Music 2.0 and artistic research

Beyond a thousand years of Western art music

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Arguing that society is going through a major civilisational transformation and claiming that Western art music has been a one thousand year-long epochal phenomenon, this paper is a plea for a reconfiguration of musical practices, provocatively labelled as "Music 2.0".
This reconfiguration can benefit from ongoing developments in artistic research, crucially moving from an aesthetic regime of the arts to more pluralistic, inclusive, and diverse aesthetico-epistemic modes of expression.

Music 2.0 is the already established future of music. [1]

- Peter Wicke

Introduction

This paper is neither intended as research dissemination, nor as an academic essay in the strict sense – it is a position paper, a sort of conceptual manifesto articulating the situatedness of Western art music, stressing its *epochality*, delimitating its borders, and opening up questions and views for possible future practices. The paper has three parts: the first one offers a condensed overview of a wide range of societal, cultural, technological, and academic transformations; the second part is a critical problematization of Western art music, how it functioned as a closed box, and how it more often than not excluded both the Other and 'sound'. The third part suggests a pivotal creative role for artistic research, and reviews several challenges for music education and research, presenting critical questions that the musician of the future will have to deal with: How to rethink music in the digital age? How to develop creative musical practices that cope with the conditions and affordances of contemporary society? What is the role and function of a musician in contemporary society? How to relate to digitization, new forms of knowledge production, technological acceleration, the proliferation of media, globalization, and changing cultural-economic conditions? How to cope with the hyper-archive and data overflow?

More than providing a definition of music 2.0, the paper is an invitation to the reader, an invitation to join forces in reconfiguring and reshaping contemporary musical practices. Music 2.0 will be what we make of it.

An epochal transformation of society

Humanity is going through a major epochal transformation. The digitization of knowledge, communication, and social interactions is triggering a reconfiguration of society only comparable to the transformations brought by the invention of language, the transition from hunter-gatherer societies to agricultural societies, the domestication of plants and animals, the emergence of cities and states, the invention of the wheel, of writing, of printing, of the steam engine or electricity. Any of these changes drastically reshaped humanity and its modes of functioning. According to Oleg Suśa 'a major civilisational transformation is a change in the way people live, think, and relate to each other and to nature on a large scale'.[2] Currently, and already for the last thirty or so years we are living such a process of disruption, which recently has been further accelerated by the emergence of artificial intelligence tools and technologies for everyday tasks and workflows.

This unfolding revolution has been presciently described and profoundly analysed by Manuel Castells,[3] who contends 'that around the end of the second millennium... a number of major social, technological, economic, and cultural transformations came together to give rise to a new form of society, the network society'.[4] This epochal transformation results from the digitization of information and communication tools, from developments in bio- and nanotechnologies, microsystems, artificial intelligence, and machine learning. The growing operability of artificial intelligence tools and technologies, the generalized automation of work, and the possible introduction of a universal basic income in the next hundred years[5] will liberate human labour for creative practices, and contribute to a new kind of society: it looks like Humanity will never be the same as before.

The musician of the future will have to deal with critical questions: How to rethink music in the digital age? How to develop creative musical practices that cope with the conditions and affordances of contemporary society? What is the role and function of a musician today?

In parallel to these developments, a more fundamental social and epistemic revolution is radically changing our conception of who we are, what we do, how we relate to each other, how we conceive of reality, and how we interact with the world. Novel practices (including post-human, AI-supported modes of expression), and unprecedented modes of social networking are massively contributing to this revolution, making it difficult to establish clear-cut separations between 'individual' and 'society', 'human' and 'non-human', 'natural' and 'artificial'. On top of all the technical and technological apparatuses that directly impacted and changed our lives in the last decades, this epochal transformation engages much more complex institutional and personal aspects, such as new modes of producing knowledge, new forms of human interaction, new economic models, and new scientific theories of the natural world, like dark energy, 'beauty quark', entropic gravity,[6] DNA and human genome research, or even the discovery of a new cell within the human body.[7] All these scientific findings and inventions lead to new relationships between society, science, and technology, and they will generate novel social arrangements.

In broader terms, society moved from information scarcity to hyper-abundance of information. The human and social sciences moved from an exclusive or (at least) very dominant human perspective, towards an expansion of their field of study, including now non-human agents and things, such as natural phenomena, animals, plants, rivers, and mountains, potentially leading to a Parliament of Things[8] and to a reassembling of sociopolitical configurations.[9] More than stand-alone things, properties, and binary relations, primacy is now given to interactions, processes, and networks. The distinction between human, nature, and machine became increasingly blurred,[10] pointing to (urgently needed) new definitions of what Humanity is in the first place.

In terms of knowledge production, new modes of reasoning and operating emerged: beyond conventional disciplinary boundaries and axiomatic science, the so-called 'mode 2 knowledge production'[11] suggested new ways to generate knowledge, centrally based upon principles of transdisciplinarity, heterogeneity, transience, social reflexivity, context-dependence, and centrality of practice-based research. Inter-, and trans-disciplinarity gained relevance and became central methods to address complex questions and dynamic systems. Interdisciplinary research became central to many scientific fields. It responds to as well as leads to the generation of new problems.[12] Critically, as Georgina Born clarified, 'interdisciplinary practice stems from a commitment or desire to contest or transcend the given epistemological and ontological foundations of historical disciplines a move that makes the new interdiscipline irreducible to its "antecedent disciplines"'.[13] The high relevance of inter- and trandisciplinarity for artistic research will be stressed in the last section, arguing for a strong move beyond established scholarly or artistic disciplines.

Finally, the arts and the making of art radically shifted from analogue to digital modes of existence. All art of the past and present became digital or is in the process of becoming digital, under the threat of disappearing or becoming irrelevant. This also includes artworks that have been analogically generated – they have been digitized in one way or another, and it is hard to see how to access them today without any digital system or device. Artists, musicians, and artist researchers alike, all had to learn innumerable new digital tools to keep up with their time. Creativity expanded to unprecedented realms, including virtual and hybrid modes of production and dissemination. Recent developments in algorithmic creative processes, neural networks applied to the arts, and blockchain technologies carry great potential to profoundly alter what counts as 'art' and its modes of emergence.[14] Digital art and Artificial Intelligence applied to creative processes are redefining artistic practices and outputs, largely forging new modes of expression that we are only starting to grasp.

Ignoring all these changes and epochal transformations would be as much untenable as irresponsible. Only by confronting these challenges is it possible to be prepared for the future and to proactively participate in the ongoing redesign and reconfiguration of society.

An epochal transformation of music culture

Music culture itself is going through a critical historical moment of drastic change. Western art music flourished during the second millennium, roughly between the invention of notation around the year 1000 and the Post World War II European and experimental avantgardes. But today, at the beginning of the third millennium, this musical corpus and associated traditions are being critically challenged both from the outside as well as from the inside of Western art music itself.

From the outside, non-Western musical practices from the Global South, from minorities, from marginalized cultures, or from marginalized genres, gained voice and aesthetic legitimacy, having become an integral part of a global and widely shared musical culture. From within, the thousand years of Western notated art music appear in an advanced state of becoming museal and increasingly irrelevant. This is particularly obvious when the focus of study and practice turns to hyper-specialized niches of organological, philological, and reiterated historical studies, including historical modes of composing and performing. By giving the past too much weight, music schools risk disconnecting a whole generation of students from the opportunities of the future.

For more than a century, music pedagogy and musicological discourses have been massively dominated by a 'preoccupation with the bounded, internal, immanent development of the lineages of Western art music, rather than their complex interrelation and imbrication with contiguous musical systems existing in the same or proximate physical, geographical, historical or social space.'[15] According to Born, 'the development of a relational musicology depends upon a break with dominant conceptions not only of what counts as music to be studied, but how it should be studied, with these principles applying as much to scholarship in ethnomusicology and in jazz and popular music studies as to that in musicology'.[16] The question of what counts as music to be studied and performed became central to music schools and music practitioners. Conventional partitions between art and popular music, between Western and non-Western musics, between high and low musical practices, between constructed and improvised music have become relics of outdated paradigms of thought and practice. It is, therefore, more than timely to explore a move beyond the thousand years of Western art music, proposing and experimenting with many possible futures for musical practices.

A foundational precondition of Western art music has been the constitution of a temporal and visual musical thought: music unfolds in time, but it is encoded in and through a visual system of inscription. One decisive factor (if not *the* decisive factor) for the proliferation of Western art music has been the invention of musical notation between the 9th and the 11th centuries: selected sounds, at specific intervals from one another (defining modes or scales), and produced by voices or instruments, increasingly gained definition and have been arranged in ever-growing combinations and degrees of complexity. Becoming 'visible', musical lines and structures suggested a whole new horizon of melodic and harmonic combinatorics that led to the consolidation of polyphony and to the emergence of complex formal structures. Thus, the invention of music notation functioned as a major transformational force that defined a new epoch, profoundly changing the nature of music. On the one hand, it allowed the separation between a musical piece and its creator; on the other, it facilitated the transmission and archiving of musical works for future practices.[17]

Interestingly, before its invention, music notation was considered as an absolute impossibility. Around the year 635 AD, Isidore of Seville (560–636) still wrote in his famous Encyclopaedia that 'unless sounds are held by the memory of man, they perish, because they cannot be written down'.[18] Although the earliest documented forms of musical notation date back to 2000 BC, and despite the existence of notational practices in ancient Greece and ancient China, the breakthrough of music notation as we know it today, happened only 400 years after Isidore's laconic statement, around the year 1000 AD. Only then did concrete forms of notation begin to develop in monasteries across Europe, using symbols known as neumes, before Guido of Arezzo combined them with a four-line staff, paving the way to modern notational practices.[19] The correlation of sounds to symbols and, soon after, the rise of new sound combinations induced by these symbols had a tremendous impact on Western art music.[20] From the 'under-notated' music of the early Middle Ages to the 'over-notated' scores of the twentieth century, a whole millennium of musical practices unfolded.

These thousand years of history and traditions are being critically challenged and need to be reassessed for (at least) three main reasons. First, this tradition needs reconsideration because the second millennium has been overwhelmingly dominated by the West,[21] and Western art music has been a mirror[22] and a part of this domination.[23] Certainly, there have been some cases of exchange, in which non-Western elements impacted Western musicians, and one can think of Turkish elements in Mozart's music, Gamelan music in Debussy, the use of Indian rhythms by Messiaen, or the use of Javanese scales by Toru Takemitsu and Iannis Xenakis following their Indonesian trip in 1972. But as sharply argued by Alexander Rehding, these case-studies remained caught within 'attempts to "domesticate" these musics by altering them utterly in transcription… through piano transcription'.[24]

It is illuminating to recall that one of the main figures of Western Music Theory, Hugo Riemann, was profoundly upset by the ethnographic recordings of Native American and Chinese musics made in the 1890s by the anthropologist Jesse Walter Fewkes and music psychologist Benjamin Ives Gilman. As Rehding writes: 'Riemann's worry was that the phonograph [. . .] would allow nonsense to enter the world of musical thought: intervals that were unthinkable in the rational system of Western music and had been barred from coming into circulation by the sheer impossibility of writing them down as musical notation'.[25]

Second, the exclusion of 'sound' from notated music creates the need for a reintegration of sound in the whole range of sonic experiences. Today, the technological proliferation of recording techniques, of analogue and digital inscriptions, digital archiving, and dissemination tools, make sound appear as all-pervading. 'Sound' in its entirety (the sounds of nature, birds, forests, rivers, cities, machinery, etc.) has been captured, recorded, edited, and reproduced for the last century. If sound seemed to be incommensurable with notation in the time of Isidore of Seville, it now appears as over-recorded, drastically challenging conventional listening experiences. More than recording sounds for the making of 'music', which has been a major trend in field recording, it could be more interesting to regain silence and the non-humanly produced disruptions of silence as a relevant sonic material per se. In the poetic formula of Murray Schafer: 'all sound aspires to the condition of silence',[26] not the other way around.

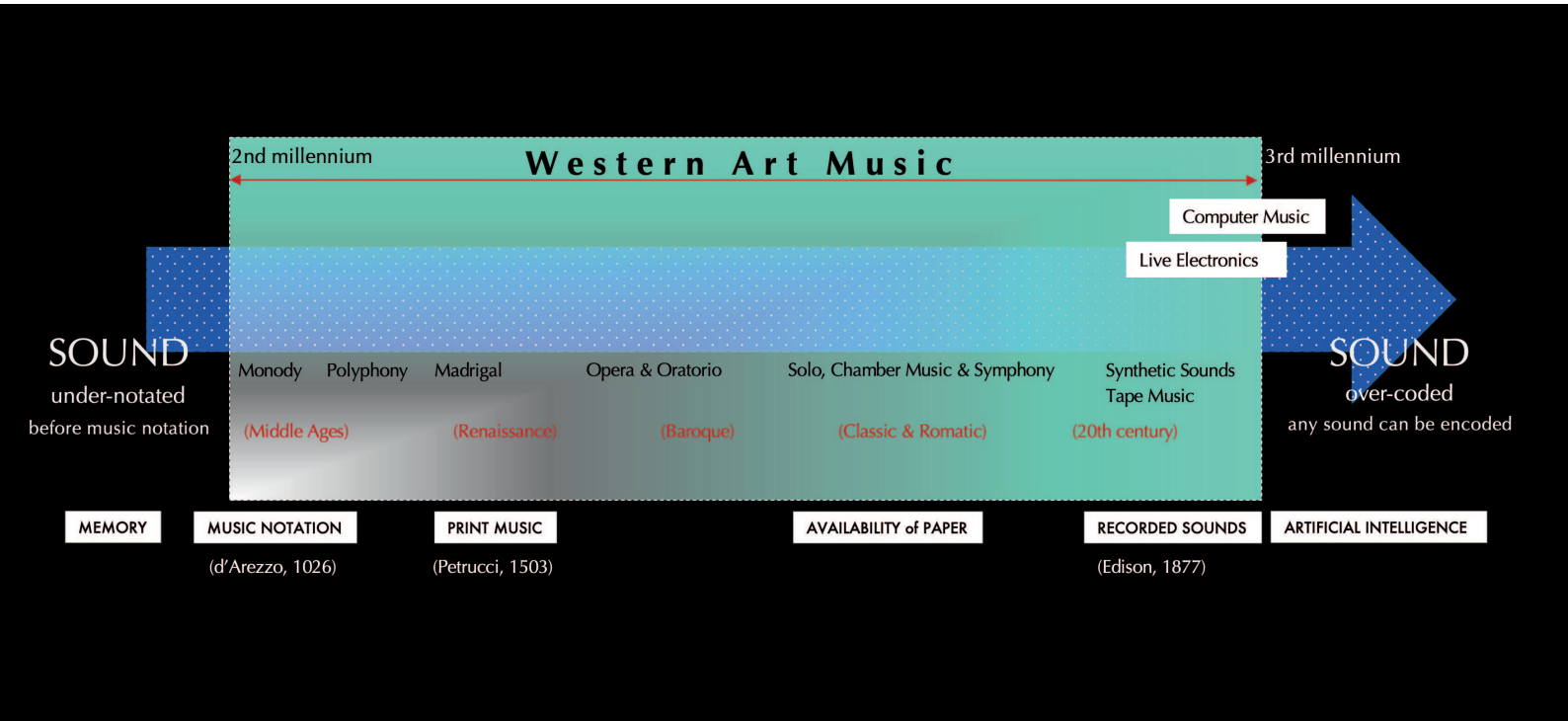
Third, the mission of most music conservatories has been to focus on the 'conservation' of those thousand years of Western art music, assuming or pretending to assume that contemporary society will always remain interested in these historical works, for some even more so if reproduced in the way they have been produced in the past. While to a certain extent this is probably correct as society seems to retain interest for historical objects (artworks, artefacts, etc.), one cannot evade the question of the social role and function of musicians in society today. Even if some music schools have contemporary, jazz, pop-rock, and world music departments, they remain minoritarian within the institutions, and they remain attached to superstructures of Western art music, like scales, instruments, spaces of performance, modes of coding, etc. Thus, music conservatories mainly deal with the past, but we are increasingly living in a permanent future that is moving away from that past at growing speed. We do not live any longer in any particular past, nor do we live in perennial arrangements of habits, conventions, traditions, and division of labour.

The graphic representation below aims at visualising these three problems, namely the exclusion of the Other, the exclusion of sound, and the recurrent tendency to exclude (or at least obstruct) innovative concepts and practices – a tendency to avoid the future.

Taking Guido of Arezzo's *Micrologus* (1026) as a symbolic starting point, these thousand years of Western music history constitute an overwhelming hyper-archive of knowledge. It is full of documents, technical objects, oral traditions, and intangible practices, all of which have become increasingly accessible in the twenty-first century. The amount of currently available information, objects, and data, combined with the exponential growth of music performances and ever-new compositional tools and strategies, has created a unique historical situation in which musical works can be assessed through multiple sources (documents and practices, layers, and arrangements thereof), and have different modes of appearance (sonic and textual, analogue and digital, live and recorded).

This hyper-archive of musical sources and practices, together with ongoing digital and technological innovations, creates space for new concepts and practices. As Born reminds us, 'any reconfiguration of subdisciplinary boundaries [requires] the presentation of cogent and compelling intellectual and creative [arguments] for a redistribution of attention to new objects of study, new perspectives on old disciplinary objects, and new conceptual and methodological resources relevant to all musics'.[27] The willingness to rethink all these mental and practice-oriented aspects requires a will to problematize our knowledge about music and about concrete musical works. The notion of problematization that I have in mind here derives from Michel Foucault's 'problematization', a term that refers to a positive conception of problems and that Foucault used as a method of questioning the assumptions and norms that shape our thinking.[28] If one doesn't see past musical works as problematic, one remains artistically uncritical and there is no obligation to enter this problematization. Crucially, as Foucault makes clear, 'problematisation doesn't mean the representation of a pre-existent object, nor the creation through discourse of an object that doesn't exist. It's the set of discursive or non-discursive practices that makes something enter into the play of the true and false, and constitutes it as an object for thought (whether under the form of moral reflection, scientific knowledge, political analysis, etc.)'.[29] It is this transformation of aesthetic objects into objects for thought (as proposed in my ongoing project on an 'aesthetico-epistemic regime') that can have the power to radically change musical practices in the next few decades.

Music 1.0: a Thousand Years of Western Art Music © Paulo de Assis.



Artistic research does not operate "after the fact" but generates facts. It challenges reality and proposes novel entities and approaches. This is the artistic dimension of artistic research. Without this dimension, artistic research would remain subsumed to historical and systematic musicology, organology, or sociology of music.

Another area in need of profound reconsideration is the whole field of aesthetics. Given the current challenges posed by the ongoing transformation of society, the big challenge for music culture and education is to renegotiate its aesthetic values and principles, while taking into account the strong dynamics at play in contemporary society. This might require a leap forward, towards a post-aesthetic regime for the arts, in which epistemic components gain centrality. This regime can be seen as belonging to the *aesthetic* because the kind of musical practices it affords can be assessed in aesthetic terms. But it is also *epistemic* because these practices take part in a broader discourse that contributes to the production, discussion, and transmission of knowledge. My book *Logic of Experimentation*[30] presents seminal work towards this new regime for the making and apprehension of music. Moving beyond conventional notions of performance, execution, interpretation, and composition, a new practice is suggested, one that defines itself as a critical act against commonplaces and clichés, overcoming both interpretation and representation, and aiming at the constitution and critical exposure of aesthetic and epistemic references, enabling the emergence of spaces of experimentation for performance and composition. Crucially, these practices are *experimental* because they are open to the creative exploration of inconsistencies in the used materials and concepts.

As recently formulated by the artist researcher Lucia D'Errico, while the artist in the aesthetic regime of the arts is 'in possession of something', in a new post-aesthetic regime, the artist may crucially 'start from a position of lack. In this position, the accumulation of knowledge, technical skills, etc. reverses its function: it is not an established territory to be inhabited, cherished, and exposed to an audience, but rather the outpost from which the artist looks towards what their practice *is not*, *might become*, or perhaps even *will never be*'.[31] In the case of music, this effort requires a reconfiguration of what counts as music and how is it generated.

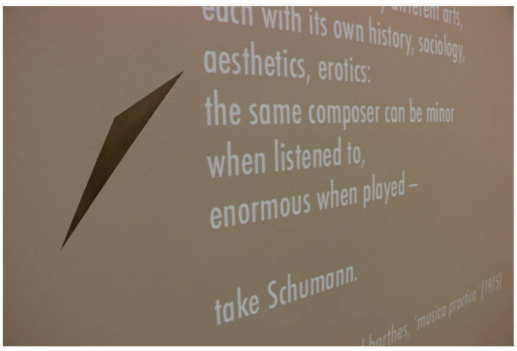
Digital tools for composition and recording became widely available to everybody and their usability has been increasingly simplified. At the same time, compositional and performative aesthetics and principles proliferated into an unprecedented variety of perspectives and accepted rules. Historically informed performance practices live together and side by side with mainstream, reconstructive, postmodern, and experimental modes of performance. Thus, apart from the very specific technical learning of an instrument, being a musician today is a very different thing than it was just twenty years ago. Conservatoire students already inhabit the world of Music 2.0, but they are still mostly trained in the premises of Music 1.0, and a movement towards more contemporary-oriented practices appears as an urgent need.

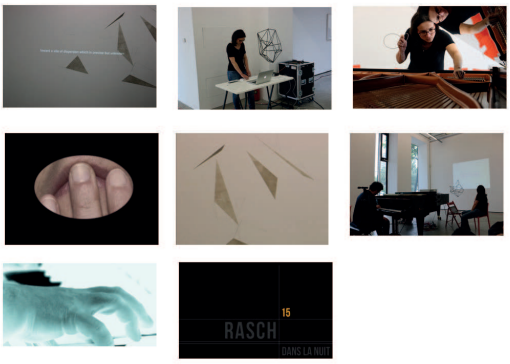
The power of artistic research

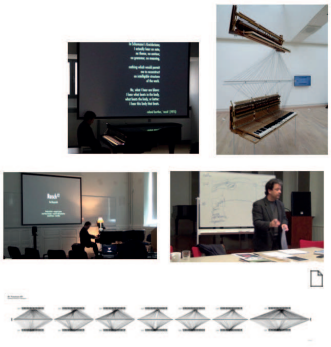
Given the massive accumulation of historic materials, sources, instruments, traditions of practice, and recordings, Western art music is currently confronted with hyper-documentation and hyper-archives. Music has so many sources, material layers, and modes of appearance that its transmission transcends any mode of singular formalization or perception. Perception, obviously, is tied to a specific here and now that is unique and temporally determined – one cannot directly transcend the temporal directionality of sonic events, which are perceived by our ears one-after-the-other. But we always 'perceive' art objects in given contexts, and as sequences of events. It is always a construction of image-on-top-of-image. This is especially the case with music in the contemporary world. Willing or not, music is always apprehended from multiple and heterogeneous perspectives.

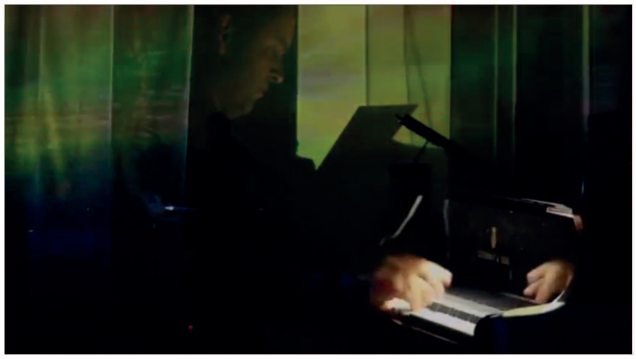
Under global historical conditions that decentre the Western model, and in the face of the increasing digitization of performances, compositions, and music archives, novel concepts and innovative practices grounded in artistic practice and research are highly required, especially given the current need for research-based curricula in higher education institutions. Dialogue and collaboration between artists, music schools, universities, and arts-based research centres will be central to guarantee inter- and transdisciplinarity, enhancing the complementarity of knowledge production, and fostering the efficiency of knowledge transfer. In this sense, the centrality of the transdisciplinary perspective offered by artistic research cannot be overstated, and even more so given its constitution as a new mode of knowledge production.

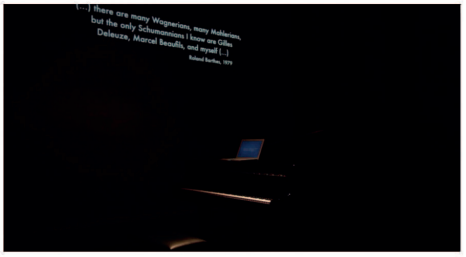
Without compromising their specific expertise, both musicians and academics will require an increasingly adaptive skill set to flourish in a changing world, to create employment opportunities for themselves and for others. Today, advanced music students (Master, PhD) and early career practitioners











Research Catalogue's entry portal to the series *Rasch-X.*

have a responsibility to conduct research through means of advanced artistic practice and reflection, directed toward the production of new knowledge, new understandings, and new skills. Third-cycle education and doctoral programmes are opening in an increasing number of conservatoires, both in Europe and globally. Additionally, new international peer-reviewed journals devoted to artistic research have been established, and diverse theoretical perspectives have been presented. Significantly, major funding agencies are supporting projects in artistic research, such as the European Research Council, which has funded several practice-based music projects in the recent past (Atau Tanaka, Paulo de Assis, Pierre-Alexandre Tremblay, and Xavier Serra, for example). These developments clearly indicate a major shift in the ways music and music research is conducted at the beginning of the twenty-first century, demonstrating the relevance of artistic research at the forefront of current research in the arts and humanities.

Even if a clear-cut definition of artistic research would be counterproductive, especially in view of the diversity of used methods and approaches, some consensual traits can be articulated. Artistic research includes practice-based research strategies, involving the creation of art as part of the research process. This can include a diversity of methods and a wide range of artistic mediums, such as painting, sculpture, dance, film, music, or literature. Artistic research often explores new techniques, materials, or ideas. It can be distinguished from more traditional forms of research, which often rely on data collection and analysis, by its focus on the artistic process and the resulting art as a form of knowledge. A major feature of artistic research, and one that crucially differentiates it from other modes of research in the arts, is that in artistic research the object of research is not entirely constituted before the research starts, it is not pre-constituted in advance – it gains constituency as the research progresses. Thus, the research object does not precede the research process: it emerges with and along the research path. This feature distinguishes artistic research in music from applied musicology, historical organology, and music philology. Artistic research does not operate 'after the fact' but generates facts. It challenges reality and proposes novel entities and approaches. This is the *artistic* dimension of artistic research. Without this dimension, artistic research would remain subsumed to historical and systematic musicology, organology, or sociology of music. Moreover, artistic research aims at producing knowledge – new knowledge that may shed new light into existing practices, processes, and entities. Again: it is not so much about knowing *more* about artistic objects, but about transforming objects of sensorial experience into aesthetico-epistemic objects for thought and problematization. This is the *epistemic* dimension of artistic research. This dimension differentiates artistic research from other practice-led modes of research, like arts-based research and design research, which first and foremost focus on applicability and useability of findings.

Additionally, artistic research makes concrete use of different *modes of research*, including basic and applied research, critical research, exploratory research, and arts-based research. From a musicological and music philosophical perspective, *basic research* can be helpful in relation to new concepts and ideas, testing definitions, relations between concepts and different music theories, and seeking potential to renew current musical discourses. Results of this background research can lead to foreground knowledge that may be applied to concrete music experiments. On the other hand, further problematizations of practices and concepts are done in dialogue with other areas of knowledge, such as visual arts, contemporary philosophy, contemporary epistemologies, media theory, and science and technology studies. Such transdisciplinary investigations build upon *critical research*, a mode of research that aims at challenging dominant systems and regimes of organizing research itself, and whose central theme involves the problematization of knowledge. Finally, the making of concrete musical objects, pertains to *arts-based research*, an emergent mode of research that is being globally embraced by a growing number of practitioners and institutions. Unlike art practice tout court, rather than focusing solely on the making of art, artistic research fundamentally sees artists as makers and thinkers, claiming that artistic thinking (the way artists think) can contribute new insights and perspectives on many objects of aesthetic investigation that are usually studied by non-practitioners. In this sense, artistic research invites and empowers artists to do research, while keeping high standards of academic quality and scholarly rigour.

This plurality of research modes enables critical reconfigurations of knowledge, both past and present, but also future, if one is willing to accept a certain speculative and fabulatory dimension. Productively, a consistent use of those plural methodologies enables two interconnectable approaches: (1) a creative rethinking of past musical objects and practices, moving beyond historically informed performance, embracing the notion of problematization, and resulting in unprecedented performances and discourses on existing music; and (2) the prospective creation of novel practices and new modes of expression, crucially including transdisciplinary connections that are not reducible to the starting 'disciplines', enabling bridges to other forms of art, thought, science, and philosophy.

Just as an example, I can refer to two overarching research projects that have been developed from this double perspective: one already finished (MusicExperiment21) and another one in progress (MetamusicX). MusicExperiment21[32] explored notions of experimentation in relation to the performance of Western art music, proposing a move beyond commonly accepted codes and conventions of musical interpretation. In this new approach, labelled as *experimental performance practices*, the performance of past musical works is not regarded in its reiterative, reconstructive, or reproductive function. On the contrary, it insists on performance as a locus of experimentation, where what we know about a given musical work is problematized. The performative moment becomes both a creative and a critical act, through which new epistemic and aesthetic properties of the musical work emerge (see for example the recording and webpage of *Rasch 11*[33] and *Rasch 27,*[34] two experimental performances based upon Schumann's *Kreisleriana*, as well as the complete *RaschX* series[35]).

The project had a substantial creative and practical component that led to several artistic realizations and outputs. It generated a great number of performances, lectures, recordings, essays, and books, pioneering open access publication modes, as well as innovative online multimedia expositions of research. An important output has been a subproject that problematized and creatively responded to music by Luigi Nono. Entitled *Con Luigi Nono – Unfolding Waves*, the project explored the extent to which future potential can be created by developing new modes of producing and sharing knowledge. The material for *Con Luigi Nono – Unfolding Waves,*[36] presented in the online *Journal of Artistic Research* as a series of seven modules, explicitly aimed through its sequencing to emphasize 'the fluidity and continuity of the borders between "academic" and "artistic" practices and outputs'. Overall, as Janet Ritterman has put it, 'by focussing on experimentation in the performance of Western notated art music, rather than on interpretation, this project offered almost limitless future potential'.[37]

The ongoing research programme MetamusicX[38] – with its inclusion of non-human sounds of the world and post-human, computer-assisted sonic results – more directly aims at contributing to what might become *Music 2.0*. Operating beyond conventional boundaries, this project crucially situates the making of music in a space that transcends music itself, opening wider fields of practice and inquiry. The project aims at renewing musical practices

both through music-specific means (hypermusic, geo-localized music, algorithmic composition, critical pop music), and through non- or extra-musical connections (to art, science, and philosophy). Exposing stratified musical entities (decomposed in their basic constitutive parts), in dialogue with other kinds of things and artefacts, this project fosters innovation, aiming at the production of aesthetic and epistemic shifts. Melting actual and virtual realities, analogue and digital modes of existence, MetamusicX aims at exploring a hybrid digital-analogue space from the unique perspective of artistic research, investigating new modes of generating and encoding basic musical particles. Artistic research is conducted within different strands: (1) developing complex notated musical structures in the form of transdisciplinary multiworks, (2) making geo-localized sound-sculptures deeply rooted in a specific spatio-temporal here-and-nows; (3) including computer-assisted composition, algorithmic composition, and generative compositional tools. A further broadening of the horizon towards critical transcultural pop music is being considered.

Even if no one can tell how the future will look like, there are some major points in the present that need consideration. Other musics and other cultures beyond Western art gained in presence and relevance. New modes of performance, communication, and dissemination appeared. New epistemologies and new modes of generating knowledge emerged. Virtually infinite sources, scores, manuscripts, and other documents complicated our views and all the things we thought to know about works and composers from the past. All our daily practice and activities became immersed and entangled in technological environments of ever smaller scale, up to heartrate monitors and movement detectors attached to our wrists. As I write, further digital tools and operating systems evolve, including arts-related Artificial Intelligence, and blockchain solutions for the creation, storage, dissemination, and commercialization of music. Without entering the realm of futurology, it seems plausible that important elements for the future of music will include digital music, AI-enhanced musical practices, AI-creativity, decentralized modes of production, the centrality of 'sound' and sonic reality, the inclusion of non-human and post-human modes of expression, a shift of emphasis from performance- and instrument-focused work, to sound art projects[39] and extended virtual and hybrid modes of appearance.

Thus, the musician of the future will have to deal with critical questions: How to rethink music in the digital age? How to develop creative musical practices that cope with the conditions and affordances of contemporary society? What is the role and function of a musician in contemporary society? How to relate to digitization, new forms of knowledge production, technological acceleration, the proliferation of media, globalization, and changing cultural-economic conditions? How to cope with the hyper-archive and data overflow? For those still dealing with the archive and the past, a major rethinking of the analogue past with a view to the digital future will be crucial. In many ways this future is already present. The music we are experiencing today, be it as performers, composers, but also as critics and listeners, is already fundamentally different from what we have been doing since the invention of notation. Beyond a thousand years of notated Western art music, 'Music 2.0 is the already established future of music', as Peter Wicke put it.[40] Some will struggle to accept this evidence, but the future is never for sceptics or conservatives – it is for all those creative and courageous minds that are willing to embrace unknown and uncharted territories. Music 2.0 is one of such yet unknown and uncharted territories. As stated above, more than providing a definition of what Music 2.0 is, this paper is an invitation to think and act according to the present challenges. Humanity 2.0 will be what we make of it.

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