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ABSTRACT
Third wave HCI initiated a slow transformation in the methods of UX research: from widely used quantitative approaches to more recently employed qualitative techniques. Articulating the nuances, complexity, and diversity of a user's experience beyond surface descriptions remains a challenge within design. One qualitative method —micro-phenomenology— has been used in HCI/Design research since 2001. Yet, no systematic understanding of micro-phenomenology has been presented, particularly from the perspective of HCI/Design researchers who actively use it in design contexts. We interviewed 5 HCI/Design experts who utilize micro-phenomenology and present their experiences with the method. We illustrate how this method has been applied by the selected experts through developing a practice, and present conditions under which the descriptions of the experience unfold, and the values that this method can provide to HCI/Design field. Our contribution highlights the value of micro-phenomenology in articulating the experience of designers and participants, developing vocabulary for multi-sensory experiences, and unfolding embodied tacit knowledge.

Author Keywords
Micro-Phenomenology; User Experience; Empirical Methods

CCS Concepts
•**Human-centered computing** → **User studies;**

INTRODUCTION
The rapid development of the UX field [64] has drawn attention to design research methodologies acknowledging the nuances and diversity of user experiences that arise from either technology use or the act of designing it. After decades of HCI research practices that focused on utilitarian uses of technologies and primary interest in usability and cognition, a paradigm shift –*3rd wave HCI* – [27] brought more experiential and affective focus regarding interaction. This shift has aligned the interest of the HCI community, designers, and researchers beyond usability and optimization towards designing technologies "as experiences" [42] and experience-centered designs [82]. Moreover, interest in designing for the experiential body [44], embodied design [24], felt experiences [8, 1] and somaesthetic interaction design [30] poses a new set of challenges in the quest for more nuanced design of technologies. These challenges amplify the need for an in-depth understanding and articulation of users' experiences, as **lived and felt**, **multi-dimensional**, ever-present and ever-changing phenomena [43, 42, 81], comprised of aesthetic, affective, embodied, tangible and intangible qualities. Yet these experiential qualities are challenging to capture and design for.

How can we then further unpack all complexities of experiential content in the immense challenges that our contemporary technological landscape presents us without developing methods that can address the dynamic spectrum of the experience? To address this question, a handful of HCI researchers and designers have shifted towards a qualitative interview method for unfolding the complexities of user experience: **micro-phenomenology** (M-P), as a way to "provide an open link to empirically based descriptions" [71] of users' experiences in greater detail. Starting from the early 2000's, micro-phenomenology has gained recognition within HCI through a wide range of HCI/Design research studies that employed the method. In addition, 2 CHI workshops focused on UX included micro-phenomenology in the workshop materials in 2010 [9, 39] and 2012 [14]. While this research from the past 19 years has ignited discussions on how the micro-phenomenological method has performed in the context of those research studies, the overarching understanding of the nuances of the method and its values for HCI and design through the lens of the subjective experiences of the researchers who utilized the method has not yet been well-disclosed. Therefore, we identified and conducted interviews with 5 HCI/Design experts who extensively used M-P in their research with a goal of answering this research question (RQ): *What is the perspective of experts who used M-P regarding: 1. how they apply the method; and 2. their opinion on the value M-P provides to HCI/design field.*

Our contribution to HCI and design research is an in-depth understanding of micro-phenomenology and its potential within HCI research and design as a method for eliciting fine-grained descriptions and unfolding structures of experience. We accomplish this by revealing the subtleties of M-P interview from the perspectives of five interviewed experts who use the method. We unpack the ways in which these experts utilize

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M-P, revealing intricacies of commitment, reflection in action and challenges that this method poses. We also identify possible directions for future use of micro-phenomenology. These directions are: developing a vocabulary and insights of felt experiences; explicating tacit, embodied knowledge and processes that can be further used in pedagogical purposes; and, employing micro-phenomenology in co-creation and participatory design activities. Moreover, we argue that M-P can be used as a 1st person design method that designers can use for explicating their design processes. In the following, we introduce M-P first, then we present a background for this method, by briefly discussing the complexities of user experience and methods that are used to unfold it, as well as present related work on applications of M-P in Design and HCI research.

MICRO-PHENOMENOLOGY: THE DESCRIPTION

Micro-phenomenology is a qualitative, second-person interview for the research of first-person accounts of lived experiences. The origins of micro-phenomenology as a descriptive phenomenology method draw from Pierre Vermersch's method – *Explicitation interview* (EI) (L'entretien d'explicitation, sometimes translated as Elicitation interviews) [75, 76, 77, 41, 37] for eliciting finely grained descriptions of experience and/or activity [15]. Vermersch trained a large body of researchers (e.g., Béatrice Cahour, Ann Light, and Claire Petitmengin) who continue to develop the method. To that end, Petitmengin extended this work by contributing an analysis method [57] to the interview method under the new, overarching name "micro-phenomenology" [54]. While EI relies on various qualitative data analysis methods (thematic analysis, grounded theory, etc.), M-P data analysis follows its own set of predetermined actions and procedures. Finally, both EI and M-P share the same objective which is to bring experiential content and processes, to our attention including parts of the experience that the user might not have been aware of during the experience (e.g., while reading a book, one might not be immediately aware of discomfort in their body as their attention is on reading). Through careful questioning and prompting, the interviewer guides an interviewee in unfolding all the complexities of experiential content in a chronological structure of the experience and bypassing generalized typical post-hoc descriptions.

Singular experiences are the focus of the method– Singular experiences are lived experiences [56] characterized by a particular time, location, and context in which they happen. M-P is concerned with two types of singular experiences. **Provoked** experiences can be easily reproduced during the interview: for instance, the experience with a particular mobile application can be provoked by asking the interviewee to use the application, and then the interview follows immediately afterwards. The other type – **invoked** – are not easily reproduced and the interviewee chooses a singular occurrence of the experience from the most recent past for the interview.

Conducting a micro-phenomenology interview

For the descriptions of the experience to emerge, the interviewer stabilizes the interviewee's attention, guides them through the process of evoking the experience, and then directs their attention to a particular dimension of the experience, by posing content-free questions to deepen the description of the experience to the required level of precision. The detailed interview description with interview excerpts can be found in the articles by Hogan et al. [28] and Maurel [41]. Here we list eight crucial steps in *the M-P interview process* [54]:

1. Establishing the communication contract: The contract is a verbal agreement about when, where, and how the interviewee and the interviewer will conduct the interview: the interviewer explains the context and the aim of the interview, and how the questions are asked. Moreover, the aim of this step is building trust and a safe space for the interviewee.

2. Stabilizing attention: The interviewer starts the interview by inviting the interviewee to revisit their experience: *"If you agree, I propose that you take the time, to let a moment come back when you (a reference to the experience in question). Take your time, and tell me when you are ready"*. After the interviewee agrees, the interviewer proceeds to the next step.

3. Induction of the evocative state: *The evocative state* is a recall of the past experience while being associated with it to the point that the interviewee becomes more present in the evoked experience than in their immediate present environment [56]. Evocative state is elicited by inviting the interviewee to first describe the spatiotemporal context of the experience (*"Can you describe where did the experience take place? Was anyone else present?"*), and then to describe all the sensorial modalities present in the experience (*"If you go back to the moment of the experience, describe what do you see? Is there any sound, smell, feeling in your body?"*) These prompts help the interviewee evoke the experience, which is usually accompanied by embodied cues (e.g., directing their gaze away from the interviewer, using hand gestures, shifting language to 1st person (use of "I"), and using present tense [56]).

4. Shifting the attention from what to how: Once in the evocative state, the interviewer poses questions in order to direct the interviewee's attention away from descriptions of the content of the experience ("what") towards the act of perceiving and "how" this content appears in the experience. Asking "how" allows the interviewer to unfold the dynamics and the descriptions of the experience. The interviewer refrains from asking "why" questions as those elicit analytical judgments and ad-hoc descriptions. Hogan et al. [28] provided an example of this from their interviews about the moment when their interviewees finished reading data visualization. Instead of asking "why", they asked a "how" questions to elicit responses that lead to a greater insight about the processes of how the experience unfolds. *"Interviewer: '**How do you know** when you have ended?'—Participant:'Before I closed it down [...] I felt that if somebody was to ask me about the graph that the graph told a bit of a story, and it is a story that I would try to retell."'*[28, p.2582].

5. Re-directing towards a singular experience: The interviewer's task is to look for the signs of the evocative state (described above) and if they notice the disturbances they guide the interviewee's attention back into the evocative state. If the interviewer notices that the interviewee moved from the descriptions of the experience to generalizations, the interviewer can gently guide them back by saying: *"Could we go back to the moment when you were doing x?"* [28].

6. Unfolding the dimensions of the experience: The finely-grained descriptions of the experience that bypass post-hoc descriptions are obtained in phases. First, the interviewee is guided to unfold the **diachronic** (dynamic temporal) **dimension** of the experience. This temporal dimension reveals the phases and sub-phases of the experience, unfolded by the questions such as *"How do you start?"* followed by *"What do you do then"* [28] and can be seen as a "container" of multiple layered **synchronic** elements. Synchronic dimension is described by Petitmengin [56] as a *"specific configuration of the experiential space (...) at a given moment of time..."*. Synchronic elements are then accessed and unfolded one at a time. To that end, the interviewer can ask then: *"At that moment when you do x, what do you do? Did any feelings/images/auditory cues arise, and if yes, how?"* [28].

7. Deepening the description to the required level of precision: To deepen and obtain fine-grained descriptions of the specific synchronic/diachronic elements, the interviewer guides the interviewee's attention to them by posing non-inductive, "content-free" questions that refer to the structures that the interviewee previously described. A similar approach to referring to and repeating the interviewee's exact words is known as *mirroring* in other interview techniques [25].

8. Bringing the interviewee back to the present moment: Finally, the interviewee is guided out of the experience by the prompt: *"Please take a moment to share if there is anything else you'd like to share and then bring your attention to here and now."* The interviewees are encouraged to reflect on the interview [39], which helps them to solidify their experience and also reflect on the process of the interview. A full M-P interview typically takes between 30 and 60 minutes.

Micro-phenomenology data analysis

In the studies that utilized M-P interview method, the collected data was analyzed following a few methods: thematic analysis [28, 59], discourse analysis [37, 38], and grounded theory [16, 26]. Petitmengin et al. proposed a micro-phenomenology analysis method that unfolds the experience through capturing descriptions and "generic" structures of the experience from lived, subjective accounts of the experience [57] that can guide researchers in creating hypothesis. We briefly describe the main stages of the analysis process below, however a detailed description of the analysis method is beyond the scope of this paper and can be found in [57].

The interviews are audio and video recorded. Video recording contributes to the process of analysis as it allows the interviewer/coder to observe the interviewee's cues (the direction of the gaze, gestures, speech slowing down [56]) as a possible indication of the evocative state. Once the audio recording of the interview data is transcribed, the analysis process is done in four stages [54]. First, because the experience is accessed a few times during the interview, each time deepening the previous description, the descriptions obtained are not necessarily in chronological order. Therefore, the first stage of the analysis is *re-sequencing the descriptions* into chronological order. Second, the diachronic structure is analyzed, and phases and sub-phases of the experience are identified. Third, for each phase, synchronic elements are identified (such as quality of attention, inner states, bodily sensations, affect and emotions). These three stages of the analysis are performed for each interview transcript. The final stage is to compare all descriptions across all interview transcripts and draw a "generic" (generalizable) structure of the experience, considering both diachronic and synchronic components of the descriptions. Finally, Petitmengin et al. pointed out that identifying the "generic" structure of the experience has "important epistemological consequence: it allows the reproducibility of analysis results" [57, p.11] and forming hypothesis about the structure of the experience for further empirical study.

BACKGROUND

In providing a background for M-P method, we discuss the notion of user experience first, followed by the discussion on the methods for experience research. We conclude the background by discussing how M-P was applied to a range of studies in HCI and Design.

Complexity of user experience

With *3rd wave HCI*, the focus of UX research turned towards exploring and designing for experiential dimensions such as intimacy [53], somatic experience [65, 66], enchantment [47], tangible magic [83], affect and interaction [3], and aesthetics of interaction [78]. Wright et al. proposed the conceptualization of experience as a structure of four "inter-twined threads" [81]. The first, *compositional thread* describes the narrative, actions, and consequences. *The sensual thread* encompasses the nuances of different sensory modalities. *The emotional thread* is constituted of affects and emotions. Finally, experiences unfold from actions *"in a particular time and place"* which defines the *spatio-temporal thread* of the experience. Furthermore, the role that our bodies play in shaping of the experience is recognized and explored within HCI as *Embodied Cognition framework* [34]. Similarly, Polanyi [62] emphasizes the *tacit dimension* to the experience, one that originates in and from the embodiment and previous experiences yet of which we are not immediately aware, and that is difficult to articulate. While there is no unified agreement on a finite number of dimensions that constitute the experience nor the theoretical foundations of UX [50, 49, 50, 52], the UX field recognizes user experience as complex, multidimensional, holistic, and context-dependent phenomena [81, 4, 61] and shaped by the embodiment [34, 22].

Two surveys, from 2011 [4] and 2018 [61], revealed that the majority of analyzed UX studies explored user experience as a general construct, allowing dimensions to emerge in the process of data analysis. While this less prescriptive, exploratory approach to unfolding the dimensions of user experience pose a challenge of generating similar or even overlapping dimensions, it also "supports new ways of thinking about experience" [4] by allowing complex, nuanced descriptions of experiential contents to emerge and lead to fresh insights.

Unfolding user experience

HCI's growing interest and "a turn to experience" [79, 10] to encompass complexities of experiential accounts has brought about new kinds of questions to the research focus of HCI [27]. It also ignited critical discussions of methods, approaches, and procedures that can support researchers in accessing holistic,

multi-dimensional detailed accounts of the diversity of user experiences. To that end, Battarbee and Koskinen [6] discussed three approaches to user experience. The *measuring* approach addresses user experience in terms of finite dimensions that can be reported on via questionnaires, or measured via physiological sensing and then translated into dimensions such as affect or emotion. The *empathic* approach is user-centered, focused on the complexity of the user's values, aspirations, dreams collected in observations, textual, visual, and self-documented data that serve as a basis for design. Finally, the *pragmatic* approach to user experience conceptualizes the experiences as dynamic, situated, multi-dimensional, in constant flux and that arise from the user's (inter)actions with the environment. Among these three approaches, Battarbee and Koskinen argue that the pragmatic approach recognizes and accounts for an **embodied, felt nature of experience** [6].

The most recent survey on UX methods from 2018 [61] lists self-developed questionnaires as the most used approach (53%) followed by semi-structured interviews (46%). While questionnaires have been the most used method in prior UX research [64, 61, 4], Light et al. [39] among others, criticized the tendency of UX researchers to translate complex, 'lived' experience into 'calculable' quantifiable units by imposing pre-determined constructs on users through questionnaires and scales, which limits the users to express fully the nuances of what they have experienced or even attempt to access tacit dimension of the experience. Similarly, Swallow et al., argue that while reducing experiences to a finite number of factors might be useful in experimental analysis, "qualitative data provides a richness and detail that may be absent from quantitative measures" [72, p.92]. To that end, Bargas-Avila and Hornbæk [4] showed that 81% of studies that focused on exploring the richness of experiential content were conducted using qualitative research methods (rather than focusing on quantitative measures and finite dimensions).

The most employed qualitative research methods for gathering verbalized accounts of experiences are semi-structured interviews, focus groups, and open interviews [4, 61]. Yet, accessing one's experience is challenging because, according to Petitmengin, "usually, we have only a very partial awareness of the way we proceed. And when we have to describe these experiences, it is much easier for us to express "what we know, what we have heard or read about them, than the way we have really lived them" [55, p.8] (similar to Polanyi's concerns of inability to immediately access tacit dimension [62]). Moreover, translating one's subjective experience into verbalized form and in precise detail that preserves the subtleties and particulars of the experience from post-hoc descriptions requires an ability of **self-observation** that is, in most of us, neglected [67].

Finally, to aid a user in recollecting their experience as they "lived and felt them" through self-observation, a handful of researchers turned towards micro-phenomenology - a descriptive phenomenology interview method with epistemological commitments rooted in constructivism and in congruence with embodied cognition framework [74]. This method facilitates the user's self-observation processes to help acquire nuanced accounts of their experiences in an empirical study. Wright and colleagues emphasized the value of micro-phenomenology [80, p.345] and other phenomenological study methods and called for their further development and application. However, compared to other phenomenological methods, for example, Descriptive Phenomenological Psychological Method [2] which has procedures to ensure that the analysis of data is free of the researcher's biases and preconceptions, M-P procedures are in place to ensure that the collected data is free of not only the researcher's biases but also ad-hoc descriptions and rationalization of lived experiences that are often added in the moment of the interview [57].

Micro-phenomenology in HCI and Design Research

While the range of HCI studies that utilized M-P since 2001 has varied, these studies share the same rationale for utilizing M-P: a lack of robustness of other methods to capture the nuances and complexities in the unfolding of experience on a moment to moment basis. Light and Wakeman applied M-P to capture experiential data and improve design of early websites [40], and mobile phone technology [38]. Détienne et al. [21] used M-P to understand the role of *Second Life* as a communication media and interactions in virtual world meetings. Articulation and verbalization of sensorial experiences were in the focus of Obrist et al.'s application of M-P to elicit participants' tactile [51] and gustatory experiences [48] that served as a knowledge resource for 'taste-enhanced designs.' Créno et al. [18] explored the lived experience of trust building in the context of carpooling. Even cognitive processes such as the sense-making of information visualization are tied to experiential facets, such as affect, that in turn impact decision making, as demonstrated by Hogan et al. [28] who introduced M-P to the primarily quantitative driven field of data visualization. The same authors also used M-P in the research of auditory and haptic modalities for data representations [29]. In design, a turn to M-P helped Petreca to unveil designers' decision making in the process of textile selection and access their tacit, embodied knowledge [60, 59]. More recently, M-P was used in the research of interactive and immersive designs. Candau and Françoise et al. [16, 26] employed micro-phenomenology to unfold the nuances of interacting with an immersive audio installation designed to elicit kinesthetic awareness. In virtual reality research, Batras et al. [5] used M-P to understand human-to-virtual agent interaction and hand gestures. Knibbe et al. [35] used M-P to understand the experience of exiting virtual reality. Finally, Prpa et al. [63] used M-P to reveal mechanisms of how virtual environments can support the elicitation and cultivation of breath awareness.

EXPERT INTERVIEWS

Recruitment Selection: We investigated the use of M-P by interviewing 5 HCI/Design experts (further referred to as 'respondents') who met the following criteria: 1. they had been formally trained in M-P (explicitation interview), and 2. they had utilized it in multiple studies (2+) and rigorously followed the method procedure. We interviewed 4 of them over Skype and one over Whatsapp. We sought diversity in their expertise: our respondents come from diverse backgrounds of data visualization, ergonomics, psychology, textile design and information science. Table 1 provides a list of the experts we interviewed and descriptions of the research studies in which they utilized M-P within an HCI and design context.

Table 1. HCI and design studies done by interview respondents that utilized M-P/EI form 2001 until 2018: Interview respondents are in bold font

Interview Participant [Abbreviation] & Affiliation	Use of micro-phenomenology
Ann Light [AL]: Professor of Design & Creative Technology (Engineering and Design), University of Sussex	•Insights into participants' lived experiences of using dynamic websites [37, 40] and associated mental processes [73], and the experience of receiving mobile phone calls [38]
Béatrice Cahour [BC]: Senior Researcher at CNRS (National Centre of Scientific Research) in Télécom ParisTech (Institut Mines-Télécom)	•Unfolding lived experience of: driving electric car with limited autonomy, and of dynamic car-pooling mobile system [13, 18], interactions in virtual world meetings [21], performed activity in the context of ergonomics and HCI [15], older users with auditory or visual augmentation navigation devices [45]
Marianna Obrist [MO]: Professor of Multisensory Experiences in the Department of Informatics, School of Engineering and Informatics at the University of Sussex, UK and Head of the SCHI Lab - Sussex Computer Human Interaction Lab	•Explicating participants verbalization of tactile experiences [51], taste experience that served as a knowledge resource for potential 'taste-enhanced designs' [48]
Bruna Petreca [BP]: Research Fellow in Human Experience and Materials, Royal College of Art, London/UK	•Revealing fashion and textile experts' tactile experiences in interaction with textile [59], Unfolding of designer's experience with textile selection in the process of design [60]
Trevor Hogan [TH]: Lecturer in the Department of Media Communications, Cork Institute of Technology, Ireland	•Explicating user experiences of data visualization [28] and across different modalities [29]

Interview method: We conducted semi-structured interviews and piloted the interview questions within our research group. Questions asked respondents about their beginnings with M-P, what led them to the method, how they heard about it, when and where they had been trained. These introductory inquiries were followed by questions on how they utilize M-P and how often, their interview process, how they sample participants (participants referred here as 'M-P interviewees'), what data they collect, and how they analyze the collected data. These questions provided a format for the interview; however, the interview questions sometimes diverged from the list when respondents raised new insights or interesting points about the topic. The interviews lasted between 45 and 90 minutes.

Data Collection and Analysis: All interviews were audio recorded and transcribed. We used nVivo12 software to analyze the data by coding the transcripts and to then draw out the themes. While the results indicate a substantial overlap of the themes in the respondents' accounts, our goal was to elicit fresh insights coming from the practice that have not been mentioned in the literature to date.

RESULTS

Here we present the findings of respondents' experiences with the M-P interview method. While the interview method and data analysis method hold equal importance in constructing the epistemological framing of the results, due to the scope of this paper, we focus on the respondents' descriptions of the interview component of M-P. The discussion of the insights about data analysis is left for future work.

Micro-phenomenology interviews as a practice

The interviews unfolded the complexities of micro-phenomenology interview regarding the need for distributing interviewer's attention between the questions asked, the bodily cues in interviewee that signal if they are in the evocative state, and the quality and level of precision of the descriptions. It was stressed by our respondents that micro-phenomenology interview is a technique that requires both: the experience of being interviewed and a regular practice of interviewing.

1. Reflection in action: from training to insight

All respondents expressed a profound interest in M-P, and as some of them described, they felt the method made sense for what they are trying to achieve but this came only after they have been subject to M-P interview themselves. Hogan shared an anecdote of how the experience of being interviewed with this method turned his skepticism into an awareness of the potential of the method to evoke the details of the experiences he had no recollection of previously: *"Claire did a 5 min interview with me, and she said to me (...) 'think of a very memorable moment in your life and I am going to use the technique to bring you back to that moment and try to make you aware of things that you were not aware at that time'. So I was like 'yeah try, you'll never gonna be able to do this'. (...) and I said 'OK, I picked the moment of when my first child was born, the first time I saw her... And, she did the interview with me for 5 minutes, and to this day I'll never forget the feeling I had goosebumps everywhere,* ***I was now aware of things****, I am now aware of kind* ***of the emotions****, and aware of actual practical* ***things I've done*** *in 2 to 3 minutes around the time that [the child's name] was born,* ***that I had no memory of previously****. And now I have that memory, that's when I was just completely sold [on using MP]".*[TH]

While all respondents received training in conducting M-P interviews, they all agree that formal training is just the first step towards a successful use of the method. The M-P interview require a particular way of paying attention to the interviewee and asking questions that are free of content. Some respondents noted that a development of confidence was required in order to start conducting interviews directly following their training. Petreca shared that in the first year following the training she lacked confidence and continued practicing. Hogan shared a similar experience: *"After I learned how to use the technique, I spent nearly 1.5 yrs* ***practicing*** *the technique before I ran a study...I must have ran maybe 200 interviews, that have never been or never will be published, just for myself, to train how to use the technique (...) because it's not the normal, natural way of interviewing anyone,(...) nor normal way of talking to anyone, so you have to get your frame of mind right in order to use the technique".*[TH]

The importance of *practice research paradigm* has been recognized [23, 36]. Sometimes a researcher's participation as an interviewee in M-P helped them to elicit the process they are studying and gain a better understanding of what their study required. Petreca's experience of both, interviewing and being

interviewed led her to an understanding that answering her research question encompassed two processes each requiring a separate interview: *"because I understood how my own experience worked, something clicked, and I understood that I had to have two interviews in my own study"*.[BP]

The more practiced the researcher becomes through a continuous practice of the method, especially M-P's questioning style (that is, content free questions), most of the respondents argued that it got carried beyond the use of M-P to inform how they conduct other studies. As Light pointed out, M-P: *"stayed with me as a way of working. I think it has informed other ways, other things that I do, the way I interview even though there is something very particular about Explicitation that is not like the normal interview...but I do think that* ***possibly the questioning style is actually sort of being absorbed in the way that I work****. "*[AL]

2. Attending to the flow of the interview and the interviewee
Micro-phenomenology interviews require the interviewer to focus their attention on the participant as they unfold the experience through carefully crafted questions, and at the pace of the interviewee. Three of the respondents described how they prepare just before the interview. Light described the self-preparation process as *"not even necessarily thinking about what I'm going to be talking about or what's going to happen...just clearing out everything that would be in the way, so it's a similar process, clearing the space for them and then clearing the space for me to focus entirely on them"*[AL]. Petreca does focusing and presence exercises that help her get *"into the zone, right state"*[BP]. Similarly, Cahour's preparation is focused on attaining a particular state of mind *"to be calm and open-minded, and not in a hurry, and...****to be prepared to be attentive, listening calmly and attentively****"*[BC].

Once the interview has started, the interviewer's attention is on the unfolding of the experience and the logical progression of questions. Petreca mentioned how aware she is of *"every question that I ask [because it] needs to build on everything that I understood until that point"*[BP]. This is challenging in part because the interviewers are simultaneously paying attention to the participant and their cues of evocation which indicate the "flow" of the interview: *"there is a certain flow. I don't how to explain it...it is really true that these cues from the body of the person, they really work...and when there is no sudden break, the interview just flows and you see that the questions lead to something else, and then...yes, it really does feel like you are going deeper. For me, I have this feeling of going deeper into something."*[BP] Similarly, Obrist described what it looks like when the participants are not in the evocative state which can be evidenced by rationalizing their answers: *"It's because of the nonverbal cues you are getting back...It's exactly because of the way they look at you, and the way they are trying to answer the question, also the type of answers they are giving you. It's more an abstraction than really trying to get them into the details. It becomes very much rationalization from their side."*[MO]

The interviewee directs attention also to the quality of the description of experience they are getting in the moment. Sometimes, poor descriptions are the result of interviewee's inability to evoke a singular experience. Instead, they speak from a generic perspective that encompasses a few similar instances of the experience. The interviewer's role is to recognize when that happens and re-direct interviewee's attention towards one particular instance of the experience. In the study on the experience of textile selection [60] Petreca encountered difficulties when she asked the participants to remember one instance of their textile selection process and then interviewed them on that (invoked experience). The accounts she was getting from those participants *"were just going everywhere and really going generic. For me, it was really hard to go deeper"*[BP]. This might be due to particular processes that the participant undertakes regularly when selecting the textile, and in the case of invoked experiences, a few instances of previous experiences were conflicting (choosing one particular experience is crucial). Petreca solved this by provoking the experience: she preselected 6-7 textile samples and created a brief for the participants. The participants were told *"this is the situation you have to design for and here are the textiles"*[BP], and asked to select one. Immediately after they picked the textile, Petreca successfully interviewed them to learn about the selection process.

Conditions under which experiential descriptions unfold

All respondents recognized the importance of the space and the context in which the interviews take place for the quality of descriptions that emerge. In this section, we describe the respondents' opinions on the context and setting for micro-phenomenology interviews.

Context under which the experiences are evoked Petreca's concern is about lab studies of the experiences that do not typically occur in the lab. Her point was about the physical, immediate context in which the experiences are provoked: *"I wonder [about] all of these studies around art experience...For me it's very tricky when you take art, the art piece out of the gallery, [and] take it to a lab. And you ask people to experience and interview them about this art piece outside of the gallery...Because experiencing in the lab or in the museum or art gallery is completely different."*[BP]

Sometimes, the act of provoking experiences out of the typical context can impose challenges and undermine the research question. Light provided an example of a study she did in which they investigated a user's motivation during their interaction with the websites. Light instructed the participants on what to do and then she conducted interviews. Light reflected on their process:

"I had people saying, for instance, 'Oh and then I thought, does she want me to do this and does she want me to do that', and, at that point where I am getting that kind of a comment it makes it a rubbish process, because it's not natural for them to think that...There is no way in a normal situation they would be wondering whether the interviewer wanted them to do this or that. It's not about that. You know, if I was interested in their motivation, I was not asking something that was meaningful, because the motivation was obviously entirely about me, and the whole point in the sense of doing elicitation is to get away from the motivation of being in the interview and pleasing the interviewer. [M-P] moves them back in to the space where they

are actually able to think about their own experiences...So it was completely wrong then to have a task that brought them in relation to me so profoundly".[AL]

Spatial setting and the qualities of interviewing space: The respondents conducted M-P interviews in various locations: in their labs, in the participants' homes or offices, and public spaces. Cahour mentioned that one of her postdoctoral students interviewed a participant in the car, immediately after they passed some of the places that were the subject of the research study. This decision was due to urgency to conduct an interview right after the experience happened. Respondents noted that public places are not desirable because it is hard to control the environment, noise being the main reason for failed interviews. Two respondents, Petreca and Cahour, mentioned how they tried interviewing at a café but failed due to distractions to the participants caused by the noise of the dishes, people chatting or moving around. Cahour described: *"it was the problem of concentration of the person, it's distractors, it distracts the person from what she is saying and what the interviewer is asking. So she [the participant] is more distracted by or the noises people entering and going...It's more difficult to keep the person in this state of evocation."* [BC]

Petreca tends to visit textile designers in their offices/work spaces and conduct interviews in situ to preserve the context for the experience that is more realistic than lab settings. Light makes sure that the space *"had to be set up in a particular kind of way, and if it couldn't work that way then it would have to be in another room, because it really did have to have [particular] characteristics."* [AL]

While the locations of the interviews can vary, the respondents agreed on the characteristics that the immediate environment must allow the participant to get into an evocative state. The space needs to be quiet, free of distractions, noise or people passing by. The most desirable setup of the space is such that it allows participants to direct their gaze away from the interviewer, and that where their gaze is directed is clear of any distractions. Obrist shared her experience of conducting a study [70] with astronauts at the Mars Desert Research Station in the desert of Utah. The only place that was available for the interview was a greenhouse which she did not have control of, other than being able to set up the seating in a particular way. While the greenhouse was pleasant, it wasn't ideal for conducting M-P interview, and Obrist wonders whether this space itself contributed to the participants' difficulties in reaching the evocative state.

Micro-phenomenology values for HCI/Design research

In the interviews, the five respondents shared not only how they use micro-phenomenology but also where they see the values of the method and potentials for using it their future research. From the interviews, we discovered a range of values that micro-phenomenology poses to HCI/design research mainly focused on unfolding tacit, embodied dimension of experiential content and design processes, articulating it and finding vocabulary for this newly found knowledge.

Accessing the depth of experience

All respondents expressed that their interest in M-P was initiated by the limitations of the existing methods' capacity to allow them to ask the questions they wanted to ask [AL], which one respondent described as if *"hitting a wall"* [BP]. Respondents also repeated that commonly used interview methods provided insufficient, impoverished descriptions of experiences where there was more to explore. For example, Hogan had been using the RepGrid technique [7], that helped him find constructs — characterizing labels of experiences— but those findings revealed little about the complexities of experience beyond their labels: *"We were getting really interesting results with the RepGrid study but they weren't deep enough. They were just first level experience. And I really wanted to get deeper level experience but I knew I wasn't going to get that just from typical interviews, and I thought that explicitation interview technique would complement what I was getting with the RepGrid"* [TH]

In the design context, M-P was used when it was clear that descriptions and observed unfolding of the experience did not fully align. Petreca shared: *"it was a mismatch between what they [participants in the study] articulate and all of the things they do that I was seeing...so, I was looking at something that will help me to get to the experience, which is...the things that designers say...I would say 'how did you get to choose this textile?' - 'It just feels right.' So it's really* ***that part of the experience that remains unarticulated****"* [BP]

Similarly, Obrist turned to M-P during her work on haptics asking: *"how can we actually help people to verbalize those experiences...because I really wanted* ***to help people describe tactile experiences****, like mid-air haptics,* ***how it feels, how it is changing, to get as much detail as possible****"* which they were not getting with other methods available at the time.

Articulating and verbalizing tacit dimension of the experience and embodied knowledge

The value of embodied, tacit knowledge has been recognized and valued in HCI [34, 69, 31]. However, the challenge is how we unfold, share, and teach such knowledge within HCI/Design field that often stays unnoticed and obscured by explicit actions of what one does. Petreca investigated design decision-making of fashion designers, in particular how they choose the fabric. She noticed nuances of small, quick actions that the designers did but were unaware of when asked about it. Petreca described one instance of such action:

"Most of the designers fold very quickly the fabric between the fingers and then I would asked them 'when you do that what do you do and what happens?'...And actually it is that they ***know with their body*** *the distance between the base of the sewing machine and the press, the foot with the needle. When they fold the fabric and rub it quickly like this, they know if that fabric is going to be too thick to go under the machine..."*[BP]

When participants are asked to evoke the experience of performing a task in a micro-phenomenology interview, they are often pleasantly surprised by the articulation of actions that now, **become part of their understanding of how they do certain things**. Petreca shared: *"My participants got so wowed. They were really excited, especially more matured ones, they were like 'I have been doing it for 40 years and I never knew that this was how I do it' "* [BP]. Hogan experienced the same: *"I've had the experience of people hugging*

me after the interviews, saying 'thank you', sitting down with you saying 'Oh my God, now I know how I use data visualization, like the most mundane thing you can ask someone to talk about, certainly they had a completely new perception of how they use it...and it's kind of like a form of training for them."[TH]

Eliciting embodied processes benefits not only the M-P interviewees' understanding of how they do things, but also allows researchers to apply this understanding in pedagogical purposes for teaching novices or students how to embody and grasp design processes they are not familiar with. Petreca describes how the gap between meaning and making can be decreased through *"creating instructions based on these [M-P] questions', like these inner actions that we have, if I can turn them into actions that I can suggest as practices that people can nurture. And, maybe this is almost like pocket training to how to do [design]"[BP].*

Petreca also demonstrated how M-P can be used to unpack the nuances of skilled designers, by guiding them in articulation and verbalization of their experiences and design processes that can be then taught to novices. Petreca shared the experiences of her students after they performed some of the embodied design processes that were previously obtained from the verbal accounts of a more skilled designer: *"I had a lot of feedback from students saying 'it's almost like we bring together the thinking and the making' and I am like 'but why did we ever split them?"...That is interesting because we did [split them], we do teach textiles a lot with numbers, and it becomes such a distant thing when actually it is their language when they became fashion designers."*[BP]

Developing vocabulary for intricate experience design
Obrist's interest in micro-phenomenology focuses on the question of how this method can be used to develop a vocabulary that will not only describe the experiences but will aid designers in creating, for example, multisensory HCI [51]: *"For me the biggest opportunity around using this method is* ***to establish the language or vocabulary around how we can describe sensory experiences*** *in such a way that we can also use them in the design of new interaction experiences. How designers come up with the language which they can use, similarly we can use visual interface elements. So we can talk about color spaces, we can talk about tactile spaces or the olfactory space, so that you can not just refer to the top level of an experience, but you actually go much deeper and you also take into account how it is changing over time, how is it unfolding. And this unfolding is not just a simple thing but you can actually take a part in it...I think it's the richness of the descriptions people are giving. And you then try to abstract, which will help us* ***move towards multisensory HCI*** *for instance, which will help us understand each other when we are talking about something, and then the opportunity to further link this language to concrete parameters, physical parameters."*[MO]

Involving the subjects in co-creating process
Petreca described the process of co-creating the costumes for and with the dancers [58], by interviewing them on the experience with a particular choreography. In embodied design for movement, observing movement experience has been a valued method that leads to design insight [24]. In this context, Petreca utilized micro-phenomenology to facilitate dancers' self-observation and their insights — the descriptions of the experience — were then used to design the costumes:

"It was mostly the experience of the movement that the dancers had, and then from the description that they had I tried to make it(...) if they would say, for example, 'this movement that I am doing I really feel the weight of my hips.' So with that I would ask 'How do you feel that weight?' And then they would say something, and then I would continue... I didn't have any intention when I was interviewing but then when I was reading the interviews I was like 'Ok, how can I translate this? What could I do to almost expand this sensation and make it material with the costumes?' So if you look at the costumes individually, they are very individual. It was the first time that I did a costume design that was not a unified concept because I really wanted to [design for] each subject and develop with them. It was a really interesting outcome, I never saw dancers more happy because ***they almost felt they did it themselves****."* [BP]

The communication contract and ethical consideration
The beginning of the interview is crucial for the participants' sense of trust and comfort and is a requirement for a successful interview. The sense of safety and trust must be established between the interviewer and the participant because the evocative state can bring to the forefront profoundly personal and intimate details of the experience. This holds as especially important in work with sensitive groups. The role of the contract at the beginning of the interview, is to assure the interviewee that they may at any time refuse to answer a question, and possibly stop the interview. The contract is regularly renewed throughout the interview through interventions such as "if you agree, I would like you to go back to the moment when...".

Failure to establish the communication contract often results in difficulties with eliciting the evocation of the experience or incomplete descriptions. Light mentioned that she heard from a few researchers who tested the method but concluded that micro-phenomenology "doesn't work". Yet Light noticed that those researchers did not establish contracts with their participants prior to the interview, a critical gateway to creating trust and safety with the participant. Petreca sees the contract as an opportunity to explain what the project is about and make gathering rich descriptions of their experience a common goal that the participants can care about.

"I think the contract is so important...because it does feel like you are accessing this intimate space suddenly...so it feels like you are both discovering something. Every time that I had these interviews that were like 'wow' that was really a good one, it was as if we were both discovering something, like the things really reveal themselves for the first time...there was this feeling of almost a dance that leads you into this understanding."[BP]

DISCUSSION

In this paper, we have introduced the micro-phenomenological interview method and presented the first-person opinions of 5 HCI/Design researchers who extensively used M-P. Our

findings contribute to the HCI discourse on methods for user experience research by sharing the unique and complex personal insights of the experts through our qualitative analysis of their responses. Our findings indicate the importance of training and developing the practice of interviewing, and the role that context and setting play in accessing the evocative state and delivering detailed accounts of the experience. In the following discussion, we are focusing on the findings most salient for the HCI/Design community. Our discussion draws upon the *Micro-phenomenology as a practice* and provide a discussion about *Who is micro-phenomenology for* based on the insights we collected from the interviews and our own experiences with the method.

Micro-phenomenology interview as a practice

Our respondents shared that to conduct successful M-P interview, the interviewer should have a prior experience of both, being a M-P interviewee and as well have some prior practice in conducting M-P interviews. As indicated by our respondents, the training in M-P is just a first step towards establishing a regular practice. This practice requires not only learning how to pay attention to posing content-free questions, but also developing the capacity to distribute attention between the interviewee and the signs of the evocation of the experience (nonverbal cues), the quality of descriptions that emerge, and logical progression of questions. While we observe that one of the values that M-P provides to a researcher is the development of observational and attentional skills, we find also that this practice brings about empathy, humility, and requires the researcher to "let-go" of a need to control the direction of how the evoked user experience and the descriptions of it unfold. As indicated in our results, the interviewer starts the interview in a particular state of attentiveness, calmness, and open-mindedness and entirely focused on the interviewee. By gently guiding the interviewee in unfolding the experience, the interviewer stays mindful of the progression of the experience, and in a way "re-lives" the experience that unfolds in front of them through the descriptions that they are getting. In this process, the interviewer takes upon a secondary role, listening and learning from the interviewee but also actively participating in the emergence of the descriptions by guiding and re-directing the interviewee's attention.

In the context of *qualitative social research*, M-P complements the methods (along with Kaufmann's *Comprehensive Interview* [33]) that diverge from rigid interviewing format. This new paradigm shift in qualitative research acknowledges the participation of both the interviewer and the interviewee in interaction that determines "experimental situation" [33] out of which discursive data emerges [25]. Therefore, the role of the interviewer in M-P is not neutral nor invisible; furthermore the outcome of the interview depends on the skill of the interviewer to intervene and gently re-direct the interviewee's attention away from generic experiences towards the singular instance of the experience to ensure the quality of the descriptions. This dynamic is essential, and is agreed upon in the *communication contract* before the interview. Finally, these values that develop through practice of M-P interviews are not restricted to M-P only, we see it as values that any research or method can benefit from. As some of our respondents mentioned, these qualities once developed, stay and inform new perspectives on researcher's role in the interview process.

Who is Micro-phenomenology for?

Versatile method for different stages of research – Unpacking the nuances of experiences or design processes and experiential, tacit knowledge can be facilitated in M-P in two ways. First, *critical incidents* [12] or past pivotal experiences can be explored by M-P interview (these are *invoked* experiences). This exploratory research phase leads to data for design consideration, or framing research questions. Second, in the generative and evaluative phases, M-P interviews can be employed for better understanding prototypes, design processes, and final designs. In this case, the experiences are provoked in direct interaction with the design, and participants are interviewed immediately right after. Data collected can be used for design analysis or design guidelines. In case of longitudinal studies, or research questions that (as in Light's case) can be easily biased by direct requests posed by a researcher, the users can be asked to interact with the design when they decide, and remember or even write significant experiences that they would be later interviewed on. Use of M-P in exploratory, generative and evaluative research presents one approach to bringing thinking and making together. It gives insight and experience solidification to the interviewees, and provides value to further application in design research.

Micro-phenomenology can be used as a first-person method for explicating one's own design processes – Not only can M-P help researchers understand the practices of others, but Light mentioned that Vermersch used this method in his work *"to clear peoples blockages to get them thinking differently."* One of the advantages is that researchers/designers can employ M-P to understand their own experiences and design processes. Neustaedter and Sengers [46] emphasized the value of *autobiographical design* research that is "design research drawing on extensive, genuine usage by those creating or building the system" [46]. Höök et al. discussed their 1st-person work on soma designs that embraces the processes of attending to bodily, felt, somatic experiences when designing for the body [31]. They proposed a few methods for "becoming aware"[20] and "turning attention inward", towards exploring soma as a resource for design [31]. Similarly, Schiphorst emphasized somatic awareness (awareness of breath, tactile and kinesthetic experiences) as a quality that can be cultivated through design [66, 68]. Such work engages the designers as well as the users. The designers can use M-P to elicit and capture experiences of using the system from the prototype phase and understand their design decisions over time, including capturing their felt, bodily experiences by using M-P for self-observation. Such documentation can offer a valuable source of knowledge to others in the field. Similarly, Neustaedter and Sengers [46] emphasize the importance of keeping explicit records of the use and changes, and micro-phenomenology can support that through a rigorous empirical method for detailed and experiential understanding of the design process.

Combining micro-phenomenology with other methods constitutes a greater range of insights – Our data revealed that our respondents reached to M-P to further deepen the understanding of the user experience, beyond what the methods available

to them could provide. But, how can one know that there is more to it than what is immediately available? Polanyi describes it as the tacit knowing of the researcher, their "intuition", that there is more to the person's experience than what the person can immediately tell [62]. To that end, in our results we reported on Hogan's experience of deepening the descriptions that he was getting through RepGRid [7]: *"It is like digging down through someone's experience, and the RepGrid will let you reveal things in upper few levels of the Earth's core...and then micro-phenomenology will let you get down deeper...I always run the micro-phenomenology studies last...so I let RepGrid open up some issues, open up thought processes that don't give me any underlying meaning behind them, and then I probe them further with M-P."*[TH]

This vignette opens a space for future consideration of how M-P can be used in mixed methods research studies that will employ M-P with other qualitative and quantitative methods. The value of a pragmatic, *mixed methods approach* [11] is recognized in user experience research. ***Triangulation approach*** is found in the majority (72%) of analyzed UX studies [61]. This survey showed the trend of not only mixing methods but mixing collected data type (e.g., qualitative and quantitative). This kind of data triangulation has been embraced in regard to M-P too. Prpa et al.[63] discussed the use of a mixed methods approach to validate users' accounts by pairing descriptions from the M-P interview with physiological data of breathing and matching them as they unfold in a timeline. Similarly, Depraz [19] triangulated heart activity data with the descriptions of the experience to gain insights into the nature of the descriptions (descriptions as a result of affective processing, or activation of cognizing mechanism). These are just two ways out of many other possibilities of how a *mixed methods approach* can contribute towards the increased validity of users' accounts and support the development and application of micro-phenomenology in more quantitative data-oriented research within HCI/Design.

Final thoughts

This paper seeks to respond to the needs, challenges, and complexities of our contemporary technological landscape by providing a closer understanding of a method used for unfolding multiple facets of experiential content and design processes in the context of HCI/ Design and technology use. Our aim is not to advocate for M-P over other methods but to contribute to the ongoing discourse on UX methods. Furthermore, our aim is to present aspects of M-P that have never been disclosed in the literature so far and let the readers decide on the value of it for their research endeavours. Based on our findings from our expert respondents we argue that such a need for a discourse on qualitative methods still exists in the fields of UX research and HCI/design field. To that end, M-P can contribute to bridge the gap between the design process and holistic accounts of user experiences of technology use or designing the technology.

The need for training and maintaining the practice is one of the biggest challenges of the method that is often raised. However, mastering any method requires a researcher's dedication, time, and practice [17]. Valerie Janesick emphasizes the importance of the practice in qualitative research: *"In qualitative work, the fact that the researcher is the research instrument requires that the senses be fine-tuned. Hence, the idea of practice, on a daily basis, sharpens the instrument"* [32]. While mastering M-P requires commitment, it offers many potentials. Our findings indicated that M-P could provide value to multiple stakeholders. Firstly, **HCI/Design field** at large can use various aspects of M-P interview for unpacking explicit but also tacit knowledge and experiences that cannot be easily observed in 3rd-person approaches, or even articulated when self-observed. These are usually experiences that engage different sensory modalities that often lack the vocabulary to be expressed and designed for. Designers and researchers interested in embodied interaction and design, soma(aesthetic) design, auto-biographic design or design concerned with bodily, felt experiences and tacit, embodied knowledge can benefit greatly from using micro-phenomenology. Moreover, M-P could provide value to commercial UX processes as well, but further recommendation of such application requires an in-depth assessment of the commercial UX landscape and presents opportunity for future work. Secondly, the **interviewees** benefit from newly emerged understanding and articulation of their experiences. Thirdly, mastering the M-P interview method through maintained practice leads the **interviewer** to embodying subtleties of asking content-free questions. Such cautious questioning style reduces the researcher's bias in the structure of posed questions [17], develops humility and empathy, all thus contributes beneficially to the other inquiry-based research methods. We recognize that each M-P practitioner lends a set of values developed through their diligent practice, and as a next step we would like to conduct M-P interviews with M-P practitioners to unfold the nuances of their M-P interview practice that is tacit, embodied, and yet undisclosed.

CONCLUSION

In this paper, we introduced the micro-phenomenology interview method for gathering diverse and finely-grained descriptions of user experiences, to answer the challenges posed by our contemporary technological landscape with empirical rigor. A handful of researchers utilized M-P in the context of HCI/Design research, yet their experiences with the method have not been presented to date. We bridge that gap by presenting interview findings from experts who have been formally trained in M-P and have been actively using the method. We highlight challenges and possibilities for the method to advance and discuss the findings that have the most promise to further HCI research. Our intent is to open a discourse on M-P as a robust phenomenological approach to unfolding more profound descriptions and structures of user experience.

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