities in informal spaces (Ferreira et al., 2015; Keller, Lima 2016). The results of ubimus research indicate ways to overcome the obstacles in knowledge transfer in the context of activities that involve participants devoid of musical training. Another approach that has received renewed attention in ubimus research is the use and implementation of technological infrastructure outside the traditional spaces for musical making (Pimenta et al., 2012, Schiavoni et al., 2018). Among the new applications of this strategy, we can mention the works that use DIY methods to develop control mechanisms and audio processing that previously were only accessible in studio (Lazzarini et al., 2015). Recently, there have also been advances in the incorporation of the Internet of Things into musical activities (Keller; Lazzarini, 2017). Finally, a ubimus approach that can contribute to artistic achievements involves the implementation of concepts and methods based on the perspectives of

ecological cognition (Gibson, 1979; Hutchins, 2010;). This perspective encompasses the production of works involving the active participation of the audience (Basanta, 2010; Keller;Capasso, 2006), the creative use of local resources through technological support (Burtner, 2005; Gomes et al., 2014) and the use of instrumental sound sources (Aliel et al., 2015, Connors, 2015, Nance, 2007). However, there is a field of application - at the border between improvisatory practices and methods based on ecology - that still presents conceptual and procedural challenges. This field has recently been defined as the evidence-based practice linked to ecological cognition (Aliel, 2017; Aliel et al., 2015).

In this work we will focus on this last aspect of ubimus research, that seeks to transcend the rigid separation of roles and social practices in which (Western) music can be practiced and understood, considering the use of technological devices that have the potential to guarantee universal access to the production and consumption of music. This problem is linked to the acoustic-instrumental paradigm, that will be discussed in more details in the next subsection. In this context, Keller et al. illustrate their perspective on ubiquitous music:

Previous musical practices provided the safe refuge of instruments as the physical support for all sound producing actions. These actions could be encoded as a series of discrete symbols - a score - which would guide the performers through a finite set of possible interactions with their instruments. Performances would occur within a space especially designed for musical activities - the concert hall - guaranteeing acoustic characteristics compatible with instrumental sound source power and projection. Furthermore, a crisp separation between performers and public, following an established ritualized set of actions - play / listen, bow / applaud - reinforced by the physical separation between stage and audience seats, allowed for strictly predefined roles in music making: musicians play, spectators just listen. Most of this social paraphernalia breaks down in the context of ubiquitous musical practices (Keller et al. 2010, p. 320).

In *Nitrallazu 4* we try to relate compositional structures with the adaptive processes made via improvisation, and to conceptualize how this type of ubiquitous artistic practice can help to alleviate the impact of this segregative "ritual" associated to the artist/audience model and the acoustic-instrumental paradigm. However, it is necessary to understand how the acoustic-instrumental paradigm occurs.

1.1 Acoustic-Instrumental Paradigm

Etymologically, the term "paradigm" originates from the Greek *paradeigma* which means a model or pattern, corresponding to something that will serve as an example to be followed in various situations. The social norms that regulate the behaviour of any human group set precise limits and determine how each individual should act within those limits. Often, paradigms are established as dogmas that can be transmitted for political reasons, or that in some cases are used in human interactions to increase social cohesion. In the specific case of the acoustic-instrumental paradigm - cf. critical discussions in Bown et al. (2009), Keller (2000), Keller (2014) and Lima et al. (2018) -, this is a normative and substantially Eurocentric concept that has a dramatic impact on creative musical practices. In this way, creative agendas focused

on the objectives of instrumental practice, relegating to a second level the cultural manifestations that were perceived as being external to this type of practice (cf. critical discussions in Bown et al., 2009; Keller, 2014). This conceptualization induces, at least in a large part of individuals, an understanding of music making as being limited to a few talented and formally trained individuals. According to Wishart (2009), the use of technology has become essential to the pursuit of creative products based purely on sound, fostering a view of music focused on the acousmatic phenomenon. However, the construction of tools centered on instrumental models tends to reduce interaction strategies based on the exploration of the potential of sound, limiting the possibilities of action to interfaces that emulate acoustic instruments. It also limits the use of local material resources in aesthetic decisions, as it imposes the production of contents that may be not necessarily related to local social, cultural and historical contexts. Emphasis is placed on the software, system and machine embodied in the instrument. The digital musical instrument thus becomes a new fetish. Technological resources serve as accessories for old acoustic-instrumental practices focused exclusively on the aural properties of the instruments.

Taking this problem as a starting point, we propose the critical use of Heidegger's concept of *Gelassenheit*, as adapted to sound practices by Aliel et al (2018) in order to construct a significant speculative basis to understand the proposed processes in *Ntrallazzu 4*, and the ways in which we can transcend the paradigms mentioned above.

1.2 **Gelassenheit**

In an attempt to explore alternatives to the acoustic-instrumental paradigm, we will seek a theorization of the philosophical concept of *Gelassenheit* for the field of musical practices. *Gelassenheit* is a term coined by Heidegger (1966). Its literal translation would be something like "serenity", but Heidegger's formulation transcends the literal meaning of the word. What Heidegger proposes is that *Gelassenheit* is a stage to be achieved through an openness to new forms of thought. In this wake, the author proposes two thought-forms: 1. Calculating thinking, which is understood within a "scientific-artistic method" with the purpose of measuring, collecting data and reproducing results. According to Heidegger, the use of new technologies is centered on calculating thinking. 2. Meditative thinking, which is the aptitude to be open to unpredictable actions, to unexpected events, and to mystery itself (Heidegger, 1966). From an artistic perspective, Aliel (2018) considers this last behavior as a process of adaptation and modification within self-reflective strategies (Donald, 2006). In this way, meditative thinking is not uniquely bound up with the product (as in calculating thought-form), but it is focused on experience in a particular way.

It is with this kind of unique experience that disparities - both in terms of technical means and of consolidated knowledge - are reduced, allowing a greater socialization of artistic practice. Adaptabilities generate products, but these come from the openness of agents towards moments of unpredictability and the provision of

reactions to these new contents. When we deal with this concept, that goes beyond the essence of calculative thinking, we try to find specific moments in the creative process (detouring, Keller and Lazzarini, 2017) where control is eliminated or reduced, enabling unpredictable conditions.

The etymology of the term paradox is based on the Greek *paradoxon*, also found in the late Latin word *paradoxum*. The word is composed of the prefix *para-*, which means "contrary to," "altered," or "opposed to," in conjunction with the nominal suffix *-doxa*, meaning "opinion". In creative practices, Aliel (2018) conceptualizes paradoxes as simulacra, considered as means to understand acoustic-instrumental paradigms as a process of adaptation to new behavioral/environmental conditions, stimulating greater possibilities of material resources.

Therefore, the objective would not be increasing technical or methodological efforts in order to guarantee the exact repetition of what was planned (as in instrumental virtuosity - simulation), but rather offering significant references in a way that each agent can find their artistic singularity (simulacrum), be it coextensive or not with traditional artistic processes (Costa, 2016).

In short, as an alternative to calculative thinking, we propose to adopt Heidegger's path of meditative thinking in order to generate paradoxes that place the decision-making process outside the acoustic-instrumental paradigm (Aliel et al. 2018). The absence of control acts as impetus to arrive at unexpected results, placing the artist in an atypical frame of possibilities and forcing them to adapt their behavior to new, previously non-existent contexts. Thus, with the absence of control, the artist acquires space to introduce divergent conceptions of the expected results within their preexisting knowledge.

The reflection on calculating thought as generator of resources based on explicit knowledge and on meditative thinking as a procedural strategy that uses elements of calculating knowledge allows for the incorporation of *Gelassenheiten* into creative cognitive-ecological practices, coextensive with *ubimus* research. However, one of the problems would be: how can artists exploit material resources by fostering playful strategies for discovering significant artistic materials? The question is complex because it pushes creative practices out of the tradition of acoustic-instrumental thinking. The association between acoustic instruments and musical structures makes the experience more familiar to musician-instrumentalists. Schiavoni et al. (2018) cite a phrase by Trueman comparing the orchestra of acoustic instruments with the orchestra of laptops and arguing that "even though it is somewhat different, its goal is not at all different from a traditional orchestra in what concerns to musical ability." In addition to the literal transcription of acoustic instrument interactions, the orchestras reproduce the layout of the Italian stage, emphasizing the separation between creative participants (the musicians) and the passive audience (Princeton Laptop Orchestra or Stanford Laptop Orchestra) which reproduce the same model.

In summary, we propose the adoption of *Gelassenheit* within the field of creative cognitive-ecological practices aligned with the proposals of the *ubimus* research. This concept involves several components that can be thought of as factors linked to creative practices, encompassing cognition, materiality, social organization and the use of computational resources. If the *ubimus* proposals can serve to advance the

musical concepts in parallel with the technological advances, it is necessary to reconsider and alleviate the hegemony of the acoustic-instrumental paradigm. As shown by various projects based on the ecological approach, the riddance of such a paradigm does not imply the exclusion of acoustic instruments as musical tools or as sound resources (Aliel et al., 2015, Connors, 2015, Nance, 2007)

2 *Ntrallazzu*

Composed by Marcello Messina, *Ntrallazzu 4* was performed by Luzilei Aliel on the *pifano* (Brazilian traditional fife), electric guitar and audio processing (delay, reverb, granular synthesis, resonators and etc). The performance took place at the Universidade Federal de São João del Rei, in Brazil, during the VIII UbiMus - Eighth Workshop on Ubiquitous Music, on 14 September 2018 (Messina and Aliel, 2018).

As suggested by its very title, *Ntrallazzu 4* is the fourth instance of a cycle of pieces, all titled *Ntrallazzu*. In Sicilian, the word “ntrallazzu” refers to the practice of smuggling locally produced state rationed crops during World War II: this was a practice of resistance criminalised by the Italian authorities, that was aimed at contrasting indigence in Sicily. By establishing micro-patterns of interaction between themselves and with the live electronics, the performer(s) of each piece of the *Ntrallazzu* cycle symbolically reproduce(s) the secret exchanges that disobeyed a violent regime of state control and punishment over the lives and means of subsistence of the islanders. After WW2, the Sicilian term, literally denoting this type of illegal resistance from below, has been substantially emptied of its original meaning and Italianised in the form “intrallazzo”, that at nationwide level refers to political corruption and bribes (Di Capua, 2005. p. 305).

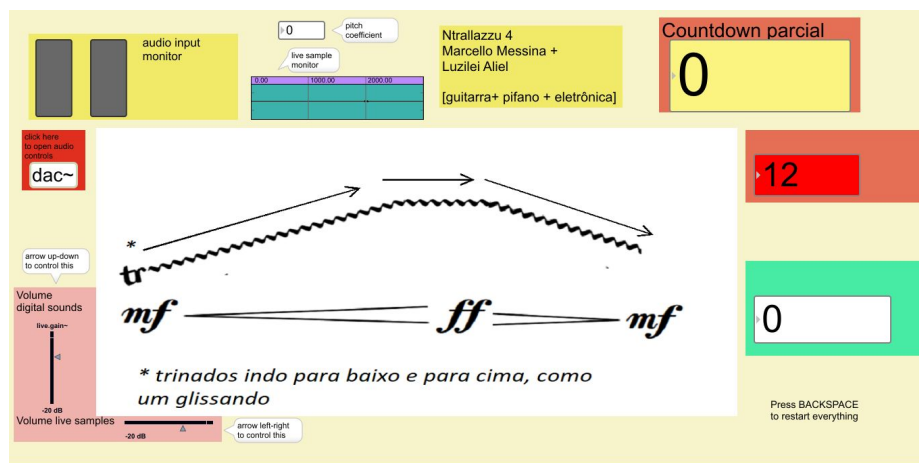


Fig. 1. A snapshot of the general GUI that is presented to the performer in *Ntrallazzu 4*

All the pieces of the *Ntrallazzu* cycle are based on a projected score that interacts in real time with the material played by the performer(s). While one of the performers plays, the sound is fed to and processed by patching software, and generates both electronic sounds and a score composed of preloaded graphical fragments, which is generally, but not necessarily, to be performed by a second player. Both the live score and the electronics run on Max (fig.1).

2.1 Metaphysics of presence

Intrinsic to the patch algorithm of *Ntrallazzu* is the very simple detection of instrumental sound and the discardure of background noise coming from the room and the audience. In this way, through simple operations of calibration, the patch crystallises some of the very discursive binaries that, in other ways, *Ntrallazzu* as a cycle intends to challenge and question. By calibrating the patch in order not to interact with the “accidental” sounds produced by the audience, the piece explicitly confirms the operativity of these binaries: namely, sound vs. silence and instrumental sound (wanted) vs. background noise (unwanted), hence marking the fundamental border between performers and audience.

Furthermore, the live score is triggered by sonic activity from the instrument(s), and ends once they stop playing. Now, this is a rudimentary form of biometric detection that boils down to a recognition of the “living presence” of the performers, as well as a detection of their disappearance once they stop playing. This reliance on what Joseph Pugliese, after Derrida, calls “metaphysics of presence” (Pugliese, 2014), is potentially very problematic, both theoretically and practically. How can one distinguish physical “presence” from “non-presence” if the detection is based on electronic impulses that might well simulate the two states? Is it not always already a simulation that is at stake? In this sense, how we distinguish real simulation from fake simulation? All this, in practical terms, makes *Ntrallazzu* always vulnerable and somewhat unstable, a characteristic that is definitely a distinctive part of the piece.

Finally, and taking another cue from Pugliese, we need to acknowledge that the bodies of the musicians have “already been technologised” (Pugliese, 2014, p. 665) before the biometric detection operated by the patch. First, that is because the human/instrument combination is a fundamental interaction that is already technological, and that, in the narratives that inscribe (Western) art music, traces a fundamental border between musician and listener. The instrument, here, awards access to some subjects while simultaneously preventing everyone else from accessing music making. More in general, the a priori “technologisation” that marks the bodies of the musicians even before the addition of live electronics might be understood as part of what Pugliese & Stryker call “somatechnics” (2009), that is, the intersection between the body as a physical, natural object and the very same body as a discursive, biocultural artifact that is always determined socially. Somatechnics makes the task of detecting physical presence through physical sound even more problematic, and confirms that *Ntrallazzu*, as a work of art, remains a highly fragile and unstable construction.

2.2 The performance of *Ntrallazzu 4*

Of the five pieces that compose the cycle so far, *Ntrallazzu 1*, *Ntrallazzu 2* and *Ntrallazzu 5* call for a duo, whereas *Ntrallazzu 3* and *Ntrallazzu 4* call for a single performer. In *Ntrallazzu 4*, however, Aiel played both the *pifano* and the electric guitar and, thanks to a specific use of the effects, managed to maintain the feeling of an interaction between the two instruments. Initially the proposal of *Ntrallazzu 4* is to capture ambient sounds, be them instrumental/noise and/or related aural inputs, in a generic way, considering intentional and unintentional actions by various agents, such as performers, audiences and the like. This premise creates a condition of sound reception and transformation into notation (as explained in section 2.1). The performer/comproviser, however, added another layer of information feedback, creating a secondary path to the resulting sound, in a way to "hack" the first system.

For a field of improvisation, used in the performance approach of *Ntrallazzu 4*, it was necessary to define guideline plans and contingency plans (Aiel, 2017). Guideline plans are rules or definitions that are not likely to be modified during the performance: that is, from a musical perspective, the composition; or, from a computational perspective, the algorithm. In *Ntrallazzu 4*, a second technical feedback system was used to create more complexity and allow for unexpected elements (*Gelassenheit*), as observable in some artistic works stemming from discussions on grounded creative practices (Aiel, 2018). Aiel curated the creation and organization of the original patch and introduced a new patch on Pure Data (PD) that connects via *jackaudio* to Ableton live software. In this way, two microphones are positioned next to the speakers that reproduce the original signal of the *Ntrallazzu 4* patch; this signal is then transductively transformed into MIDI protocol language, via the [ftom] - (frequency for MIDI) object in PD. Obviously, the resulting algorithm is not limited solely to this object, however it constitutes its fundamental axis: its structure is based on signal captured via pitch detection, similar to the procedures found in digital tuners. With the numeric MIDI data, the transformation is subdivided into four channels controlled by a stochastic algorithm that addresses each channel for sound processing in Ableton Live. That is, during the performance there is no knowledge about which sonic processes will be applied, since the entire process is randomly controlled by the machine, introducing aspects consistent with the *Gelassenheit* strategy (Aiel, 2018).

In the guideline plan, Aiel considered the organization of the original *Ntrallazzu 4* patch and introduced a new Pure Data (PD) patch that connects via *jackaudio* with Ableton live software. Briefly, the PD patch captures the sounds reproduced in the amplifiers of the first *Ntrallazzu 4* patch and transforms the signal into MIDI protocol. This transformation is subdivided into four channels that are controlled by a stochastic algorithm that addresses each channel for processing in Ableton Live. That is, during the performance there is no knowledge about what types of processing, whether involving pitch or types of dynamics will be reproduced, as the whole process is randomly controlled by the machine.

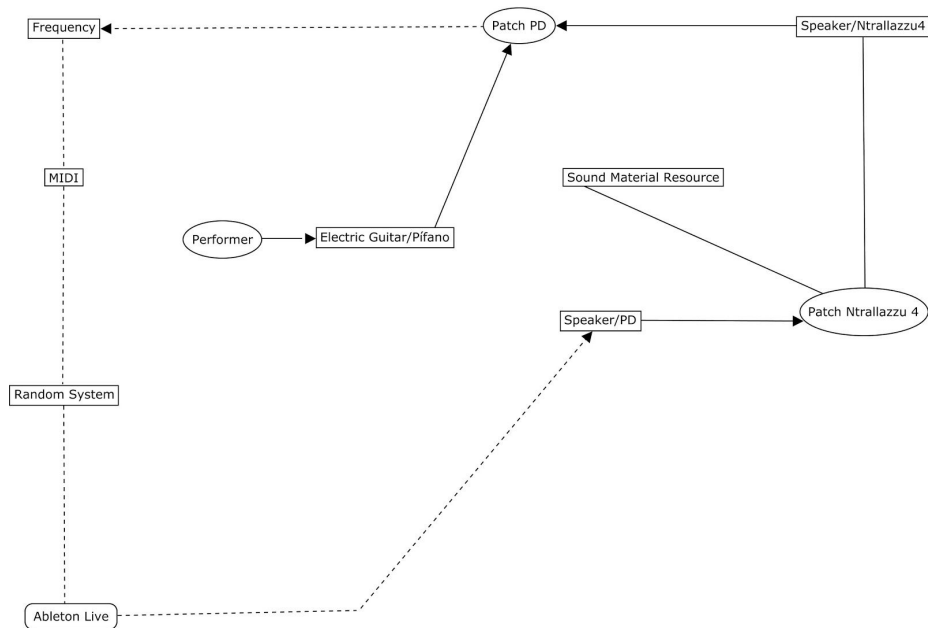


Fig. 2. Flowchart of the *Ntrallazu 4* improvisation system

On the other hand, the contingency plans of *Ntrallazu 4* are limited to the process of "hacking" and adaptation to the constructed systems. Contingency plans in compositions refer to elements that are not previously organized and must be solved at the moment of performance: in musical structures this is associated with improvisation, while in computational structures it is associated to complex dynamic systems, or stochastic resources. In *Ntrallazu 4*, the adaptation process consists in dealing with the overlapping of feedback layers. At each new sound layer, two distributions are conducted separately but provide parallel effects. While a patch uses the data captured to generate musical notation content (score) the other patch uses the transduced information to select the audio processing. The contingency process therefore involves the adaptation of the performance to notation and loudness events, and must be "solved" in real time. It is important to point out that with each new adaptation of the performer, a new layer of sound information is introduced to the system, allowing for a change with a greater or lesser impact on the final result. Ultimately, the machine participates in the work effectively. In the contingency plan, Aliel handles multiple textural layers, some of which are more easily recognizable, while others become fully diffused. This lack of standardization requires a high level of openness to events by the performer, and the acceptance that the final material may be very different from that imagined by the composer.

3 Final Remarks

In all the pieces of the *Ntrallazzu* cycle, the “biometric detection” of the presence and absence of the performer(s) is always at risk of either being disrupted by unpredictable circumstances, such as audience noise, etc., or of being deliberately simulated or dissimulated by the musicians.

In *Ntrallazzu 4*, however, disruption is taken to a further level, in that the original piece, with its set of functional and aural predictions, is literally hijacked by the performer/comproviser and fed to a whole set of new processings, therefore opening a wide range of unforeseen possibilities. This resonates again with ubiquitous music and with the transcendence of the rigid separation of roles (in particular, composer vs. performer) and social practices on which (Western) art music is predicated, through the use of technological devices that have the potential to grant universal access to the making and consumption of music.

Situating *Ntrallazzu 4* and the whole *Ntrallazzu* cycle as ubiquitous music also involves assessing the ways in which they blur the separation between performers and audience by projecting the score and letting spectators appreciate the interaction. In this way, the “mysterious” ritual of score reading, that is normally negotiated among the performers, is opened to the general public. Importantly, this is not “any” score reading, as the live score involves a high degree of unpredictability that may engage the performer(s) and audience in a sort of “interpassive” interaction (Reuben, 2014). In turn, this allows for a mitigation of the strict protocol of ceremonial actions such as bowing and applauding, as the score flags the end of the piece, leaving no room for surprise awkward doubts.

Ironically, of all the various circumstances in which pieces of the *Ntrallazzu* cycle were performed, it was precisely on the occasion of the performance of *Ntrallazzu 4*, reiteratively, during the VIII UbiMus workshop, that this strict protocol was implicitly reestablished by the coercive – if bona fide – action of a sound/video technician. Once he saw fragments of a score on the screen, the technician decided to turn off the projection in the middle of the performance. Supposedly, even in that context, the “mystery” of score reading was deemed to belong too exclusively to the performer, in a way that any form of audience participation in the process was unmistakably categorized as an error.

Just to clarify, disruptions such as this one are to be intended as an integral part of the “experimental” rubric that inscribes this piece as well as its technical preparation, compositional process and performance-oriented training. In this sense, the fact that the projection was arbitrarily interrupted does not represent a sort of “failure” of the piece – on the contrary, it proves one of the fundamental points made by the piece itself. Furthermore, if on the one hand the interruption of the projection seems to undo precisely the philosophical premises on which ubiquitous music is predicated, on the other hand, as the deliberate intervention of an agent that exists outside the composer/performer dyad, it may also be categorised as a form of “breaking down” of

the “social paraphernalia” that characterize traditional musical practices. In general, unexpected disruptions are a fundamental part of the whole *Ntrallazzu* cycle.

References

1. Aliel, L. Ensaios sobre improvisações em ecologia sonora: Perspectivas práticas e teóricas. Dissertação de Mestrado em Música. São Paulo: USP, 2017.
2. Aliel, L.; Keller, D. & Costa, R.: Comprovisation: An approach from aesthetic heuristics in ecocomposition (Comprovisação: Abordagens desde a heurística estética em ecocomposição). In: *Proceedings of the Brazilian Symposium on Computer Music (SBCM 2015)*, 169-180. Campinas, SP: SBC (2015).
3. Aliel, L.; Keller, D. & Costa, R.: Theoretical perspectives for the analysis of ecologically grounded creative practice (Perspectivas teóricas para a análise das práticas criativas ecocognitivas). In: Damián Keller, Helena Lima (eds.), *Ubiquitous Music Applications (Aplicações em Música Ubíqua)*. São Paulo, SP: ANPPOM (2018).
4. Basanta, A. Syntax as sign: The use of ecological models within a semiotic approach to electroacoustic composition. *Organised Sound* 15 (2), 125-132, 2010. (Doi:10.1017/S1355771810000117.).
5. Bown, O.; Eldridge, A.; McCormack, J. Understanding interaction in contemporary digital music: From instruments to behavioural objects. *Organised Sound* 14, 188-196, 2009. (Doi: 10.1017/S1355771809000296.).
6. Connors, T. M. Audiovisual Installation as Ecological Performativity. In: *Proceedings of 21st International Symposium on Electronic Art (ISEA 2015)*. Vancouver, Canada: ISEA, 2015.
7. Costa, V. F. *Morfologia da Obra Aberta: esboço de uma teoria geral da forma musical*. Editora Prismas, Curitiba, 2016
8. Di Capua, G. *Il biennio cruciale (luglio 1943-giugno 1945): l'Italia di Charles Poletti*. Rubbettino Editore, Soveria Mannelli, (2005)
9. Donald, M. *Art and Cognitive Evolution*. In M. Turner (ed.), *The Artful Mind*. Oxford: Oxford University Press, (2006)
10. Ferreira, E.; Keller, D.; Farias, F. M.; Pinheiro da Silva, F.; Lazzarini, V.; Pimenta, M. S.; Lima, M. H.; Costalonga, L. L.; Johann, M. *Marcação temporal em ambientes domésticos e comerciais: Estudo comparativo*. In: D. Keller; M. A. Scarpellini (eds.), *Anais do Simpósio Internacional de Música na Amazônia (SIMA 2014)*, Vol. 2. Rio Branco, AC: Editora da UFAC, (2014).
11. Gibson, J. J.: *The ecological approach to visual perception*. Boston, MA: Houghton Mifflin (1979).
12. Heidegger, M. *Gelassenheit*. New York, NY: Harper Collins, 1966.
13. Hutchins, E.: *Cognitive ecology*. *Topics in Cognitive Science* 2 (4), 705-715 (2010).
14. Keller, D. *Compositional processes from an ecological perspective*. *Leonardo Music Journal* 10, 55-60,. (Doi: 10.1162/096112100570459).(2000)
15. Keller, D. *Characterizing resources in ubimus research: Volatility and rivalry*. In: *Proceedings of the V Workshop in Ubiquitous Music (V UbiMus)*. Vitória, ES: Ubiquitous Music Group, 2014.
16. Keller, D., Barreiro, D. L., Queiroz, M., Pimenta, M. S. *Anchoring in ubiquitous musical activities*, in *Proceedings of the International Computer Music Conference*, University of Michigan Library, Ann Arbor, 319-326 (2010).

17. Keller, D.; Capasso, A. New concepts and techniques in eco-composition. *Organised Sound* 11 (1), 55-62, 2006. (Doi: 10.1017/S1355771806000082.)
18. Keller, D.; Lima, M. H.; Práticas cognitivo-ecológicas em Ubimus: Sons do CAP. In: *Anais do Workshop em Música Ubíqua (UbiMus 2018)*. São João del Rei, MG: UFSJ. (2018).
19. Keller, D. & Lazzarini, V. Ecologically grounded creative practices in ubiquitous music. *Organised Sound* 22 (1): 61–72, (2017).
20. Keller, D.; Lima, M. H. Supporting everyday creativity in ubiquitous music making. In: *Trends in Music Information Seeking, Behavior, and Retrieval for Creative* (pp. 78-99). Vancouver, BC: IGI Global, (2016).
21. Lazzarini, V.; Keller, D.; Kuhn, C.; Pimenta, M.; Timoney, J. Prototyping of ubiquitous music ecosystems. *Journal of Cases on Information Technology* (17), 73-85, (2015). (Doi: 10.4018/JCIT.2015100105.)
22. Lima, M. H.; Keller, D.; Pimenta, M. S.; Lazzarini, V.; Miletto, E. M. Creativity-centred design for ubiquitous musical activities: Two case studies. *Journal of Music, Technology and Education* 5 (2), 195-222, (2012). (Doi: 10.1386/jmte.5.2.195_1.) (2018)
23. Messina, M.; Aliel, L. *Ntrallazzu 4* [a cycle of pieces for extractable parts, live scores and electronics]. *Workshop em Música Ubíqua / Ubiquitous Music Workshop (UbiMus 2018)*, São João del Rei, Brazil, (2018).
24. Nance, R. W. *Compositional explorations of plastic sound*. Doctoral Thesis in Music, De Montfort University, UK, 2007.
25. Pimenta, M. S.; Miletto, E. M.; Keller, D.; Flores, L. V. Technological support for online communities focusing on music creation: Adopting collaboration, flexibility and multiculturalism from Brazilian creativity styles. In N. A. Azab (ed.), *Cases on Web 2.0 in Developing Countries: Studies on Implementation, Application and Use*. Vancouver, BC: IGI Global Press, (2012). (ISBN: 1466625155.)
26. Pugliese, J. The alleged liveness of “Live”: Legal visibility, biometric liveness testing and the metaphysics of presence. In: Wagner, A., Sherwin, R. K. (eds.) *Law, culture and visual studies*, pp. 649-669. Springer, Dordrecht (2014).
27. Pugliese, J., Stryker, S. The somatechnics of race and whiteness. *Social Semiotics*, 19(1), 1-8. (2009).
28. Reuben, F. *Reworking Musical Strategies in the Digital Age*. PhD Thesis: University of York (2011).
29. Schiavoni, F. L.; Silva, E. X.; Cançado, P. G. N.. *Orchidea: Uma orquestra de dispositivos móveis*. In: *Anais do Workshop em Música Ubíqua (UbiMus 2018)*. São João del Rei, MG: UFSJ. (2018)
30. Wishhart, T. Computer music: Some reflections. In R. T. Dean (ed.), *The Oxford Handbook of Computer Music*, 151–160. New York: Oxford University Press, 2009.