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Max Weber played the piano more than
a hundred years ago: Contributions for a contemporary
revisiting of Weber's sociology (of music)

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Abstract

Music has always been a concern for sociology, and its classic authors attest to this. We begin this article – which is essayistic in nature – with a substantive analysis of this tradition that continues to (re)shape the sociology of music today. Amongst these classics, we would like to highlight its greatest name: Max Weber. In fact, this author developed a long-term analysis of Western music, especially with the advance of rationalisation, somewhat similar to his analyses of the spirit of capitalism and the genesis of bureaucracy in Europe in his study *The Rational and Social Foundations of Music* – written between 1912–1913 and published posthumously in 1921. We then establish a link between Weber's thesis and the sociology of music today, centring our analysis on contemporary music production through the use of Artificial Intelligence (AI), but also the digital universe more broadly. Weber's theoretical contributions are explored in relation to this, focusing on the interconnection between his concept of rationalisation and the emerging digitalisation of music – in particular, streaming services.

Keywords: Max Weber; sociology of music; rationalisation; artificial intelligence (AI); digital creation

1 A prelude to Weber's 'sound'

Sociology training often ignores the creative side or specificity of sociologists, who are considered creative social agents. Max Weber is often presented as a German sociologist, jurist and economist with a body of theoretical and intellectual work directed toward the topic of capitalism. *The Protestant Ethics and the Spirit of Capitalism* (Weber, 2015) is his best-known book, in which Weber analyses Calvinist and Lutheran Protestant societies, associating religious views with financial prosperity. However, few know that Weber was a passionate lover of music – a fascinating and relevant aspect of our analysis of his trajectory.

Braun (1999) calls Weber's position into question: How could a lawyer, historian, economist and cultural analyst end up focusing on a subject as remote as music? Before answering this question, we should note that it was not his interest in music that caused

the disciplinary upheaval but the fact that he had been appointed as a professor of economics at Freiburg. A second relevant point was his mental weaknesses, which should have put an end to his theoretical production but instead contributed to his productivity. In this context, Weber published two essays, 'Objectivity' and 'Protestantism', in 1904 and 1905 respectively. With these theoretical productions, concepts begin to emerge that are crucial to the reading and analysis of his work, but also to the understanding of his sociology of music: the 'sense' of social action and the idea of an 'ideal type'. Both can be interpreted as the basis of a cultural and scientific objectivity that is linked to the framework of social values. In this way, Weber tried to distance himself from the sociology of the humanities and allied himself with the sociology of the social sciences (Weber, 2022).

Jaspers (1965) described Weber as a man who lived between two worlds and in two different times; he portrayed him as the most relevant personality of his historical moment. Jaspers even compares Weber to Michelangelo, as did Marianne Weber (1988), who described him as a genius. According to García (2011), Marianne Weber saw Weber as a genius who carried the weight of his historical time in a period of social transition. Like García (2011), Marianne Weber saw a change in Weber's musical preferences during his period of mental fragility, pointing out his receptiveness to music to poetry; it is important to highlight his interest in poets such as Rainer Maria Rilke and Stefan George. Marianne Weber (1988) says Weber described Rilke as a true mystic, believing that he did not write poetry but rather poetry was written within him. A similar statement can be made about Weber and music: he did not write about music but had music and art inscribed in him.

The relevance of the theory of disenchantment with the world (*Entzauberung der Welt*)¹ will be highlighted. Although this theory emerged from Weber's studies of the German rural exodus, inspired by the aesthetic reflections of the German poet Friedrich Von Schiller (1750–1805), this theory can also be linked with his contributions to the sociology of music, mainly because it presupposes a connection with a historical context marked by freedom. Music, in Weber's thesis and the theory of the disenchantment of the world, possesses a powerful sense of psychological and sociological 'enchantment' that is linked to freedom because it is understood to activate sensibilities that Weber feared would be undermined by rationalisation. In this sense, music takes the subject away from the oppressions of hierarchies and dominant social structures (García, 2011). The topic of disenchantment of the world is central to the universe of Weberian thought, which is behind Western rationalisation.

Collected Essays on the Sociology of Religion (1921), a posthumous work edited and published by Marianne Weber, includes a dedication to Mina Tobler, a family friend whose work deeply influenced Weber by providing him with human depth and musical enrichment (Radkau, 2011). Mina was a pianist, and several claims are made about her influence on Weber's sociology of music:

First, she appears at the beginning of Max Weber's withdrawal from ascetic rationalism, maintained until 1907, as an absolute virtue. In fact, Mina took part in discussions in

¹ In Weber's theory, this expression does not mean loss, disenchantment or disillusionment. Etymologically, the word 'disenchantment' in German is *Entzauberung* and its literal meaning is demythologization (Weber, 2022).

Heidelberg about the ‘ascent of Eros’. Max Weber gradually revises his position concerning the complete subordination of the erotic, stemming from a highly repressive puritanical sexual ethic. Second, and linked with this, he presents a new assessment of erotic and aesthetic aspects of human existence as a form of escaping from an obsessively organized and rationalized world to a more authentic and vital world connected to the lost sources of life (García, 2011, p. 286).

We begin the article with a substantive analysis of the tradition begun by Weber – which continues today – regarding the sociology of music. Other authors, such as Becker, Adorno and Simmel, are discussed in relation to Weber. We then look at his perspective and scientific work within the scope of this scientific discipline before establishing a connection between Weber’s thesis and the sociology of music in contemporary times, focused on the digital universe and music created with Artificial Intelligence (AI). Weber’s theoretical contributions are explored in relation to this, focusing on the interconnection of his concept of rationalisation and the emerging digitalisation of music – particularly streaming services. The article takes a socio-historical approach, referring to Weber’s life and trajectory, along with a content analysis combined with a qualitative methodology (Drisko & Maschi, 2016). The article will focus mainly on historical works and textual references, complemented by an empirical note on the digital universe of music production, consumption, and musical production using AI software.

2 Perspectives about a sociology of music: Reading a capella

Music has always been the target of sociological inquiry, and here we examine concerns raised by other sociologists who, like Weber, had a critical perspective in relation to music as an artistic and social expression. De Carvalho (1991) describes a concern to separate European musical history from general history, with musical analysis occurring only at a formal-syntactic level. This paradigm assumes the existence of an ‘absolute music’, with society extra-musical – a paradigm that emerged in nineteenth-century Germany as a reaction to social changes such as the Industrial Revolution, and industry and technology penetrating every dimension of social lives, including music. This context underpins many sociological works with artistic-musical creation as a focus. However, a preservationist perspective on music instead takes it as an external dimension of the experiential process (Benjamin, 1994).

Discussions of the music–society connection have a long history and are imbricated socially. We can go back to Plato’s golden age, when he discussed the importance of music in constituting a citizen and a republic. Socrates saw music as moulding the soul, and in turn the body – never the other way around. Music had a pedagogical and moral component since it smoothed out the negative aspects and highlighted the positive features of youth. In this utopia, music had a central role: to mould citizens, their *ethos*, the moral character. So, it is unsurprising that the sociology of music analyses music as an activity that people do together. These considerations have provoked indignation in artistic and musical circles, given that there is always a mystification of culture, where styles and artistic options are understood as natural and not as the result of a group of practices and social struggles – closer to a religious or esoteric reality than a social activity (Bourdieu, 1996).

For many years, music suffered from a ‘paradoxical silence’ due to postmodern iconocentrism – a privileging of the visual over the auditory (Guerra, 2023b). As Small’s (1998) concept of ‘musicking’ displays, the object of study is not music but the people who make it, listen to it and dance to it. Becker (2010) analyses the production field through a focus on the agents of cultural production and on the collaborative and conflictive relations they generate among themselves, an approach continued and extended in studies of local, translocal and virtual scenes (Bennett & Peterson, 2004), music worlds (Crossley, 2015; 2019) and circuits of do-it-yourself (DIY) production (Guerra, 2020; 2021). Back (2021) questions what sociologists learn from music. Concomitantly, many sociologists who were either musicians or passionate about music – from Weber and DuBois (Rabaka, 2023) to H.S. Becker and Paul Gilroy – were influenced by this passion, including in their writing (Guerra, 2022a). Previous work (Guerra, 2022b; 2023a) departed from the premise that music is a valuable tool for thinking about the world because music serves the imagining of sociological utopias (Brown, 2010).²

Before we continue with our analysis of Weber, a look at Karl Marx and Friedrich Engels (2021) is necessary to show how individuals and societies were organized at the levels of production, distribution and consumption. This supports an analysis through the lens of music sociology, given that we are dealing with macro-sociological theories. In parallel, a focus on the economic dimension of social reality can also be transposed to studies about music. Engels was passionate about music, as seen in the musical analogies that abound in his letters. Marx, despite his proletarian internationalism, was proud that most renowned composers in London were Germans (Lindley, 2010). Marx admitted that ‘certain epochs of artistic flowering are not at all in conformity with the general development of society, nor [...] with [...] its material base [...] the bones of its organization’ (Marx, 2022, p. 228). For Marx, music was an example of human potential, which would only be fully harnessed through a humanization of labour and production relations. Although Marxist theory does not expand on music, it did influence Adorno and Horkheimer (2012), who developed concepts such as cultural industry and mass society, and Attali (1985), who postulates a political economy of music. Both approaches are based on a materialistic approach to history, and each develops concepts to answer to the limitations of the Marxist economic approach.

Émile Durkheim (2002) includes music in his studies of religion, considering that the best way to maintain social cohesion is through rituals. It is here that we observe the importance of music, which plays a fundamental role in the processes of collective effervescence, as a kind of social energy transmitted among those who participate in the ritual. If Durkheim assigns four social functions to the ritual, we find that music is relevant in the reproduction of each ritual (Friedmann, 2012). As for Plato, Durkheim (2011) sees music as an educational tool, an instrument to shape the body and a way to transmit a message that can be assimilated; this led church officials to put biblical teachings into lyrics³

² Here, we can introduce the contributions of Molotch (1994), who said sociologists must accept and consider their hobbies to extend their vision beyond the thin slice of human experience circumscribed to them in the academy.

³ In the Jewish context, Friedmann (2012) speaks of the importance of certain songs, such as the Misinai, which are attributed to Moses and still sung today by Jews all over the world, serving to emphasize the importance of something greater than themselves. Music is thus a sonorous expression of an objectified collective past (Bennett & Peterson, 2004).

(Durkheim, 2002). Rituals have a social cohesion function, and music contributes greatly to the reciprocity of emotions that is fundamental to this experience. In addition, rituals have a revitalising function, highlighting – in communities – their shared history and culture. Here, music is the sound expression of a collective past. Finally, rituals have a euphoric function, giving believers a sense of well-being. And this well-being is routinely enhanced by music. It's enough to remember the popular aphorism 'he who sings, his evils scatter.'

Simmel (2003) had an idiosyncratic perspective and writing style, which was not appreciated at the time but is now undergoing a renaissance (Cantó-Milà, 2020; Frisby, 2000; Helle, 2014). He was one of the first to view music as a sociological object worthy of analysis (Etzkorn, 1964). Music was a mechanism of interaction between individuals, and his concern was to analyse the place of music in metropolitan life (Simmel, 2003). Simmel analysed the origins of music, which is born out of an individual's need to express their feelings as a means of communicating emotions between people. While there are other means of communicating these feelings, for Simmel music is the least mediated of all the arts, so is particularly suited to such communication. In Simmel's view, all individuals are potential musicians (Kemple, 2009; 2020; Simmel, 2019).

Adorno's first essays on music, in which he tries to understand the role of music in capitalist societies, were written in the 1930s – some before he fled Nazi Germany. Adorno (2002a) addresses a concern mentioned by Weber: rationalisation in Western culture has led to a progressive diminution of the capacity to hear, which for the author implies a regression of hearing with psychological consequences, such as the infantilisation of listeners⁴ (Adorno, 2002a; Nealon & Irr, 2002). For Adorno (2002b), music was a distraction, at least for the masses. However, like Weber, Adorno also saw the critical and emancipatory potential of 'serious music'.

3 *Crescendo, decrescendo*: Unravelling Weber's artistic-sociological path

Weber was a music lover: he loved to sing, a taste that began in his youth when he sang German patriotic songs with his brother (Back, 2021). Waizbort (1995) sees music as also present in Weber's writings, where each analysis should be understood as a musical composition developed through his sociological trajectory.⁵

It is noteworthy that Weber was born in a context of artistic wealth, with *kultur* central to the new German national identity and composers, writers and painters at the forefront of artistic innovation. He was exposed to music and art at an early age, always with a nationalist dimension (Pollak, 1996). His study *The Rational and Social Foundations of*

⁴ When Adorno refers to an infantilized music without critical and aesthetic value, he is referring to the last of the two musical spheres he postulates: popular music. The other sphere is serious music, namely European classical music (Adorno, 2002b; Adorno & Horkheimer, 1985; 2012).

⁵ It is no coincidence that in a statement Weber made about Wagner's score of *Tristan and Isolde*, he lamented that, unlike the composer, he could not express the various sociological and intellectual concerns he had at the same time in a score.

Music (Weber, 1995), begun in 1912–1913 and published posthumously in 1921, emerged as an appendix to *Economy and Society* (Weber, 2022). It is the result of a broader study that focuses on the concept of the rationalisation of Western society and the specificity of European socio-historical development (Fleury, 2019; Weber, 2015). Weber was the precursor of an analysis that Bourdieu would undertake years later – this refers to the introduction of crucial concepts such as rationalisation. From Cohn's (2003) understanding, this reflects the conceptual process of an author who is concerned with characterising the object of research rather than defining it.

The process of rationalisation is a central theme in all his work; he is concerned with the modernity emerging in his environment, and this was a preoccupation that motivated all sociological classics to deal with this reality – each in their own way. For Weber, rationalisation – or the diffusion of rationality – penetrated more and more social dimensions, especially in a social world increasingly marked by the disenchantment generated by the application of rational modes of action in the different social dimensions, such as art or religion (Weber, 2017). Weber was to observe this rationalisation in many dimensions as the emergence of an internal logic, separate from the other dimensions – what Bourdieu (1996; 2010), in a fruitful dialogue with Weber's theory, would term 'the field.'

One dimension affected by the process of rationalisation was the artistic or aesthetic sphere, which is where the sociology of music comes in. As Pierucci (2003) points out, Weber's sociology of music should always be analysed in relation to his sociology of religion because the rationalisation of the various spheres, such as the artistic sphere, always occurs in parallel with the rationalisation of the religious sphere. Rationalisation refers to the technical specialisation of European civilisation, which serves to reduce the gap between tradition and religion. Moreover, for Weber, the process of rationalisation implies the substitution of tradition or faith by rationality, which considers the need for individuals to rely on themselves when making decisions, thus driving society towards atomism (Freund, 2003; Parkin, 2000). Weber's sociology of music should be seen in the context of this long-term process, in which even art suffers from rationalisation and bureaucratisation. This was materialised along two axes: first, in musical rationalisation as a consequence of the democratisation of access to musical instruments and the standardisation of musical scales, and second, in the increasing separation of the musical dimension from the religious experience (Weber, 1995). We are faced with a paradoxical thesis since Weber explains that the increasing access to instruments, especially the piano (the instrument *par excellence* of a dominant bourgeoisie), as well as technological progress and the standardisation of the twelve-tone scale (Wierzbicki, 2010), have all led to a progressive diminution of the listening capacity of Western culture, especially compared with other cultures:

The specific sound effects of the instrument [piano], played by means of tangents that both delimited the sounding part of the strings and silenced them, at the height of its perfection, and above all the 'vibratos' of the sounds, characteristic and full of expression, only let it fall victim to competition from the Hammerklavier [...] when the demand of a restricted group of musicians and dilettantes with a delicate ear no longer decided the fate of musical instruments, but [this] was decided by the market conditions of instrument production turned capitalist. (Weber, 1995, p. 145)

Weber did not subscribe to a one-dimensional approach to the phenomenon of music. The process of cultural rationalisation meant looking at how the spheres of production, dissemination and reception were affected. This is evident in his analysis of the genesis of the piano, and more specifically of the modern pianoforte, whose triumph depended on the pooling of the interests of music businesspeople and publishers to meet the emerging commercial demand and competition. As the modern sociology of music defends, Weber saw the world of music as a sphere intimately related to the other dimensions of social life; with this premise in mind, he used comparative studies to try to explain why musical (and artistic) practice had been embodied in a rational way only in the West. In addition, it is also possible to question the existence of a 'oneness' of rationalisation in Weber's theory (1995). Moreover, this is often a misreading of his work. In fact, the author defends the existence of several modalities of rationalisation, which operate in a logic of coexistence and presuppose a principle of differentiation rather than sameness (Weber, 2022).

From very early times, music was used in religious services due to the high level of illiteracy, which made music the main theological vehicle available to the Catholic Church. With the Protestant Reformation, this scenario worsened, and some religious leaders, such as John Calvin, began to ban profane music (Blanning, 2011; Weber, 2007). It was a reality that deeply affected the European artistic field, and we can see this in the case of Mozart, who, despite his will to become autonomous, never stopped composing religious works (Elias, 1995). Nevertheless, due to the infiltration of rationalisation into the artistic sphere, there was a gradual movement towards the independence of music from the religious dimension, which led Weber to affirm that music replaced religion. Art – in this case, music – began to compete with religion as a means of redemption. According to Weber, music does not save the individual from sin but rather from the bureaucratic and rationalising routine of everyday life, which leads to a disenchantment with the world. Once again, the relevance of the Weberian *Entzauberung der Welt* emerges in the sense of the importance of music in the search for meaning, in the design of utopias, in the nourishment of dreams, in short, in the belief in a better world.

For Weber (1995), music would be the way to enchant the world, and listening to music would be a substitute for religious experience. In an analysis of modernity, there are many paths that lead us to Max Weber. Western music emerged at the centre of a historical battleground between 'purposely rational', 'affective' and 'traditionally rational' actions. Reminding us of the composite Weberian perspective of social action with regard to the affirmation of Western music and so well reflected in his words about the daily use of the piano in Europe.

When developing his theory about the process of rationalisation, Weber linked this process to capitalism in the West by analysing the standardisation and growth of Western music (Turley, 2001). In fact, the core of Weber's approach is not to be found in this object of study because, as we know, societies and other social contexts are mutable and constantly changing. What is still considered to be profoundly relevant in Weber's theory concerns his methodological and historical *apparatus*, which is still significant in the contemporary research landscape (Weber, 2009). Thus, to take up the previous idea, we can assess that Weber saw the rationalisation of Western cultures as an element promoting the rise of capitalism.

With the advent of capitalism and the rationalisation of societies, the processes of bureaucratisation and division of labour, which were particularly evident in the Roman Catholic Church, spread to music. The standardisation or rationalisation of music was mainly based on the change in the typology of instruments, the execution of which became standardised, giving rise to a unique European musical style that is still recognised today (Turley, 2001). To this end, Weber applied a research methodology based on the study of ecclesiastical notation (Eisenstadt, 1992), proving that there was a standardisation of music by monks for the transmission of liturgical music. Weber was committed to musical documentation as a source of empirical data but failed to establish a transcultural comparison, which led him to conclude that it was the process of rationalisation – coupled with capitalism – that led to the rationality of music.

Weber analysed music from two perspectives: music as an artefact and product of a historical rationalisation and music as a significant element of society and culture. From another perspective, the identification of cultural influences in music production materialises the sociological interest in the study of music: the society–music relation. In this sense, many sociological studies can be associated with those of Weber because they adopt a macro-sociological approach. Frith (1989) studied the English education system and tried to find out why England produced so many pop musicians in the 1960s and 1970s (Turley, 2001). His focus was music institutions, in line with Weber's studies. Other authors, such as Straw (1991), analysed the modern music industry as a global aggregation of transnational interests, while sociologists, such as Shepherd (1993), analysed the cultural value and power of music. These authors can be associated with Weber, as they are all concerned with the dimensions of meaning, structure and social action. Authors such as Martin (1995) note the existence of a unique element that guides the artistic field and Western music; in this way, Weber's statements are crucial to studying contemporary times (Weber, 1983).

Even if we recognize the impact of Weber's theoretical contributions to the sociology of music, contemporaneity provides tools capable of analysing his contributions from other perspectives. The first criticism of his work, especially from the standpoint of the rationalization of music through the emergence of capitalism in the West, is the fact that Weber started from a relatively Eurocentric perspective – in other words, he was a German whose focus was characteristics such as harmony and notation (Turley, 2001). Thus, the bureaucratic production of music in other non-European countries was excluded from his investigations (Salmen, 1983).

4 Cyclic compositions: Musical ensemble about freedom, rationalisation and emotion

In this essay, we want to emphasise Weber's contributions to the establishment of a contemporary sociology of music. This relates to music and the rationalization of musical instruments. Weber argued that a hypothesized calculability of a structure of sounds is created by a set of harmonic tones (1995), which gives rise to the rationalization of Western music (see Segady, 2010). This harmonization, which from Weber's perspective came to guide Western music, is based on a set of rules; later, this standard became capable of

being reproduced by any instrument. For musicians and non-musicians alike, this may seem a minor observation. For Weber, it presupposes a wavering between rationality and irrationality, with the latter present in cases without harmony. Thus, the link between the rational and the irrational guides Western music's tonal structure (Weber, 1995).

We cannot help but notice that Weber's study is based on the important work of Helmholtz – which would have been impossible without musical recordings that were beginning at the time. Thus, musical notation (which dates back to the late Middle Ages) and musical recordings are key components that explain why Weber is so relevant to our understanding of the standardisation and mechanisation of music that we can observe today through publishing and digitisation. In this empirical context, the rationalisation of music is associated with a standardisation closely related to the 'explosion' of possibilities for the creation and enjoyment of digital platforms. For Lambèr and Est (2020), rationalization implies an acceptance of efficiency, predictability, calculability and control through the replacement of human judgement by technology. When Weber enunciated this concept, the belief in efficiency led to the remodelling of administrative processes, not least because practices came to be defined in terms of flows that could (or could not) be mechanized, giving rise to a more broadly efficient machine. As stated, rationalization was considered by Weber to be a double-edged sword in the sense that it would bring benefits, such as access to products and services, in a democratic way, but on the other hand, systems that became rationally based could be marked by various types of irrationalities, such as a loss of control. In short, Weber was concerned that rationality – or an excess of rationality – could reduce the freedom and choice of social agents, leading to a loss of autonomy and dehumanization. This premise can be applied to contemporary music production and its emerging digitalization.

In terms of musical rationalization, Weber applies a long-term analysis of Western music, somewhat like his analyses of the spirit of capitalism and the genesis of bureaucracy in European states (Parkin, 2000). In the same way that bureaucracy eventually became an iron cage, musical rationalization restricted the faculty of playing and listening to music. It narrowed the universe of the possible. In the wake of Lambèr and Est (2020), it becomes possible to affirm that rationalization is currently patent in various aspects of the life of social actors, in the sense that life – including music – has become an expanded information system. Like Lambèr and Est (2020), we also assume that digitalization and rationalization go hand in hand. We can even talk about a 'digital cage of rationality' – that is, if the concern was previously that rationalization could undermine the freedom of choices of social agents, the same premise could now be applied to digitalization, so a focus on music production is latent.

Rationalization always entails specialisation; for Weber, the creation of modern musical notation allowed the transmission and reproduction of contemporary musical art but also gave greater legitimacy to the professional artist and the musical education system (Weber, 1995, p. 119). The current musical field had just been born, and it is a short way from here to Bourdieu's (1996) theories about the artistic field. As we have seen, music secularised itself from the religious sphere, becoming the 'triumph of the musician' (Blanning, 2011), which implies the constitution of its legality in this sphere at various levels: first, the form of a public; second, the emergence of a circuit of producers and cultural entrepreneurs; and third, the emergence of multiple instances of consecration and

legitimation, together with the diffusion of cultural goods. For Weber, it is the consequence of the rationalization of Western society. For Blanning (2011), it is the triumph of the musician and the victory of bourgeois life. For Bourdieu (1996), it is the autonomy of the artistic field.

Weber's theory conjectured the passage of a paradigm from traditional to modern music (Weber, 1995, p. 123). This passage would gradually eliminate music's irrational and mystical qualities as an artistic practice, replacing them with rational attributes. With the advent of digital platforms and the standardization of sounds and instruments, an organized and standardized sequences of chords started to be built – for example, musical genres such as pop, rock and funk. Thus, we are in the presence of another type of musical notation. For Turley (2001), two critical moments in the rationalization of music for Weber were the development of modern instruments and the invention of modern musical notation. At the time, Weber referred to the emergence of a professional and professionalizing group of artisans responsible for the execution of instruments; subsequently, the musicians he called performers came into action (Weber, 2009). With the emergence of today's digital platforms and considering the specific case of electronic music as an example, these roles are mixed, mainly because it becomes possible to produce music from the intimate spaces of the artists and musicians, creating a symbiotic relationship between the processes of musical construction and musical production. As in Weber's *teoria* (1983), this question of the digital has a significant impact, but this is where relevant structures become significant. During the COVID-19 pandemic, many musicians used streaming as a way to deal with the closing of cultural spaces (Guerra, 2022a; 2023a; Green et al., 2021) but did not manage to obtain a significant income from this.

Malhotra (1979), in approaching electronic music, adopts Weber's vision regarding the degree to which these digital programs are based on a mathematical formula. The growing importance of digital media today transports us to a post-Weberian period but also brings up some issues regarding the theory of rationalization and disenchantment of the world. Still, for Malhotra (1979), the sense with which an individual hears music is always based on the cultural context in which the piece is created. To understand music nowadays, it is necessary to understand the cultural and social context that massifies access to digital media and democratizes musical instruments when these were previously only destined for the middle and high classes as a symbol of power and economic status. Weber's main question was whether the emerging rationalization of societies would inhibit emotional responses to music, so we can similarly question whether music has become different today due to the role of digital media. We can further examine whether the emotional response to physical instruments has been rationalized due to the affirmation of the digital field of music production, consumption and dissemination.

Focusing on virtual instruments – for example, MIDI instruments⁶ – and their relationship to the rationalization proposed by Weber, it is essential to note the existence of a formal distinction between musical elements and musical forms:

⁶ Musical Instrument of Digital Interface is a technical standard that describes a communications protocol, digital interface, and electrical connectors that connect a wide variety of electronic musical instruments, computers, and related audio devices for playing, editing, and recording music.

Musical elements include the tonal and harmonic system which involves scales, overtones, chord structures keys, and rhythm. Musical forms are the structural patterns such as fugues, sonatas, song, canon, dance, symphonic structure, concerto, etc. (Malhotra, 1979, p. 105)

This distinction is essential to understanding why Weber mentioned that the rationalization of Western music limited expressivity (Weber, 1995). Weber said the traditional music system had undermined the sensibility of social agents, causing chords and the musical progression of each composition to be anticipated. However, in our reading of the digitally produced music scene, while chaining individuals together, rationalization also sets them free. There is greater freedom for experimentation and musical creation, which in turn gives rise to new sensibilities that are not undermined by the rationalization of the music production process (Levine, 1977), not least because '[v]irtually any type of sound wave may be produced. This means the composer is liberated from the restricting timbres possible on existing instruments' (Malhotra, 1979, p. 109). The artist becomes free to create; even the instruments are recreated by the computer and the digital universe, and this field of possibilities starts to enhance the freedom of artistic creation but also the independence and sensibility of those who listen to this musical production. As Etzkorn (1977) points out, for Weber, music begins when technique ends. As Malhotra (1979, p. 116) tells us:

Perhaps we are in a new era of enchantment whereby the very knowledge that a musical form involves advanced technology and science produces a magical appeal for the masses of people who are as mystified by science today as persons of previous cultures were mystified by various rites and rituals.

Weber associated economic, cultural, social, technical and also climatic factors⁷ with the rationalism of an instrument, namely the piano (Weber, 1995, p. 131). If, at the time of his theoretical and empirical incursions, Weber (1995) mentioned that the piano had become a piece of furniture of the middle-class family, today, the same can be said about digital musical production equipment.

The construction of the piano is conditioned by mass sales, because the piano is also, according to its musical essence, a bourgeois domestic instrument. If the organ requires a gigantic space to develop its best qualities, the piano requires a moderate space. All the virtuosic successes of modern pianists in no way alter the fact that the instrument, when performing alone in the large concert hall, is involuntarily compared to the orchestra, and is then undoubtedly very much at home. It is therefore no coincidence that the peoples of the north, whose lives are linked to the house because of the climate, have become the mainstays of pianistic culture, as opposed to the peoples of the south. Because the cult of bourgeois domestic comfort was very underdeveloped in the South, for climatic and historical reasons, and the piano, invented there, did not spread – as we have seen – as quickly as it did among us, and to this day it has not obtained, to the same extent, the position that has been natural among us for some time, of bourgeois 'furniture'. (Weber, 1995, p. 150)

⁷ Some authors claim that the piano spread more rapidly in Northern Europe than in Southern Europe (Turley, 2001, p. 638) due to the colder climate, as the Northern European population spent more time indoors.

Moreover, access to the internet is virtually ubiquitous, almost regardless of the social class of individuals. Hence, the ability to undertake processes of musical rationalization from digital platforms is commonplace. Thus, in contemporary societies, starting from the digital universe, Weber's comments about rational capitalism having fed musical consumption and production (Weber, 1995) can be transposed to the advent of the internet and the installation of digital streaming platforms such as Spotify. These historical and economic advances provided by the digital universe are symptomatic of the (still) emerging process of rationalization in force in capitalist societies. Furthermore, from the point of view of the applicability of his theory, we can also see his contribution to the sociology of music, as these theoretical contributions have led to the identification of a process with multiple dimensions, including gender, social class, age group and economic value, which in their essence are used to explain a phenomenon: digitalization of musical production and consumption.

We can also mention some more recent and emerging examples related to music creation and production through Artificial Intelligence (AI). Let us highlight, as an example of the concept of rationalization proposed by Weber, the emerging human-machine relationship that guides AI. In 2018, Taryn Southern released the album *I am AI*,⁸ a musical project that was composed and produced using four digital programs (AIVA, Watson Beat, Amper Music and Google Magenta). Another case is that of Holly Herndon, noted as the 'godfather' of AI music. In the music 'Baby AI Spawn', voices and sounds based on data and algorithms were used. By being produced from databases and algorithms whose focus is on processes of rationalization, digitalisation and automation, these productions demonstrate the basic principle of Weber's theory (2017).

5 Epilogue

Fuente (2004) states that one of the recurrent topics in sociological discussions of cultural modernism is the emergence of the artist as a figure of rebellion against the bourgeois norms of society. This interpretation of modernism draws heavily on Weber's contributions to culture and art because, as we have seen, he tends to portray artistic movements as an aesthetic of escape from rational activity (Scaff, 1989). Although the concept of rationalization lacks a deep and broader definition, the empirical exemplification and presentation of the social phenomenon that Weber provides are assumed as a framework that allows reflection around it, as well as entering the problematic of the importance of social, historical and geographical contexts in the analysis of a social phenomenon – not least because Weber's theory was developed through a German lens. As we have seen, various criticisms can be levelled at his work, ranging from the lack of conceptualization regarding rationalization to adopting a Eurocentric perspective. However, his study is remarkable for its comparative consideration of musical traditions far removed from the Western canon (see Konoval, 2019). The contributions made by Weber about music have mainly

⁸ More information at: <https://www.thomann.de/blog/en/the-rise-of-ai-in-music-2>

contributed to the advancement of the discipline of sociology of music not only because they have influenced several critical contemporary thinkers but also because they have had a major influence on contemporary research (Frith, 1989; Shepherd, 1993; Straw, 1991).

Here, in an abbreviated way, we have sought to relate the definition of rationalisation, promoting an interpretation of it from the reading of statistical data related to music streaming, another form of consumption and musical notation. Weber's contributions conclude that rationalisation has deeply penetrated the most diverse social dimensions – for example, highlighting music consumption related to digital platforms. This high-level consumption of streaming is, in our view, a recent materialization of the phenomenon of disenchantment of the world, which Weber associated with the emerging process of rationalization of social action *vis-à-vis* art or religion (Weber, 2017). Freedom, associated with encountering the world, can be seen through another prism in this approach, especially because musical and artistic consumption has become more accessible, as have the modes of artistic-musical production and dissemination. Suppose the world's disenchantment was associated with a loss of individual freedom. In that case, the digital mode potentiates an enchantment of the world, starting from space for artistic and musical creation. In brief, Weber's theory proposes the provision of a broad theoretical apparatus of macro-sociological character about art, society and various spheres that make up social experience; therefore, his contributions are still highly relevant in an analysis of the cultural and musical panorama of a community, including from the perspective of its impacts. At the same time, his methodological options and involvement as a sociologist in research – currently called 'action research' – are among his central legacies to sociology as a science.

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