The O in NIME: Reflecting on the Importance of Reusing and Repurposing Old Musical Instruments

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ABSTRACT

In this paper, we reflect on the focus of "newness" in NIME research and practice and argue that there is a missing O (for "Old") in framing our academic discourse. A systematic review of the last year's conference proceedings reveals that most papers do, indeed, present new instruments, interfaces, or pieces of technology. Comparably few papers focus on the prolongation of existing NIMEs. Our meta-analysis identifies four main categories from these papers: (1) reuse, (2) update, (3) complement, and (4) long-term engagement. We discuss how focusing more on these four types of NIME development and engagement can be seen as an approach to increase sustainability.

Author Keywords

NIME, Newness, Novelty, Old, Longevity, Sustainability

CCS Concepts

•**Applied computing** → *Performing arts;* **Sound and music computing;** •**Human-centered computing** → HCI theory, concepts and models;

1. INTRODUCTION

The "NIME" acronym has been dissected throughout the years as an onto-epistemological endeavour to make sense of who we are, what we do, and what we consider worth and not worth investigating. The first of these endeavours was dedicated to analysing the "E": what is *expression* for NIME [24]? In recent years, the "M" was subject to a similar investigation: what is *music* for NIME [71]? Despite not being included in the title of their manuscript, Marquez-Borbon and Stapleton [64] reflected upon the "N" in their commentary to the re-edition of their NIME 2014 paper in *A NIME Reader*:

> "The "N" in NIME itself is perhaps partially to blame, in that it resists the long-term develop-

ment of performance pedagogies, repertoire and critical discourse necessary for the legitimisation of a performance community within the wider NIME community." [64]

In this paper, we elaborate on some challenges of focusing on newness—or novelty, depending on how one interprets the "N"—in the NIME community. This reflection is rooted in the observation that relatively little attention is given to old NIMEs [76].

Reviewing papers from the last three editions of the NIME conference, we found that most presented papers focus on new technologies; only a small set of papers accounted for the longevity of NIMEs. By analysing these papers in depth, we identified four strategies for prolonging the life of existing NIMEs: (1) reuse, (2) update, (3) complement, and (4) long-term engagement. By connecting these strategies with the life cycles of a musical artefact as articulated by Masu and colleagues [67] (*Making—Testing—Using—Disposing*), we develop some reflections on sustainability from an *environmental perspective*—based on the relationship between longevity and waste [18, 43]—and concerning the practices and the knowledge embedded into these practices connecting it to the idea of *sustainability of the results* [79].

Additionally, we reflect on an epistemological perspective related to newness, focusing on the knowledge learned from existing—*Old*—NIMEs. This point touches upon what Cantrell [16] discussed in 2017:

> "The positioning of the artistic gesture within the context of NIME culture immediately poses specificities and limitations. Perhaps the most immediate and obvious is the presence of the 'new' demarcation. Similar to other monikers such as 'new media', the presence of a temporal qualifier points to an apriori limitation; that which is considered 'old' is to be excluded. In other words, the 'newness' here is technical, and the technical is prioritized." [16]

This paper is structured as follows. The next section explores NIME's genesis, longevity, and sustainability issues. The successive section focuses on our original investigation into the presence (or absence) of old NIMEs, which is then discussed with a focus on the ideology of newness and sustainability.

2. BACKGROUND

2.1 What is in the name—NIME

The NIME conference began as a workshop at the ACM Conference on Human Factors in Computing Systems (CHI) in 2001 and has been organised annually as a separate conference since 2002. Today, it is an important meeting point for researchers, developers, designers, and artists. The acronym of the conference—NIME—has an official definition, although it is not apparent why exactly "new", "interfaces", and "musical expression" were chosen as the defining terms of what has grown into a large international community.

In *A NIME Reader*, Jensenius and Lyons [51] suggested alternative interpretations of the acronym. What if the "N" would stand for *novel*, the "I" for *instrument*, the "M" for *multimedia*, and the "E" for *exploration*? Would that change the content and discourse of the conference?

The focus on newness in the NIME community can be seen as a reaction towards a relatively conservative commercial music technology industry. The large producers of electronically-based instruments have focused for decades on MIDI-based keyboard instruments. New features are continuously added, but the basic concepts remain the same. Even though there has always been innovation in musical instrument design, there appears to be stagnation in standardised instruments. Magnusson argued that "[m]ost acoustic instruments gained their final form in the late nineteenth century and have evolved very little since" [60]. Perhaps caused by this stagnation in the commercial industry, the NIME community has focused so much on newness that it effectively prevents long-term development.

Another challenge with the NIME acronym is that it focuses on "interface" instead of "instrument". Although it was probably not intended as such, this terminology effectively removes the focus on (audible) sound and highlights the technical meeting point between the performer and the "device". This creates what Jensenius calls a large *action–sound separation* [50]. Many digital musical instruments are, in fact, not instruments at all if one considers an instrument a "sound maker". The modularisation of music technologies has led to the design of separate controllers, sound engines, and speakers that can be connected in various constellations. This separation arguably focuses on developing new components rather than long-term musical engagement with an instrument.

2.2 Longevity and Techno-centrism at NIME

The NIME community is central in developing and exploiting the flexibility of today's modularised music technologies. However, combined with the focus on newness, this comes at a cost. Matters of instrument longevity have been directly and indirectly discussed at NIME. In 2017, springing from previous criticisms about the lack of music made with NIMEs [52] and the lack of NIMEs that remain in use after being presented at the conference [63], Morreale and McPherson systematically tested the status of instruments presented at five successive editions of NIME [76]. Their results confirmed that more than half are no longer in use, and a strikingly low percentage have been commonly used in performances. The authors also commented that it might not be an expectation for NIMEs to sustain continued use. Goudard expanded upon this idea questioning whether the lack of longevity should be considered an issue at all [36]. We should wonder, however, if the ephemerality of NIME is less poetic and more problematic than it seems. A fast succession of new interfaces might derive from a characteristic of the NIME community, as identified by Green: the development of technical systems takes priority over research in musicality [37]. This comment resonates with the early alarm bell raised by Michel Waisvisz: *"If our goal is musical expression we have to move beyond designing technical systems"*. [90].

2.3 Longevity and Sustainability

Many forms of sustainability exist[1]. In this paper, we account for environmental sustainability and sustainability of the knowledge embedded in a DMI (which we refer to as *of the results*) as more directly connected to longevity.

While the issue of disposal has been touched in relation to the end of life of DMIs in previous NIME papers [67, 25], an unquestioned logic of novelty and innovation has an often under-scrutinised impact on environmental sustainability:

> "The drive for novelty at NIME often ends up explicitly promoting cutting-edge technologies (such as maker processes, high performance computing, machine learning) whose wide-scale environmental impact is largely unknown and not yet discussed" [73]

In 2005, Chapman reported that "over 90 per cent of the resources taken out of the ground today become waste within only three months" [18]. Since then, many authors have investigated the longevity of tools as a way to promote environmental sustainability and contrast waste production (e.g. [17, 43, 45]). In a commentary on sustainable interaction design, Blevis [4] focused on the possibilities for reducing waste. The author discussed ten actions to rank the environmental impact of the residual components of technology, which ranged from *Disposal* to *Active repair of misuse*; promoting the reuse of the tools in relation to their longevity is identified as a crucial principle for sustainability.

Since then, the interaction design debate on sustainability has largely evolved (e.g. [23, 40]). Within this context, Dourish [26] proposed that sustainability should not be addressed in terms of individual choices, and cultural contexts should always be considered. In the last few years, several authors aligned with Dourish's view (e.g. [40, 55, 82]) pointing out the need of broadening the vision of sustainability by accounting for a socio-economic perspective. Following a similar view, Chapman [18] addressed unsustainable waste production in relation to a social and relational issue. In his reflection, the author analysed how the waste of products is often symptomatic of a failed emotional relationship between humans and objects and attributed this failure to consumerism. According to the author, people tend to engage in short relationships by continuously producing new objects and swiftly disposing of them.

Bettega and colleagues [3] recently discussed how building Participatory Design projects around adopting off-the-shelf digital commons (e.g. open source tools), rather than producing new technologies, can offer a valid set of strategies to promote sustainability while maximising the benefits for the participants. Indeed, as such tools exist beyond the scope of a specific project, it is more probable that they will be maintained beyond the project time frame [2]. The issue of how to preserve the benefit of a specific project for the community is a common concern in the Participatory Design community, and Poderi [79] formalised it as the *sustainability of the results*.

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[1]This clearly emerges in the Sustainable Development Goal proposed by the UN: https://sdgs.un.org/

Within the NIME community, the research practice is generally different from the Participatory Design community. Thus the idea of *sustainability of the results* as formalised in [79] cannot be directly applied to our community. However, the sustainability of our results and practices should be a concern. In many cases, DMIs embed a new form of knowledge in relation to music practice and experience [60]. As such, we can consider NIME results to be—at least partially—embedded in our instruments and related to their musical usage.

Overall, the longevity of an instrument concerns different types of sustainability: *of the results*, by prolonging and putting into practice the embedded knowledge on an instrument, and *environmental*, by postponing the time of disposal. In this paper, we focus on what is presented at the conference investigating how the "N" in NIME has been balanced among longevity, practice, and sustainability in its various conceptions.

3. OLD NIMES

To better frame longevity, sustainability, and newness-related issues within the NIME discourse, we systematically scrutinised the last three conference editions (2020-2021-2022). The purpose of this investigation is twofold:

1. To present an overview of the number of new technologies for comparative purposes

2. To discover and highlight existing strategies for sustainable NIME practice

3.1   Methodology

We systematically analysed all the abstracts of every paper presented at the 2020, 2021, and 2022 editions of the NIME conference. The analysis featured two stages. The first quantitative analysis focused on our primary objective and aimed to provide an overview of new technologies presented in the past three years. The second qualitative analysis focused on the second objective by highlighting good strategies for sustaining NIMEs' longevity.

In the first phase, we read all the abstracts and manually annotated them, focusing on whether or not *the paper is presenting a new NIME/technology.* For each paper presenting new technology, we also highlighted whether the new NIME has a name. The descriptive statistics resulting from this initial quantitative analysis are presented in subsection 3.2, and the numeric results are in Table 1.

While scrutinising all the abstracts, we also highlighted papers that presented a new technology with some form of long-term engagement with a NIME (e.g. multiple performances or based on previous NIMEs) and papers that use existing NIMEs for new performances or studies. By analysing the abstracts, we initially identified 32 papers that suggested some form of a long engagement. These papers were further analysed at full length in the second qualitative phase. In this process, five papers (three from 2021 and two from 2020) were excluded because only one composition or performance was mentioned. We, therefore, ended up with a total of 27 papers analysed in the second phase. The numbers presented in Table 2 already account for this exclusion.

After analysing these papers, we summarised their relation with either long-term engagement or previous NIMEs. Then we coded and recursively clustered them until we identified the four categories: (1) reuse, (2) update, (3) complement, and (4) long-term engagement.

3.2   New Technologies

By counting the papers presenting new technologies against the totality of accepted papers (summarised in Table 1), we find that the majority (around 67%) of the contributions presented new technologies. We also observe that this percentage is stably above 50% across the three editions of the conference (minimum 58%, maximum 73%).

3.3   Strategies for Sustaining NIMEs Longevity

In the following, we discuss four strategies for long-term engagements with NIMEs (see Table 2 for an overview).

3.3.1   Reusing Old NIMEs

Seven papers focused on reusing existing NIMEs as they are—without any modification. This first corpus of papers proposes new research using previously developed NIMEs. These NIMEs have often been used as probes for new research. For instance, Guidi and McPherson [38] presented a new study using the Magpick (an augmented guitar pick [75]) to evaluate whether a musician is capable of performing precise actions on an unfamiliar interface while maintaining the focus on the musical outcome. As another example, Ford et al. [33] examined the types of interactions emerging with Codetta (creativity support tool for children presented in [34]), collecting new logs from 20 children.

Two papers focus on reusing an existing NIME, viewing this from a design perspective. Holzer et al. [46] described a workshop where sound designers were invited to explore a historical instrument's electronic sound (the Dataton System 3000, used primarily in the 1970s). Jack and colleagues [48] used the instrument Strummi (which was initially presented by Harrison and Jack [42, 49]) as a case study to discuss how a DMI can be framed as a research product.

The remaining three papers used an existing NIME, the T-stick, which was originally presented at NIME in 2007 [62]. Two of them [91, 92] presented a study for remapping gestural/audio control options of the instrument. One of these papers [91] purposely replicated the methodology of the other study and provided the software for future replication. Finally, the last paper [35] presented a series of musical commissions supporting composers by organising workshops and technical mentorship sessions, "meant to foment composition and performance using the T-stick and provide an opportunity to improve technical and pedagogical support for the instrument."

3.3.2   Updating Old NIMEs

Eight papers presented updated versions of existing NIMEs. Two papers, which presented the second versions of the AirSticks and AI-terity, primarily focus on technological aspects. The AirSticks 2.0 [88] is a new version of AirSticks 1.0 [47], which relied on off-the-shelf virtual reality controllers "which were discontinued one year into the project." The AirSticks 1.0 was adopted outside the lab through hundreds of music performances since. The new version combined sensor fusion of Inertial Measurement Units with low latency wireless data transmission over Bluetooth Low Energy. AI-terity 2.0 [85] improved the AI-terity [84] by implementing a new deep learning architecture and improving the 3D model of the interface.

Two papers [83, 94] presented a redesign of existing NIMEs with a design-research focus. Sullivan et al. [83] presented a user-driven redesign of the DMI Noiseboxes; in this case, the main focus is on the user-driven process. Zayas-Gari and colleagues [94] reflected on DMI apprenticeship by develop-

NIME Edition	2022	2021	2020	total
Total papers	56	87	126	269
Paper presenting new technology	37 (∼66%)	50 (∼58%)	92 (∼73%)	179 (∼67%)
New technology with a name	24	29	34	87

Table 1: Overview of new technologies presented in the year 2020, 2021, and 2022.

ing a process that led to successfully replicating Strummi (based on the original instrument [42, 49]).

A few other projects were primarily grounded in personal practices and uses. Click::RAND 2:0 [29] is a reconceptualisation and redevelopment of Click::RAND, presented in 2020 [28]. The new Electrumpet presented in 2021 [58] described major developments since its creation in 2008-9 [56] and its upgraded version presented in 2012 [57]. In this case, the paper presented a very long engagement with systems since the previous version. The new version of the Feral Cello [21] revisited the performance system that was first presented at NIME 2017 [20]. This new version was presented "after an extended development period that has also encompassed a body of performance."

Finally, Calegario [13] presented an update of the Probatio toolkit, which was originally presented at NIME 2017 [14]. After that, several musicians interacted with the system, and feedback was collected.

3.3.3 Complementing Old NIMEs

The third category includes six papers that presented completely new technologies that complement or are directly inspired by existing NIMEs.

An example is a new belt respiration sensor [86] that was used along with a modified version of the web application called Pink Trombone[2], created by Thapen in 2017. Another of these instruments is the Kanchay_Yupana [12], an open-source NIME for the generation of rhythms that complements Electronic_Khipu_ (a previous DMI based on an Andean khipu not published in NIME). Pitkin [78] presented a software emulation of the Magnetic Resonator Piano [68]. This virtual version was designed for practising when the physical DMI is unavailable.

Two papers presented new technologies that can be used in combination with the T-stick. The T-Tree [53], for instance, is a DMI and a docking station that can embed several T-sticks, expanding on the premise of the original T-stick and mitigating technical obsolescence (i.e., by supporting updates). TorqueTuner [54] is a module that allows designers to map sensors to parameters of haptic effects, that was integrated into an existing T-stick (as well as a stand-alone knob) to increase modularity and portability.

Finally, one study presented a new surface-based instrument, the Monet [9], and compared it with a previous one, Locus [81]. Although a comparison of a new technology against existing literature is commonly found in NIME publications, this paper is a unique case as it was the only paper in our corpus that indicated in the abstract a comparison with another specific NIME.

3.3.4 Considering long-term engagement

While presenting new technologies, six papers described a long-term engagement from different perspectives. In this category, some papers described a long practice with them. For instance, Fiebrink and Sonami [32] described the refinement process of the Spring Spyre instrument over eight years. Bukvic [7] presented Tweeter L2Ork, an online musi-

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[2] https://dood.al/pinktrombone/

cal instrument introduced in April 2020 to ensure the operation of Virginia Tech's Linux Laptop Orchestra (L2Ork)—an ensemble active since 2010 [8])—during the COVID-19 pandemic. Tweeter L2Ork was used in six international performances during a time span of 18 months. Similarly, Villicaña-Shaw and colleagues [27] presented a fist-sized, battery-powered, environmentally aware soundscape augmentation artefact used in multiple installations between October 2019 and March 2020. Dublon and Liu [89] presented a system initially used online, then used on-site following a festival commission.

In other cases, a prolonged experience constitutes the foundation of a paper presenting a new NIME. This is the case of HAGS [80], an augmented saxophone whose design "was largely justified by some of the repertoire that motivated it, including contemporary repertoire for saxophone and electronics."

Finally, Harlow and colleagues [41] presented a pilot study carried out by a quartet of performers in January 2021. The initial phase of the project, 2020–22, explored the artistic and technological affordances of Global Hyperorgan through a series of interaction scenarios.

NIME Edition	2022	2021	2020	total
Reusing Old NIMEs for new studies	1	4	2	7
Updating Old NIMEs	1	4	3	8
Complementing Old NIMEs	3	2	1	6
Considering long-term engagement	1	4	1	6

Table 2: Overview of the four strategies we identified in our analysis, with the number of papers belonging to each category per year.

4. DISCUSSION

Our systematic analysis confirmed what others have suggested before [16, 76]: the locus of *newness* at NIME firmly sits within new designs of new technologies. While we found a disproportionate amount of papers presenting new technologies, we successfully found examples of research on and with old NIMEs (the "O") in a relatively small but precious set of papers. In this section, we will reflect on what this means for NIME.

4.1 The Ideology of Newness

The NIME community has increasingly questioned hegemonic positions around innovation and techno solutionism [64, 73, 77] and has suggested a change of direction that priorities musicality over technicality [37]. Our analysis, however, suggests that newness still prevails in NIME research practice.

The lack of extensive engagement with "the old" in the community might be caused by an ideology of newness that

permeates the political-economical system in which NIME is situated. Previous research by critical music technology scholars helps us identify some traits of this ideology:

1. an "accelerated temporal logic of contemporary electronics [...] that insists on newness" [22]

2. a techno-utopian climate marked by "liberation through new technologies (that) mistakenly places technology, and not human agency, at the source of human history-making" [10]

3. a general academic climate that "privilege innovation and impact over actual content and substance" [64] and in which "counting matters" [44]

4. a techno-cultural hegemony "rooted in the way (music) software is made, and those who make it" [77]

5. a simplistic solution that reduces a complex space of "personally and artistically motivated challenges" [73], and of "politically negotiated demands" [11] to neoliberal convenience.

We believe that avoiding "sleepwalking into technological futures" [19] is imperative for NIME. As a progressive community uniting artists, researchers, and practitioners from many disciplines, the NIME community could assist in moving beyond what Ekbia and Nardi called the "simple utility and beneficence of technology, and (the) uncritical celebration of innovation" [30].

In NIME research and practice, new knowledge is often embedded in technology [60], as such innovation requires an injection into practice in order to develop and preserve the knowledge inscribed in the instruments. If we look at this from the perspective of academic advancement, in many cases, long-term results of NIME research could be identified in such a practice. Therefore, it is important for our community to develop strategies to prolong their lifespan and not only chase novelty to foster a *sustainability of the results* [79].

4.2 NIMEs' Life Cycles and Sustainability

When discussing the sustainability of NIMEs, Masu and colleagues [67] articulated the life cycles of a musical artefact into four phases: *Making—Testing—Using—Disposing.* Cannon and Favilla proposed the concept of "disposable instruments" to criticise the culture behind DMIs that are discarded shortly after their development [15]. We argue that postponing the *disposing of* stage is fundamental for reducing environmental impact by spreading the environmental cost of developing a NIME over a longer period and promoting its longevity [17, 18, 43, 45].

Prolonging the disposal date of a NIME could also encourage more and longer actual practice and use. **Reusing old NIMEs** represents an ideal scenario as it prolongs the *Testing—Using* phase by reusing the instrument in new research and artistic practice. This is an ideal way of achieving environmental sustainability [4]; by being used, the instrument is sustained by the research practice itself.

A discussion on **updating Old NIMEs** could be separated into two parts. Some systems are updated because of technical needs. This may not be ideal in postponing the disposal of the previous physical or software components. For instance, as the first version of the AirSticks [88] relied on a discontinued controller, it is likely that that first version needed to be disposed of. However, by updating it, the results and the practice—and the knowledge embedded in it—are preserved, opening new *Testing—Using* phases. In

this case, only some parts of the instrument are disposed of, but not the underlying ideas. A different reflection needs to be made for those instruments that were updated within the context of artistic practice and long-term engagement (e.g. [58, 21]). In this case, an update is an actual form of use. While discussing the Feral Cello [21], Devis and Reid clearly frame their long engagement—which leads to an update on the instrument—as a practice that criticises short-term engagement.

Complementing old NIMEs represents another way of postponing disposal. Similarly to reusing old NIMEs, this category prolongs the *Testing—Using* phases of previous NIMEs. In this sense, these artefacts can promote "renewal & reuse," using a terminology by Blevis [4]. However, it consumes more compared to simply reusing an original NIME, as it requires developing new technology.

Finally, **long-term engagement** has virtually no implication on the life span of previous old NIMEs, but facilitates that new NIMEs can grow old. In some cases, the NIMEs are already "old" when they are presented, such as the Spring Spyre instrument [32], which underwent a refinement process over eight years before being presented. This category shared similarity with those systems that present an update of a NIME after long-term engagements (e.g. [58, 21]). These types of papers present a practice that embeds a form of sustainability inscribed into artistic practice.

Chapman [18] suggested that waste of a product is often symptomatic of a failed emotional relationship between humans and objects, which rapidly induce people to dispose of technology. Among the four categories we identified, it is relevant to highlight that three of them present new technologies. Since NIME is primarily a community of makers, it is not surprising that one way of promoting long-term engagement is actually building new updated versions or new instruments to be used in combination with the old ones. The need for customising technology is probably a necessity to develop emotional engagements with technologies [18]. This can again lead to continuous updates for multiple years, either presented as updated instruments (e.g. Electrumpet [58] or the Feral Cello [21]) or as a new instrument refined during a long process (e.g. Spring Spyre [32] or Tweeter L2Ork [7]).

4.3 Reflection on NIME Practice

We acknowledge that many NIMEs are conceived as a Proof of Concept (PoC) or result from Research Through Design (RtD) processes. We fully support this form of research; much activity in the NIME community can already be seen as a form of critical research rather than simply product development. For instance, Bowers and colleagues aim to "broaden the design space" of NIME [6] or critically intervene in "technicist" research areas [5]. Interestingly, these works did not produce new instruments or interfaces, rather their outcome consisted of new performances combining an assemblage of a variety of experimental makings followed by critical reflection. It is also worth mentioning that RtD has been used to investigate different forms of appropriation—for instance by focusing on dimensionality [93] or constraints [39]—which implies an interest in different usage of a system by multiple persons. We have also seen how research agendas of individual researchers or research groups have developed valuable strategies to facilitate a long-term engagement with "old" NIMEs, such as the team working on the T-stick.

However, it is clear that the majority of papers presented at the conference still focus on the development of new technologies. That may be more representative of the phrasing

of calls for papers and the peer review processes than actual artistic practice. For the 2022 conference, a special call for music *NIMEs with a Story*[3] was dedicated to reusing NIMEs for new pieces or performances. As a result, 11 pieces (∼39%) out of 28 selected belonged to this category. This is significantly higher than the 27 out of 269 papers presented in the last three years (∼10%), and the fact that only 22% of the NIMEs presented at the conference between 2010 and 2014 were used in public performances more than one time [76].

4.4 Limitations

Our review was based on the initial filtering of papers based on the content of their abstracts. Thus there is the risk of "false negatives", papers that have been excluded despite discussing NIMEs that have been presented before. One example is the case of FAAB [69], which is simply described in the abstract as a new NIME. Similarly, Mice and Mcpherson [71] presented a new study on the Chaos Bells, which was previously published at CHI [72].

There are also other forms of papers whose academic contribution is based on a longitudinal analysis of practices, such as papers focused on lab practices (e.g. EmuteLab [61], The Proto-Langspil: Launching an Icelandic NIME [1]); self-reflection from a subsets community (e.g. Latin American NIME community [65]); long-term engagement (five years) in the classroom [87] producing reflections on NIME pedagogy; longitudinal ethnographic studies that lead to reflections on accessible music technologies [59]; or systematic literature reviews (e.g. [31, 66]) that scrutinise practices developed across multiple editions of the conference. However, the focus of this paper is on "new" vs "old" NIMEs, by looking at moments in the lifespan of individual technologies and how such technologies are integrated into long-term NIME practice.

5. CONCLUSION

This paper continues an ongoing critical discourse [21, 64, 70, 71] on challenges related to overly focusing on newness within the NIME community. In particular, we analysed the last three editions (2020-2021-2022) of the conference proceedings. Our analysis showed that the majority of recent papers focus on presenting new technologies and we commented on the underpinning ideology of this trend [73, 64, 77].

In the corpus of analysed papers, we identified four strategies that facilitate and promote long-term engagements with NIMEs. We integrated these strategies with the life-cycle of a musical artefact as articulated by Masu and colleagues [67]: *Making—Testing—Using—Disposing*. In doing so, we suggest how these strategies can promote sustainability from both an environmental perspective and in relation to the practice.

We acknowledge that developing new technologies is at the core of the NIME community. However, a sole focus on novelty and newness risks leaving out sustainability in its different forms, i.e. environmental and the results. As suggested by Dourish, sustainability should not be addressed in terms of individual choices [26], this is a matter to be tackled by the community. We suggest that specific conference calls, workshops, or working groups could support more sustainable NIME research. Such actions should not substitute—but complement—current NIME practices.

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[3] https://nime2022.org/music.html

7. ETHICAL STANDARDS

This paper complies with the ethical standard of the NIME conference [74] and does not present any conflict of interest. No human or animal participants were involved. Furthermore, this paper directly addresses sustainability which is one of the topics mentioned in the NIME code.

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