

Major Events that Changed the Instrumentalists’ Performance

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ABSTRACT

This article proposes to identify aesthetic currents and key events that affected music instrumentalists over the last 100 years - approximately - as well as to characterize new outcomes in music performance. The aesthetic, technical, and compositional evolution of music influenced and changed the traditional conception of the performance – that of a musician taking to the stage using only his instrument, performing an interpretation of a musical score, in a unidirectional relationship with the audience – to a multidisciplinary concept. This generalised evolution, brought new demands to the instrumentalists, who had to adapt and improve, practically autonomously. The increase of multidisciplinary, fostered creativity, which in turn gave rise to new techniques, both in interpretation and in musical writing. In order to focus the article, it will be centred on traditional musical instruments players, and excludes instrumental music of oral and/or improvised tradition, as well as vocal interpreters.

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1 Introduction

This article synthetically presents and discusses the significance of events that influenced the evolution of instrumentalists’ performances of written music in the Western tradition, which have enlarged the scope of traditional performance. The analysis of these key events will contribute to an awareness of their direct or indirect impact on instrumental performance, as in its full spectrum. Inherently, the article will affirm the contribution of these events, not only concerning performative matters, but also as a support for studies in music and instrumentalist education. To this end, the article is divided into the following sections: musical performance, procedural rupture, *musique concrète* and acousmatic, *musique concrète instrumentale*, different aesthetic concepts, socio-economic development, evolution of the written instrumental music, notational evolution, sound recording and reproduction, conclusion, and future work.

2 Musical Performance

The word performance was first used in relation to theater and only later, already with a different dimension, to categorize a new, more encompassing artistic field: the performing arts. The word derives from the Italian *per formare*, which means to give shape through a concept (Serrão, 2011). According to McCarthy, Brooks, Lowell and Zakaras (McCarthy et al., 2001) nowadays, the arts market is divided into four categories: performative, media, visual and literary. With regard to the performing arts, these include music, theatre, dance and opera. Within musical performance, and regarding written music of Western tradition, there has always been a pre-defined structure that involves a score and its interpretation for an audience (LaBelle, 2006).

However, this tripartite relationship between composer, performer and score has not always been so. As in other musical cultures, in which these three agents do not exist as areas of specialization and are assumed by a single person, in the written music of western tradition there was also a wider freedom. Until the 19th century approximately, and despite the existence of scores, it was common to have some improvisation, musical freedom, and activity within the composition, by the musicians/performers (Després et al., 2017). In this change, the score – or musical notation – has played a central role by becoming increasingly specific and detailed, providing a tool in the search for specialization of roles through increased complexity, both compositionally and interpretatively.

Musical notation was the creation of an Italian monk, Guido d'Arezzo, around the year 1030, and its first objective was to preserve musical and cultural memory. However, in more recent times, it also came to allow the commercialization and dissemination of musical works. Musical notation also gained an important role as a communication channel between composers and interpreters, allowing composers to convey their thoughts about the work to the interpreters, as well as receiving feedback, leading to an improvement of the work and its performance through this interdisciplinary model. Thus, the musical score became the preferred communication platform in knowledge sharing between composer and interpreter. Concomitantly, the role of these actors – composer and interpreter – were well defined during the XIX century, as interdisciplinary collaboration led to many composers not needing the capacity to perform their own works (Magnusson, 2019). The evolution of musical notation has improved the tools available in which composers express their ideas to the interpreters, who, in turn, have more and more detailed information at their disposal regarding the works. Through this interdisciplinary collaboration and evolution, interpretation became increasingly more precise and thorough (Smalley, 1969). All of this is aligned with the idea that written music is based on the reproduction of a text, and the most important premise for the interpretation to be accepted as a performance, was that it was performed live (Cook, 2014), which, in turn, implied the existence of three actors during the process: the composer, the interpreter – which could be the same person – and the listener (De Poli, 2004). However, other authors proposed replacing the third actor – the listener – or adding a new one, which is the *ambience/ecosystem* (Waters, 2007) or *acoustic ecology* (Paine, 2017). *Acoustic ecology/ambience*, beyond its scope of the acoustic influence during the performance – modifying the sound and conditioning the sound production in this way – also designates the social contextualization, with all the actors that are involved, in particular: the interpreter, the composer, the notational communication channel between them, and the audience. In short, *acoustic ecology/ambience* is the framework over which the entire creative process evolves, exerting its influence on both the concept and the practice, covering all the aspects involved in the performative process. Caroline Palmer (Palmer, 1989) defines musical interpretation as having three primordial aspects, and all of them linked to the sound outcome: *sound intent* – the choice of musical intention through the emphasis given to each musical structure, melody, phrases and dynamics; *the rhythmic organization* – organization of accents and emphases related to the duration of sounds; and *the use of articulation* – the way the sound is shaped in terms of attack, duration and ending. As addition to the above-mentioned performative aspects, Nijs, Lesaffre and Leman (Nijs et al., 2013), separate the creative processes in two categories: *actions* – all the interpretative physical movements which were planned and performed in a conscient way; and *operations* – all the interpretative physical movements which arose from an unconscious routine of practice. In summary, musical performance until the beginning of the XX century, is generally defined by auditory and mechanical parameters, and is always linked to instrumental performance.

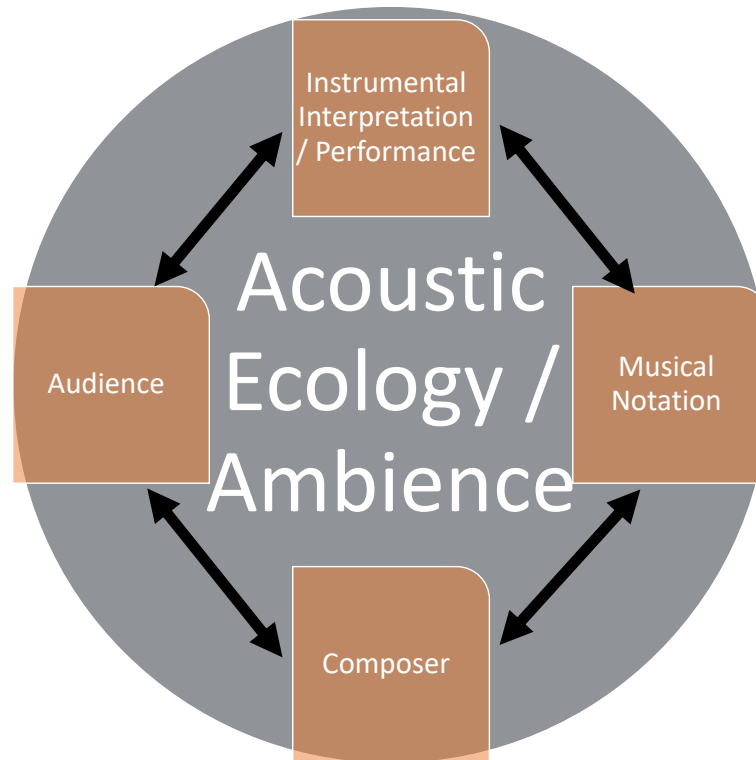


Fig. 1. Traditional Performance. Source: author.

As we can observe in Figure 1, musical performance is surrounded, being influenced, and influencing all the other components, over the acoustic ecology/ambience framework. Musical notation assumes the role of a communication channel between composer and interpreter, which, through feedback regarding the score, could in turn influence the composer. The audience members, through their role as consumers, influence both the composer and the interpreter, and therefore impact the acoustic ecology/ambience. Still in this context, it is possible to observe the separate roles of composer and interpreter, which, before the XIX century, were mostly assumed by the same individual. We can, thus, observe an evolution regarding the role of the instrumentalist/interpreter who no longer assumes the role of the composer, in order to focus and specialize on musical and mechanical interpretation of one or more instruments. Lastly, regarding the acoustic ecology/ambience, it is up to the interpreter to adapt his performance in real time to the acoustic and social conditions of the surrounding space, so that the characteristics of the work remain as identical as possible to the composer's original intent, avoiding interferences that might be originated at the performance site.

3 Procedural Rupture

In the late 1930s and throughout the 1940s John Cage created works that symbolically broke the link between composer and interpreter, replacing the score with a procedural form. This implied a rupture, not only in the musical work itself, through the switching of the melody and harmony for an open work. In contrast with the fully notated work, open work is characterized by a deliberately open notation (Magnusson, 2019), where musical writing is replaced by processes to create situations that will produce music (LaBelle, 2006). But it also introduces a significant change in aesthetics, from the interpreter/instrumentalist's point of view, as this type of work requires new performative skills that go beyond mere instrumental execution, in a broad sense. Thus Cage presents an alternative to the considerations of Russolo in 1913 – the traditional orchestra is no longer capable of capturing the imagination of a society involved in noise – and of Edgard Varèse in the 1930s – the difference between music and noise is only the organization of sound (Cox & Warner, 2006). *4'33"* – the "Silent Piece" –, written in 1952, works as a meeting with appointed time, to perform and appreciate the sound process, in which, for the first time in music history, the musical interpreter takes the stage without having to play a single note (Katschthaler, 2015). Cage sought to demonstrate to people that the sound that surrounds life is more important than any sound they might seek in a concert hall (Cox, 2020), and,

there is also a rupture with the preconceived idea that the audience goes to a concert hall to listen to an exclusively instrumental performance (LaBelle, 2006). Consequently, the audience members who were once routinely attending a concert hall to listen to melodies and harmonies produced by one or more instruments, became themselves part of the performative process through their sonic reactions – or lack of –, all of this in parallel with their normal roles, as audience members. Another aspect that caused changes in the audience's habits, was the addition of scenic components to the performance – everything that involves purposeful bodily processes that are not intrinsic to instrumental performance – that inherently drive the audience to a greater focus on the visual component. Summarizing, as we can observe in Figure 2, the rupture caused by Cage gave rise to an evolution regarding musical notation, so that the score acquires the form of a procedural description, the work becomes autonomous, and frees itself from the need to interconnect with musical interpretation to achieve the performance. Musical interpretation has also been separated from performance, because this ceases to happen exclusively through an instrumental performance and focuses only on its sound production – sound direction, rhythmic organization, and articulation – to be complemented by the visual component (Guerreiro, 2015). Likewise, the audience no longer has an exclusively passive role, as their interactions become an integral part of the performance.

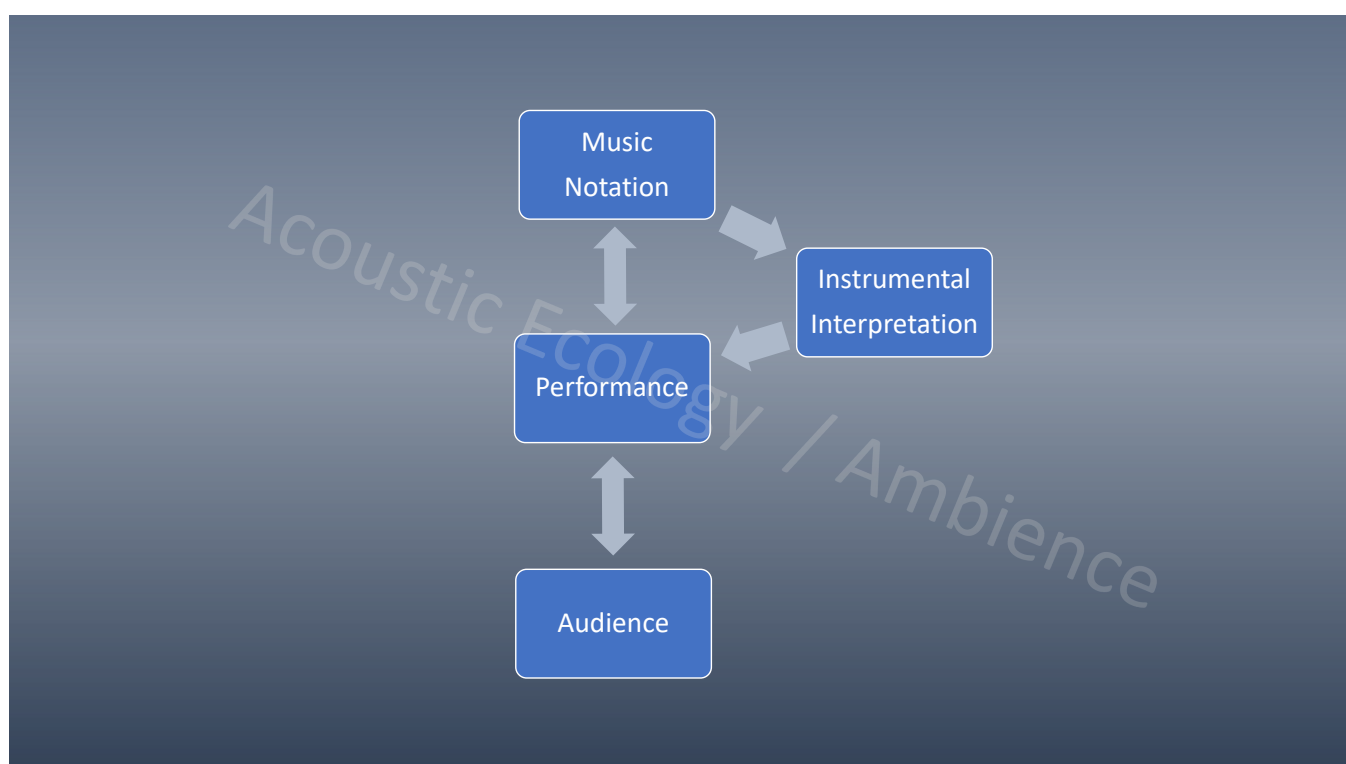


Fig. 2. New Connection Between Performance and Notation, Source: author.

4 Musique Concrète and Acousmatic

Before Cage's more mature developments, Pierre Schaeffer proposed another concept in the late 1940s, in France (LaBelle, 2006). He called it *musique concrète*, and it was based on the assumption that sound is an object and, as an object, it can thus be transformed, in terms of mass, timbre, dynamics, strength, and duration, among other features. *Musique concrète* is produced through technological manipulation and appears in opposition to the abstract sounds performed by music instruments, one of its goals being the dissociation between sound and its source, leading to the appreciation of sound only for what it is. To this concept, the appearance of the magnetic tape as a substitute for the phonograph, was a breakthrough, because it opened door to a new set of possibilities, such as reproduction in different channels, the reverse play function, different playback speeds, direct cut and edition, track recording, sound overlap, use of the stereo effect combined with the spatialization and placement of several speakers, only to name a few (Battier, 2007). It is precisely in this context that acousmatic music emerges, which consists of the playback of concrete music exclusively through speakers, exploring their physical positions, and whose designation evokes Pythagoras' methodology, of teaching behind a curtain in order to stimulate hearing over vision (Carrilho, 2013).

In short, acousmatic music has the purpose of separating the sound from its source, so that the audience can appreciate sound exclusively for what it is, without any connotation with the way it is produced (Gati, 2015). Consequently, concrete music and acousmatic music distanced instrumentalists from performance, giving autonomy to composers who thus embraced a multidisciplinary related to acoustics and sound engineering, and assumed all performance responsibilities. One of the characteristic aspects of traditional instruments is their unstable and not linear behavior in acoustic terms, which obliges the instrumentalist to have constant daily practice throughout his entire life as a performer/interpreter. This commitment is not consistent with an already demanding activity such as composition, thus, electronics provided an opportunity to overcome this obstacle (E. R. Miranda & Wanderley, 2006). Despite the distance of instrumentalists from the performative process – stress on “performative” since with electronically processed sounds for concrete music and acousmatic music, these sounds can also be sourced from traditional instruments – both concepts ended up having repercussions on the development of instrumentalists’ performance, influencing the appearance of concrete instrumental music.

5 Musique Concrète Instrumentale

In the wake of *musique concrète*, composer Helmut Lachenmann conceived *musique concrète instrumentale*, and produced in 1968 his first work of the new genre named *TemaA*. In Lachenmann’s perspective, *musique concrète instrumentale* is a sound transmission from the mechanical parts of traditional instruments, as well as an energetic experience, where instruments are used as objects and utensils. Regarding its composition and interpretation, this implies a defamiliarization of instrumental technique, connected to a constant discovery of new sounds together with new technical learning for the instrumentalists. Despite the mechanical features, the human factor is present in the performances, and the sounds that compose it are physically produced live, thus being able to convey to the audience a sense of traceability, as opposed to the artificial quality of the sound produced through the membranes of a speaker (Ryan & Lachenmann, 1999). It is possible to observe similarities between Lachenmann’s concept and Cage’s, in that both converge the human factor as a sound generator for the performance, unlike Schaeffer who uses electronics to work and reproduce sound during the performance. In summary, *musique concrète instrumentale* focuses on the search of new physical sounds through traditional instruments, replacing the development of melody and harmony at the centre of musical development (Ribeiro & Ferraz, 2017).

6 Different Aesthetic Concepts

Although the concepts of Cage and Schaeffer converge – in the sense that both sought to develop sound as the main raw material, freed from harmony and melodic conceptions, using it as an independent material for their works, as well as the development of a relationship between the work, the physical location of its presentation, and the conditions generated by these two factors – the overall concept was quite different (LaBelle, 2006). While Schaeffer captured the sounds to electronically process them, Cage provided situations for the sound to occur and be artistically apprehended in its pure state. There is also an important differentiation in the sensory field, while the aesthetic current derived from Schaeffer sought to make sound worth only by itself and its spectrum, disconnecting it from its producing source and seeking to originate a purely auditory experience, Cage added a visual component to sound. For the latter, the artwork triggered events in order to provide the public with a perception of the sound of real life. In short, while aiming at the emancipation of sound, the results were opposite, since Schaeffer presented an electronically manipulated sound, whereas Cage presented it in a raw state, while also manipulating it but only in the process of its production. In acousmatic music, in addition to sound manipulation, there is also an acoustic manipulation at the time of performance through the planning and relationship of sound sources, by carefully positioning the loudspeakers. Lachenmann, on the other hand, physically manipulated traditional instruments, developing new interpretive techniques and new concepts of musical notation, coinciding in the objective of emancipating sound with those of Cage and Schaeffer. However, this concept chose to maintain the traditional relationship of Western music, as the musicians performed a score for an audience, in a unilateral relationship. Analyzing these three concepts under the instrumentalist’s so-called traditional instruments point of view, three different ramifications emerged regarding interpretation: with Cage’s conceptual approach, the instrumentalist embraces a multidisciplinary with other areas, being himself part of a process in which sound production is not just his responsibility; acousmatic music sets aside the instrumentalist as a performer, reserving for him an experimental role in the process of capturing sounds; Lachenmann’s aesthetic leads the instrumentalist in a quest for new sound

production techniques. In summary, we can conclude that these three aesthetic currents also brought new paths to the instrumentalists' performance; in Schaeffer's concept, the instrumentalist was excluded from the performance, being used only to capture sounds, which were later electronically manipulated.

7 Socioeconomic Development

There is an entire economic system around music that is undergoing constant mutations due to socioeconomic development. As far as the artistic part is concerned, the technology, through the capacity of recording and audio reproduction, not only allowed but fostered the massification of musical culture, driving music into becoming a product of consumerism (Lipovetsky & Serroy, 2015). This massification marks the end of an era, in which the most common way for the public to relate to their musical idols was through their presence at concerts. For the past decades corporations have extended a greater influence over relationship through the fabrication of artistic images for musicians, and using them for global dissemination. The concept of the artist's public image and its exploitation, fostered not just an increase in music consumption – along with the generalized and increasing demand of new consumerist experiences – but also in a plethora of related merchandise (Pine & Gilmore, 1998). Music consumption is no longer done exclusively live, to become a more individualistic consumption – in the sense that everyone is now able to reproduce just for oneself the recording of a concert, instead of going to a live concert, as part of the audience – through the reproduction of recordings distributed by a market that transforms everything into a product, even the avant-garde aesthetic movements, in a massive attempt at economic profitability. The instrumentalists also became products of this consumerism and targets of this experimentation. Note the case of Benny Goodman, for example, who in the late 1930s sold millions of copies of his albums and, a few years later, in 1956, a cinematographic biography was made to capitalize on his image (Collier, 1989), thus giving a feeling of closeness to the fans and, at the same time, generating a widespread growth of empathy across the creation of a commercial image. Therefore, the consumer culture influenced the instrumentalist, bringing him a new concept of marketing and public image, and transforming their art from an ephemeral and unique product – such as a live event – into a (potentially) perpetual and mass replicated one. Performance became thus capable of reproduction, overcoming the restrictions of space, time, and singularity. But regardless of all technological and market induced transformations it is still the relationship between the Artist, the Artwork and the Audience (AAA) (Veiga, 2021) that constitute the core of artistic – not just musical – performance.

8 Evolution of the Written Instrumental Music

Science acknowledges instrumental musical performance as one of the most complex activities for the human body, bringing together physical and cognitive abilities to a limit that is defined by creativity. In this context, the instrument works as an extension of the body, even acquiring a kind of personality that makes it capable of relating to the instrumentalist himself, fitting in as an integral part of the motor coordination system (Nijs et al., 2013). Cage opened the door to an artistic sphere that clearly goes beyond music, further increasing the possibilities of musical performance, and making this activity - instrumental performance - even more complex. He takes musical performance to another level of multidisciplinary, which makes it evolve from a concept based only on instrumental interpretation, to another in which all sounds of the space where the performance takes place have the same degree of importance, and where the visual component becomes as important as the sound. This way of approaching sound - treating sound only for what it represents, to the detriment of melody and harmony - together with the evolution that electronics brought to music, makes music in a certain way equal to the visual arts, insofar as the composer, being able to use recordings and reproductions of any type of sound, had a palette of sounds, just as the painter has a palette of pigments (Nance, 2007). One of the firsts works written with an equal concern between the visual component and instrumental interpretation, was *Water Music* – a work for piano by Cage written in 1952 – which already presented an important dimension of non-musical expression. Stockhausen, inspired by Cage's work, extended this idea and demanded that the musician embraced theatrical performance skills, namely in the work *Harlekin* for solo clarinet, written in 1975 (Marczak, 2009). In this work, the clarinetist has to play atonal music from memory, in parallel with theatrical and dance performances, for approximately 45 minutes. The composer himself describes the work as being for a *dancing clarinetist*. In this way, we reach a performative level in which the musician interpreter merges his musical knowledge with other skills, thus creating a multidisciplinary performance. Even before Stockhausen, Luciano Berio in 1966 had also explored a multidisciplinary approach with the work *Sequenza V* for solo trombone. In this work, dedicated to the clown Grock, the score has references to the clothes

to be worn, stage lighting, vocal sections, and theatrical performance (Hansen, 2010). Another pioneer regarding the exploration of the experimental theatrical music, and also inspired by Cage, was Mauricio Kagel in the late 1950s. Experimental theatrical music was a strand that emphasized four aspects (Hubner, 2010): (1) predefined scenic movements to perform with the instrument; (2) stage design for musicians and elements related to choreography; (3) use of speeches for instrumentalists; and (4) elaboration of the musicians' movements taking into account the general performance. Thus, stage design could be developed not just based on the physical position of musicians for scenic or performance reasons, but also in relation to acoustic motives. A comparison regarding this aspect is made here, to acousmatic music – when the musician's position on stage happens only due to acoustic and/or timbral reasons, the purpose being similar to what acousmatic music uses in the physical distribution of the loudspeakers in the concert hall. An example of this similarity is what happens on *Domaines*, by Pierre Boulez, in which several musicians are distributed in different areas of the stage, with the clarinetist being a hybrid element, who can be positioned in different areas throughout the work. On another level, related to concrete instrumental music, the instrumentalist sees a large part of his instrumental technique becoming obsolete on behalf of the research for new techniques and sounds. In this way, the instrumentalist also becomes a scientist in a quest for new sounds and timbres, and developing with the composer a fairly different system of musical notation, characteristic of an interdisciplinary cooperation. In short, the instrumentalists renew their instrumental technique at the same time as they acquire form of expression, both at an interpretative level and in terms of musical notation.

All this evolution dissipates the concept that instrumental music can be framed in decorative music instead of in fine arts. As decorative music, it would be within a concept in which the performance is only the sound design, in which the interpreter performs an insipid representation of the score, with absolutely no meaning or intention beyond this. However, it is hard to believe in a performance considered so empty and uninfluenced by any artistic meaning, aesthetic, or repercussion triggered by acoustic ecology (Alperson, 2008). This evolution, in which the instrumentalist becomes more and more multidisciplinary, as well as all the interdisciplinary cooperation that may arise in the conception or performance of the work, fills the performance with context and it escapes more and more from what could be only a representation of a text – score.

9 Notational Evolution

Several composers have developed their own languages, leading interpreters to learn different types of notations (Bergstrom-Nielsen, 2012), depending on the composer and the work they perform, and, within these new languages, we can identify verbal additions and additions of new sound designations. Verbal additions emerged in the Baroque period as a descriptive component related to indications of time, character, expression, and concrete instructions, however, over time, this verbalization was developed and some works became exclusively verbal, such as for example *de 4'33* by Cage or the *Aus Den Sieben Tagen* by Stockhausen – the first as procedural form and the second in which the score takes the form of a poem. Summarizing, musical notation was expanded in its functions and encompassed not only the musical field – sound duration, dynamics, pitch, articulation – but the procedural as well – indication of physical movements, concepts, and all kinds of instructions that the composers considered useful and pertinent. In sound additions, musical notation has been developed through the inclusion of new techniques – harmonics, *flutterzongue*, growling, among others – as they emerged (Bergstrom-Nielsen, 2012). Erik Satie, in 1893 in his work *Vexations* wrote the following instruction: “In order to play this motif 840 times in succession, it would be advisable to prepare oneself beforehand, in the deepest silence, through serious immobility” (Kohlmetz et al., 2003). According to Satie's instructions, a small score became a 28 hour piano performance, testing the physical and psychological limits of the interpreter and, even inducing trance states during the performance (Kohlmetz et al., 2003).

Another feature that was enabled through notation - in this case with the assistance of technology - was to add the audience to the musical performance as an interpreter. Take for example the work of Ander Lind (Lind, n.d.) *Animated Notation for Mixed Orchestra*, consisted in a performance concept where thirty teenagers were playing percussion instruments and electronic instruments, and thus interacting with a classical orchestra, through a visual music notation system. In 2018, with the work *Uphonia*, which used the same concept, Lind engaged the audience in performing orchestral works through the use of their mobile phones with the Orchestra Sinfonietta of Riga, in a work for mobile phone orchestra and classical orchestra. Thus, with the audience's direct interaction in the execution, the secular static relationship – in which audience members are passive agents, only present to enjoy the performance – is reversed (Peppler, 2010). This musical interaction generated by the audience, leads the instrumentalist to respond to another interpretative source than the conventional ones.

10 Sound Recording and Reproduction

Although the instruments are themselves technological objects, this section focuses on the technological integration provided by sound recording and reproduction through a computer and/or digital technologies. In this field, there are two ways to develop them: (1) through the use of actuators – consisting in the digital manipulation of the instrument's acoustic properties and (2) through augmentation, including timbre control and resonance, and vibration modes, which remain under the responsibility of the instrumentalist (Ângelo et al., 2018). Nevertheless, both forms should have specific purposes and concerns during their development process (Portovedo et al., 2018), namely: to keep the instrumental performance feasible; to assess whether there are technical changes in the performance; to contribute to an increase in sound resources and/or other performance parameters. One example of an augmented instrument - which incorporate electronic amplifications of their normal capabilities - is the *Feedback Cello* project (Eldridge & Kiefer, 2019), which can be played in the traditional way with the addition of pedals that manipulate the sound, played and manipulated externally through lines of code in real time, as well as played through predefined processes by digital signal processing. In this case the whole project was designed and developed by the instrumentalist, in a multidisciplinary and interdisciplinary process. Centered on this subject, the *Augmented Instruments Laboratory* has significantly explored these instrumental augmentation/actuation ¹.

But the added technology also impacted the non-traditional music-making forms, such as electroacoustic, in which the interpreter shares the performance with electronics. Although Luigi Russolo between 1913-14, Varère between 1929-31, and Ottorino Respighi in 1924, have all used phonographic reproductions for their works, one of the first works considered as mixed electroacoustic is *Musica su Due Dimensioni* by Bruno Maderna, composed in 1952 for flute and magnetic tape (Gati, 2015). There are also mixed electroacoustic works that explore the visual component in different ways, such as in *Parcours de L'Entilé* by Flo Menezes, composed in 1994 – where illusory movements occur with the objective of confusing the audience about whether it is the instrumentalist who produces the sound, or if it is coming from the loudspeakers – and in *Altra Voce* by Berio, composed in 1999 – the alto flute plays the same sound as the speaker but slightly out of phase, with score indications for the instrumentalist to examine the instrument, conveying the idea it was actually being cleaned during the performance (Gati, 2014). The challenge that the interpreter faces in this kind of performance, if it includes a reproduction of a previous recording, is a very reduced flexibility in the interpretation, in order to be able to accompany the previously recorded audio. However, there are already other resources that increase this flexibility, namely the *Score Follower*², that can be added to the electronics. Nevertheless, this requires greater perfection in the interpreter's sound articulation so that the software delivers a good result. This technology may also introduce problems in sound capture, as it will be more demanding. In case the electroacoustics are controlled in real time by another musician, this problem disappears – however, the role of the electronic device is then changed from that of consistent playback to that of a digital instrument (P. A. Miranda & Barreiro, 2011).

11 Conclusion

One of the first multidisciplinary forms in musical performance arises through interpretation of symbols – musical notation – allied to the instrumentalist's sensibility in treating the sound, thus producing an interpretation by means of a musical instrument (De Poli, 2004). On another multidisciplinary level, there are the opera singers, who add to the musical reading and interpretation an implicit theatrical component. On this aspect, and from the instrumentalist's point of view, Cage had a crucial role, since he helped paving the way for multidisciplinary instrumental musical performances, which went beyond the musical domain, expanding, significantly the creative possibilities. The centrality of the instrument in this kind of performance has undergone mutations due to the addition of new possibilities to complement it, such as, dance, narration, scenic actions, among others, thus balancing its auditory and visual aspects. At the same time, this led to interpreters being constrained - in order to perform certain works - to acquire extra-musical skills to be able to meet the multidisciplinary demands of composers. Like Cage, composers such as Stockhausen, Berio, and Lachenmann, among others, brought a need for instrumentalists to develop and adapt to a new performative reality. They had to reinvent themselves by dressing the role of scientists for their instruments

¹ <http://instrumentslab.org/>

² <https://www.scorefollower.org/>

and creating interdisciplinary connections to acquire more and more skills. This new role has created the possibility of symbiosis, as the composer has been able to benefit from a reinvigorated attitude from the instrumentalists, building a partnership with a wider interdisciplinarity in order to develop performances supported by mutually acquired knowledge.

Marketing has also evolved significantly through - among other things - the massification of music distribution. However, the prejudice several classical musicians may suffer against promoting their own work, assuming that self-promotion will break their artistic integrity, contributes to a knowledge divide, where self-marketing is seen as being out of reach for them, a gray area mostly addressed through self-learning – as opposed to formal (Kubacki & Croft, 2004). As mentioned, the performance is influenced by the acoustic ecology/ambience, opening here an important window concerning the marketing’s field of action, as it may shape the public image of the performer, the work, the physical space, among other aspects. Commercial marketing has become a complementary area to performance (Hall, n.d.), as for example in the creation of immersive experiences [36] (Inc., n.d.), or, in technological innovation or other points so characteristic of current commercial artistic experiences (*Ars Electronica*, n.d.).

With regard to the personal experience of the author of the present article, who is also an instrumentalist, he is regularly faced with different demands in performative terms. Despite the fact that he has had a solid academic background, it is noticeable that the academic world is always inevitably one step behind in relation to innovation - insofar as innovation needs to be generated, accepted by its peers, and disseminated, until it reaches the teaching process. This process generates what can be considered as a correlation, as the demand for more skills to perform the work, is usually accompanied by greater creative freedom, which leads the performer to have to deal with experimentation - *knowing* (Annegret Huber et al., 2021) -, creating a need to build new knowledge. In short, the performer is alone in the search for new knowledge - academically speaking - seeking knowledge autonomously, or sharing experiences with peers.

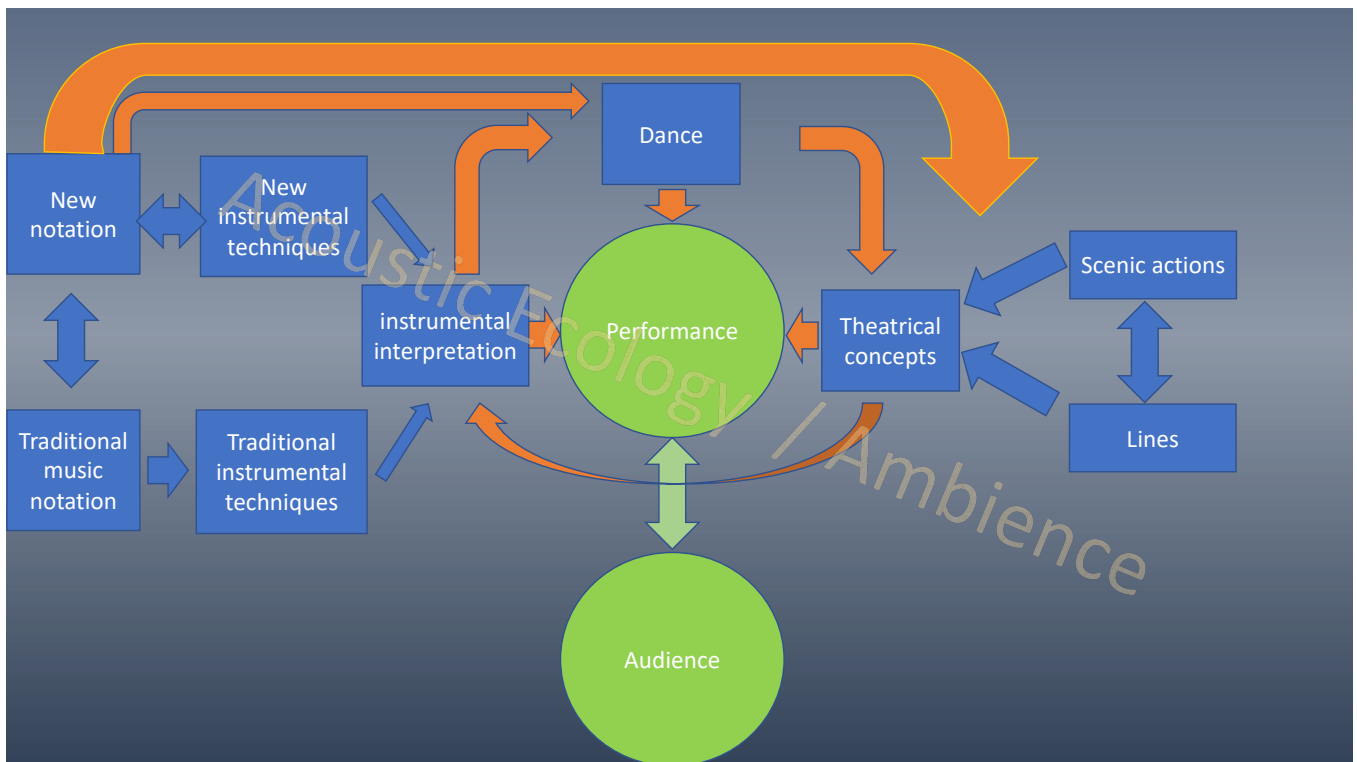


Fig. 3. Current Performance. Source: author.

By observing the diagram presented in Figure 3, it is possible to verify the instrumental performative possibilities, influenced by the aesthetic concepts presented throughout this article. When compared to Figure 1 and Figure 2, it is possible to verify the evolutionary path of performance. Figure 3 depicts as a background the acoustic ecology/ambience that works as a framework, supporting the performance. This network can be called the social footprint, or ecosystem, and links the composer, the work,

the interpreter, the act of performance and the audience. Then there is the performance as a central point, which exists in function of an audience, which in turn, depending on the artistic work, may or may not influence or interact with the performance itself. Around the performance and beyond musical interpretation, theatrical concepts and dance emerged. However, this circle is not closed and may involve other multidisciplinary aspects. The instrumental interpretation itself has undergone changes with the introduction of new forms of notation, which, as we see in Figure 2, can jump directly to performance or to another disciplinary valence, as in the case of 4'33, in which musical interpretation does not occur. This new notation, when connected to musical interpretation, is intrinsically linked to new instrumental techniques and vice versa, since the creation of new techniques requires new notation. Finally, with regard to musical notation, it has adapted to incorporate other scenic and performative elements, such as physical movements, lines, and clothing, among others.

Still concerning Figure 3, it was mentioned that the circle around the performance is an open circle, and it may be incomplete, as its expansion only depends on the creativity and new demands of creators and performers, making it impossible to carry out a survey of all musical performative works that use skills in a multidisciplinary way. However, the same figure highlights the evolution of musical performance, from the beginning of the XX century.

Through the point of view of a traditional instrument performer, all the aesthetic evolution brought an expansion to performance and especially to its multidisciplinary. This multidisciplinary, converges with the experimentalism expected by the audience, being therefore an evolving subject, which integrates other areas, both inside and outside the domain of arts (Magnusson, 2019). It is admissible, given the evidence on traditional performance, with no known contradictory, that until the first half of the XX century, the personal involvement of an instrumentalist in performance was exclusively in the context of instrumental interpretation and a multidisciplinary approach restricted to the assimilation of reading the score with musical interpretation. Thus, by observing all the evolution registered after the aesthetic evolutions, as well as in the derived works, it can be concluded that the role of the instrumentalist has suffered – and continues to suffer – a mutation with regard to its interpretative characteristics, which consist in the expansion and extrapolation of the technical execution of a musical instrument, to a multi and interdisciplinary field, crossing other artistic areas and involving other technologies. This is a type of evolution linked to *knowing* and not to *knowledge*, as the acquisition of knowledge is triggered by the need that comes from creativity and carried out by the performative practice of the performer, and not by theoretical knowledge (Annegret Huber et al., 2021). An individual may have full theoretical *knowledge* about a piano, but if he has not acquired the *knowing* from practice, he will certainly not be able to play it. We can affirm that instrumental performance evolution referred throughout this article - where events have been identified as originating new performative paths, such as, scenic components, new instrumental techniques, physical movements, among others - is resultant of performative practice/experience, and it is this knowledge created in the field that has been shaping the performative path. In this way, Cage, Berio, Stockhausen, among others, such as all the performers involved in those performances - at least those who premiered the works - are responsible for leading and creating new demands on instrumental performance, in which the performers had to adapt to a new reality, increasingly interdisciplinary, and to acquire their own knowledge through practice and collaboration with their peers.

Thus, we can identify the following aspects that have expanded the required domain of interpreters over the past century (Travasso & Gomes, 2021):

- Exploration of the interpreter's physical capacity.
- Exploration of the interpreter's psychic ability.
- Different types of sound and verbal notation.
- New instrumental techniques.
- Multidisciplinary with other artistic areas.
- Multidisciplinary with other areas of knowledge.
- Different flexibility of interpretation and articulation in the case of mixed electroacoustics.
- New communication and marketing concepts.
- Musical interaction with non-conventional interpretative sources.

With all these aspects emerging over the last 100 years - approximately -, with the highest incidence occurring in the last 50 years, it is concluded that instrumental performance has been undergoing significant changes, adapting and combining the development of new forms of artistic expression in the music. As most of these aspects are relatively recent and few are implemented in the instrumental repertoire, we can intrinsically assume that the current educational offer to instrumentalists is one step behind, with regard to new techniques, leading the instrumentalists to self-develop and self-acquire skills, along their artistic path.

Future work

This article can serve as a baseline for future research related to the instrumentalists' academic education, and/or be used as a starting point for further research, revealing more evolutionary aspects and exploring the instrumentalists' performance in more detail. One of the directions that can be taken is the analysis of technology impact on musical instrumental performance since the beginning of the 21st century.

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