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EDITORIAL

Ubiquitous music research stands at the crossroads of multiple forces that have shaped the ways of thinking, designing, and deploying technological resources for post-2020 music-making. For us, the 2020 milestone is particularly significant because the period of the covid-19 pandemic highlighted the brittleness of the support infrastructure for musical interaction and the fragility of key 20th-century approaches to musical thought. The pandemic tsunami brought into focus the proposals laid out during the first wave of ubimus initiatives (2007-2014), suggesting that several of the emerging threads could be consolidated as sociotechnical frameworks. It is interesting to revisit some of the observations made by ubimus researchers in April 2020, when the lasting consequences of the pandemic period on artistic and educational practices were not as clear as today.

In their editorial Ubiquitous Music Making in COVID-19 Times, Keller, Costalonga and Messina (2020) formulate the following question: “will the new areas of ubimus application, highlighting the usage of domestic settings, the asynchronous strategies of group support and the incorporation of multiple modalities of exchange help to foster well-being, musical diversity and meaningful interaction? [...] For better or worse, [music-making] as we

know it will have to make room for artistic practices compatible with a planet in decomposition [...]". These aspects seem to have gained importance in post-2020 creative practice. Rather than the reactive attitude that permeated artistic initiatives of the last decades of the 20th century[1], ubimus practitioners tend to address environmental and social impact as central issues of technological design, which have to be considered before resources are deployed.

Another question that emerges from the confrontation with the extreme constraints triggered by the start of the pandemic is whether the extant infrastructure may provide the necessary support to bypass in-place music-making. "Despite the tendency to increase the amount of information available on the spot, overcoming some of the technical caveats faced by the telematic approaches to music-making such as network jitter and delay, there are human-performance limitations that even speed-of-light data transmission rates may not solve. One aspect is knowledge sharing. Network-based activities involving stakeholders with uneven levels of musical training demand careful attention to the strategies employed for supporting knowledge transfer [...]"[2]. This assertion is confirmed by several threads of post-2020 creative practice. A careless reader could interpret these words as subscribing to a network-only deployment of musical infrastructure. This is not the case. Web-based interaction has been supported since the early days of ubimus (see Miletto et al. 2011). But the design philosophy adopted by ubimus researchers has been expansive rather than resource-oriented[3]. Therefore,

ubimus frameworks avoid platform-exclusive concepts that tend to get buried under the rubble of legacy technologies (typical examples are the Schaefferean 'sound object', the instrumental 'score' or the 'laptop orchestra', among several others)[4]. In this vein, it is interesting to note the recurring emergence of technofeudal myths. 'Democratization' is a case in point.

Among the objectives of ubimus research, reducing the digital divide seems to be at the top of the agenda. Nevertheless, providing access to technological resources does not necessarily change the dynamics of social exclusion. Consider, for instance, the incorporation of mobile platforms. It is true that mobile devices are currently available to significant segments of the population, even in low-income countries. This creates potential for creative usage, but it does not ensure an expansion of creativity. In particular, when the expanded availability of hardware is not accompanied by critical know-how, the effects of corporate infrastructure tend to be deleterious. As a result, the strategies applied in ubimus involve a policy of slow adoption: to avoid social disruptions, new resources are introduced after careful assessment of short-term effects and the consideration of long-term impact. This is akin to Weiser`s proposal of calm or slow technology (Weiser and Brown 1996), an approach to design that relegates attention-grabbing interaction techniques to specific demands and strives to incorporate peripheral-attention cognitive resources as material for design. Whole-body interaction is a case in point. Rather than approaching sound-shaping as an instrumentally oriented activity, ubimus frameworks explore

body movements that do not require long periods of training or fine motor skills. The struck-string interaction framework discussed by Chakraborty et al. and by Kramann (in this volume) exemplifies this design approach.

Another thread highlighted by Keller, Costalonga, and Messina (2020) entails the use of improvisatory strategies in ubimus. "There is a well-established tradition of free-improvisatory practices in Brazil. But until recently, attempts to establish bridges between professionally oriented improvisation and the participation of lay musicians were rare. In an effort to overcome the artificial separation between musically trained subjects and casual collaborators, ubimus practitioners have laid out bridges to integrate improvisatory practices with active audience involvement [...]". When approached from a ubimus-design perspective, the improvisational component is reconfigured: its functionality within the creative process is brought into question (Koszolko and Studley 2023). Given that ubimus is about ways of thinking, designing, and deploying, the incorporation of unplanned factors can be applied beyond sound-making. Contingencies are present in design (Aliel et al. 2024) and involve the incorporation of pliable musical concepts, such as musical stuff (Gómez Mejía et al. 2025). Therefore, improvisation is no longer understood just as synchronous sound-making with acoustic-instrumental resources. Contingency is a core component of thinking, designing, and deploying ubimus resources – hence it demands the reconfiguration of design methods. Interestingly, this aspect is explored in the hardware design techniques featured in Harding's and Jagwani and

Lazzarini's proposals.

Another thread addressed by the authors of the 2020 editorial is ubimus dialogics. Based on the educational principles laid out by Paulo Freire (Shor and Freire 1987), dialogics highlights the role of horizontal exchanges among peers, fostering respect for cultural diversity and a positive attitude toward local knowledge. The participatory design movement in Scandinavia was strongly influenced by dialogics (Ehn 1988). These strategies involve an early incorporation of local stakeholders in the design process. This approach is exemplified in Santos, Defilippo, and Pimentel's project featured in this issue. Santos et al. focus on the demands of musical activities in the context of elementary education, with a special emphasis on the development of ubimus infrastructure applicable both to educational and domestic settings. They describe the implementation and usage of musical mats – an artifact composed of a desktop computer, a Makey Makey microcontroller, and a mat-based triggering mechanism. The prototype makes use of the shareware utility Soundplant2 as a tool for sonic production. Santos et al. carried out an informal study involving eighty seventh-grade students, focusing on classroom-based activities.

According to Keller et al. (2020) in the above-mentioned editorial, "the usage of interfaces and resources that emulate the behavior of European orchestral instruments is a prime example of genre-specific knowledge. Rather than calling this knowledge 'musical', it should be labeled 'orchestral' or even better, 'piano-', 'clarinet-', or 'guitar-based' knowledge. This view [of music-making] only targets the resources linked

to the instrumental performance of acoustic and digitally emulated acoustic instruments. This type of knowledge has limited applicability since it does not encompass the rich experiences provided by a growing variety of multimodal artistic formats, by the application of analogue computing, and it does not engage with the recent contributions of the makers' movement to [music-making][...]". These three threads, multimodality, analogue computing, and support for DIY approaches to hardware design, are present in the current issue, highlighting a consistent theoretical path of ubimus developments. Furthermore, the observations regarding the specificity of timbre-related knowledge are now articulated as a set of ubimus frameworks, exemplified by struck-string interaction (see this issue's Section 1 with three contributions, by Chakraborty et al., Su et al. and Kramann).

Despite the efforts to avoid stylistic or genre-oriented biases, recent discussions in the ubimus community showcase a persistent concern to support legacy approaches to music-making. This is exemplified by frameworks such as the proposals of ubimus archaeologies and the musical-internet (IoMusT and IoMuSt)[5]. Lazzarini et al. (2023) document the recovery of one of the first music-programming compilers, MUSIC V (Mathews et al. 1969). A process of musicological investigation involving iterative adjustments of the programming environment enabled the deployment and synthesis, based on original code and materials, of Jean-Claude Risset's suite Little Boy (1969). Regarding the design for the musical internet, Fiorini et al. (2025) point to interesting contributions by Rich Gold,

involving early implementations of networked resources. This thread may provide opportunities for further deployments of ubimus archaeologies, potentially unveiling musical experiences done at Xerox PARC in the 1990s.

In any case, acoustic-instrumental sonic resources present a difficult conundrum for legacy ubimus frameworks. Acoustic-instrumental sound is an important resource for music-making that cannot be excluded from ubimus designs. This body of material may impose some forms of sonic organization that are difficult to insert within genre-neutral approaches, such as equal-tempered tuning, functional tonality, pitch-based hierarchies, meter-based temporalities, or genre-oriented semantics. All of these are featured as central components of musical-information protocols or generative techniques and tend to reinforce the conservative tendencies of tool development. Thus, the incorporation of a genre-neutral technique to handle musical material is a relevant contribution to legacy frameworks. This initiative is exemplified by the application of spatialization processes on acoustic-instrumental sources. Peters, Koszolko, and Scott (this issue) report their work on the piece Immertio Overture. The novelty here lies in the hybrid approach to composing with instrumental sounds by incorporating sonic placement as a central dimension of creative thinking. The message is that the projected space of the sonic materials constitutes a core aspect of the creative process. How to tackle this dimension as an integrated parameter within the ubimus creative cycle is still an open question.

Summing up, the materials gathered in the second volume of the Journal of Ubiquitous Music feature original

contributions that are well-aligned with the emergent threads of post-2020 creative practice. Cutting-edge technological innovation is exemplified by the incorporation of FPGA-based embedded computing that enhances the Ubimus Plugging Framework (Jagwani and Lazzarini, this issue; Keller, Jagwani, and Lazzarini 2025). Hardware prototyping is also exemplified by Santos et al.'s musical mats and Harding's analogue-synthesis modules (section 3). Multimodality is featured in the two Struck-String Interaction projects featured in section 1. An exploratory usage of spatialization is proposed by Peters et al. as a genre-neutral component of acoustic-instrumental sonic organizations. These proposals highlight a difficult coexistence between legacy and prospective frameworks, slowly emerging in ubimus post-2020 creative practice. A reconfiguration of musical first principles seems to be taking shape. Whether this will involve a dissolution of boundaries among inherited and forward-looking musical ways of thinking or a sharpened conflict between incompatible trends is an open issue to be resolved by careful and consistent application of ubimus methods. We look forward to the next chapters of this intriguing exploration.

ENDNOTES

[1] Undoubtedly soundscape composition provides a historical precedent regarding the need to consider not only the implications of musical activities within artistic venues, but also the educational potential of music-making released from the constraints of standard musical notation. The shortcomings of the soundscape approach as a tool for design are not necessarily conceptual, they are mostly methodological (see Lima et al. 2012; Gomes et al. 2014; Oleksik et al. 2008 for contrasting perspectives on this issue).

[2] The authors mention the widely adopted notion of 'knowledge transfer' but subsequent ubimus research indicates that nonintentional exchanges are as important as intentional exchange of musical information, hence the term 'sharing' seems to be better aligned to ubimus design.

[3] See the various criticisms of the notion of 'thing' in the series of publications dedicated to musical stuff (Messina, Keller, Aliel, Gómez Mejía, Filho and Simurra 2022; Messina, Stolfi, Aliel, Simurra and Keller 2024).

[4] There seems to be an acceleration of obsolescence in music-technological resources. This phenomenon may be due to the expansion of technofeudal hegemony in the central countries. But it may also be caused by an increased fragility of the ways of doing in the peripheral communities of practice. A brittle material base tends to disrupt knowledge-sharing strategies. Thus, there may be a synergy in the obsolescence processes: lack of material support tends to constrain knowledge-sharing and lack of know-how compromises the adoption of infrastructure.

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