A NIME of the Times: Developing an Outward-Looking Political Agenda For This Community

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ABSTRACT

So far, NIME research has been mostly inward-looking, dedicated to divulging and studying our own work and having limited engagement with trends outside our community. Though musical instruments as cultural artefacts are inherently political, we have so far not sufficiently engaged with confronting these themes in our own research. In this paper we argue that we should consider how our work is also political, and begin to develop a clear political agenda that includes social, ethical, and cultural considerations through which to consider not only our own musical instruments, but also those not created by us. Failing to do so would result in an unintentional but tacit acceptance and support of such ideologies. We explore one item to be included in this political agenda: the recent trend in music technology of "democratising music", which carries implicit political ideologies grounded in techno-solutionism. We conclude with a number of recommendations for stimulating community-wide discussion on these themes in the hope that this leads to the development of an outward-facing perspective that fully engages with political topics.

Author Keywords

Techno-solutionism, Democratisation, NIME critique

CCS Concepts

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

1. INTRODUCTION

Evidence of NIME's maturity as a research community has been identified as the production of a considerable amount of self-reflective work [38, 30]. While most of this work has a *documentary* function (e.g. consolidating research methods [9], comparing techniques and input modalities [52], and identifying common evaluation approaches [3]), some of this self-reflection has been *inquisitive*, aimed at pinpointing areas of improvement, such as the recent debate on the limited adoption and longevity of new instruments created by the NIME community [37, 16].

Recently, this self-reflection has begun to turn to political issues, such as the lack of gender parity within NIME and related communities [7, 55, 14] and issues around accessibility [18]. Instead of being wholly situated inside NIME, these discussions engage with what is also happening *outside*. In the case of gender diversity, these discussions have begun to question and apply critiques to music technology more broadly [45, 47]. In addition to the inherent benefits of including political discourse in our ongoing conversations, this has also paved the way for a shift in critical studies at NIME: a shift moving from *inward-looking* to *outward-looking*; i.e. a shift from reflections on our own doings to reflections on the outside world's doings in the context of new musical instruments.

In this paper, we argue that NIME should more fully embrace this shift, and expand our discussions to engage with the political issues inherent in new musical instruments[1] – both our own, as well as those made by others. Notwithstanding the host of political topics that intersect with musical instruments, NIME has no explicit political agenda. Though we self-describe as a place for "researchers and musicians from all over the world to share their knowledge and late-breaking work on new musical interface design"[2], which suggests that a wide-reaching perspective already exists, in fact almost all new instruments presented at the conference are created by the authors themselves [37]. In short: we have so far neglected to sufficiently engage in critical work with the world outside of NIME.

In this paper, we explain why this lack of critical work should be a matter of concern. With a few notable exceptions [32], our community has overlooked political issues connected to new instruments. This might be due to reasons such as an outward-looking perspective running counter to the practical, geeky, crafty interests of most members rather than any intentional negligence or self-indulgence. Whatever the reason for this lack of engagement with the word outside, we believe that NIME should not only examine the political issues affecting what we create, but also develop ways of understanding, discussing and critiquing trends in the outside world.

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[1]In this paper we use *musical instruments* as an umbrella term to indicate all those instruments that include some sort of computer technology that are elsewhere referred to using terms such as NIMEs and DMIs.
[2]https://www.nime.org

The objective of this paper is twofold. First, we aim to bring attention to how new musical instruments embody a host of political ideologies, and we illustrate this by examining instruments from the *outside* world. We detail our concern for the lack of scrutiny from our community on how our research connects to the world outside, and suggest that this lack of interest may unintentionally but implicitly support specific ideologies.

Second, we propose that, despite some engagement with political issues like gender diversity [7, 55, 45, 47], open research [22], and inclusion [18, 26], NIME continues to lack any explicitly articulated political positions, let alone a diversity of positions that could form the basis for productive debate. We then offer starting points for discussion through which political agendas for NIME could develop, grounded in theories that feature social, ethical, and cultural considerations, aimed not only developing critique of new instruments but also highlighting their potential consequences.

2. BACKGROUND
2.1 Critical perspectives in HCI

NIME researchers have repeatedly drawn inspiration from methodologies [50], tools [52], and frameworks [35] typical of HCI. Recently, HCI scholars have produced a body of work aimed at discussing political and ethical considerations of interaction design and exposing its consequences [46, 4, 36, 23], yet NIME has not followed this trend.

A significant corpus of politically-motivated work in HCI is rooted in political theories and movements, the most prominent example being Participatory Design (PD)[48, 2]. PD emerged in the 1970s, a time and context where social democratic ideologies were thriving. The driving ethos of PD was to redistribute agency in the workplace by making workers direct contributors to the development of information technology [2]: design is a political issue because it is a locus of power. Since then, PD has offered numerous theories and methodologies for involving users in the design of technology, some of which – most notably User-Centred Design – have evolved without political connotations.

In recent years, the HCI community has returned to considerations of the social and political implications of their work [4, 23]. Particular attention has been devoted to understanding who is included or excluded by technology and its design, accounting for differences in ability [1], gender [21], race [17], and class [23]. Though the tenor of these discussions is clearly political and despite the emergence of politically-oriented HCI work [23], some scholars contend that political positions in HCI are not explicit enough [4, 25]. Researchers have argued that avoiding explicit politics is not the *absence* of politic, but rather a *tacit acceptance* of the status quo [13, 23]: "Allowing political stances to remain unspoken has constrained our ability to question and challenge the consequences of the work we put into the world. Further, this silence creates stumbling blocks for critique and accountability mechanisms" [23].

We believe that, as a community, we should take a cue from these positions in HCI. Despite small amounts of politically-engaged work that exists in the NIME literature, there is a deficit of these kinds of discussions on a larger scale. We must consider that these conversations are overdue, and what is at stake if we delay them any longer.

2.2 Critical perspectives at NIME

NIME members have been engaged with self-reflective critical work since the formation of the community. Initially, this work aimed to structure our understanding of the technical aspects of DMIs (this objective predates the NIME conference itself [51, 20, 42]), and on developing design frameworks that could systematise and offer guidance to the design of new instruments [52, 35].

More recently, NIME scholars expanded the focus of critical investigations from the characteristics of the instruments they design to the characteristics of the community to which they belong. This body of work focuses on a variety of aspects that characterise NIME and satellite communities [30, 39, 33], the common research approaches [9] and evaluation methodologies [3], and the typical values and intentions that we embed in our instruments [28, 8, 38].

A number of critical studies have also begin referencing political issues. Whether voluntary or not, these works embrace issues that were previously identified by HCI scholars when examining matters of inclusion, such as accessibility (who is included or excluded from/by the way we design instruments?) and gender diversity (who is included or excluded from/by our community?). The theme of accessibility [18, 15, 26, 24, 41] has gained interest sufficient that this is a theme of NIME 2020,[3] and the theme of gender diversity has been explored through papers [55, 45, 47, 14], workshops [7], and working groups (Women In Music Technology[4]), as well as the establishment of the Pamela Z Award For Innovation in 2018. However, these efforts, along with NIME's 2018 diversity statement,[5] represent only preliminary engagement with these issues, and this kind of work represents only a very small portion of NIME's output.

That being said, the emergence of these themes signals that the NIME community's attention is widening to include social issues. At the same time, these themes do not articulate the totality of political issues that overlap with NIME practice, and a wider perspective is needed. In the next section we discuss other aspects that are important for this community, the political impact of which might be possibly less obvious but surely less discussed.

2.3 What is "political" for new instruments?

Musical instruments are inherently political, given their role as tools of cultural production and cultural symbols, and the political issues that exist here are as deep as they are latent. These issues include: instruments as symbols of status; learning instruments (especially from childhood) is often the realm of the affluent; the supremacy of Western hegemony as Western classical music is the most 'valuable', not to mention so much music technology being based on Western musical systems; instruments outside Western traditions often being co-opted for novel interfaces. The list goes on, and NIME is not apart from any of these realms of critique.[6]

Moreover, NIME is not somehow immune from environmental concerns and oppressive capitalistic systems. We argue that we have not adequately engaged with the hidden environmental costs that are embedded in new musical instruments (given the focus of this paper on the *outside*, we will not discuss the environmental costs connected to the activities of the NIME community itself, such as conference organisation and attendance). Notably, environmental costs are not limited to the production and disposal phase, and our analysis should also include environmental costs at *run*

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[3] https://nime2020.bcu.ac.uk
[4] http://gtcmt.gatech.edu/womeninmusictech
[5] https://www.nime.org/diversity/
[6] To take one example, the NIME conference has mostly been held in a small geographic region: Western/Northern Europe (7 times), USA (5 times), Canada (twice), Australia (twice), and once each in Japan, South Korea, and Brazil; also, the majority of NIME submissions come from a small set of Western, mostly English-speaking, countries.

time (for instance the Machine-Learning-powered, resource-intensive [49] instruments like Amazon's forthcoming Deep-Composer[7]).

Additionally, discussion of the environmental impact of cheap and easily-available hardware components typically used in new musical instruments is largely absent, from carbon footprint to working conditions in factories to the manufacturing process itself. We believe that these analyses are crucial as 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.

Issues of environmental and labour exploitation are only a starting point for the task of analysing the political and social responsibility of music technology. However, we hold that it is important to consider and critically examine these stages of production where political issues are *subcontracted*. In his "Political ecology of music" [11], Devine states that when Spotify and other streaming companies *subcontract* processing needs to cloud companies like Amazon and Google, they are also subcontracting "their consciousness of the energy intensity of digital music's infrastructure" (ibid.), and we argue that NIME cannot continue to offload or ignore these impacts.

There are countless other important political issues that relate to the design, manufacture, performance, study of, access to, and learning with musical instruments. However, this paper is not aimed to systematically map these issues, but rather to broaden our discourse to include these types of outward-looking socially engaged concerns. In the next section we delve into one of these issues, which we believe is one of the most pressing, with the call to other researchers to analyse other political issues.

3. THE POLITICS OF ACCESS

Democratisation is most commonly used to indicate forms of government based on self-legislation and participation of citizens in political decisions. Recently, this term has gained an additional meaning: the democratisation of a resource (such as technology, knowledge, or information) describes the process through which that resource becomes more available or accessible to more people. The logic goes thus: previously some sort of scarcity excluded access by some part of the population to a *resource*, and then a *breakthrough* happened that allowed more people to have access to that resource. In the case of the "democratisation of technology", the scarce *resource* was computational power and hardware availability and the *breakthrough* was the technological innovation that reduced the costs of production.

3.1 "Everyone can make music"

In the last decade, the democratisation process has infiltrated virtually all areas of content-creation. The "democratisation of music-making" is defined by Park et al. as "affordable, sophisticated, and cost-effective technologies enabling non-experts to engage in music-making, music exploration, and music access" [40]. If we were to apply the logic proposed above, this definition does not describe the *resource* that was in short supply *before*, nor the *breakthrough* that made this scarcity history.

When commerce intersects with this idealism, political questions are thrown into high relief. It is useful to use a case study of instruments designed for mass appeal to unpack political issues that intersect with this practice. Every year dozens of new instruments specifically targeting

non-musicians are developed for the commercial market, and most of these instruments are funded via crowdfunding campaigns. These campaigns often promise a musical instrument that *anybody can play*, as evidenced by these three examples:

Jamstik ($813k raised): 'No experience needed; anyone can just pick it up and play' (controller to trigger sounds from a mobile app).

Roli's LUMI ($2.1M raised): 'The smarter way to learn' for 'anyone who ever wanted to play an instrument' (keyboard with keys that light up in time).

Minim ($145k raised): 'We believe anyone can make music, and that most people really want to'.

McPherson et al. express scepticism for this *anyone can play* sentiment: "*Music* is not one homogeneous entity but rather an umbrella term encompassing a huge variety of genres, styles and techniques. Few people would learn a traditional instrument to generically create music of any arbitrary style; most people are motivated to participate in particular genres, often ones they also listen to" [32].

3.2 Techno-solutionism

The idea of an easily-accessible musical instrument is not new and, in fact, far predates digital technology [32]. Inventors have been promising music for the masses for centuries: the hurdy-gurdy, autoharp, harmonica, and Suzuki Omnichord all promised to unlock the musician in anyone.

In the above examples non-musicians are portrayed as frustrated individuals that have always wanted to make music but are stymied by difficult instruments. The problem is simple and clear: instruments are inefficient, and take a long time to master. However, this attenuates, or perhaps outright disregards, deeper political and intersecting reasons that a person may want to engage in music but is unable to, such as exclusion because of socioeconomic resources, the undervaluing of the arts in schools, time poverty imposed by capitalist forces, exclusion from music-making communities because of gender, disability, body size, musical tastes ... just to name a few.

Instead, these examples frame a lack of musical ability or training as a *technical* issue that can (or must) be addressed with technology. This kind of techno-solutionism sees technology as the answer to virtually all problems [44], and justifies solutions as necessary answers to "deficiencies" that are not deficiencies at all [34], and "presumes rather than investigates the problems that it is trying to solve, reaching *for answers before the questions have been fully asked*" [12].

In this way, "easiness" becomes the central concern when measuring the quality of an instrument for novices. By sacrificing complexity to achieve "easiness", the "perfect musical instrument" can only ever be an over-simplified version of music making. Notably, nowhere has it been *discussed*, let alone *proved*, that an over-simplified instrument holds any benefits for a novice in the long term. This *problematising* of music along with the disregard for the more subtle and harder-to-address problems of a political nature, means that this narrative argues for *technological inevitability*, the belief that making things "easier" and "more efficient" with technology is always an appropriate and positive course of action.

Adopting a techno-solutionist approach that reduces music making to a simple and solvable problem, in turn, produces political and ideological effects. Techno-solutionism is aligned with a capitalist ideology [27] that simplistically reduces a complex space of personally and artistically motivated challenges to neoliberal convenience with the aims of packaging and selling a solution. Ironically, the same capi-

talist ideology that reduced the monetary value of music by pushing listeners to spend less on recorded music [11] now seems to claim that no one should let their musical potential go untapped by failing to buy a solution.

3.3 What NIME can learn

Though the above examples are from outside the NIME community, we should acknowledge that NIME is not an exception to solutionism. In fact NIME has, at times, relied on this same kind of solutionist approach, perhaps as an attempt to demonstrate quantifiable utility to academic promotion committees and research funders. We also do not levy criticism specifically at for-profit music technology, and acknowledge the wealth of knowledge, awareness, and discourse on political issues in industry; further, there are plenty of examples of blends between NIME research and commercial outputs [53, 31]. What these examples are intended to illustrate is the political content in musical instruments, the roots of solutionism, and the ways in which a technology-focused approach can disregard many subtle yet vitally important human considerations.

First and foremost, these examples illustrate that musical instruments are intensely political. As cultural tools and symbols musical instruments also take on political content in many ways, particularly around access that is affected by physical ability, gender, socio-economic status, class, Eurocentric worldviews, and cultural hierarchies.

Within NIME some work already exists in this domain that challenges this worldview [19, 54], and there is some awareness of these issues. From within NIME, McPherson and colleagues state: "the ability to perform music may best be viewed not as an engineering or societal *problem* to be solved, but as an open-ended creative *opportunity* where new ideas will always be welcome and even necessary" [32]. We suspect that this stance is shared among the vast majority of NIME, and yet we have so far failed to begin deep discussions on these topics, or develop a robust response.

As well as recognising these issues, the NIME community can also benefit from reflection on solutionism in our own work, and which ends this approach has served or failed. Morozov directly challenges techno-solutionism [34] using the metaphor of cooking, stating that subjecting creative activities to the logic of efficiency "is to deprive humans of the ability to achieve mastery in this activity, to make human flourishing impossible and to impoverish our lives". He adds: "technology can actually make the cooking process more challenging, opening up new vistas for experimentation and giving us new ways to violate the rules". As well as being a barrier to more subtle political aspects at play, resorting to solutionism may discourage more productive and exciting applications of technology. If we continue to under-consider the issues at play and resort to simplifying problems and creating the most straightforward solutions in response, what are we losing?

It is also pertinent for NIME to consider the longevity of instruments of the kind in the examples above and the longevity of our own instruments. If the purpose of these example instruments is to make money, then instruments that are bought and used for years have limited commercial benefit; it makes sense then that these instruments are used for a short period of time and set aside, and making an environmental critique against this capitalistic behaviour is easy to do. However, this short lifespan has also recently been identified within NIME [37], which does not have any necessary commercial ends. This should give us pause; if we're not bound by capitalistic ideology, why do we as a community have an enduring focus on novelty? Is this focus a reflection of academic rather than artistic incentives?

What environmental and resource issues should we be considering as creators, and what issues have we, so far, failed to notice?

4. A STARTING POINT
4.1 How NIME may be useful to other domains

Though the community named NIME is only a few decades old, the kind of technology-focused creative musical practice that unites our work has a history of more than a century: a long historical arc that includes a significant amount of iteration, writing, discussion, and development.

This considerable history also includes decades of working to understand what it is to create music with computational and electronic means, a form of *autotelic* experience that has no task and no purpose outside itself [10]. Only relatively recently has the HCI community begun to engage with interaction that has no task, and there is limited room within HCI scholarship for such artistically-motivated research that occurs largely through practice. As Bin states, "the concerns of DMI research are not confined to a curious corner of HCI scholarship where people make weird music", and that this long tradition of exploring what it means to create artistic works with computers means that "this community may have a monumental head start in insight and knowledge in this realm" [6]. This means that we not only have the opportunity to deepen and enrich our own discourse, but because this community is one with decades of experience in what is emerging in other fields as a new phenomenon, we may have useful insight to offer to others.

4.2 Practical suggestions

We do not intend for this paper to offer conclusions or solutions to these problems, as these can only be developed through community-wide discussion. However, we have identified some starting points for these political positions to be explored and developed, and offer some practical suggestions to start this conversation.

1. Deepen current conversations, and start new ones. Recently, there has been engagement within NIME on the themes of accessibility and gender diversity, and these are starting points from which we can go further with greater momentum and purpose. For example, there is current discussion about designing instruments for one-handed musicians [18], but this discussion has not yet extended to, for instance, examining whether making accessibility a separate topic of discussion further marginalises disabled musicians, or how (or even if) non-disabled researchers should be speaking for this community. We suggest that we begin with these existing themes and go deeper, in order to take on these larger questions as well as spark new discussions that can foster the connections between our work and the outside world.

2. Scrutinise new commercial instruments. The most immediate and straightforward action is to extend NIME's focus to new commercial musical instruments, sharing the responsibility of identifying their socio-cultural and ideological implications with other scholars already doing so [5, 43]. We suggest that NIME researchers should engage in empirical, ethnographic, and performative investigations of these instruments, and that the NIME conference should explicitly welcome these contributions in order to foster this discussion and develop this vein of research.

3. Avoid solutionism and inevitability. Technology communities often blindly accept ideologies of solutionism, inevitabilism, and utopianism [34, 56]. However, as Zuboff points out, "inevitability is the opposite of politics

and history" [56], and utopias often "harbor an element of determinism" [29]. For this reason, we should take a critical stance on technological innovation for its own sake, and reflect this in the instruments we make, the research we promote, and the discussions we emphasise as valuable.

4. Building counterpowers. Musical instruments are inherently and deeply political. We should recognise and engage with these political themes and accept the themes that belong to musical instruments, by extension, belong to us as well. We should endeavour to confront and dive deep into these issues, discuss them broadly, develop ways to relate to them, and build counterpowers where necessary.

5. Rethinking NIME submissions. If in-depth explorations of political issues that intersect with new musical instrument research are to be included at NIME, we should reconsider the current format of submission.

First, publishing does not have to only be annually. Reviews on new commercial instruments, for example, could be more useful as peer-reviewed online articles published on a rolling basis rather than only as conference proceedings.

Second, review the page limit for NIME submissions. Simply excluding references from page limits can encourage wider scope and more rigorous explorations in the NIME proceedings. Unpacking and articulating political positions based on interdisciplinary theory requires space for exploration, and may require several pages for references alone – and these references often act as way points for other scholars, expanding the community's discourse as a whole and introducing new connections with work in other domains.

Third, we should consider what we mean by "novelty". The paper review process seems to prioritise technical novelty, leading to an ever-shifting set of ephemeral instruments and discouraging analytical work about existing instruments, as well as useful scholarship such as meta reviews. This review of the term "novelty" could also extend to the performance review process, as valuing novelty often results in the over-representation of newly-created instrument made by the performer or their collaborators. Ultimately the pursuit of novelty has environmental and ideological implications, and we should reckon with why we value new things rather than closely considering that which we already have.

5. CONCLUSION

> "The changes and disruptions that an evolving technology repeatedly caused in modern life were accepted as given or inevitable simply because no one bothered to ask whether there were other possibilities." [56]

In this paper we explained why a shift in NIME's focus from inward-looking self-reflection to more outward-facing, politically-engaged critique is overdue, and why recent discussions around accessibility and gender diversity have created the space in which this can happen. We argue that explicit political standpoints on the broad range of political issues connected to musical instruments is needed, because not doing so risks implicit agreement with the status quo.

We offered a practical example of developments outside of NIME, particularly the commercialisation of the democratisation of music-making through instruments launched through crowdfunding campaigns. While we agree that fostering interest in music is a noble goal, these instruments can reflect techno-solutionism that considers a lack of musical ability to be a technical problem that requires a technical solution. This is one of a myriad of latent yet pressing political issues that intersect with NIME's musical instrument practice and research, and propose that these are the kinds of issues that

NIME should be actively developing critical discourse. We then detail how NIME is in a unique position to offer insight to other domains such as HCI, as this community has a long history of phenomena such as, for example, taskless interaction, which HCI has only recently begun to consider. In this way we can not only enhance our own inquiries, but find ways to make these useful to others. Finally, we suggest ways through which our community can begin to develop a robust, outward-facing political perspective.

This work is not intended to impose limitations or boundaries within the community, or to discourage the kind of exploratory, innovative, experimental research that defines us. Instead, we suggest that we consider trends and developments in the outside world in our discussions, research, critiques and understanding of music technology, along with the political issues that are connected to the things we make. Our goal is to raise ontological questions about NIME that open discussions on who we are and who we want to be. Are we the developers and keepers of (quasi-)scientific knowledge? An artist collective advancing an aesthetic agenda? A guild of craftspeople handing down techniques? An economic organisation? And has NIME matured enough to render political judgements on instrument work outside our community? Ultimately, we must face the question: how can we develop political engagement and discourse around our own work, and can we afford not to do so?

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