

Towards Critical Heritage in the wild: Analysing Discomfort through Collaborative Autoethnography

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ABSTRACT

As we engaged in designing digital interventions for intercultural dialogues around public cultural heritage sites, we saw an opportunity to surface multiple interpretations and points of view of history and shine a critical lens on current societal issues. To do so, we present the results of a collaborative auto-ethnography of alternative tours accompanied by intercultural guides, to explore sensory and embodied engagements with cultural heritage sites in a southern European capital. By focusing on the differences in how we experienced the heritage sites, we analyse the duality of discomfort, a common concept in HCI, in that it can both be deployed as a resource for designing systems that can transform people's understanding of history or it can be a hindrance for engagement, having an unequal effect on individuals.

CCS CONCEPTS

• **Human-centered computing** → **Field studies**; • **Applied computing** → **Arts and humanities**.

KEYWORDS

cultural heritage, intercultural dialogues, ethnography

1 INTRODUCTION

Migration has shaped modern society by allowing for intercultural exchanges [98]. European nations, in particular, are composed of many cultures, interacting over centuries, but the recent rise in migration has also led to an increase in xenophobic discourse, which seeks to defend and protect European heritage as if it was homogeneous [72, 79]. Countering anti-migration sentiments, European policy agendas [47, 48] seek to stimulate intercultural dialogues, acknowledging that European culture heritage (CH) has been and

is currently influenced by multiple cultures. As this heritage discourse becomes digital, a critique of these interventions is that they adopt a techno-deterministic approach [54, 92], without concern for who is participating in this dialogue and the outcome of digital technologies in CH. Notably, existing digital interventions do not address why intercultural dialogues are difficult to achieve and leave it to citizens to start and engage in exchanges. Furthermore, digital interventions in the public CH sites (like locative media technologies [1, 7, 36, 80, 96]) may not consider the barriers that stop intercultural dialogues.

Therefore, we seek to explore intercultural dialogue through sensory and embodied engagements with CH sites to understand the design's physical context. Our research, explicitly oriented towards "the wild" [121], builds on the work of Schofield and colleagues [109, 110] to investigate the suitability of Human-Computer Interaction (HCI) design methods to contribute to an understanding of digital CH from a critical and future-oriented way. Through a collaboration with two organizations that provide intercultural alternative guided tours in Lisbon, a southern European capital, six researchers visited 13 distinct heritage sites and documented, through autoethnography, our engagements with the physical and discursive contexts of the sites, as we learned about the different histories and the communities represented in them. Through collaborative autoethnography and diffractive analysis, we looked for visible "patterns of difference" [10] on how each researcher experienced heritage places differently.

Firstly, as a contribution to CH, we demonstrate the usefulness of doing autoethnography with a critical cultural heritage stance, where the emphasis on bodies and their relationship to the material-semiotic conditions of heritage sites are taken as a starting point for design. Methods such as these can be helpful in articulating the

experience of interacting and learning about cultural heritage from an intercultural perspective.

Secondly, as a contribution to HCI, our design exploration surfaces embodied aspects related to discomfort, a somatic dimension of experience that has been gaining relevance in HCI [16, 17, 112, 125], for designing critical and intercultural heritage technologies. Notably, our articulation of discomfort highlights how different facets of discomfort can be resources or hindrances when designing critical heritage tools. This articulation of discomfort is structured as design implications (in section 5.1) for researchers interested in critical locative media in public heritage sites.

Finally, methods used in this article contribute to the growing HCI body of work on collaborative autoethnography [31, 70, 86, 105, 106] and diffraction [40, 52, 67, 78, 103], which can be useful to other HCI researchers exploring patterns of difference in an entangled world. Reflection on these methods are presented as methodological implications (in section 5.2) for researchers interested in applying these methods to other topics.

2 BACKGROUND

In this section, we summarise modern heritage approaches and its connection to HCI.

2.1 Modern Heritage Approaches

Heritage is an element that can be inherited and that should be preserved due to its cultural, natural, or historic value [64]. Tangible CH elements, like physical artefacts or places, accentuate the physicality and material qualities of heritage [64]. Intangible CH includes the social and cultural practices that maintain a collective social memory [64, 77]. Tangible CH is linked to intangible CH (e.g., in the way we use language to describe it) and embedded in an experience of an individual (therefore, subjective) [64].

A new wave in heritage research has emerged by framing it through a critical lens that extends and shifts attention from heritage to issues that affect the present [135]. A common tenet of critical heritage discourse is the desire to move past an Authorised Heritage Discourse (AHD) [116], a view of heritage that is expert-centric, euro-centric and propagating institutionally approved narratives of culture. For example, AHD creates or maintains the narrative of a nation by highlighting sites that are representative of power [55]; this refocuses heritage as not being "things" but as a continuous negotiation of meaning-making by identifying, managing, preserving, and visiting [116]. In opposition to AHD, perspectives to understand heritage have emerged that focus on non-western conceptualisations or that value sub-national or community voices, creating bottom-up approaches to heritage [115]. Tsenova et al. [126] explores a bridge between AHD and community voices by casting volunteers in heritage sites as *genius loci*, experts in their own experience and the 'spirit of place'/authenticity but not authorised by institutions. Plural heritages [110] stand against AHD by legitimatising all heritages since having an AHD's institutionalised narrative invalidates all others. Plural heritages should not be seen as an exercise in integrating or reconciling past perspectives but as giving value to these perspectives and their dimensions [109]. Future-oriented heritage stands against AHD by rejecting

its adopted binaries (e.g., tangible/intangible, nature/culture, human/nonhuman) [65] and theorising the future of heritage as a critical lens on present issues and what heritage means [109]. For example, the *Future Heritages* research project [65] tackled four themes (uncertainty, transformation, profusion and diversity) by exploring how different heritage practices could assemble radically different futures.

2.2 Heritage & HCI

Digital tools have been applied to safeguard CH in multiple ways, including identification, cataloguing, preservation, curation, dissemination and education, among others [50]. Digital tools, and in particular, semantic web technologies have been concerned with providing digital CH access to different stakeholders [43, 113], extending also to concerns about the quality of data available [4, 49] and ease of access Candela et al. [28]. This emphasis on dissemination is also often accompanied with an emphasis on education, with several digital artifacts exploring virtual or augmented reality [14, 50], serious games [71], social media [77] and tangible interaction [34, 95], in a variety of contexts (e.g., schools [71] and museums [34]). Digital tools have also been applied to the experience of interacting in physical CH sites through the curation of geo-localised experiences. For example, Baker and Verstockt [7] created a system that curates routes with geotagging for tourists, facilitating exploration, while Quercia et al. [96] created a geolocalised recommender system based on knowledge graphs that makes use of perceptions of people that are already familiar with the city, to recommend paths aimed at a particular feeling. Following this focus on locative experiences, several works have begun to explore Augmented Reality inline with activist practices [114]: *The Whole Story Project* app [36] juxtaposes virtual statues of notable women juxtaposed to physical male statues; *SweetgrassAR* [80] overlays co-created digital stories on sculptures in a university campus, challenging colonial narratives with a reflection on Indigenous-settler relationships; and *Campus AR* [1] uses filters to rename campus infrastructures after prominent alumni of color.

These last examples [1, 80, 80], in addition to work from Schofield et al. [109] and Claisse et al. [35], show that HCI has began exploring artifacts as conduits for critical heritage discourse. Schofield et al. [109] by identifying common interests and concerns related to participation, representation and knowledge creation, links modern heritage approaches to contemporary design/HCI practices (such as embodied interaction, participatory design and speculative design).

HCI's *turn to embodiment* [101] influenced by theory on embodiment and technology [42], rejecting a Cartesian separation between mind and body, has resulted in multiple research threads exploring feminism, race, differently-abled, among others epistemological perspectives [12, 73, 74, 87, 117, 133, 134]. An orientation to embodied interaction in HCI has been gaining traction, not only because technologies are increasingly worn, close to us, carried with us, or within us, [83] but also because ultimately, as stated by Homewood and colleagues [67], "we have bodies, we are bodies, and we exist in continuous relations with other bodies". This attention to how different bodies experience the world has led to new approaches to design, such as soma design [69], where the aesthetic appreciation of the soma (or bodymind), is taken as the starting point of the

design. However, Katta Spiel's [117] analysis of body-oriented tangible technologies revealed that most designs are implicitly made for unmarked bodies and body norms, the majority being non-disabled, western, white, and cis-male. Spiel suggests a different approach to design that is sensitive to the norms permeating the design process, that marks all bodies in the design, and embraces the messiness of living bodies [117]. This is congruent with an intersectional lens in design [108], which has a commitment to make visible how different intersecting identities and privileges matter to how different people experience the world and technology or experience oppression.

Discomfort is particularly relevant for embodied interaction [16, 111] and soma design. In HCI, discomfort was initially described in relation to rides in theme parks, but has since expanded to performance-led research and cultural experiences, making it part of HCI's *turn to culture* [101]. Uncomfortable Interactions were first articulated by Benford et al. [16] as "*those that cause a degree of suffering to the user. This may be physical suffering such as physical stress, tiredness or pain, but might also involve mental suffering due to fear and anxiety, either experienced directly or emphatically on behalf of others.*" (p.2005). Benford et al. [16] suggest that discomfort, carefully and ethically, can be used: (i) to design for entertainment, such as thrilling experiences (encompassing fearful anticipation, extreme physical sensation, euphoric resolution); (ii) to design for enlightenment by demanding a personal commitment to some experiences, such as appreciating and interpreting artwork with dark themes; (iii) or to promote social bonding by sharing difficult experiences (either theirs or somebody else's). Benford et al. [16] recognised four forms of discomfort: (i) *visceral*, focused on physical sensations; (ii) *cultural* associated with dark cultural content, either through exposure or through decision making; (iii) *control*, by temporary removing control away from users and being given greater control; and (iv) *intimacy*, achieved by playing with social boundaries, isolating users, pushing for social interaction or surveying them. Recognising and adapting to negative emotions is essential for our social relationships, mental health and resilience [91]. Once controversial due to its ethical nature, discomfort has now become more accepted as a way to design for rich complex emotional interactions, beyond designing for simply user-friendliness and positive emotion. This acceptance is in part due to the ethical reflections on the use of this approach [15, 60], considering the impact on participants or as a research method. Discomfort has been deployed successfully in the design of digital games [57], exergames [26], and also about designing interactions with art objects [51]. Following HCI's lead of engaging critically with the diversity of human experience, discomfort has also been used to engage societal systematic and intergenerational tensions with transformative learning [59, 60] or to reflect on the methods we use [66].

Valuing sensory embodied experience as knowledge [42] has also been paralleled in critical heritage research with Sather-Wagstaff's [104] description of moving bodies in sites of difficult heritage. The expanded set of epistemological perspectives in HCI (such as Feminist HCI [12] or Post-Colonial Computing [73, 74]) highlights the value of knowledge diversity in the same way as plural heritages has in cultural heritage. For HCI and CH, participatory design practices have valued the importance of polyvocality through participation and representation [109]. Future-oriented heritage is also paralleled in a set of HCI practices that value creativity and imagination by

constructing artefacts as knowledge. Critical design [11, 45], speculative design [44], counterfunctional design [94], design fiction [21, 22], among others practices, not only draw focus to future artefacts, but also to the social worlds that support them [109].

2.3 Intercultural Dialogues around Heritage

Building on Schofield et al.'s [109] call to critical heritage, we look at heritage from an intercultural dialogic view. This not only explores a design issue not present in Schofield et al. [109], but also harkens to calls [38, 53, 93] to look at the active, physical and embodied engagement with heritage.

Galani et al. [54] highlights two aspects affecting intercultural dialogue in European Union (EU). Firstly, the conceptualisation of otherness within heritage, with an initial focus on Europeans versus immigrants "others", highlighting perceptions of cultural difference, and then later, a conceptualisation of heritage as shared values, highlighting perceptions of cultural commonality [54]. These conceptualisations fail to address the dark side of European history (e.g., slavery, colonialism, war, institutionalised racism, etc.) [54] and can represent knowledge-oriented multiculturalism, where the "other" culture is viewed as an object of knowledge to enrich the dominant culture [23].

In this paper, we take inspiration from alternative practices for intercultural dialogue through its inclusion in tourism. Tourism can often be a marginalising practice [88] since tourism sites (which include heritage sites) and tools (which include guidebooks, maps, and tours) perpetuate AHD, and cast local hosts as performers of cultural difference and holders of authenticity [128]. This spectatorial lens of cultural difference reiterates the otherness of this experience, while a lens of empathy, of feeling like a native, dismisses any discomfort of the experience, erasing plurality [19]. Differentiating from tourism or empathy, Arendt [6] highlights visiting as a mode of civic learning, one that acknowledges the critical plurality of perspectives of an event/space, and a reflexive meaning-making stage caused by this acknowledgement [19, 88]. Adopting this critical and reflexive approach [33], several guidebooks [32], maps [27, 37, 89] and tours [13, 18, 41, 85, 97, 122–124] counteract the dominant narratives by showcasing dissonant heritage [127] and the voices of those left out of AHD [27]. To better understand the mechanisms behind these tours, Ormond and Vietti [88] focus on the inner workings of two initiatives: *Migrantour*[81], a project co-funded by the EU with tour guides (citizen migrants, refugees and asylum seekers) in 16 cities across Europe, and *Roots Guide*[58], an interactive reflexive guidebook based on participants' internal and international migration experience, and targeting domestic tourists in the Netherlands. Both programs use multi-stage participatory storytelling and (auto)ethnographic mapping techniques to engage guides in critical reflection [33], identifying multiple perspectives and building their narrative, one that can "*contest and broaden local and national heritage discourses*" [88]. Ormond and Vietti [88] identifies both initiatives as corresponding to the practice of "*visiting*" as described by Arendt [6], since it acknowledges the legitimacy of various perspectives (the host and the visitor's interpretation) and the intersection points between them, capable of creating the disorientation dilemmas and emotional discomfort necessary for transformative learning [100, 129].

3 METHODOLOGY FOR DESIGN EXPLORATION

Building on work in critical heritage in HCI [109] and the need to further articulate embodied “in the wild” heritage experiences [53], our design orientation does not attempt to homogenise or erase the different histories and power relations that are part of how different people experience the city and cultural heritage. We start from a postcolonial & feminist design orientation:

- Irani and colleagues describe the postcolonial orientation in HCI as one that allows “designers to recognise their work not as designing appropriately for static, nationally-bound cultures, but instead as interventions both in conversation with and transformative of existing cultural practices” [73]. This orientation is concerned with framing the design process and the types of relationships that the design process fosters (e.g., between designers and end-users), steering away from universal conceptions of design methods (and its created design knowledge).
- Our design orientation is also firmly rooted in the feminist notion that all knowledge, including historical knowledge, is situated [62]. Particularly, we start from the notion that there are no a-priori distinctions between the world and the observer, but that both the subject and the object—or people and the world around them—are constituted in their relationship to each other. When applying this notion to human bodies [67], we can conceive of bodies as being entangled [52] in the world. The bodies become the sites where politics and ethics are enacted. When we design from this orientation, the “political and the material are entangled at a deeper, epistemological and ontological level” [2].

3.1 Preparing the Field Study

Our heritage setting for fieldwork is in Lisbon, a city that has benefited from its role as the central power in Portugal’s Imperialism policy. The Portuguese Empire was one of Europe’s longest and largest empires, giving Portugal considerable power and influence. Similarly to other European Imperialistic nations, we acknowledge that this power and influence emerged from Portugal’s colonial stance. In particular, Portugal’s role in the trans-Atlantic slave trade objectified millions of Africans as commodities in Europe and America and has reverberated throughout to the present, with structural discrimination of African people in Portugal. This “otherness” caused by coloniality is also present towards other communities. This issue is not exclusive to Portugal, with many European countries having to deal with their (hidden) history and its consequences in today’s society [54].

As Blomberg and Karasti put it, the ethnographic “field site is not out there waiting to be visited; instead it is reflexively constructed by every choice the ethnographer makes in selecting, connecting, and bounding the site and via the interactions through which s/he engages with the material artifacts and the people who define the field” [20]. In our case, we constructed a field site for studying how critical cultural heritage encounters could work in practice, considering two criteria. Firstly, following Arendt’s [6] reflexive practice of “visiting”, we searched for individuals/organizations which are “good

company” [56], i.e. able to help us visit different perspectives. Secondly, we sought after dissonant views of history, ones that actively stayed away from the canon view of Portuguese history. Considering the location of Lisbon and these two criteria, we searched online (consulting search engines, blogs, travel agencies), and identified two tours in Lisbon which fit these criteria: *Migrantour* [81] and *African Lisbon Tour* [122]. We engaged in collaboration with guides—from here on, referred to as intercultural guides because of their role in bridging between different cultures and multiple interpretations of heritage sites [107]—from these organisations devoted to promoting intercultural dialogues through tourism, as well as integration of migrant communities through tourism industry jobs.

3.2 Collaborative Autoethnography

Inspired by Schofield et al. [109] provocation that several HCI practices could be repurposed to study critical heritage discourse, we chose to engage with the fieldwork by conducting collaborative autoethnography [31].

Autoethnography as a method in HCI has gained popularity, especially when a deep understanding of the experience is needed [99], including a variety of autoethnographic work, like horseback riding as a way to learn about bodily interaction [68] to soundscape design for personal heritage and locative media [30]. In autobiographical design, Desjardins and Ball [39] identifies authority as a tension, when collaborators are involved in the design but not on the account of it. Addressing ethics concerns with the mono-vocal nature of autoethnography [75], first-person research methods have begun to include multiple researchers emphasising the dialogical relationship between multiple lived experiences. Duoethnography [86, 105, 106], trioethnography [70] and collaborative autoethnography [31] interpret the pooled autoethnographic data as a collective. Given the number of researchers involved, we chose collaborative autoethnography and while examples within HCI are scarce, we found that this approach would best exemplify the plural heritages [110] and follow Schofield et al. [109] use of HCI methods as an exploration of CH.

Several tours were scheduled (3 for *Migrantour* and 1 for the *African Lisbon Tour*) for six researchers (identified as R1 to R6, all authors). For these tours, researchers were paired in groups of two and three; this was intentional to have multiple perspectives of the same tour instance. For *Migrantour*, groups of two (R1 + R3; R2 + R6; R3 + R4) did the tour; for the *African Lisbon Tour* a group of three (R2 + R4 + R5) did the tour. Due to scheduling issues, only three researchers could do both tours. When engaging in interactions with the intercultural guides, we revealed ourselves as researchers, but we were also “tourists”, acting as such in terms of communication with the intercultural guides; therefore, all the intercultural guides were compensated with their usual fees. Intercultural guides did not use any digital components (e.g., audio or video) as support during the tour; they did however have printed documents (e.g., images from their country, historical documents) that were often weaved into the experience of “visiting”. During the tours, the researchers took notes of the experience and documented their engagements through text and drawings in a notebook or through annotated geotagged photos. After the tours, each researcher wrote autoethnographic accounts of going through the city. Fig. 1 and

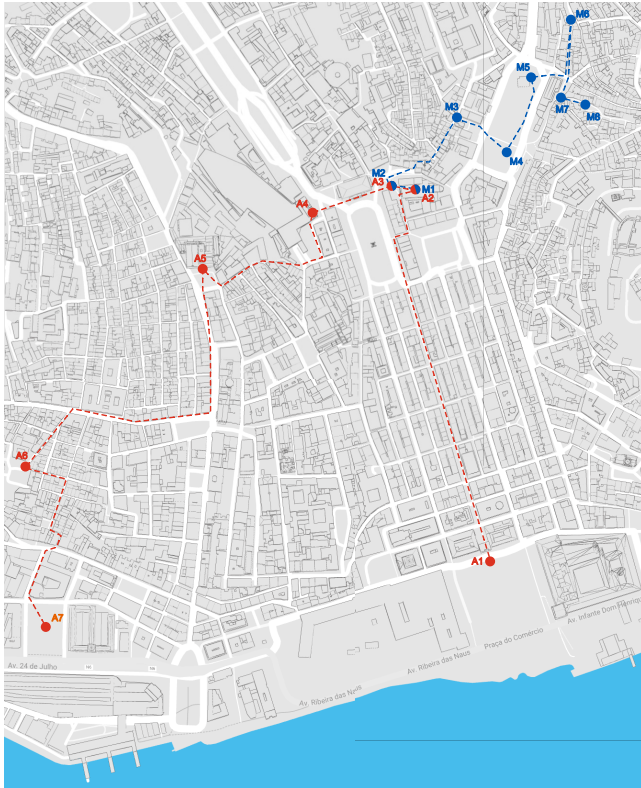


Figure 1: Map of Lisbon with locations "stops" (●) for the **Migrantour (M1-7)** and **African Lisbon Tour (A1-A6)**

table 1 show the trajectory of the two intercultural tours, as well as a short description of its main "stops".

3.3 Analysis of Ethnographic Materials

Each researcher wrote autoethnographic accounts after engaging in intercultural tours in 13 CH sites in Lisbon, with particular attention to the feelings and sensations as we walked, moved, entered, and left places, learned and interacted with objects, concepts and people.

To collectively analyse our pooled autoethnographic data, we were inspired by the use of diffraction [40, 52, 67, 78, 103] in HCI, recommended by Homewood and colleagues [67] "*as a concept and a process as it lets designers read the ways of approaching bodies through one another rather than against one another*".

Diffraction is a metaphor for inquiry inspired by Karen Barad [10], focused on attending to differences, the specific material entanglements we are part of, our intersecting identities, and the multiple and often conflicting discursive and material practices that constitute our everyday lives. Diffraction is focused on documenting how these different elements may interfere with each other in the ongoing process of producing knowledge and meaning from the world where we are entangled [52]. While positivist and classical qualitative approaches rely on validity and reliability to assess how much data can accurately represent an external world, a diffractive mode of enquiry does not seek to represent the world but engage

with it, producing new insights and situated knowledge. Such a paradigm relies instead on a rigorous description of the discursive and material conditions that give rise to different forms of data, from the collection to the analysis and presentation of results, backed by the notion that each decision made by the researchers represents an agential cut. For Barad, an agential cut [9] represents an active choice of separating subject and object, an inside and outside of a phenomenon that we are interested in describing. Agential cuts create a specific kind of knowledge and way of seeing the world, while necessarily precluding an infinite number of others.

As opposed to traditional qualitative methods (such as grounded theory [119] that would strive to find commonalities), to diffractively analyse our autoethnographic accounts, we placed these in a shared online whiteboard and documents (Miro Boards¹ and Google Docs², see fig. 2). These nine documents (6 for the *Migrantour* and 3 for *African Lisbon Tour*) also included photos taken during the tour, and drawings, maps, and diagrams done after.

Over a week, researchers were tasked with multiple reading sessions of the accounts and invited to comment on the documents to ask questions about each other's experiences over prompts such as: "*What were the tensions, the dissonances, the comfort and discomfort zones that the researchers highlighted in their accounts? Why did we describe something in a particular way? Why did someone notice one thing and others didn't? What is prioritised for each person, and why?*".

In this analysis, we also took notice of the different emotions attributed to different situations. We were particularly looking for differences in experience and instances when some particular place/person/event produced different readings. We treated it as a pattern of difference [10] and used it to discuss and pinpoint the particular discursive-material conditions that created that specific reaction. After a period of asynchronous commenting, we organised five online workshops sessions, each lasting around one hour:

- The first and second workshops were focused on the general autoethnographic accounts with an increasing level of detail.
- Three workshop sessions focused on the different threads (e.g., gender or cultural identity differences) to deepen our understanding of each other's experiences. Each thread consists of different possible agential cuts [9], through which we could analyse our experience.

During this one week of workshops, asynchronous commenting on the autoethnographic accounts continued, and the content of the session discussions was also added to the documents and digital whiteboard. The results of this analysis are not stable, uniform categories usually produced by traditional qualitative modes of inquiry (e.g. thematic analysis), but instead, make visible "patterns of difference" [10] on how each researcher aspects of heritage places differently.

3.4 Positionality

Following Feminist Standpoint Theory [63], our experiences and background make up a unique perspective on the world. Data, when analysed diffractively, is not taken as a referent of an individual

¹<https://miro.com>

²<https://docs.google.com>

relevant to the discussion of intercultural dialogues around heritage. For example, two researchers live in an autonomous region, previously considered overseas territories or colonies (without a native population), representing a different subnational identity. Our positionality statements also acknowledge our epistemological backgrounds for transparency. Finally, we also acknowledge traits in common (middle class and educated in STEM fields) and our positionality as a collective (embedded in a research institution that values human-centred design of sociotechnical systems).

4 ENGAGEMENTS WITH HERITAGE SITES

Below we detail our experiences engaging with some of the heritage sites. Although we have documented engagements with multiple heritage sites in Lisbon, we chose to detail the ones below due to their richness in various meanings and diffracted engagements. For each site, we give a minimal historical contextualisation as intercultural guides gave it, so we can describe the experience of engaging with them.

4.1 St. Dominic Church (M1 & A2)

St. Dominic church (see fig. 3.a) is as a catholic church built in 1241 in Baroque style [131]. The church, a National Heritage site, was not known in advance by all except one researcher (R4). The church was a place of memorials, carrying marks from the past. It had been the stage of the Easter slaughter, where thousands of Jews (that converted to Catholicism) were lynched in the 16th century, carried by faithful Catholics. The event has been memorialised through the planting of an olive tree by the entrance and a monument depicting a star of David near the church's exterior (see fig. 4.b). Additionally, it had suffered two earthquakes, one of which had destroyed most of the church, and it had been rebuilt using pieces from other churches nearby. When the fire consumed most of it in 1959, it was only partially rebuilt (in 1994), and most marks of the fire were left (see fig. 3.b). These historical facts were unknown to all of the researchers, even if most of them had studied in the Portuguese educational system, and their reflections on learning the historical facts while being in the church were recorded in the autoethnographies.

We start by listing the different researcher self-reports of the experience of crossing the door threshold. The church and all the stories associated with it provoked a kind of discomfort in all but one of us, but the discomfort was associated with different discursive and material conditions associated with the church. R3 describes her experience as being marked by noticing a *"religious veil that a saint used, and it was there showcased"*. Her experience of the church was framed by her memories of attending a Catholic school and the ability to both recognise and have an affective relationship with the symbols on display. But R3 also felt like an intruder, as she was negotiating both her roles as a Catholic and as a researcher, balancing the need to observe and listen to the guide with her knowledge of how to behave in a church as a worshipper. In contrast, R1 reflecting on his experience of leaving the Catholic church as a child, states that *visiting churches is a weird experience for me. On one hand, I can admit that they are beautiful, important for a group of people and that they should be respected/preserved. On the other hand, they now seem kinda soulless to me, like the space would*

only feel complete by my belief in a higher entity". However, the church gained a new set of meanings through the historical context provided by the intercultural guides. For example, R6 and R5 both describe a poignant "aesthetical experience" when entering the church after being told that the church had been the stage of a massacre of the Jewish community and that it had been consumed by fire and only partially restored, being painted red and leaving the marks of the fire: *"Was the red restoration symbolic of something? Maybe of the sins committed in that church during the massacre?"*. R2, on the other hand, had not felt particularly connected to the church, seeing it as a place partly in ruins, but it piqued his interest once he learned that the same church had been the place where the first black fraternity was created in Europe and the dual role that it had as a place where the converted slaves could organise themselves and have some sort of financial freedom, as well as being a place where the catholic church could exert influence on the African population. R4 was familiar with the church, knew its connections to the African community, having visited many times with their family, but had not considered how the church was also connected to the Jewish community: *"These stories are never talked about in history books. I had no idea Lisbon has such a horrible history with Jews. What has happened to the Jewish community in this town, I wonder?"*

4.1.1 Comparing the experience. The church's history, when situated and contextualised by being physically there, created a strong aesthetic experience and left lasting impressions. This experience is partly framed by the material conditions in the construction and destruction of the church, but mostly about its histories. We highlight the use of plural "histories" because rather than being one particular history, each of the facts provided by the tours are incomplete. Each history about the church and the different communities whose stories intersected with it brought to attention a particular material detail in the church: the red paint, the scars in the structure, or the barren look. However, we can also see how each of the researcher's identities, religious orientations, and knowledge of history determined the experience of being there. National CH sites are often made to create and sustain a national identity. We started our analysis by assuming a unified national identity for most researchers, but our engagements with the church were mostly framed around other local identities or other characteristics that each resulted in distinct uncomfortable experiences — framed by uneasy relationships with religious symbols (R1, R3) or the contrast between a sacred place and the knowledge of the histories of massacres (R5, R6) —, although for all of us, it also resulted in a desire to know more about the fates of the communities represented in the stories.

4.2 St. Dominic's square (M2 & A3)

Outside the church lies St. Dominic's square (see fig 4.a). St. Dominic's square is a historical meeting point for African communities. As R5 learns, the market *"was used as a slave market. I wasn't aware of that. I felt a little revolted because it was another point that deserved more significance in our history books and not to be hidden/not talked about"*. Over the centuries, the square has been functioning as a support network for newly arrived immigrants from African countries. Currently, square benches are mostly occupied by elderly

Table 2: Positionality statements of researchers (R) involved in the autoethnography

ID	Positionality
R1	R1 is a white male of Portuguese nationality, from a middle-class background and identifies as atheist. While having previously lived in Lisbon, R1 was born and lived the majority of his life in an autonomous region of Portugal. R1 has migrated before for short periods (6-12 months). R1 was born with bilateral clubfoot; he has had multiple operations but still walks with a gait and often experiences pain. R1 comes from a computer science and HCI background, with previous experience in designing and evaluating technologies using a human-centred design approach, including previous work on tourism and heritage.
R2	R2 is a white male of Portuguese nationality from a middle-class background and identifies as non-religious. R2 has lived in Lisbon for a majority of his life, but has lived for 16 years abroad. R2 comes from a background in Computer Science, with previous experience in interaction design, including previous work in tangible and embodied interaction.
R3	R3 is a white female of Portuguese nationality, from a middle-class background and identifies as catholic. While born near Lisbon, R3 has lived the majority of her life in autonomous regions of Portugal. R3 comes from a background in communication, culture and HCI, with previous experience in designing and evaluating technologies for museum settings using a human-centred design approach and co-design methods, including previous work on communities and heritage.
R4	R4 is a black non-binary perceived as female of Portuguese nationality, from a middle-class background and does not identify with any specific religion. R4 was born and has lived in the district of Lisbon for the majority of their life. R4 is currently a computer science student, with no previous research experience.
R5	R5 is a white female of Portuguese nationality, from a middle-class background and identifies as atheist. R5 was born and has lived in the district of Lisbon for all her life, 30 km away from the city centre. R5 is currently a computer science student, with no previous research experience.
R6	R6 is a white female of Italian nationality, from a middle-class background and does not identify with any specific religion, despite being interested and inspired by several. Having previously lived in many cities in Europe and outside, R6 has lived in Portugal for the last thirteen years as an immigrant. R6 comes from a background in Fine Arts, and HCI, with previous experience in several Digital Storytelling projects, including previous work on communities and heritage.



Figure 3: St. Dominic Church (M1 & A2), from left to right: a) rebuilt exterior of the church; b) marks of the fire inside the church

men; as detailed by one of the intercultural guides, these are afro-descendent ex-combatants who fought in the second half of the XX century in Portugal's colonial wars. The square was also inhabited by street sellers, almost exclusively of African descent. These were women selling fruits, nuts, and vegetables, many imported and

typical of east Africa. There were also men selling assorted antique items.

Although most of us were familiar with the square and the surrounding areas, as they are very central in Lisbon, few of us have engaged with the sellers. R4 was the exception, as they had visited

the market with their grandmother. As R2 enters the market, he notes that *"So many times have I been in that square without interacting with the street sellers at all. And then suddenly I find that they are selling baobab fruit"*. As R2 approached to buy the fruit, he was approached by a man, who was not a seller, who asked him to google an image of the baobab trees. He then shows the picture to the woman selling the seeds. R6 appreciated the women selling fruits but was distrustful of the antiques being sold and chose not to engage with the sellers. R5 and R4 were put in touch with the sellers by the guide but the reaction of some of the sellers was not welcoming, and they chose not to engage in conversation. Reflecting on this, R5 describes that *"even though we are curious about someone else's culture, we need to have respect and consent from the other person. Sometimes people love to talk to new people and tell them all types of stories like where they come from, who they are, what do they do, etc., but sometimes, like that day, they might not want to do any of that and just be there to do what they came to do such as selling her own goods"*. In hindsight, R4 describes that *"It felt a bit uncomfortable as [the guide] was trying to get them to explain the importance of the products to their culture, but they were not very willing to talk"*.

4.2.1 Comparing the experience. As we learned the historical context of this central square, from the horrific slave trade to a safe space for the afro-descendent community living in Lisbon and newly arrived immigrants, it was clear that this was a space that was already a cultural heritage site where intercultural encounters happened daily. It was a microcosm for many of the positive connections we wanted to foster and the friction that may occur in these encounters. This was our design goal from the outset, which meant that the square was an opportunity to analyse how intercultural exchanges could occur. This also foregrounded our roles as visitors, as we interacted with the people who were part of the daily life of this historical square. By looking at the differences in experience, we find that there needs to be some common ground for communication to be established. When such common ground was not there from the outset, we believed that this resulted in "mutual strangerhood" [88], a feeling where the visitor and the local think of each other as an idealisation, and almost always results in impoverished connections. When communication departed from this outset, it resulted in an uncomfortable, almost forced, intimacy. This was noted by R4 and R5, and contrasts with e.g. how R2 experienced the market with comfort and ease, since he had been approached by someone. At its most negative, these feelings can result in withdrawal from interaction.

4.3 Streets of Lisbon

"Count the steps" [our guide] told us before we started going up a very uphill flight of stairs that would lead us to Largo Trindade Coelho. When we got to the top, a number came up, 235, which represented the number of slaves sold at the first auction held at the House of Slaves" (R4). The streets of Lisbon, much like other old cities, are full of history. In the example we shown, the number of stairs and the effort required to climb them became a way to accentuate the severity of the slave trade. As a city with seven steep hills, many stories were told at the top of a hill (see fig. 5.a), overlooking different neighbourhoods and monuments. In short, moving about, visiting

places, and getting exposed to different people, was an integral part of the experience. However, already as we leave S.Dominic's square, in a street involving several flights of stairs, one of the researchers, R1, noted how the geography of the city was challenging for him. Having a disability, he reflected on how every step and every inclination required additional planning to tackle it: *"I'm always thinking of what shoes I'm wearing, how my feet feel, what type of terrain I will encounter, etc. This constant self-check is also because I'm prone to forget about them at times; I live with a constant baseline of pain, and some points I don't notice when the pain stops or increases"*.

In contrast, moving through the city was considered mostly unremarkable by the other researchers and notably absent from their autoethnographic reports, at least until the end, when most researchers reported some form of physical or mental exhaustion. During one of our workshops, where we zoomed into factors of mobility, we started disentangling some of the concerns most of us had when moving about in this particular city. For example, R2 who has young children, avoids going to the city centre with them (see fig.5.b), as the streets are not pram accessible, and R3 preemptively adds bandages to her shoes before going for a walk to prevent blisters. These concerns could sometimes prevent us from visiting the city centre, home of the heritage sites we were interested in.

Additionally, on different occasions, R5 and R4 reported feeling uncomfortable in the streets due to being perceived as women. For example, R4 notes, when walking in one of the streets: *"The first noticeable thing is that only men can be seen in the stores, and most of them sit at the front of it almost as a way of claiming the space as their own and controlling what goes on the street. Being perceived as a woman, I rapidly become uncomfortable as I start to feel monitored"* and R5, in a nearby street right close to one monument (see fig. 5.c), also writes that as the guide *"was trying to explain the history of the monument but there was a man behind harassing us and I could barely hear her. As if harassing a group of four women was not bad enough, he was being incredibly loud"*. As we tried to disentangle these concerns, R4 reports that even if familiar with the city centre, they often avoid places exclusively inhabited by men due to discomfort and feelings of insecurity.

4.3.1 Comparing the experience. When looking at differences in mobility, particularly the blind spots of those who have not reported mobility (R1 and R3 reported physical hindrances as opposed to the other researchers) or harassment in the street (as noted first by R5 and R4, with women researchers concurring, and with male researchers acknowledging but not having first-person experience of similar forms of harassment), we started to see a pattern emerging in how we all move, and worry about moving, differently. Although we have experienced that learning about cultural heritage while being there, physically, is important, we have also seen how physical and mental discomfort can prevent us from engaging with the places and people or even preventing us from visiting places in the first place. Differences in how we move, who we move with, and how we think others perceive us make a difference in how and if we choose to visit places, making it an essential consideration for designing locative media in CH sites in the city.



Figure 4: St. Dominic's square (M2 & A3), from left to right: a) open square surrounded by the "Lisbon, city of tolerance" wall; b) Memorial do the victims of 1506 Easter Slaughter in the center of the square



Figure 5: Streets of Lisbon, from left to right: a) View from Torre da Pela (M3) of the Martim Moniz square (M4), only accessible through downhill stairs; b) Bem Formoso street M6, with sidewalks occupied with cars; c) Small alleyway in Mouraria M8

4.4 Rossio railway station (A4), Statue of Padre António Vieira (A5) and Statue of Marquis of Sá da Bandeira (A7)

"We now walk in the middle of the Rossio station and we go up to a platform overlooking Lisbon. Here the Portuguese are put on the spot. We're asked questions about Marquês de Pombal"(R2). Rossio railway station was once known as Central Station, occupying a prominent Lisbon site. As it is located at the bottom of a hill, it is possible to climb up from inside the building and get a privileged view of Lisbon, with many important heritage sites visible from the platform. One of its platforms was used as a stage for learning

about the ending of the Portuguese slave trade, particularly about the role of Marquês de Pombal, who is often credited with ending the international slave trade in Portugal and the first in the World to do so in 1761. For various reasons, he was an important figure for Lisbon, having a major square named after him. The privileged view of Lisbon allowed the intercultural guide to point to different sites relevant to the story. Here, the guide has chosen to interpolate the Portuguese researchers and ask them who ended the slave trade. The answers, reflecting our common knowledge, were wrong. As the guide distributes a piece of paper with a photocopy of a letter written by Marquês de Pombal at the time, it was clear that he had



Figure 6: Statues in Lisbon, from left to right: a) Statue of Padre António Vieira (A5), with three converted indigenous children at the the base; b) Statue of Marquis of Sá da Bandeira (A7), with a mother and child with European features (representing the free slaves with broken shackles) at the base

simply banned enslaved people from entering Portugal because they were seen as taking jobs from young Portuguese men, redirecting the slave trade to the colonies instead. Finding gaps in knowledge was interpreted differently by the different researchers, in terms of how comfortable they felt with it. R5 and R4, for example, state that they feel uncomfortable with not knowing things that should be common sense, with R4 hedging their discomfort by always expecting not to know.

As we move towards another area of town nearby, we are faced with the statue of a Jesuit priest (see Fig. 6.a), missionary in Colonial Brazil, diplomat and writer from the XVII century called António Vieira, whose books are uncritically taught as part of the main curriculum of Portuguese high schools. This statue, which was unveiled in 2017, has been the centre of controversies since António Vieira was complicit in the slave trade to Brazil. When it was unveiled, it was immediately protested by anti-colonial groups and physically guarded by far-right groups. The statue has also been the target of a graffiti protest in 2020, following worldwide reactions to Black Lives Matter in the US, where the statue's hands were painted red. Three of the researchers, R5, R4, and R2 engaged with this statue in one of the tours. R4 states that the contextualisation of the statue was perceived as surprising, noting that it differed dramatically from the history taught in school: "I was surprised to know about his negative influence in the lives of indigenous people as in school. We only focused on analysing his writing without a critical look into his role in Portuguese history itself." R2, living abroad and never having seen the statue live before, only the pictures of the protests done to it, and only having a faint memory of reading his books in school, noted how different the statue felt compared to St. Dominic's church, who was showing the marks of its history:

"Looking at the statue, for the first time ever, I was struck by how clean it was. [...] The statue had forgotten all of what has happened and it was standing there, victorious, in the middle of a public square." R5 also had a faint memory of what had been taught in school, and when asked by the guide to say what she thought of the figure, she said that the name was familiar, but the memory of who it represented was faint.

Later, the researchers were engaged with the statue of Marquis of Sá da Bandeira (see fig 6.c), a politician known for their abolitionist efforts. However, the guide's prompts were not focused on the Marquis, but on what was wrong with the woman and child at its base. Firstly, it was supposed to represent the formerly enslaved people with broken shackles, a small detail that could get lost. Secondly, although being based on Black Fernanda (the most famous black citizen at the time the statue was commissioned), the representation of the enslaved African women was whitewashed. R2 contemplated how Black Fernanda, a character with a varied life ranging from brothels to a lady in high society, was "[...] being used to make symbols that represent thankfulness to the coloniser (the shackles broken, the kneeling), then ultimately invisibilised and erased, in this case by whitewashing her face". Here, the details hide the historical knowledge, as the guide points out "this statue represents Portuguese history: on the surface it looks good but dig a little deeper and you find the real content"(R2). This statue marked the end of one of the tours. As a final reflection on how they have learned new historical facts, R4 writes that "It feels like it's more daunting when you're asked directly and need to come up with an answer that most times is way way off of the actual correct answer, rather than just listening to the facts without realising the extent of your own ignorance."

4.4.1 Comparing the experience. Being interpolated about historical knowledge was a common tactic used by the guides at different times to assess the level of knowledge and depart from it, either by correcting it or adding to it. It occurred on different occasions, and here we chose to highlight three. This was a discomfort acutely felt by R2, R4, and R5, who in contrast with the other researchers, lived most of their lives in Lisbon and had their beliefs about the history of the city most challenged. Being interpolated, as a tactic, had differing effects related to how strongly we felt that we knew the answer or were attached to that belief. If that was the case, it resulted in feeling uncomfortable by not knowing the correct answer. In many cases, it made us notice and inquire why we had such beliefs, from where they came from, even if the answers were not always apparent. In the sites we highlight here, the lack of physical marks left on the places was also noticeable, which stands in stark contrast with St. Dominic Church.

5 DISCUSSION

Lisbon, and its history, is an entanglement of multiple communities, religions, and conflicts over the centuries. This history can be told from multiple points of view and has sometimes left marks on the city, both physical in the buildings, statues and monuments that we see, as well as the people daily living and commuting. We have thus far analysed the experience of visiting heritage sites accompanied by intercultural guides. For most of the researchers, educated in the Portuguese national education system, the re-learning of Portuguese history and heritage from the perspective of the different cultures, which are part of Portuguese history but invisible from canon history, functioned as a form of defamiliarisation [132] of our knowledge about Portuguese cultural heritage. Additionally, city streets and city living, when contextualised by intercultural guides, can be powerful sites to learn not only about the culture and elements of the histories of the different communities who are part of a city but also how the histories are reflected in the present living conditions of the city dwellers. As this aligns well with the goals of critical and future heritage work [109], we believe that entering in collaboration with organisations and individuals who do this kind of work would be of great value for HCI researchers working in this domain.

Our analysis focused on diffracting our documented experiences of engaging with these sites, to shed light on the material-discursive conditions at the basis of our differences in experience. As digital cultural heritage applications are increasingly designed for settings outside of museums, our study offers a starting point on what it would mean to adopt design methods to articulate elements and dimensions of the user experience of cultural heritage "in the wild", particularly in the city streets [109]. An orientation towards diffraction allowed us to see how different bodies adapt, or struggle to adapt, to the heritage site and its stories and practices.

In our case, it was clear that discomfort could be used as a lens—in fact, an agential cut [9]—to see the ways that our bodies were able to get entangled [52] with heritage sites, and which discursive-material conditions caused it to be felt. In our study, there are clear parallels to experiencing visceral, cultural, and intimate discomfort [16], but here we go a step further and define discomfort in a more

basic sense, in a way that allows us to discuss how bodies are adapted or not to the environment.

Following Sarah Ahmed's work on race and place [2], as well as "somaesthetics of discomfort" [125], we take discomfort to be the feeling at odds with the environment. As Sarah Ahmed writes, "To be comfortable is to be so at ease with one's environment that it is hard to distinguish where one's body ends and the world begins" [2], and as such comfort/discomfort can function as a powerful lens from which to analyse how heritage sites—particularly when contextualised and experienced from critical and polyvocal angles—can be experienced. Additionally, it was also a useful lens to conceptualise when discomfort was being resolved, in a cathartic manner [16], and therefore be used as a resource for learning and visiting [6, 88] other points-of-view. We are inspired by soma design [69], in that we avoid a dualistic view of body and mind and do not distinguish between physical and mental discomfort. Instead, we chose two agential cuts to discuss our study: seeing discomfort as a driving force for transformation or discomfort as a hindrance. Our study expands on the concept of discomfort for creating and evaluating user experiences in particular for CH and in general to HCI.

5.1 Design Implications

5.1.1 Discomfort as a resource for designing critical CH. A future and critical orientation to heritage is centred on moving past the Authorised Heritage Discourse (AHD) [116], one that maintains the narrative of a nation [55]. As we purposefully exposed ourselves to plural heritage [110] perspectives, we encountered dissonant points of view that shook some of our beliefs. Being exposed to new information or simply being made aware of our ignorance should be taken as expected reactions to the design of tools and information augmentation around heritage sites. According to Galani [54], interactions and exposure to information in the digital space are increasingly niched and personalised, where we are exposed to views that are often similar to our own. When it comes to cultural heritage, and in particular when taking a critical and future orientation, we need to consider both the physical heritage sites and any digital representation of heritage as diffracted, where the truth can be found in the intersections of the different interpretations and histories. We found that the lens of discomfort helped frame our experiences of learning and re-learning history and engaging with unfamiliar points of view.

In our case, we can name the defamiliarisation and disorientation coming from being exposed to different angles of history as mild discomfort, but also one that led to aesthetic appreciation of the stories and suffering of those whose points of view in history were not as visible as, we all felt, they should. In our collaborative autoethnography, when diffractively analysing several instances of exposure to new information and contextualisation of the places we were in, we found that the degree of discomfort (or in other words, the degree of feeling at odds with the information given to us) was related to how much we felt connected to the Portuguese identity and history. If the symbols and the histories presented were specific to the city of Lisbon, for researchers (R1 and R3) coming from an insular region (and that did not recognise these symbols and histories), the information was perceived as curious but not uncomfortable. If, on the other hand, some basic understanding

of the history of Portugal was challenged, this often gave rise to feelings of shame and willingness to learn. We found this insight to be helpful to move away from designing from the assumption of a stable national identity, where the goal might have been to reconcile national (in this case, the official textbook historical Portuguese version) and "other" (e.g., migrant, non-eurocentric) points of view, a duality contested by Galani [54]. Instead, we find that focusing on subnational identities and locally relevant histories and intersections might be a better path towards achieving the discomfort that we felt was important to pay attention to and retain the information for later. Throughout the tours, the guides employed provocation and inquiry to both sustain interest and stimulate critical reflection, such as when we were prompted about our views on historical phenomena like the slave trade, to point out gaps in the Portuguese educational system. Such tactics have been employed, for example, in the design of chatbots to stimulate critical reflection around cultural heritage and allow visitors to experience points of view different than their own [102]. Additionally, moving in and out of places, sometimes physically experiencing the weight of history, such as when climbing 235 steps (4.3), was also a factor in sustaining attention, giving weight to the value of sensory embodied experience [53] for critical heritage research [109]. **Here, we propose as a design implication, that provoking discomfort can be fruitful towards designing tools that expose people to diverse points of view in critical heritage.** One way to scaffold the design of uncomfortable interactions can be through the tool of trajectories [120]. We have not attempted to express discomfort explicitly, as discomfort was not something we expected from the outset, but we find value in these tools and design methods as we move forward towards ideation and future design work.

5.1.2 Problematising discomfort in the design of critical CH. Although discomfort has been applied to the design of cultural experiences, the bodies that feature in that branch of research are often unmarked, similar to the ones Spiel problematises in their work [117]. As such, they do not speak of the discomfort that may come from having different abilities, genders, and races. By zooming into these aspects, our analysis highlights how heritage sites are not neutral spaces for engaging in intercultural dialogues. The implication is that any researchers wanting to take up this research problem must consider existing inequalities in occupying different places. Discomfort is not something simply to be minimised, nor is it something to just be sought after, but it is instead something ongoing, related to the phenomenological experience of bodies (not fitting with the environment [2, 125]). A practical implication of this is that once we access and pinpoint the discursive-material background level of discomfort, we can consider how to design and intervene in the public space/heritage site we focus on, with heightened attention to the different factors and abilities of bodies.

One of the main patterns of difference had to do with the differing degrees of discomfort reported by each team member as they moved throughout the city. Mobility concerns started to unfold once one of the researchers revealed that they had a physical disability that made them consider every visit to a new city or place. This was initially an unexpected factor for us when considering the experience of heritage sites, but it became more prominent as the analysis progressed. Hansen and Philo [61] discuss the everyday

practices of disabled people as they inhabit a non-disabled space as the "*normality of doing things differently*". With this, they mean that differently-abled people experience a disconnect between their bodies and the "normal" everyday spaces and must constantly adapt how they move. Rather than trying to force individuals to move normally (i.e. "correct" them), the authors suggest a conversation between differently-abled bodied individuals to celebrate differences and how they overcome the different problems they face as they move, and to create a space for thinking-with disability: therefore normalising doing things differently. With the focus on how we move differently, we saw that researchers planned visits to places differently, depending on their particular conditions and contexts. **One implication of considering mobility discomfort, i.e. not being able to move unproblematically through the site, is to consider the extra work required by people as they are invited to engage with the heritage site.** There is an opportunity to design the space of preparation for visiting, one that considers the physical characteristics of places. This requires interaction designers to consider the user journey as having a starting point that includes pre-visiting the sites and preparing accordingly for them. There are a different number of reasons why we prepare for different places. For example, breastfeeding women can be served by informational apps to prepare trips outside the home in ways that include places where they can comfortably breastfeed [8]. Mobile applications, especially those serving tourism and restauration, can enable pre-visiting [25], allowing visitors to experience the places. These concepts can be useful when designing critical heritage experiences that attend to the conditions and inequalities of assessing heritage sites.

Other two agential cuts that spoke to the experience of discomfort were that of cultural identity and gender. According to many feminist scholars, our bodies are performative, where "[i]heir boundaries materialise in social interactions" [62, p.595]. From this perspective, gender and cultural identities are fluid, where sometimes they become fixed. Rather than essentialising gender or cultural identity, we depart from the perception of discomfort that was felt differently by different researchers, where gender was an important agential cut in making sense of these experiences. Here, we can contextualise our experience of perceiving the heritage site as male, and feeling uncomfortably at odds with it. In our accounts, we identified feelings of discomfort as either coming from feeling observed by the male gaze (as R4 noted when in Bem Formoso street), as well as being interacted with without consent, both forms of intimacy discomfort [16]. To make sense of this discomfort, we turn to Sarah Ahmed, who writes that "spaces acquire the 'skin' of the bodies that inhabit them" [2]. With this, Ahmed means that many places are white through the people that inhabit them, making it so that white bodies can take space unproblematically: "*White bodies are habitual insofar as they' trail behind' actions: they do not get 'stressed' in their encounters with objects or others, as their whiteness 'goes unnoticed'*". When we consider the lenses of gender and cultural identity, our engagement with different heritage sites made us aware that the way the sites are built, maintained, and frequented by different people, can result in them being perceived as: (i) male (both physically in Bem Formoso street and historically as most statues represented men), (ii) white (such as the statue of the Jesuit priest, standing clean in defiance of its coloniser history), (iii) and sometimes, rarely

in this particular context, black (St. Dominic's markets who through its history become mainly occupied by afro-descendants). This perception of the heritage sites may potentially affect how each person feels comfortable in them. **As an implication, when designing for critical locative media in public heritage sites, we call for designers to account for how different bodies, especially with regards to race and gender, may feel in or out-of-place when visiting heritage sites**, as this has implications for who gets to visit and participate in critical heritage dialogues. We are reminded, for example, of how streets in the US tend to be less safe for black bodies and how that matters in the design of locative games such as Pokemon Go [76].

5.1.3 Ethics of discomfort in the design of critical CH. The balance of harm and benefits in using discomfort for critical CH is complex and nuanced. Uncomfortable interactions [16] adopted a consequentialist approach using the long-term benefits (of entertainment, enlightenment and social interaction) to justify the short-term discomfort; ethical considerations included informed consent of participants, the right to withdraw, the right to privacy and anonymity and risk management. A broader look at ethical challenges of cultural applications [15] included the impact of transgressions and boundaries negotiation. Ethical considerations of how intercultural guides conduct tours are similar to the ones suggested for cultural applications interacting with the public [15]. Intercultural guides provoke transgression by prompting visitors to interact socially with locals; these transgressions cause intimacy discomfort and can lead visitors to question ethical boundaries (e.g., feeling like locals are being dragged into to the tour experience without their consent). Intercultural guides have to use their professional judgement and experience to identify visitors and locals' boundaries; this personal judgement can be difficult to assess, and difficulty is further compacted by the number of actors that need to be tracked. After identifying these boundaries, intercultural guides can also take a role of being a "good" host [56] for their visitors by removing discomfort (e.g., in the *Migrantour*, after the interaction, the intercultural guide explained that the vendors knew about the tour, revealing the ethnographic work that happens behind the scenes; in another interaction with a vendor, the guide asked for permission to stand in front of his stall, considering the boundaries of an actor outside of the tour). Another way that intercultural guides provoke transgression is by "casting" the visitors in a role that may cause discomfort (e.g., in the *African Lisbon Tour*, the Portuguese researchers were asked questions about Portuguese slave trade, highlighting gaps of knowledge). Consent from the visitors is never formally discussed. As a service that they pay for, visitors are expected to know (from the marketing material, website, reviews, etc.) that complex topics will be brought up for discussion; they also rely on the integrity of the intercultural guide to understand discomfort is not felt/provoked without a goal. In these tours, consent is an unspoken agreement of trust, continuously negotiated during the tour, and in risk when too much discomfort is felt, that ultimately may lead to disconnection or withdrawal from the tour. Again, as a "good" host [56], intercultural guides have to resolve cultural discomfort before the tour ends; intercultural guides are not only provocateurs, but also mediators fostering dialogue between visitors. For example, the defamiliarisation of knowledge through historical documents

shown by the intercultural guide can cause discomfort or shame that leads to perspective transformation, but at the same time, the discussion around it can point to systematic and intergenerational tensions that leave the visitor more knowledgeable. Our design implications are derived from an end-user perspective of experience with discomfort, but reflecting on the ethical guidelines (and roles) of intercultural guides dealing with discomfort can also inform the design for critical locative media in public heritage sites when a human is not present. These might involve interaction designers to consider not only how their end-users occupy space, but their impact on others; or how discussions of context might happen asynchronously between end-users. We choose not to explicitly state these as design implications as more exploration on the role of discomfort is needed, either through trajectories [120], or by engaging intercultural guides in autoethnography.

5.2 Methodological Implications

Setting up the autoethnography with intercultural guides allowed us to cast ourselves in the role of a critical heritage experience, from where we could analyse the effects of hearing, seeing and interacting with heritage. This allowed us to consider locative media design from an end-user perspective, suggesting several design implications (highlighted above) on using discomfort as an approach in systems engaging with critical CH. This is of course, no replacement for conducting additional user research, but it offered us a starting point to explore the terms from which we can frame the embodied experience of critical heritage.

Our choice of diffraction as an analytical method was informed by the design domain and our intent of designing for interculturality, where historical knowledge around physical spaces could be told from multiple points of view. As researchers trained in the dominant qualitative paradigm of finding similarities and common themes across experiences, we are accustomed to synthesising, abstracting and summarising. In our initial discussions, we focused on similar reflections on the design implications of what we were witnessing. Most of us have, for example, reported on some form of need for visualising and learning about heritage places through overlaying information and digitising some of the supplementary materials shown or given to us by the intercultural guides. However, when we applied a diffractive lens to autoethnographic data, we initially found that rather than offering clear themes we could build on to design, we were left with questions about why the differences were being reported. We became attuned to the differences in engagement with the heritage sites and the reasons for the differences. Because of this, the diffractive analysis allowed us to pinpoint some of the elements in our differences of perception of places, thereby opening up for new articulations of the experience of engaging with heritage sites. For this reason, we argue that diffractive analysis can be part of the toolbox of digital cultural heritage designers, filling a much-needed gap in how to evaluate embodied experiences in the wild [53].

Although there is a growing body of work around diffractive methods in design practice [40, 78, 103, 118], there are very few recommendations for conducting or replicating this type of engagements with data and research materials in design. Below we reflect

on how we engaged with diffraction, resulting in methodological recommendations:

- In a diffractive analysis, the researcher is part of the apparatus, not a detached observer. In this study, diffraction was useful to highlight how people experienced contexts (e.g. a particular square or church) and how this experience was influenced by individual characteristics, beliefs and histories. The richness of the results is therefore limited by the diversity of points of view in the research process. Additionally, the ongoing conversation happening between data and the researcher need to be taken into account. This includes reflections upon seeing ones data, and other people's data (i.e. how data affects the person). In our study, we have scripted different engagements with our own autoethnographies in different ways: by commenting and adding discourse on each own narrative (therefore adding a layer of interpretation), and then subsequently by re-visiting each other's text and teasing out the main differences in how we experienced discomfort differently. For example, comfort related to safety in streets was quickly found to be gendered, as the male researchers in the group were less likely to be called or threatened.
- Focusing on differences, and how they matter, and on encouraging dissensus was essential to reach a deeper understanding of how different bodies experienced the world differently. However, in order to be able to describe these experiences in a way that is useful for design, we defined this uneasy relation between body and environment as the phenomenon of "discomfort". It is important to mention that this is a particular cut within the richness of our ethnographic materials. Rather than simply emerging from the data, the definition and articulation of the phenomenon of discomfort relies considerably on academic literature in HCI [16], phenomenology [2] and somaesthetics [125], among other related work.

6 FUTURE WORK & LIMITATIONS

The study herein lays the groundwork for a more extensive design endeavour. Now that we have identified and problematised discomfort as both a driving force and a hindrance for engaging with cultural heritage from a critical, future-oriented perspective, we plan to apply it in the design of locative media around some of the heritage sites we visited in this study. To do so, we intend to deploy trajectories—in the way described by Fosh and colleagues [51]—where the multiple dimensions of discomfort can be canonically projected and compared with how different participants experience the heritage site. Additionally, following recommendations from Schofield et al. [109], we will explore the applicability of other design methods to build and ideate on the embodied experience of heritage sites. Notably, we are inspired by methods such as soma design ideation workshops [3, 120], bodystorming [90] and magic machines [5], where the body is taken as central in the ideation process.

Our choice of autoethnography (and subsequently collaborative autoethnography) as a qualitative method was motivated by

the use of first-person methods in HCI. Previous work in ethnography [20, 82, 130] has highlighted the complexities and ethical challenges of applying it, including pre-existing or new biases for the researcher, authority/boundaries in integrating communities and extensive work needed for immersion. Autoethnography, as we use it specifically in this study, skirts such challenges due to its function: long immersion is not needed as we are focusing on the act of "visiting"; we are not integrating into communities that we wouldn't be part of; and the researchers' biases are being questioned by the use of collaborative and diffractive methods. While ethnography strives for "thick descriptions" of culture, autoethnography is focused on personal and interpersonal experiences [46]; as such, autoethnography may appear to be "navel gazing" and is limited by what the researcher is willing to disclose [46]. This intimate quality of autoethnography causes discomfort in the researcher that may impede exploration, or in other cases, by embracing the discomfort lead to reflection [29]. For example, Bouulus-Rødje [24] by describing the embodied experience of passing through checkpoints (and the discomfort it causes), the author reflects on the everyday experience of locals. In our work, discomfort in disclosing our autoethnographies can be cultural (as we confront challenging themes such as colonialism and racism) and/or intimacy-related (as our memories and experiences are visible to readers and between researchers). While discomfort can generate avoidance and denial [29], collaborative autoethnography with the asynchronous reading/commenting of autoethnographies, as well as the online workshop sessions, compelled us to "stay with the trouble" [62].

We acknowledge the methodological limitations of using collaborative autoethnography and diffractive analysis. Although our design team's composition was diverse enough to highlight different facets of discomfort, we do not consider our articulation of discomfort to be by no means complete. As such, future work will also include studies that engage with other perspectives, such as the perspectives of the intercultural guides or the different street dwellers. We are also aware that our design team is uniform in many ways, such middle-class background, highly educated in STEM fields, and relatively uniform religious beliefs. We intend to greatly expand on the number of users, backgrounds and body-types, by using an intersectionally informed sampling.

7 CONCLUSION

In this paper, we articulated sensory and embodied engagements with cultural heritage sites as a way to understand the physical context of the design, from a critical heritage perspective that privileges participation, interculturality and polyvocality. We suggest that analysing discomfort—following Sarah Ahmed's articulation as "*spaces we occupy do not 'extend' the surfaces of our bodies*" [2, p.163]—as a fully embodied dimension of experience, is useful for the design of critical heritage experiences, as it can both illuminate how inequalities can prevent people from engaging with heritage sites, as well as being a component of the experience of intercultural exchanges, in a way that can be used to visit [6] other perspectives. Specifically, we suggest that: (i) discomfort can be provoked as a strategy to expose people to different perspectives of heritage, (ii) discomfort can be taken into account when considering the extra work required by people as they are invited to visit the heritage

site, and (iii) discomfort should be analysed from an intersectional lens that considers—among other possible dimensions—gender, race and cultural identity when considering how bodies feel in or out of place in heritage sites. Taken together, we argue that designing digital tools for understanding the past should also depart from understanding the present conditions that allow/prevent different groups of people from learning and connecting with the past. We hope this study will inspire other HCI researchers to engage in the work of bridging perspectives from the starting point of our lived bodies that ultimately are the centre of experience.

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