Querying Experience with Musical Interaction

Courtney N. Reed
School of Biomedical
Engineering & Imaging
Science
Kings College London
London, United Kingdom
courtney.reed@kcl.ac.uk

Eevee Zayas-Garin
School of Electronic
Engineering & Computer
Science
Queen Mary University of
London
London, United Kingdom
e.zayasgarin@qmul.ac.uk

Andrew McPherson
Dyson School of Design
Engineering
Imperial College London
London, United Kingdom
andrew.mcpherson@imperial.ac.uk

ABSTRACT

With this workshop, we aim to bring together researchers with the common interest of querying, articulating and understanding experience in the context of New Interfaces for Musical Expression, and to jointly identify challenges, methodologies and opportunities in this space. Furthermore, we hope it serves as a platform for strengthening the community of researchers working with qualitative and phenomenological methods around the design of DMIs and HCI applied to musical interaction.

Author Keywords

NIME, querying, experience, methodologies, somaesthetics, micro-phenomenology, dialogic design, trioethnography

CCS Concepts

•**Human-centered computing** → **Interaction design process and methods;** HCI theory, concepts and models; •**Applied computing** → *Sound and music computing;*

1. BACKGROUND

With its roots in human computer interaction (HCI), NIME has traditionally focused on user evaluation metrics in the design and evaluation of Digital Musical Instruments (DMIs). These metrics, evaluated for instance through usability testing, ratings on Likert scales, and efficiency and performance measures, provide a rigorous and consistent metric to study the use of DMIs in a broad context. Such evaluations focus on a third-person perspective, wherein the user and their interaction is observed by someone else. Because of this perspective, these approaches can be removed and limiting: by focusing on quantisation of the experience of using DMIs, we often overgeneralise and lose much of the individual, contextual aspects of their use. The priority-shift introduced by third-wave HCI has addressed this important aspect of experience. This approach focuses less on objective efficiency and goals such as task completion and more in the

socially- and culturally-situated relationship with our tools, which in turn shapes our interaction and experience. This includes examining the qualitative aspects of how our individual bodies and unique knowledge of the world impact our interaction [4]. The aim of this workshop is to introduce methods and approaches to query and understand experience, through the first-hand knowledge of designers and practitioners working with DMIs, to the NIME community.

Experience itself is a multi-faceted concept; HCI views experience as the subjective aspects of interaction with technology, while psychology associates experience with learning and acquiring knowledge from the world. DMI research has involved a little of both: musical interaction is inherently subjective and dependent on the background and previous interactions of all involved — musicians, DMI designers, listeners. As well, this existing knowledge shapes how we approach our musical craft, how we learn new musical interactions based on ones we know already, and how our role in the world influences our music. Experience in this subjective and context-dependent definition is therefore critical to the study of DMIs, their design, use, and role in music performance.

This workshop will delve into the *how* of researching DMIs through experience with them. These methods examine experience through different lenses, focusing on the first-person perspective of the user (musician or designer, for instance), or the second-person perspective of the dialogue and co-investigation between researcher and user. We will focus on four actively used approaches in our community and the broader HCI community, including:

- **Somaesthetics** [12] is a term that combines soma — our non-dualistic subjective self, body, emotion, and thinking — and aesthetics, as in our ability to perceptually appreciate the world around us, what we feel, hear, see and engage with [5]. It has been proposed that soma design has an important and distinctive role to play in the design of NIMEs that emphasise the aesthetics of playing an instrument alongside the generation of sound [7]. It presents a novel approach to NIME design which is grounded in the performer's subjective experience of their body in performance [1].

- **Micro-phenomenology** [8] is discipline that is being used in HCI/design [9] for articulating the nuances, complexity and diversity of users' experiences beyond surface descriptions. It involves querying experiences through interviews in which interviewer and interviewee co-explore dimensions of experience which otherwise were unnoticed at the time of interaction. In NIME, it has been used to research perception, and to understand interaction and performance with digital musical instruments [11].

- **Dialogic design** [3, 13] is a subset of participatory design (PD) which highlights the significance of multi-directional flow of ideas, getting back to PD's radical origins of workplace user involvement in Scandinavia. As a method in NIME, it can be used to articulate the experience of the performer and channel it into specific design decisions [14].

- **Retrospective trioethnography** [6], rooted in autoethnography [2], is a method in which design researchers turn the lens on themselves and their design process, allowing first-hand experience to spark new insights, treating subjectivity and emotions as central to research. Particularly, duoethnography and trioethnography are based on the juxtaposition of the personal experiences of two or three affined researchers, with emphasis given to the dialogical relationship between their lived experiences. Its potential for NIME is in its ability to challenge existing narratives and discover new ways of reporting on our design processes.

In our workshop, we will together to unpack these approaches and how they can be used in the study of DMIs. We will do this by exploring the accounts of researchers using them and through hands-on experience observing and participating in their processes. At its end, we aim for participants to leave the workshop knowing how these methods can be employed to address experiential perspectives in the evaluation of DMIs in their own research and in the greater NIME community as a whole.

2. SPEAKERS
The workshop will be presented and facilitated by both core organisers and additional invited speakers.

2.1 Organisers
The workshop will be organised by the following members of the Augmented Instruments Lab:

- **Courtney N. Reed** is a vocalist and Postdoctoral Research Assistant in Design Analytics and Music Physiology in the School of Biomedical Engineering & Imaging Sciences at King's College London. Her research focuses on externalising internal sensory feedback, control dynamics between musician and their musical body, and how music and physiology shape each other.

- **Eevee Zayas-Garin** is a PhD student at Queen Mary University of London. They are a design engineer and musician. Their research focuses on accessibility, lived experience and replicability in digital musical instrument design. Drawing from disability justice perspectives, they work towards developing NIME research methods that engage with matters of access, articulating experience and instrument longevity.

- **Andrew McPherson** is a Professor of Design Engineering and Music in the Dyson School of Design Engineering, Imperial College London, where he leads the Augmented Instruments Laboratory. He is a computing researcher, composer, electronic engineer, and musical instrument designer.

2.2 Featured Speakers
The following speakers will present their work, know-how, and insight in querying experience at the workshop:

- **Kelsey Cotton** is a vocalist-artist-mover working with experimental music, Musical Artificial Intelligence, electronic textiles, soft-robotics, and Human-Computer Interaction. As a researcher, Kelsey is fascinated with pushing the limits of musical bodies, with her recent work delving deeper into designing artifacts which harness, augment and fuse different physiologies. She is passionate about somatic interaction, the potential for intersomatic experiences between fleshy and synthetic bodies, and first-person feminist perspectives of musical AI. Kelsey is currently undertaking PhD studies in Interactive Music and AI at Chalmers University of Technology in Gothenburg, Sweden. Kelsey can be contacted at kelsey@chalmers.se.

- **Noura Howell** is an Assistant Professor in Digital Media at Georgia Tech. Her design research explores embodied, emotional, sonic interactions with biodata–data about people's bodies and behaviors. Working with heat, sound, and vibration, her work investigates ways of knowing, ways of feeling, and ways of listening with biodata. What can (and can't) biodata infer about how we feel, and how might engagements with biodata influence how we feel? Noura can be contacted at noura.howell@gmail.com.

- **Juan Pablo Martinez Avila** is a Computer Science PhD student at the Mixed Reality Laboratory at the University of Nottingham, UK. His research is focused on HCI, ethnography, and multimodal interaction, specifically oriented in somaesthetic design and augmenting guitars for performance preparation. Juan Pablo can be contacted at juan.martinez-avila@nottingham.ac.uk.

- **Cally Gatehouse** is a Lecturer, HEA Fellow, designer, and researcher at the School of Design, Northumbria University. Cally's interest is in the distinctive kinds of knowledge that design can produce and how that can help designers, researchers and citizens to navigate and understand a world shaped by network technology. Cally's work incorporates a background in graphic and communication design, drawing on a range of post-solutionist design practices and feminist STS to consider how design research practices can find ways to forging commitments to complex problems which resist easy resolution.

3. WORKSHOP DESCRIPTION
During this workshop, we will explore approaches being used in NIME, HCI, and related fields to query experience and gather subjective data about musical interaction. The workshop will be broken down into two main parts.

The first half will introduce terminology and define experience in third-wave HCI approaches. This will involve round-table discussion, where the group as a whole can work together to reach shared understanding of the kinds of perspectives and research questions we aim to address through these methods. Our invited speakers will introduce methods they have used in their own research and demonstrate their functionality and means to query experience.

In the second half, the workshop will take a hands-on approach to exploring these methods in practice. In small groups, we will cooperatively trial their implementation to address example research questions, including some provided by workshop attendees, and see how they query experience from the side of the user. This will allow participants

to get acquainted with the methods' perspectives, the kinds of data they collect, and how it feels to articulate experience through these practices. We will culminate by exploring together potential avenues and further resources for our individual research aims, pointing participants to practical next steps in their experiential querying journies.

3.1 Part One

3.1.1 Opening: Defining "Experience"

The first part of the workshop will focus on sharing knowledge among the organisers and participants about their research and introducing subjective methodology to those who might not have existing experience or knowledge. The aim is to create a level understanding and identify areas where examining experience will be beneficial to addressing research questions.

We will begin the workshop by examining how experience is viewed in different disciplines and how these different understandings apply to the design and use of musical interfaces, interactions, and performances. We will also introduce related terminology in subjective and phenomenological methods to those who may not already be familiar. This includes subjective perspectives (e.g., first- and second-person, compared to "traditional" third-person data), and phenomenological terminology such as embodied experience and tacit knowledge.

3.1.2 Presentations: Methodology In-Context

With our shared terminology in place, the next part of the workshop introduces specific approaches and methods designed for querying experience. Our organisers and Featured Speakers will lend their first-hand experience employing these practices in the study of DMIs and musical interaction in practice to provide space for all to examine benefits, interrogate the methods, and become familiar with how they allow researchers to query experience. Each method will be first introduced along with relevant literature around its creation and use, identifying key distinctions that set it apart from other strategies. Then, each of the methods will be elaborated through specific examples within and beyond NIME of research on DMIs and musical interaction:

- Somaesthetics: Kelsey [1] and Juan Pablo [7]

- Microphenomenology: Courtney [10]

- Dialogic design: Eevee [14] and Cally [3]

- Retrospective trioethnography: Noura [6]

Our organisers and speakers will focus on how the method was employed and demonstrate realistic aspects of querying experience in this way. We will touch on practical application and necessary logistics of the experimental design, as well as honest reflection of their experience using them in research.

3.2 Part Two

3.2.1 "Taster Session:" Hands-On Methodology

The latter half of the workshop is designed to be a "taster" session, where participants can get hands-on experience with each method by getting involved in the process. The participants in some way become participants — in smaller groups, we will query the experience of our workshop attendees so that everyone can experience being on the receiving side of

the method. We will observe how these practices can elicit our own experience the kinds of data that can be collected, and new perspectives working with DMIs.

This will run in two parallel sessions, so participants can choose which approaches seem most applicable to their research and spend as much time as possible in experiencing their application. In this process, we invite participants to discuss their own work and how such methods will be beneficial to their work. The exercises will be based around the submissions of interest provided by workshop participants, so that we can explore the DMIs designed by the group and relevant research questions.

3.2.2 Next Steps: Linking to Research Practices

Participants will discuss in their small groups how these methods would benefit their research questions and we will work on future directions/next steps. At the end of this session, we will conclude the workshop by sharing our experiences and developing concrete next-steps.

We will also set next steps for further community building and resource sharing around this kind of research in NIME. We aim for participants to leave the workshop with direction for studying these methods, incorporating them into their future work, and connections to others working in this space.

4. WORKSHOP STRUCTURE

The half-day workshop will be hybrid. It will take place as follows:

	Activity	Duration (minutes)
Part 1	Opening	20
	Speaker Presentations	50
	Participant Introductions	30
	Break	10
Part 2	Taster Session	60 (2x 30 min)
	Next Steps	30
	Break	10
	Reflection & Closing	30

4.1 Part One Activities (110 minutes)

4.1.1 Opening (30 minutes)

We will open with the workshop's motivation, agenda, and introduction to the organizers and methodologies to be discussed.

4.1.2 Speaker Presentations (50 minutes)

We will then give the floor to our invited speakers to present their work in somaesthetics, micro-phenomenology, dialogic design and retrospective trioethnography.

4.1.3 Participant Introductions (30 minutes)

After the presentations, we will invite participants to introduce themselves to get to know each other and their research interests.

4.1.4 Break (10 minutes)

Although we will encourage participants to take a break whenever they need, we will schedule two 10-minute breaks to allow participants time away from the workshop and get to know each other more.

4.2 Part Two Activities (130 minutes)

4.2.1 Taster Session (50 minutes)

We will run two parallel activities so that participants can spend time getting to know the methods they are most interested in through first-hand experience. The workshop organisers and Featured Speakers will lead activities so the small groups can experience working with these methods and see how experience is queried.

These activities will be later finalised by the organisers and speakers, but will likely include somaesthetic exercises such as body mapping, scanning, and deautomatisation, experiencing being interviewed through micro-phenomenologically-inspired interviews, and engaging in short dialogic designs and trioethnographic reflections.

4.2.2 Next Steps (30 minutes)

Participants will be invited to create a map of their own research interests and methodologies, as well as the ones presented in the workshop, with special attention to how the methodologies relate and complement each other. In groups, we will form ideas and concrete steps to further the knowledge taken from this workshop in our own research.

4.2.3 Break (10 minutes)

4.2.4 Reflection & Closing Remarks (30 minutes)

At the end of the workshop, we will reflect on the day's activities and what was learned and take next steps to build a research community around these methods within NIME. We will ensure documentation of sources and information shared during the workshop in a shared repository, for future use. We will also discuss how the workshop can be improved for future editions and how this information can be shared with others in NIME. We will close by identifying opportunities for collaboration and discussion beyond the workshop.

5. CALL FOR PARTICIPATION

We will invite researchers, designers, practitioners and community members to submit materials that reflect their interest in the aforementioned topics. This will help us to structure the specific examples we will use in the Taster Session.

Our Call for Participants will be found on the workshop's website and provide further information about when and how to submit. Accepted submissions will be featured on the workshop's website.

6. TECHNICAL REQUIREMENTS

The Workshop will be be able to run as a hybrid program broadcast with audio-video communication, likely in Zoom, and Miro for online documentation and information, to ensure all participants have access during and after the workshop time. To facilitate this, we will need access to a medium-sized room that will allow us to interact as a whole group and also provide a bit of space to break into smaller groups if needed, and a projector, speakers, and round-table microphone (if available) to operate effectively in a hybrid modality.

7. WEBSITE

We will provide information about the Workshop, including our call for participants, the schedule, and information about the organisers, and additional speakers, on a dedicated website:

https://qe4nime.github.io/

8. ACKNOWLEDGMENTS

9. ETHICAL STANDARDS

We are committed to making this workshop accessible to all. We will encourage participants to submit their accessibility requirements and it will be our priority to accommodate these.

10. REFERENCES

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