



"Connected to the people": Social Inclusion & Cohesion in Action through a Cultural Heritage Digital Tool

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Current cultural policies are evolving from social inclusion (removing barriers and promoting equality for participation in culture) to social cohesion (fostering solid bonds between groups despite their differences). Digital interventions can create spaces that promote social inclusion and cohesion. In this paper, we report on the design and evaluation of a cultural heritage and digital storytelling application supporting a participatory approach to culture and hosting society. We evaluate our intervention in three marginalized communities with different social-cultural contexts: migrant women in Barcelona, a community living in a priority neighbourhood in Paris and second and third-generation migrants in Lisbon. Through an analysis of their application use, our findings point at their needs and desires, highlighting how the app can support social inclusion as the first step towards cohesion, but that these are heterogeneous concepts susceptible to nuanced appropriations by the different communities.

CCS Concepts: • **Human-centered computing** → **User studies**; *Collaborative and social computing theory, concepts and paradigms*.

Additional Key Words and Phrases: cultural heritage; social inclusion; social cohesion; cultural exclusion; migrants; communities; digital storytelling

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1 INTRODUCTION

As technology engages and mediates intricate socio-political issues, complex domains of social life like culture and migration are increasingly addressed by the Human-Computer Interaction (HCI) community. Sabie et al. [89] report on the last decade of migration research in HCI, extending from

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the mid-2010s focus on the European refugee crisis towards a global scope. In recent years, research has evolved from focusing on the immediate displacement needs related to mobility to emotional and financial needs for long-term settlement, addressing more complex political and emotional aspects of displacement and risks of being marginalised, through digital technologies [53].

Recently, governmental and non-governmental organisations have adjusted their policies to promote values for long-term settlement, such as social inclusion and the use of digital technology to support these values [89]. According to a recent European report [93], increasing the inclusion of migrants and minorities in arts and culture promotes the integration outcomes for participants, strengthens local communities' social cohesion, and enhances cultural institutions' relevance and sustainability. However, proposing digital technologies to foster social inclusion through cultural participation brings out challenges in how these communities have access, how they participate, how they produce knowledge and how this knowledge is safeguarded [41]. Furthermore, working with migrants and other vulnerable populations brings out significant ethical concerns [52, 67]. Co-designing with vulnerable minorities such as refugees or migrants highlights issues like the power disparity between researchers and studied populations and cultural conflicts among participants themselves [59].

In this paper, we report on a three-year research project exploring the use of digital tools for social inclusion through cultural heritage discourse. Cultural heritage encompasses tangible and intangible elements that can be passed to future generations [111]. Discourse on what should be acknowledged as cultural heritage has primarily been done by the experts organisations like UNESCO [111]. Modern approaches to heritage have begun to include communities in this discourse favouring a polyvocal, critical and future-oriented view of heritage [41, 43]. Through this research, we expand on previous work about digital technologies connecting vulnerable communities to cultural heritage [43] by empowering communities at risk of social exclusion through cultural participation as storytellers. This effort resulted in a mobile application that sustains three communities, accounting for different perspectives of migrant identity and other social inclusion challenges. Here, we summarise the design steps while reporting in detail on the study of the mobile application as a safe medium for communities to express and share their stories and memories, thus participating in cultural heritage discourse. Our results are grounded in the evaluation of the app with community members and other project stakeholders like cultural and social operators, who were the only ones dealing directly with the disadvantaged communities. We discuss these results against the project goals of promoting social inclusion, leading to increased cohesion and the ethical and social concerns of working with vulnerable communities. Overall, findings from the studies show that community participants cherished the application as an expressive showcase of their stories and highlighted their interest in creating, sharing and connecting their stories to other communities and heritage sites. Our findings illuminate how the different communities want to use the app to support social inclusion and potentially generate cohesion through participation in the local heritage discourse. This article contributes to HCI and the cultural heritage fields by designing and evaluating a novel artefact system supporting a participatory approach that bridges cultural heritage and vulnerable communities to promote social inclusion by leveraging polyvocality.

1.1 Project Overview

This research was conducted in the context of an EU-funded research project¹ promoting social inclusion and cohesion through collaborative digital storytelling tools. The project aims to empower marginalised communities to participate in cultural heritage-making and voice their perspectives through stories and memories related to cultural heritage. The work accounts for "digital divides"

¹<https://memexproject.eu/en/>

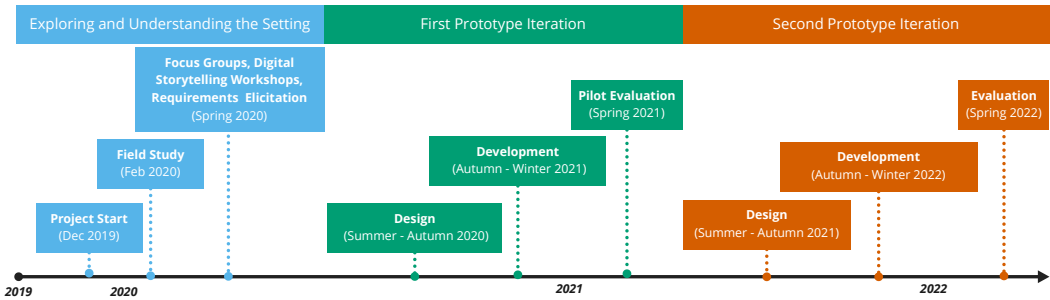


Fig. 1. Overview of the project approach

[113] in access and other barriers that prevent these communities from participating. Overall, the project's primary goals are: (i) to empower communities to weld their fragmented experiences and memories into geolocalised storylines and new personalised digital content, and (ii) to acknowledge and understand the diversity of voices in society and, ultimately, exercise their rights to participate in the communities they live in actively.

Recruitment and activities with marginalised communities were enabled and supported by multiple partnerships with local non-governmental organisations in different countries. As such, the project ambitiously engages a heterogeneous sample from different social-cultural contexts determined by the consortium partners located in three major European metropolises:

- (1) Migrant women in Barcelona, Spain - originally from several different countries, mainly employed as domestic workers, their stories tend to reflect a gender perspective on cultural heritage. Most of these participants have been involved in civic and feminist activism movements. Example stories from this community can be found in appendix A.
- (2) The Rosa Park community, living in the priority neighbourhood of the 19th *arrondissement* in Paris, France - Extensive urban renewal in recent years has transformed the neglected and peripheric area into a residential neighbourhood with a high concentration of migrants. Community participants have lived through this renewal, and their stories tend to reflect Paris's lost and gained heritage. Example stories from this community can be found in appendix B.
- (3) Second and third-generation migrants in Lisbon, Portugal - The community in Lisbon is composed of second and third-generation migrants from Portuguese ex-colonies, mostly of African origin. Their stories tend to reflect the duality of their identity and the (in)visible colonial traces in the city. Example stories from this community can be found in appendix C.

Figure 1 summarises the project process through its different stages. The project's initial stage embraced a participatory approach, engaging members from marginalised communities and project stakeholders. This stage included design methods such as photo voice and digital storytelling workshops with focus groups for developing a deep understanding of the stakeholder's needs and perspectives. These initial efforts and results are described in Nisi et al. [76]. These activities were essential for requirements elicitation, and the resulting efforts materialised in a mobile application to explore connections with the surrounding tangible and intangible cultural heritage. Following an agile development process, the prototype was iteratively developed and evaluated with various stakeholders. This article reports on the studies conducted on the two first iterations of the mobile application.

1.2 Project Positionality

As we embarked on our project, the complex inter-dependencies between technical challenges with societal ones became clearer. [14]. As such, we set up frequent and regular touchpoints and exchanges between the project's team members and structural work packages. The team was composed of expert stakeholders with different expertise (e.g., technical stakeholders with knowledge of technology development, cultural stakeholders with knowledge about cultural heritage and audience development, and social stakeholders with local knowledge about the communities) embracing the common goals of the project to contribute to the societal challenge of fostering inclusion and cohesion through the co-design and development of CH digital tools.

We (the authors) positioned ourselves in this project as designers and researchers, acting as mediators between the technical, social and cultural stakeholders. We acknowledge the political and social tensions around inclusion, cultural heritage and migration and worked closely with the social stakeholders to support migrant participants to feel safe and listened to. We connected only with organisations and individuals who manifested empathy for our work and the project goals. Participants from the marginalised communities were recruited and directly engaged by social stakeholders; volunteers played a crucial role in our work. Furthermore, living and working in one of the project cities, the researchers experienced first-hand the importance of multiculturalism to promote social inclusion and digital tools to empower minorities in contributing and deciding which cultural aspects should be voiced. Researchers had experience with participatory design processes, and all activities were approved jointly by the social stakeholders and the University ethics board. In retrospect, we explicitly formulated several assumptions for this work, which were implicitly made in the project proposal and initial project meetings:

- (1) Participants from the communities at risk have the same goals regarding which problems should be addressed and are comfortable with the project approach;
- (2) Technical, social and cultural stakeholders, as well as researchers and participants, have similar goals and a shared understanding of the importance of participation and co-design for inclusion;
- (3) Experienced social stakeholders are the only project partners engaging directly with marginalised communities and addressing ethical concerns (including digital inclusion). This aspect resulted in the social partners conducting the app evaluations on behalf of the researchers (authors);
- (4) Participants from the communities at risk and the social stakeholders have an intrinsic interest in a project that aims to develop technological solutions addressing their problems.

2 RELATED WORK

This research is grounded in recent HCI, Computer Supported Cooperative Work (CSCW) and CH trends, mainly focusing on marginalized communities and ubiquitous digital technologies as tools to tackle societal challenges. We address these topics by recognizing four main subjects of study:

- **Social inclusion & cohesion** – From removing barriers to strengthening bonds;
- **Migration & HCI** – The use of technology in migration studies, extending from functional to the emotional aspects of lifelong settlers, such as identity and heritage;
- **Tangible & Intangible Cultural Heritage** – The growing focus on intangible cultural heritage emerging from a changing society addressing migration patterns and marginalization;
- **Role of digital storytelling and CH tools** – Preserving and accessing tangible and intangible cultural heritage, focusing on community access and engagement in cultural interventions.

2.1 Social Inclusion & Cohesion

Inclusion is commonly defined as the practice or policy of granting equal access to resources and opportunities for people who might otherwise be excluded or marginalized, such as segments of minority groups [63]. In the context of HCI, inclusion is discussed regarding the participation, engagement, and equity within the research and those doing the research [59, 61, 67, 80]. In social sciences, inclusion is discussed concerning how individuals can participate in society. A European report from 2019 [29] indicates that over 20% of the European population is at risk of poverty or social exclusion.

Penninx [83] maps existing policies for the inclusion/exclusion of migrant communities along several dimensions (social-economic, legal/political, and cultural-religious). While integration is a bidirectional process depending on the newcomer and the receiving community, policies established by the receiving community heavily influence the migrant's social capital [10]. Social capital refers to the resources available through the migrant's social network [53]. The [29] report highlights that cultural policies should reframe social inclusion ("as being about removing barriers, such as discrimination, ensuring everyone's possibility to enjoy their human rights") to social cohesion ("how the bonds between different groups or between the individual and society can be strengthened despite the difference in world views and cultural practices"). The Council of Europe sees social cohesion as a concept for an open and multicultural society. The meaning of this concept can differ according to the socio-political environment in which it evolves [9].

2.2 Migration & HCI

Human migration is a complex issue that touches every society worldwide and is often exacerbated by misinformation [72]. The increase in displacement over the last half century has fueled interdisciplinary approaches in migration studies. For HCI, migrant's use of technology became of interest to scholars [28] as digital technology is used, both as infrastructures for enabling, controlling or stopping migration [64]. This research interest persists in HCI, CSCW and related communities [1, 60, 62, 91, 99, 101, 102, 105, 107, 108] with recent workshops on the role of HCI in migration and refugee studies.

Research in the field has highlighted the use of technology such as messaging applications [75] and social media [34] for planning migration and interacting with socio-technical systems involved in mobility [95]. On the counter side, the role of technology has also been studied in preventing mobility, such as through government monitoring [46, 48, 60, 64, 94]. The role of technology has not only been analysed as contributing to settling, whether in (temporary) camps (e.g. [54, 55, 74, 92]) or in the host country (e.g. [5, 16, 88]). Several works have addressed the needs of these communities in their various contexts, such as community building [54, 117], the role of participation and care [59], communication between family members [116], education [4, 115], health [18, 104] or language [2, 19, 114]. For example, Talhouk et al. [106] report on the use of e-voucher systems for food aid in the Syrian Refugee community of Lebanon, identifying issues of technological literacy and power and information asymmetries; this work also highlighted collaborative action within the community to cope with food insecurity.

These works highlight the role of technology in assuring the functional aspects related to settling. However, Hsiao and Dillahunt [53] identify that while technology can easily address immediate settlement needs, it minimally addresses their financial and cultural needs and ignores emotional needs. This was also confirmed by Sabie et al. [89], adding that more work is starting to emerge about long-term integration. For example, Sabie et al. [90] used a paper-based home drafting system as an artefact-driven storytelling practice for heritage sharing; artefacts created expressed

dimensions of collective memory (social, material, and mental), acting as cultural probes of their identity.

As participatory design projects engage with complex social and political issues (such as inclusion, migration and culture), the growing tension between democratic participation and "care" becomes a research challenge [58]. Based on a multi-year co-design project on digital resettling tools, Kruger et al. [59] argue that participation is insufficient in a complex domain such as migration and that applying a lens of "care" provides insights relevant to the broader research community. Therefore, factors such as ethical practices, reflective processes, and group-oriented spatial layout and dynamics are required to create "safe spaces" when working with vulnerable populations [20]. Hutchinson et al. [13] and Duarte et al. [20, 21] apply User-Centered Design frameworks (interviews, focus groups and participatory design workshops) to involve migrants in the process of designing technologies for their use. Fisher et al. [39] engaged Syrian refugee youth through speculative design, co-designing paper prototypes of visionary devices to help their community; Almohamed et al. [6] used "magic machines" with Iraqi refugees in Australia while Rüller et al. [49] used speculative fiction to engage with Imazighen native people in Morocco. These speculative approaches favour understanding tensions and desires over direct applications to technology, caring for participants' individuality.

2.3 Tangible & Intangible Cultural Heritage

The concept of Cultural Heritage was coined after the French revolution in the 19th century, profoundly connected to the European nation-building processes [22]. Until the late 20th century, the concept of CH remained primarily Eurocentric, mainly understood as tangible monuments and art, to later evolve with the shift of focus from national to the intercultural dialogue among the diverse European nations and cultures [96]. Within the context of decolonization and the impact of modernization on indigenous cultures, the migration processes resulted in an emerging discourse on intercultural dialogue with cultures of the migrants' origin [3]. In parallel, the concept of CH evolved to include dynamic and intangible aspects, specifically community-related [7]. The 2003 UNESCO recognized Intangible Cultural Heritage (ICH) as "the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage" [111]. This broader definition recognizes the importance of ICH to build a sense of identity and continuity through the active recreation by communities in response to their environment. ICH concerns people and, as such, is fluid, continuously negotiated, and inherently contested, and it relies on complex social processes and political actions to "stay alive" [3, 96].

In a universal approach to CH, UNESCO addresses the importance of culture for social cohesion with "the recognition of equal dignity of and respect for all cultures, including the cultures of persons belonging to minorities and indigenous peoples" [111]. Nevertheless, migration-related diversity in hosting societies is only implicitly addressed. Integrating migrant ICH has existed in several discourses since post-WWII through forced assimilation and placement into ethnically stratified social structures [33]. However, as argued by Giglitto et al. [43], despite recognising ICH as a critical community-building factor for migrants in their host countries, studying ICH in the context of migration is complex, demanding several dimensions that are difficult to cluster and analyze holistically. Therefore, the relationship between ICH and migration requires further exploration because of its importance to the lives and experiences of migrants [42].

2.4 Role of digital storytelling and CH tools

Storytelling has been of interest to HCI research, as a method of inquiry [12, 36, 109], as a focus for interaction design [8, 11, 82], and as a learning and self-expression tool of individuals and communities through social media [38], video platforms [40] or mobile and geolocalised applications [78]. Storytelling research can contribute to society through work with vulnerable communities [77] and the institutional or political contexts of their telling [85]. The use of technology allows for a bottom-up approach, valuing individual creation and democratic participation.

In the last decades, locative apps that use storytelling to enhance democratic access to CH have flourished. From making CH content visible and accessible inside and outside museum spaces [25, 84], these systems expanded their scope to heritage making, giving voice to the local living communities that inhabit a space [79]. Adopting a narrative inquiry approach [30], Clarke and Wright [26] conducted workshops to co-create digital stories and digital portraits with vulnerable women about their experience; the created artefacts were evocative/imaginative rather than representative of the experience. Dimond et al. [35] investigated an online collective storytelling platform, Hollaback, whose mission is to end street harassment. Interviewing participants who shared stories, they found that the struggle to understand and express their experiences changed their cognitive and emotional orientation towards their experience. These results focus on storytelling as a driver for personal catharsis but do not look at its influence on those without the lived experience. Manuel et al. [71] focus on the configuration of participatory media to widen participation and enable story creation and sharing amongst citizens. Michie et al. [73] created exploratory storytelling platforms in a series of workshops on Abortion Rights with pro-choice stakeholders in Ireland. The digital storytelling platforms were not intended to be prototypes but instead used as a design material to provoke critical reflection on the role of platforms for activism. These critical reflections highlighted opportunities to "raise awareness and challenge stigma through exposing hidden realities; foster empathy and polyvocality to expand the collective community; and provide stepping stones to activism that allow for an engagement at different levels" [73]. Bonsignori et al. [15] discussed the challenges of designing and evaluating an in-situ authoring tool (StoryKit) that provides a simple integrated media-capture interface to enable rich expression; their research provides insights on how to conduct these studies in the wild. Projects such as CultureLabs [43], SPICE [97], Loci Stories [110], and SEE.TELL.LISTEN [68], explore the concept of polyvocality in CH to diversify the accepted knowledge, values and stories formed in response to or challenging "authorized cultural heritage" [47, 110]. These works also highlight the difficulty of working with polyvocality, such as dealing with perspectives that go against the power dynamics, social structures, and historical narratives [110], balancing multiple perspectives [47], and balancing authorship with potential risks [47, 73].

In summary, technology, and in particular digital storytelling, plays an essential role in the context of engaging with vulnerable communities (such as refugees and migrants) [8, 45, 86] and ICH [11, 69, 70, 87]. The transmission and safeguarding of ICH are intertwined with the generational and cultural mismatch, exacerbated by digital technology use and divide [42]. However, technologies provide unique opportunities to democratize access and promote an inclusive and participatory approach to ICH that spans cultures, and borders [3, 33]. While polyvocality is a grounding concept for empowering communities in the heritage discourse, how systems are able to support it and safeguard its users is still an active research topic. Specifically, polyvocality in heritage discourse may risk social cohesion as it can create further rifts in perspectives. To the best of our knowledge, our work provides a novel combination of a storytelling tool (authoring and viewing) focused on connecting stories and memories of vulnerable communities with cultural heritage, supporting

heritage-making discourse and dialogue, fostering participation and embracing cohesion from the Council of Europe point of view: a concept for an open and multicultural society [51].

3 DESIGN & IMPLEMENTATION

Over the last two decades, researchers embraced the concept of community-centred heritage, with digital technology playing a crucial role in grassroots engagement for collecting, managing and displaying cultural heritage [43]. Our work expands this movement by designing and evaluating tools for the discourse on cultural heritage, allowing for social inclusion and preparing the basis for social cohesion as well [29]. By doing so, we aim at leveraging the polyvocality of cultural heritage, with differences and similarities between groups but equality in views [47].

3.1 Exploring and Understanding the Setting

The project followed a participatory design approach from the beginning, including community members and other project stakeholders allowing for an understanding of the context of the communities involved. The scope of planned activities was affected mainly by the COVID-19 pandemic, which restricted physical meetings and travel necessary for presential activities. While these efforts are reported in detail in Nisi et al. [76], here we summarize such activities, highlighting relevant findings for the design process:

- **Exploratory Field study** – We engaged ten first and second-generation migrant participants from Lisbon in a one-week photo challenge where they were asked to take photos of their surroundings and everyday journeys through the city and describe their experiences in short Twitter-like texts. The material was then used to engage the same participants in further story co-creation, inspired by photo-voice methods [27, 98]. The material collected during this phase included ten individually created story journeys (made of four to five photos plus text for each photo) and six co-created stories inspired by the pictures, reinterpreted by the group as a collective.
- **Synthesis and requirements gathering** – Regular one-hour weekly online meetings were held between the HCI researchers and the social partners from each city; the meetings were held in March and April 2020 to compensate for the inability to travel to the locations and perform follow-up studies. The extensive dialogues generated six personas and six scenarios (two per community) to cover the different communities. Using an empathy mapping framework [57], a set of emotional requirements were derived from the personas. The requirements encapsulated how the digital tools could support heritage discourse (e.g., allowing *in-situ* writing) and methodological concerns about involving communities in the research process. Because of lockdown restrictions so early in the project, it was impossible to engage any community participants in this process. Mutual trust, confidence, and a safe space had not yet been established between the social partners and the target community users.
- **Digital Storytelling Workshops** – Based on [37], one of the cultural organizations partnering in the project organized a set of (online and offline) Digital storytelling workshops structured to facilitate the development of short personal stories about heritage in a digital format. Three workshops (divided into two sessions, two hours each) targeted the project's social and technical partners to understand the creative process of writing about heritage. Subsequently, each social partner adapted the methodology to suit their community needs and local lockdown constraints. The national differences in lockdown policies added to the community's needs and constraints, challenging a homogeneous deployment of storytelling workshops. Nevertheless, at the end of the project, a total of 80 stories were collected, ranging from short

images and textual descriptions to several minutes of edited videos. Some examples of stories from each community (and their English translations) are available in appendices A, B and C.

The elicited requirements were used to plan the agile development of the app prototype in three incremental iterations. Each iteration included a design, development and evaluation phase, which addressed feedback from prior assessments and added new features according to that stage's design concern (see Fig. 1). Per iteration cycle, low/high fidelity interactive prototypes were validated internally among project stakeholders.

3.2 First Prototype Iteration

The first app prototype was a web-based application. The main design concern for the first iteration was supporting social inclusion through digital storytelling. Entailing that, the initial app prototype (in Fig. 2) was required to support essential interactions for accessing, creating, searching and viewing participant's stories:

- For **accessing** (A1 and A2 in Fig. 2), the app supported two types of users: guests (shown in blue, that can only search and view stories) and authors (shown in pink, that can create stories).
- For **creating** (C1 and C2 in Fig. 2), the app allows for input of different story elements (e.g., title, location, cover image, various types of media, story text, keywords), as well as controlling the state of the story (draft/published).
- For **searching** (S1 and S2 in Fig. 2), the app allows for multiple visualizations for exploring stories (list in S1 or maps in S2). Both views allow filtering based on keywords or queries using a search bar. The user can also use the current location to limit the number of stories and maintain a spatial awareness of the places and cultural heritage highlighted by the close communities ("Near me").
- For **viewing** (V1 in Fig. 2), the app supports visualization of the created artefact, including media playback and connecting to the phone's navigation application.

3.3 Second Prototype Iteration

The main design concern for the second prototype iteration was to support the creation of bonds across stories and bonds across stories and CH elements. It also entails visualizing these bonds in conjunction (in what we call *connectedness*). This creates scenarios where guests can discover new and unexpected connections between stories and CH elements, identifying social cohesion among a polyvocal set of stories. Ultimately, these bonds should not be user-driven but instead controlled by Artificial Intelligence (AI) processes based on Knowledge Graphs (KGs) – a standard method to incorporate human knowledge in AI models [50]. This process was supported by the existing KGs of geolocalized CH elements of the three project cities. KGs are graph-based data models, where nodes (e.g., "Spain", "Barcelona", "Gaudí") are entities of interest, and edges are potentially different relations between these entities (e.g., "born in", "is in"). Crossing nodes and edges can make complex relations between entities (e.g., "Gaudí [was] born in Barcelona, which is in Spain"). Abstraction makes KGs flexible enough to be applied to a variety of domains (e.g., to control robots [118]) or aligned with language models to create prompt questions [65]). Open KGs like Wikidata [112] are publicly available and crowdsourced, allowing them to be edited and extended. Digital archives curate both tangible (e.g., monuments, buildings) and intangible CH elements (e.g., customs, traditions), including both text descriptions as well as media [23]. Therefore, for this project, we built a custom tool for ingesting data from Wikidata². Initially, this process collected geolocalised entities within the city's constraints. Then, it expanded to connected entities

²<https://github.com/MEMEXProject/MEMEX-KG>

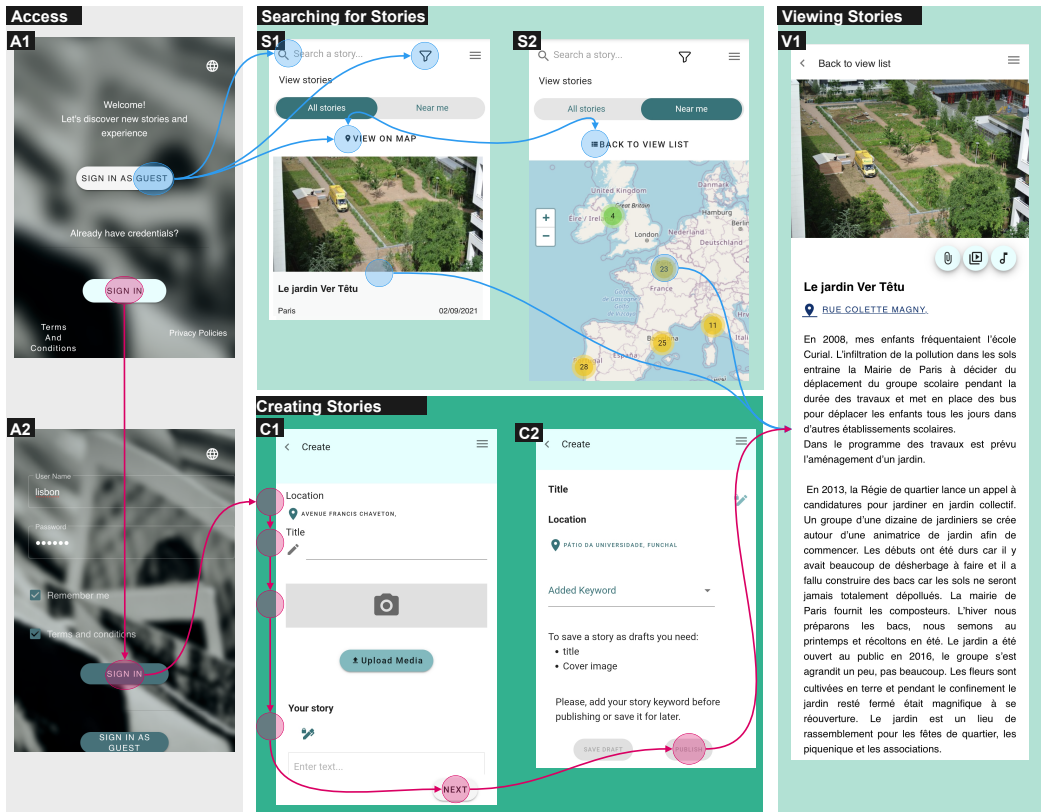


Fig. 2. Interface flow for the first prototype iteration. ●Pink dots (on bottom half) are representative of actions an author would need to create a story, while ●Blue dots (on top half) are representative of actions a user (such as a guest) would need to explore and search for stories. Interfaces are divided into four areas: **Access (A1 and A2)**, for access as a guest or as an author; **Searching for Stories (S1 and S2)**, regarding visualizing list/maps of stories, searching and filtering; **Creating Stories (C1 and C2)**, supporting authoring a story; and **Viewing Stories (V1)**, regarding the visualization of the story and associated media.

(that may not be geolocalized such as intangible elements). The resulting Neo4J³ graph database allows us to have more complex interactions:

- We expanded the KG with Europeana,⁴ a digitised cultural heritage meta-data aggregation with over 50 million cultural and scientific artefacts.
- We expand the KG by treating the stories created in the prototype as entities. Story elements (like uploaded media or keywords) can be treated as entities and connected to the original story.
- We support dealing with queries based on entities and relationships between them. For example, given the current GPS location, we can query for tangible cultural heritage sites in a radius.

³<https://neo4j.com>

⁴<https://www.europeana.eu>

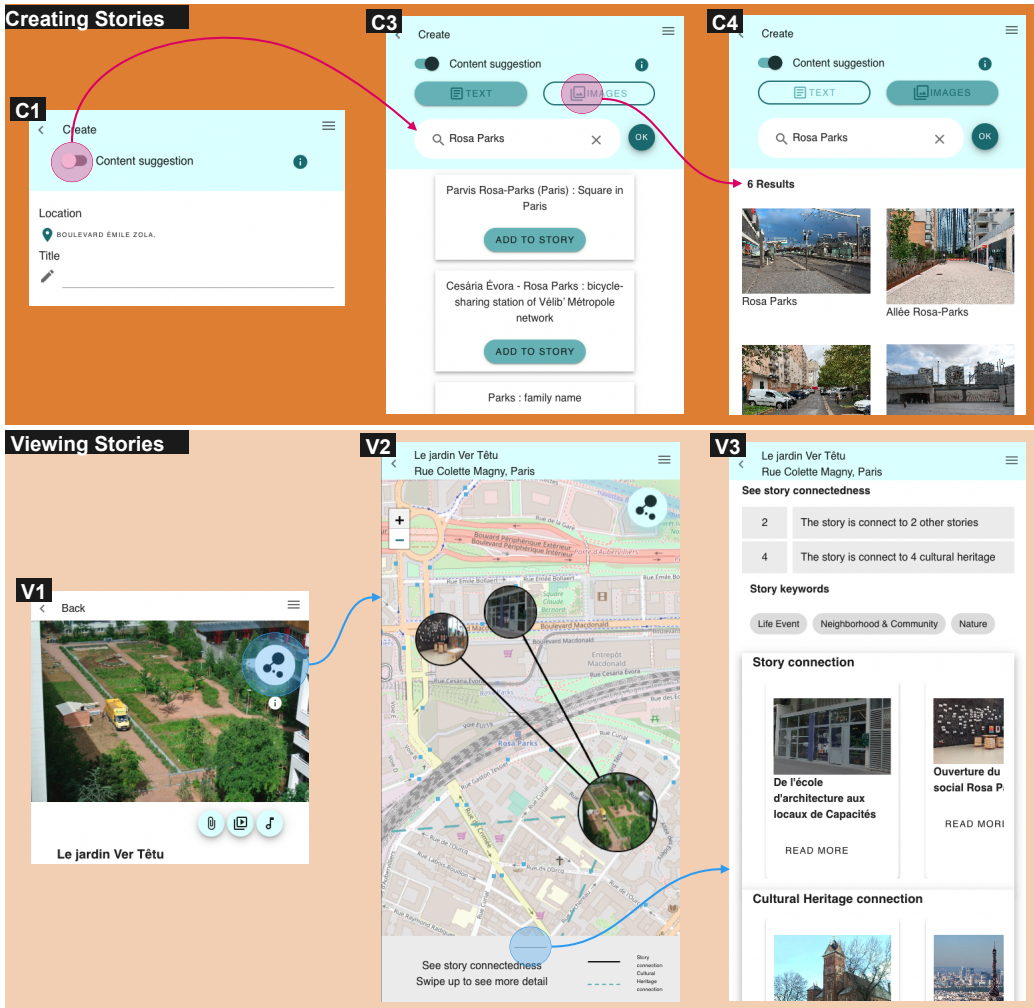


Fig. 3. Interface flow extension for the second prototype iteration. ●Pink dots (on top half) are representative of actions an author would need to manually add content from the KG to their story, while ●Blue dots (on bottom half) are representative of actions a user (such as a guest) would need to explore the connectedness of the story being viewed. Interfaces are divided into two areas: **Creating Stories (C1, C2 and C3)**, regarding the inclusion of KG content into a story; and **Viewing Stories (V1, V2, and V3)**, showcasing the visualization of connections of the story with other stories and with geolocalized cultural heritage content.

- Stories can be automatically related to entities in the KG based on the text content related to the entities' title (keyword spotting); this allows for identifying places, people and events, for example.
- Connections between stories can be created based on tags assigned by the user.

The use of KGs creates a scenario where AI can help users to create stories (e.g., incorporating media about CH from the KG) and to connect stories and CH (e.g., identifying bonds between

polyvocal stories). As such, the second iteration of the app prototype (see Fig. 3) leverages the KG to increment the previous features of creating and viewing stories:

- For **creating** (C3 and C4 in Fig. 3), the app supports a direct search of the KG, returning results as text descriptions or images related to the search term. One of the identified requirements involves supporting the user in writing by allowing access to information - results from the search can be directly inserted into the written story and edited by the author. To make connections between entities, we must have stories where the entities are recognizable. This is done manually by the author using the entity in their story. This is also done automatically with Named Entity Recognition (NER), or keyword spotting [66], identifying KG identities within the written text.
- For **viewing** (V2 and V3 in Fig. 3), the app can query for geolocalized stories and cultural heritage that have a relevant connection to the story being viewed. These connections can be explored in a map (V2) or a detailed list (V3), showing the connectedness between elements.

4 STUDY

To gauge the application against the project's goals of social inclusion and cohesion, user studies were organized with participants from the three communities:

- **Pilot study**, conducted in Spring 2021, using the first prototype iteration (described in section 3.2) and involving 23 subjects. This pilot study was conducted remotely due to the COVID-19 restrictions. It engaged participants in base tasks like creating and viewing stories, aiming to apprehend their view of the app's purpose and how it could have a purpose in their lives.
- **Main study**, conducted in Winter/Spring 2022, using the second prototype iteration (described in section 3.3) and involving 37 participants. Following COVID-19 pandemic health guidelines, the study was done in person. The main study used a refined prototype of the app (compared to the pilot study), which included advanced features such as uploading various media content, viewing stories from different countries/communities and interacting with the cultural heritage assets via a Knowledge Graph (KG).

4.1 Participants

The app was evaluated by community members (those who participated in digital storytelling workshops and created stories) and other social and cultural stakeholders in touch with those communities (e.g., social workers and cultural mediators). For brevity, we refer to the first as community members and the latter as stakeholders. Table 1 summarizes the participant profile across the three communities:

- The **Pilot study** involved 23 subjects (10 in Lisbon, 6 in Barcelona, and 7 in Paris), 13 of which were community members, and 10 were other social/cultural stakeholders.
- The **Main study** involved 37 subjects (15 in Lisbon, 11 in Barcelona and 11 in Paris), 26 of which were community members, and 11 were other social/cultural stakeholders.

All participants were recruited according to the social and cultural stakeholder's ethical regulations and protocols. Facilitators prioritized community members when scheduling, so stakeholders were exposed to a growing corpus of stories. Through an informed consent form, participants were aware of the purpose of the study, protocol and their privacy rights, including that collected data would be anonymized and serve only for research purposes. Participants were reassured that the study was evaluating the app (and not them) and that they could interrupt or end their participation at any time. Participants are anonymized and coded by the first letter of the city and an assigned number (e.g., L2 is participant 2 in Lisbon). In this article, we use a prefix (PS_) to identify the pilot study participants. Additionally, we use a suffix (_st) to identify participants who are stakeholders

but not community members. For example, PS_L3_st refers to the pilot study's participant 3 from Lisbon who is a cultural-social stakeholder, while P6 refers to the main study's participant 6 from Paris.







4.2 Procedure

We (the authors) did not participate directly in collecting the data. Because of the project ethics regulations designed to protect vulnerable communities, only the social partners could directly contact and interact with the vulnerable community participants. While the protocols were designed by the researchers and adapted to the local pilot setting together with the social partners, the researchers were not able to perform observations and capture contextual data, nor derive meaning from expressions and other subtle cues. Moreover, during the semi-structured interviews, the researchers could have directed the conversation in accord with their hunches and curiosity.

Still, we carefully instructed the local social and cultural stakeholders to act as facilitators/mediators in conducting the evaluations, capturing the data and later sharing it with the researchers. This proved to be a successful technique, as it elicited more candid responses from participants because the facilitators had already built a rapport with the local communities and were less attached to the prototype design, and not directly involved in the creation or implementation of the app.

The facilitators were responsible for setting up the evaluation sessions and helping participants set up their devices (smartphones with data access). Each session took between thirty minutes to one hour. Both studies engaged participants individually via online video-conferencing platforms (in the **Pilot study**) or in person (in the **Main study**), with one device per person. After filling out the informed consent form and a demographics form, participants were asked to use the prototype to perform a printed list of tasks and express their thoughts through think-aloud. Facilitators took notes and were allowed to help the participants if asked. Afterwards, facilitators led a semi-structured interview on the use of the app:

Table 1. Description of **Pilot** and **Main study** participants across the three communities (Lisbon, Barcelona, Paris). For each community, we report the gender (M - male, F - female, NB - non-binary), participant type (community participant or stakeholder as defined in section 4.1) and IDs used.

	Community	Gender	Participant Type	IDs
Pilot Study (N=23)	 Lisbon (N=10)	1M, 9F	Community (N=4)	PS_L1, PS_L2, PS_L9, PS_L10
			Stakeholder (N=6)	PS_L3_st, PS_L4_st, PS_L5_st, PS_L6_st, PS_L7_st, PS_L8_st
	 Barcelona (N=6)	6F	Community (N=5)	PS_B1, PS_B2, PS_B3, PS_B4, PS_B5
			Stakeholder (N=1)	PS_B6_st
	 Paris (N=7)	2M, 5F	Community (N=4)	PS_P1, PS_P2, PS_P3, PS_P4
			Stakeholder (N=3)	PS_P5_st, PS_P6_st, PS_P7_st
Main Study (N=37)	 Lisbon (N=15)	3M, 12F	Community (N=10)	L1, L2, L3, L4, L5, L6, L7, L9, L10, L15
			Stakeholder (N=5)	L8_st, L11_st, L12_st, L13_st, L14_st
	 Barcelona (N=11)	10F, 1NB	Community (N=10)	B1, B2, B5, B9, B10, B11, B12, B13, B14, B15
			Stakeholder (N=1)	B3_st
	 Paris (N=11)	4M, 7F	Community (N=5)	P3, P4, P6, P7, P13
			Stakeholder (N=6)	P5_st, P8_st, P9_st, P11_st, P12_st, P14_st

- For the **Pilot study**, this semi-structured interview probed participants about their likes and dislikes of the prototype and their motivation and expectations in using or incorporating it into their lives.
- For the **Main study**, in addition to the previous questions, the interview probed participants about how they perceived the features of connectedness and the expressive power of stories.

The list of tasks was dependent on the type of participant (community participant or stakeholder) and the version of the prototype that was being tested (pilot study or main study):

- In the **Pilot study** (see fig. 2), participants were asked to access the app (A1, A2), create a story (C1, C2), edit/delete that story (similar to C1 and C2), and browse and view stories (S1, S2).
- in the **Main study** (see fig. 3), in addition to the previous tasks, participants were asked to search for suggested CH content (C1) related to the city in which they are based (e.g. a cultural heritage site) and add text (C3) or images (C4) to the story. When viewing stories (V1), participants were asked to explore how those stories were connected to others (V2, V3).
- In both the **Pilot study** and **Main study**, community members who had participated in the Digital Storytelling Workshops (see section 3.1), were asked to bring some already made material for the story creation (a short text recounting a story or memory, 1 or 2 digital photos, audio or video) and were also asked to create a story with those materials (C1, C2). These stories compose the corpus of narratives on heritage discourse and remain in the app for others to view (S1, S2).

4.3 Thematic Analysis

For the **Pilot study** and **Main study**, interviews (transcribed and translated by facilitators) were analysed using thematic analysis [17] with NVivo (1.6.2),⁵ a qualitative data analysis package. While using the same methodology, interviews from the **Pilot study** and **Main study** were analysed separately. We based our thematic analysis approach on the six phases described by Braun and Clarke [17], using two coders (the two first authors). For each study, the two coders began by familiarising themselves with the interviews and started a coding round; we adopted an objective stance acknowledging people's experiences as they report them and using inductive coding (informed by the project's emphasis on social inclusion and cohesion). After generating initial codes, researchers met to discuss the codes, resolve any conflicts through discussion until consensus was reached, and agree on a codebook. The two coders looked again at the data to refine the analysis. After coding, the two first authors and the last author met to define/review themes and produce the results report. Defining/reviewing themes was made in a two-tier process: first, considering the whole dataset to identify common themes across communities and second, filtering the dataset into community subsets to define community-specific themes. For the **Pilot study**, due to the smaller sample size, the prototype features and the interview focus, we decided not to report community-specific themes, favouring common themes. For the **Main study**, we report common themes (mainly connected to usability and user experience issues) and community-specific themes. In both cases, when reporting, we prioritise reporting feedback from community members over stakeholders as the app's design is geared primarily towards their needs.

5 FINDINGS

In this section, we separate themes from the **Pilot study** (section 5.1), from the ones conceptualized in the more comprehensive **Main study** (section 4).

⁵<https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>

5.1 Pilot Study Findings

The semi-structured interviews across the three communities were thematically analysed [17] identifying three positive themes about the use of the app, as well as themes with suggestions for changes or new features:

- Valuing the concept of a tool for "inclusion"** - Overall, community members (who had engaged in the digital storytelling (DS) workshops) were happy to see the concept realised in a digital prototype, found the app easy to use, and praised the possibility of further customising their stories. While some realised the app was different from what they had envisioned (e.g., PS_B3 stating *"I think it's different from what we imagined, what we thought it would be from our practice [from the DS workshops]"*), they were curious and appreciative of the app, enabling them to view others' stories (e.g., PS_B1 *"It is beautiful to see someone else's story"*, PS_L10 *"You can see other people's creativity. To how far other people's imagination goes."*). When asked about their expectations, participants said they would like to see more stories on the app and that, once it is fully operational, they would like to use it while walking or when socialising with friends (PS_P1, PS_P2). Participants highlighted the power of locality (and the app's geolocalized features) and desire to contribute to it, *"[I want to use it] when I go for a walk, to know what people really think about a place and also to share my experiences"* (PS_L9). Finally, some participants informed facilitators that they would appreciate the possibility of being more included in the app's design. Participants saw themselves not only as future users but as co-designers (e.g., PS_L9 *"[I] am anxious to see it concluded and know I contributed in a very small way to the app"*).
- Creating and sharing personal stories cross communities** - Being able to publish their stories in the app made participants feel accomplished and somehow connected (e.g., PS_B4 *"I'd use it [...] when I want to feel connected to someone else through their experiences."*). The possibility to preview a story before its publication was much appreciated, as well as the opportunity to upload different media content for each given story (video, audio, text, and photo). They enjoyed scrolling through the stories accounts, seeing their contributions be visible alongside others and being part of a "big" project (e.g., PS_B3 *"Because I help to build it, I was part of this process and I think that is what motivates me the most."*). This made them feel empowered in communicating with and understanding others. Another participant (PS_L9) indicated that viewing shared stories could be in itself a prompt for others to share *"What is good is that when someone wants to know a specific place, they can put the location and check all stories told near there, which can be good to help visitors start imagining stories, that someone was there and had a different view"*. Although language came up as a potential barrier for some, several participants shared a general willingness to engage and explore stories from other pilots even in their original language, *"I liked seeing stories from colleagues from Paris and Lisbon. I'd like to have more access to their content"* (PS_B3), *"[...] we can know about someone's story, from other countries"* (PS_B4).
- Geolocalization of stories** Community members highlighted that the map and the geolocalisation features of the app are crucial in supporting connection, inclusion and exploration of CH, with PS_B3 identifying the app as *"[...] a tool to build different narratives and to explore other ways of seeing cultural heritage. A more grounded vision, more embodied"*. Community members associate digital maps and the interaction patterns afforded by them with exploration, mentally placing the app as *"[...] an alternative way to approach a city. For example, if you come to Barcelona – where lots of people travel here frequently, they can use it to do something different. It would be great to add the places I already know, stories from people that live there"* (PS_B2).

Stakeholders valued the importance of linking personal accounts to the surrounding cultural heritage (e.g., PS_L3_st "*This is an application to share personal stories related to the heritage that surrounds us*", PS_L6_st "*Understanding different perceptions about the heritage that we have in the city of Lisbon. Getting to know heritage from other European cities*"). Stakeholders also acknowledge the polyvocality of CH through the app and its ability to engage people in different ways emotionally, "*A statue that transmits happiness or joy can transmit the opposite to another person. It's interesting to know what other people see in the same heritage element*" (PS_L3_st).

- **Participants as co designers** - While a portion of the difficulties encountered in using the app are related to its prototype nature (and set to be tackled in the subsequent versions), participants enjoyed suggesting design improvements or new features that not only affect the usability but the core experience of using the app.

Participants (PS_P2, PS_B3) suggested improving the design through a more colourful interface with PS_B3 stating, "*[...] the app graphics, I found them very corporate. It didn't appeal to me to participate. [...] As a user, I imagined it warmer, embracing, then I feel its aesthetics are opposed to the goal, the message of it*". One stakeholder (PS_B6_st) suggested rethinking the app from a woman's perspective, paying more attention to details and nuances, "*a more sensitive approach*".

Participants often compared the app to other platforms such as blogs (PS_P1), YouTube (PS_L2), Tumblr (PS_P1), and Instagram (PS_P1). While some voiced desire to have interfaces that resembled social networks (e.g., PS_L4_st "*[...] interface should be more similar to Instagram, with contents in a single column and infinite scrolling*") or that connect to it (e.g., PS_L1 "*[...] would like to link to social media*"), others defended the need to differentiate from social media as the goal of the app should be different (e.g., PS_L1 "*A person may not understand the aim of the application or it may look more like a social network [...] It may not be the goal, as it evades the judgment of social media.*").

One suggested solution to differentiate from social networks is the option of linking stories together (e.g., PS_P1 "*Beyond the geolocation, it would be nice to link all the stories together to create a journey.*"), creating a more complex narrative journey through several stories and valuing the connectedness potential of the app. Several participants commented on the potential of the app to escape the mainstream (e.g., PS_L7_st "*I think it could be very useful even at the touristic level, as shared heritage can get even more visibility so that it isn't only the primary sites that are visited*", PS_B2 "*[...] normally everybody wants to go to most visited spots, sights... I wish we all have the time to have these other experiences.*"). Stakeholders like PS_B6_st considered the app potential broader than the CH and story sharing and voiced that it could be helpful for some of their activities (e.g., supporting the making and sharing of the anti-racist route through the city centre of Barcelona).

5.2 Main Study Findings

The thematic analysis [17] of semi-structured interviews from the **Main study** identified community-specific and common themes about using the app for discourses on CH. In the following subsections, we present common themes across communities first and then expand on results per community.

5.2.1 Common findings across communities. Across the three communities, participants viewed the creation of stories as fostering belonging and inclusion in the hosting society. Moreover, making these stories visible to others solidifies their societal position despite their differences from the mainstream population. Through the analysis, we clustered the following common themes across communities:

- **Valuing cross-community access** - participants wished to read stories about other places, cultures and nationalities, despite existing language barriers;
- **Valuing geolocalised storytelling and CH** - participants praise the incentive to physically explore places by having content connected to the physical world;
- **Valuing multiple and different perspectives** - participants appreciate the existence of polyvocality about their city, especially since stories are often personal and intimate;
- **Valuing multimedia support** - participants desire the possibility to integrate different types of media to tell a story;

Community members and other stakeholders alike, voiced dissatisfaction towards two particular bugs of the prototypes: (i) the slow loading times, which made them feel unsure of their actions, and (ii) the complex interface of the KG-assisted authoring tool, which was not responding to their needs. The support provided by the KG was not pertinent to the user's needs or the topic; forecasting this problem, researchers instructed facilitators to support the participants through the technical parts of the tasks, including the KG-supported interactions. Nevertheless, most participants demonstrated interest in the KG-assistive tool concept and recognised its potential (B2 "*this is very relevant... It has the potential to give (the app) even more value*"), describing it as "*a very powerful idea*" (B12).

Similarly to the pilot study, participants across different communities valued their roles as co-creators of stories and the app and contributed with several improvements and suggestions. These ranged from broadening the list of keywords categorizing the stories (L1, B1, B5); to translation of stories into the language of the participant (L1, B1, P6, P13); optimise loading times (L4, B2, B10, B11, B14); further providing positive or negative feedback messages about interactions (L7, B2, B10).

5.2.2 Lisbon's community. In the Lisbon study, 15 participants tested the app, including ten community members (with second and third-generation migrant backgrounds) and five stakeholders from the local cultural and social sector:

- **Supporting multiple perspectives for inclusion** - Community members recognized the app's value for inclusion; they not only cherished the app as a community story-sharing tool but identified its purpose in showing multiple perspectives inside and outside a community. In L1's words, "*I published a story about the Praça do Comércio. For them [the other app users] to see my vision, how I see the Praça do Comércio, and how I think it's beautiful. Because they might have this same perspective... And I also have a perspective like they do. Each one has a different way of seeing things, right?*"; L1 acknowledges through the app that people can "*[...] can understand the diversity of feelings and stories, and dimensions that may exist about the same heritage monument*". L3 reported that the app's scope is not limited to local inclusion but could reach to those who left or those that arrived in Lisbon, "*[...] connecting with other people stories, I think it also helps when you are away, living in another country that isn't your own, [...] it is very interesting to understand other people perspectives. And I think maybe some people, they just moved to Lisbon but [would] probably find it very useful as well and then realize there is more going on. And it is almost a contribution to the city, [...]It's part of sharing the story of Lisbon*". Overall, participants recognize that the app enables self-expression, which can lead to understanding the city (and the CH within it) by including multiple perspectives.
- **Participation as a form of integration** - When using the app, some participants voiced a sense of belonging stemming from the act of sharing their stories and having their perspectives included at the same level as a local, L3 "*[...] it brings different people from different backgrounds and whether you were born in Portugal or not [...] But I think gives a sense of community-based on how you live. So it's integration also. [I'm] feeling [like] a part of Lisbon. Like a Lisboner*". For this participant, integration is not referred to as feeling accepted but as having agency in

participating in the place where they live. The ability to share stories through the app is a meaning-making activity and a form of integration by connecting to the place. This view is also shared by stakeholders, with L8_st stating that *"We can mix our personal stories with the stories of the places and in that way integrate the [migrant] population in the Portuguese culture and heritage. Because we are included, but at the same time, we aren't. And this is a way to connect people to the place they live in and more"*.

- **Valuing polyvocality to escape the mainstream** - While some participants recognize that several end-users may exist (e.g., L1 *"[...] mainly for tourism but also for the local participants"*), most participants acquiesced that one of the app's values is to allow polyvocal views about the city, outside the tourist-beaten tracks. Participants reported several ways in which the app can help in this: identifying new views (e.g., L15 *"Because there is a lot of people that travel, that move around, that like to search for less obvious things, escape from patterns, [...]"*); recontextualizing old views (e.g., L7 *"It's an app to discover new perspectives about the city through different perspectives on known places such as museums or streets... places that may be more touristic and such."*), or humanizing views (e.g., L3 *"It is always nice if you are visiting a place to have an alternative sense of what is going on as well because, of course, you have the travel guide and things like these, but this is testimonies from people."*).

In this case, polyvocality is not just about having multiple personal views but also the connections between personal stories and cultural heritage information. As L2 states, this is what makes the app different from other mainstream platforms, L2 *"it's different [than] when you see Wikipedia. It has feelings, and it is related to the person, it's more interesting. It's connected to the people"*. This authenticity about a city is a value that they recognize *"[...] I am going to Paris next month. So the probability of accessing the app... To know what people are writing here. What happened there. I think that's interesting"* (L6). While this personal touch is the base for authenticity, one stakeholder warns about their difficulty in adjusting to it in the context of heritage discourse, L13_st *"What I kind of had to get used to, was that the texts were not written by professional authors and so they hadn't this dramatic storyline. They were more additive in what they were saying about certain places. And you didn't know upfront what you were supposed to expect. So it was kind of a surprise"*.

5.2.3 Barcelona's community. The Barcelona study engaged a total of 11 participants, including ten community members (all migrant women) and one session with a stakeholder from a local NGO:

- **Geolocalised storytelling and CH** - Community members highlighted the app's potential to share and view stories by valuing personal stories as heritage (as stated by B2 *"The story of a person [...] is already a heritage in itself: this aspect of the app is very relevant because it has the potential to give that value, to make the personal something public and shared"*). Despite several technical issues (e.g., slow connection affecting the app's responsiveness), most participants said they would use the app regularly, praising the geolocalization of stories and CH. The value of this feature (both locally and globally) was identified by participants (e.g., B2 *"[...] based on connecting geographic spaces with the stories of people who have bonded with those spaces"*, B10 *"I think it's interesting the idea of connecting places, countries [...] The visualisation of the map helps me make a connection between countries."*). Some participants (B5, B14, B11) mentioned adding or updating stories on the map regularly, which could incentivise a continued use of the app.
- **Grassroots community building for cohesion** - Several participants mentioned the potential of the process (including the app) to create a sense of community (e.g., B11 *"[...] I think it is an app that can be adopted by a community, where people can also put more stories or*

some new features, in a way almost making the community grow"). For this set of participants, many of which are engaged activists, the process of storytelling about heritage is not only person-centric but community-centric. As B11 states, *"We, as migrant women, come alone and this form of being a community is a perspective of knowledge, getting to know places from a feminist, activist perspective, and in this way, we would show [it] to workers in Paris or Lisbon."* They see heritage discourse as a community-building activity, as stated by B9 *"I would like people to know that when you get to a country, you think you have no rights, and the step of protesting in the street for me was important. I was scared to participate because I thought as a migrant, I couldn't participate in the country's political life. That changed my life. I felt strength. The right to protest is a right we migrants have, and we can find strength through unity."*

- **Unexpected connections** - The second iteration of the prototype leverages KG in creating and connecting stories. However, most participants found KG-supported interactions hard to grasp. Some participants (B2, B9, B10, B11) were frustrated when searching for relevant content to add to their stories. This frustration was mainly caused by the limited scope of the KG (e.g., B2 says, *"[...] I wanted to enter the word sorority, but I opted for fraternity, thinking that the search would be simpler, and I finally opted for cooperation. I would highlight that it was difficult for me to find a word to enter into the search engine to find it."*). For participant B10, the frustration was caused by not knowing where the information was coming from *"[the suggestions][...] It seems a bit random, and I would like to understand where those results are coming from. I put the word 'woman' in the images, and a man came up [laughs]. It's weird and ambiguous"*. These concerns were connected to the lack of visibility in the Human-AI interaction. Similarly, when asked to explain how stories were connected, participants (B2, B3_st, B10, B11, B12) showed difficulties or uncertainty in explaining why connections happen. For example, B3_st stated that they were *"[...] a bit confused by this, I think they are connected because of themes, but I am not sure"*.

nevertheless, some participants were positively surprised by the KG support, even if it did not provide what they expected when creating stories (e.g., B15 *"It was useful but I was looking for a dove, and there was no dove amongst the choices"*, B9 *"[...] I put some words, but I didn't identify with the [written] results. Only when I looked in images, I find a statue of a woman I liked."*). While there is a consensus the feature needs some further development, several participants (B10, B11, B9) praised the value of the suggested content (and how it could empower their story) and future connections with other communities and cultural heritage, with B10 stating that *"[...] it's interesting to see how countries are connected because of shared memories ... or how two countries are related. It can be a reflective space if you know how to use the tool"*. For B15, the existence of unexpected connections was a reflective trigger *"I was surprised that mine is connected with another place in Portugal, it's incredible."*

5.2.4 Paris's community. The Paris study involved a total of 11 participants, five community members (migrants living in the Rosa Parks neighbourhood), and six stakeholders from local authorities and the sociocultural sector:

- **Leveraging grassroots engagement as collective memory** - Community members from Paris perceived the app in close connection with the history of the local neighbourhood, with P3 stating, *"It's a way to valorise people's memories and thus, the neighbourhood's memory. It's an interesting tool that puts humans at the centre"*. As the area has changed recently, the principal shared content was personal stories about the neighbourhood's history, urban transformation, and memories of lost buildings and people. In a way, the app leveraged grassroots efforts to build or rebuild the neighbourhood's heritage. For example, P13 uses his story to recognize a social centre as a new heritage, one that is influenced politically and

socially "By talking about the Rosa parks centre, I wanted to convey the link between a political will and its concrete application by a group of inhabitants".

Participants enjoyed being able to share their experiences about the neighbourhood and mostly being able to build a collective history of their shared living space, with P3 stating "It aims at valuing people, stories and places which are not necessarily known, marginalized". When asked how they would use the app, similarly to Lisbon, a stakeholder reported the potential of the app to support newcomers in knowing the neighbourhood, P8_st "[the app] presents a real interest for a newcomer in the territory, to understand the dynamics of the territory [...]". Other participants identify an educational potential to these stories (e.g., P7 "to educate students about these places.", P3 "For instance, we can imagine some kind of pedagogical treasure hunt with children or adults, using the stories and the [app]'s map.").

- **Empowering new perspectives of heritage** - Stakeholders from the area saw the app as an interconnection tool. They expressed interest in expanding its reach by connecting and mapping more stories inside and outside the area of Rosa Parks. This may be because some stakeholders see the tool not only as showcasing different perspectives but also as a tool to engage and promote activities in the neighbourhood. Stakeholders recognize that the stories told by community members have value in the heritage field (e.g., P11_st) "I find it interesting to listen to the perceptions of the inhabitants on the district, micro-local approach, the tools bring knowledge on the district for the professionals [...]") and beyond it (e.g., P12_st sees it as a way to study the neighbourhood, "[...] it would be interesting to use it as a tool for diagnosis"). For local authorities (such as P8_st), the app could have a political value by focusing on "Stories about the social centre, cultural facilities, and the neighbourhood's transformation over time".
- **Connecting transnational communities** - Similarly to the other cities, the sharing of stories across countries was cherished (e.g., P13 "there are no longer any borders, as we can access the stories of people abroad") and some participants suggested translating the stories to facilitate exchanges. Similarly to Barcelona, some participants found adding content suggestions from KG complex. They did not quite understand how stories were connected or the value of the suggested linked content (P6, P9_st, P7). Some stakeholders thought the story's connection was only based on its geolocation (P14_st, P12_st). In that sense, users felt the need for more guidance and a more straightforward user interface, P9_st "I used it randomly, the story suggestion wasn't relevant, but the idea is good, it might give more to the story".

6 DISCUSSION

In this section, we discuss the findings from the study in parallel with the goals and outcomes of the project and connect them to the related work when appropriate.

6.1 Social Inclusion & Cohesion in action

The concepts of social inclusion to encourage and support cohesion (introduced in section 2.1) were cornerstones in the design of the prototype for engaging with heritage discourse. For the first iteration of the prototype, social inclusion was expressed through access and the ability of community members to share stories. This enables the creation of a trusted and cherished safe space for participants to share their CH and participate in the hosting culture. Following Sabie et al. [89] invitation to cater for more than basic needs, the app created a safe space for cultural participation [20, 21, 32, 71].

For the second iteration of the prototype, the app design in support of social inclusion was expanded to champion cohesion and expressed through the identification (via the KG) and visualization of connections among stories and CH [43]. Highlighting the existence of bonds between stories across the same community, as well as stories in different communities, and stories and society (through CH assets), was valued by participants despite their differences to the "mainstream" society. Here expanding on previous work [59–61], the app went beyond participation and offered the communities a way to experience cohesion through the bonds created among stories, cultures and CH. Throughout the study and the whole project, inclusion and cohesion were identified and valued as heterogeneous concepts composed of distinct elements, practices, feelings and actions; they present nuances that differ depending on the marginalised community.

The complexity of the concept of inclusion, and its relevance as a seed for cohesion, becomes visible through how participants talk about the purposes of the app. All participants across communities valued the app as a tool for inclusion, expressing a desire to keep using it to add more stories to it; from this point of view, the app facilitates **inclusion through sharing and participation** similarly to what is suggested by [53] and in line with the insufficient support for participation reported by [59]. Participants cherished reading and learning about other communities framing **inclusion from a bonding and embracing perspective**, which can be seen as a seed for cohesion in line with the importance of the tension between democratic participation and care suggested by [59, 60]. Moreover, participants appreciated being involved in the evaluation of the app, and some wished they could further help in the design process, valuing the co-design process itself; this expression values **inclusion as co-designing**. To further expand the inclusive features of the app to support social cohesion, the app created visible connections between stories and CH, through what was named the "connectedness" feature. The connections were made manually (e.g., tagging the stories through keywords) and automatically (e.g., KG-supported Named Entity Recognition). The importance in support for connectedness is consistent with previous work on migrants networking support (e.g., [1]) and supports the longstanding call for HCI to support wider humanitarian research [102, 103]. In addition, it provides one example of the socially just use of Artificial Intelligence and Machine Learning extending its reach to marginalized people [99, 100]. Participants identified and cherished the existence of connections through their stories, both inside the same community and in other communities, manifesting curiosity towards the interrelatedness of their experiences and a tendency towards cohesion inside and across different communities. As such, **connectedness** was appreciated, and even though the connection is not necessarily cohesion, it can be conducive to it [83], especially since it contributes to removing the barriers to inclusions [29]. Similarly to inclusion, cohesion emerged as a complex concept through how participants talked about the app's purpose. Each pilot community interpreted it as a tool to cohere differently, consistent with Beauvois and Jensen [9] claim that they differ according to the socio-political environment in which it evolves. Participants in Barcelona wanted to use the app to share and connect their stories to support grassroots engagement around activism; they expressed wanting the app to empower other migrants (from their original city and others) to express themselves and fight for their rights. This frames **cohesion as a form of community building** [10]. Participants in Paris wanted to use the app to share their stories to stimulate grassroots engagement with their neighbourhood; they created a repository of memories, making the neighbourhood's heritage visible and known to others. They saw the app as an invitation to create new heritage dialogues centred on their locale, suggestive of a cohesive behaviour **that takes the form of collective memory and community building**, extending on the work of Sabie et al. [90] on physical spaces and households. Participants in Lisbon wanted to use the app to make their migrant origins visible and root them in the Portuguese culture and heritage; by making their heritage visible, the participants aimed to make themselves visible and directly participate

in their hosting society's culture. This attitude highlights participation in meaning-making as a fundamental aspect of inclusion and possibly **cohesion** providing evidence of civic engagement and participation processes of mean-making places [31]. Community members' various appropriations and interpretations of the app all point towards ways to create stronger social bonds within and across different communities. We acknowledge that other potential frames of the app may exist, tied to the nature of the marginalized communities the authors engaged with and the conscious or unconscious societal boundaries they are pushing against. Paris participants who lived through a profound urban renewal of their peripheral neighbourhood use the app to think about the tension between remembering the past and embracing modernity. Barcelona participants engaged in gender and migration activism used the app to reflect on their struggles to integrate into the new society and fight for their rights. Lisbon participants, as first and second-generation migrants, use the app to manifest the duality of living with multiple concurring cultures. In summary, the app can function as a social probe, making visible the boundaries against which each community is pushing, highlighting different backgrounds, cultures, contexts and social challenges.

6.2 Geolocalised Storytelling and CH

Across communities, participants praised the app's geolocalization features and its ability to visualise stories and CH on a map in line with previous work [40, 77, 78]. Participants described several use cases for the app (e.g., to suggest guided tours and pedagogical treasure hunts) that take advantage of geolocalization and contextualize the use of the app in the real world and go beyond the use as a self-expression tool [85]. Although the app can be used anywhere (e.g., the user is free to choose its GPS positioning for any created story; there are no location barriers in searching for stories), features like the map and the journeys can be seen by participants as prompts for physical exploration. Furthermore, heritage discourse often focuses on physical places' tangible and historical heritage. The cities where the studies took place all have highly developed tourism sectors. Therefore, these factors align to create use cases where the exploration of the town can be a primary use of the app. Overall, our results suggest the app could widen participation and enable story creation and sharing amongst citizens in line with previous research reported by Manuel et al. [71].

Regarding using the KG tool to support the authoring of the stories, participants across communities had issues using it and using the information it provided. While the concept was well received (a tool suggesting CH content that relates to the story being told), the interface design for such a feature proved hard to grasp as it did not clearly express the intended interaction. Participants were puzzled about where the information came from, hence not incentivising trust in the system or transparency in its performance. Participants were not satisfied by the support information presented by the KG while authoring their stories because it did not fulfil their needs and expectations. This provides challenges for human-AI interaction for disadvantaged communities [99, 100]. While participants recognize that this feature has potential, further work is needed to make this feature more transparent, trustworthy, helpful and appreciated.

On the other hand, participants understood its purpose when used for viewing stories (instead of authoring) despite the opaqueness of the interaction. They praised the connectedness as it connected stories and content across the maps (see V2 in fig. 3). Nevertheless, the feature needs further redesign to make the human-AI interaction explainable and more usable. But even in its current form, participants enjoyed seeing their stories connected to others and CH, especially if that connection was transnational.

6.3 Tensions due to power disparities

Results from the study expand on the complex ethical issues concerning the work of researchers with vulnerable communities [52, 67]. Our analysis highlighted several tensions between community members and stakeholders' expectations for the app and the power disparity between researchers and vulnerable participants populations [59].

Participants often compared and wished the app was more similar to mainstream platforms (e.g., blogs, Instagram, Tumblr, Wikipedia, etc.), many of which they already used. Some storytelling participants suggested the app interface mimics existing mainstream apps. Mainly for the ease of interaction but also because they wanted to be identified as authors of the content. On the other hand, the project ethics did not allow the app to identify authors nor let them comment or leave tokens of appreciation for each other's authored stories. In parallel, participants recognized that the app's purpose is not the same as a social network (where "judgments", rankings and preferences are expressed) or a crowd-sourced archive of content like Wikipedia (where the personal and polyvocal nature of heritage could be lost). As voiced by L2, the app needs to be "*connected to the people*" as opposed to being mediated by authorised sources of information. While the app intended to serve communities at risk of exclusion in particular, throughout the studies, we realised that embracing standard features and interaction design patterns from the mainstream application could benefit our target users. It would diminish interaction problems and usability issues. The creation of a novel and original artefact was counter-intuitive to the goal of supporting communities in using and adopting the app. Moreover, during the co-design session between technical and social partners, the issue of designing a "special" app for vulnerable communities brought up the danger of further discrimination against them, distancing them even further from the mainstream.

Stakeholders participants recognised the app's power in celebrating polyvocality as a way to escape mainstream (both in CH discourse and tourism). They valued having multiple views on CH, identifying hidden heritage elements and creating new or contextualising old heritage. The participatory approach of the app was praised as a promising feature embracing the latest trends in cultural heritage discourse [41, 44]. Stakeholder participants described the app as a counter-mapping tool (maps challenging dominant power structures of knowledge [24]), creating new experiences for those exploring the city. These experiences escape the mainstream by focusing on personal accounts. Nevertheless, escaping the mainstream can lead to ethical questioning of the participation of fragile and marginalized communities in heritage discourse. Care should be put into avoiding their exploitation. While the researcher's ethical practices and positioning as allies are intended to create "safe spaces" for sharing stories [20, 21, 32, 71], we acknowledge that digital tools need ethical considerations before being released in the wild [8].

For example, the funding guidelines of the project prohibited the disclosure of any personal information about participants from vulnerable communities that could lead to identification and in compliance with the European General Data Protection Regulation (GDPR). In contrast, several participants wanted ownership and identification of their work. This generated tensions between the design team and the project coordinators, where the ethics delivered to the funding agent super seeded the desires of the communities the app was supposed to serve. Similar tensions emerged during the design of the connectedness features. The social partners enforced their section of keywords that would act as tags to the participants' stories and connect the stories among themselves and to the surrounding CH. Social partners justified the action by protecting the participants from identifying themselves through keywords, exposing vulnerabilities, and triggering reactions [13, 20, 21]. Nevertheless, very early in the evaluation process, the storytelling participants disagreed with what they perceived as a "top-down" approach to classifying their content. Participants wanted more agency in defining their stories' keywords. Such tensions are

an exemplar of the power imbalance regarding some funded projects [58]. Those designing and engaging with fragile communities are often bounded by rules that do not reflect the community's needs and desires. This is an open issue, particularly with projects that need detailed plans to receive funding and rely on complicated balancing processes of project awarding, reporting and results. As such, features such as public profiles for participants were discussed internally but could not be implemented in the app. However, this is a common discussion point for participatory projects that work with marginalized communities [67]. Further, counter-mapping with personal stories can also be viewed as exploitative for the communities in those areas. Tourism can be a marginalizing practice [81] when authenticity is performative. Most of these tensions were unresolved in our project, but identifying them and unpacking their dynamics can help future researchers take further steps to solve them.

In summary, this paper contributes to the HCI community in several ways.

- (1) First, through the results and insights from the artefact evaluation with the communities at risk of exclusion. After careful analysis and discussion of the data, we can affirm that the app extends previous work of HCI and migration with a caring artefact that can support the participation of vulnerable communities in their hosting society's culture, fostering heritage-making and dialogue. This dialogue reinforces inclusion and cohesion for an open and multicultural society [29, 56, 63].
- (2) As a second contribution, we present a digital storytelling and CH artefact that brings together several novel features, such as giving agency to vulnerable communities to tell their stories, connecting them to tangible and intangible local heritage, and building and strengthening the heritage discourse of those communities and their localities. The tool supports heritage discourse among co-located and distant vulnerable multicultural communities.

7 LIMITATIONS & FUTURE WORK

There are several limitations to this work, often connected how these projects are funded and managed. Several aspects of the project were defined before achieving the funding and could not be changed afterwards. The pilot communities were part of the initial proposal bid, chosen for their variety in covering vulnerabilities of several European communities. Still, no further communities of study could be added once the project had been awarded funding.

The project started at the end of 2019 and encountered several barriers that shaped its evolution. The heterogeneous nature of stakeholders was exacerbated by the COVID-19 challenges in having geographically distributed design and development teams and very heterogeneous groups in the three case cities of Barcelona, Paris and Lisbon. The social distance restrictions imposed by the COVID-19 pandemic at the start of the project affected the participatory methods and the number of participants for the evaluation sessions. The traditional face-to-face methods often transformed distant interactions, challenging trust and rapport online as many social cues were missing, privacy concerns were raised, and the digital divide played a role. In addition, evaluating complex experiences (such as those supported by our app) with prototyping technology (e.g., KG) can be problematic as the level of performance also affects the experience. Future work involves enhancing the app's support for more efficient AI techniques and broader KG support. The interest demonstrated by the participants in pushing the project team to make the app available for mainstream use is probably the best outcome we could expect from this project.

Despite several setbacks, we successfully deployed the mobile application to gauge the communities of migrants' needs, desires, and experiences concerning the concept of inclusion through CH and managed to conduct the presential evaluation of the technological interventions with participants belonging to at-risk communities. Nevertheless, because of the ethical framework set

up by the Project funding agent and the coordinator's partners, the communities at risk could only be contacted by the social partners. For this reason, the researchers never had direct access to the participants of the studies. They relied on the social partners conducting the studies, recording the sessions and transcribing the records. While this was intended to protect participants, this proved to be limiting for the research output in several ways. The social partners were not experts in the technology used, nor in conducting this kind of study. While interviewing the participants, researchers could not follow leads and probe in specific directions deemed essential or emotionally charged. Additionally, researchers could not collect observations of the app's contextual use or participants' physical expressions.

Finally, although our results indicate ways in which our participants felt social inclusion and social cohesion while using the app and appropriating the app to voice their stories, a longer engagement with the app "in the wild" is needed to quantify these measures. For example, social cohesion [56] is a multi-dimensional measure that involves economic, political and socio-cultural factors, making it complex to quantify. While indicators of belonging (like multiculturalism, trust, and participation) were identified in our interviews, a longitudinal study would be needed to investigate the effect of our system on the participants' daily lives. Alas, such an endeavour is not possible in short-term funded projects such as ours.

8 CONCLUSION

Digital tools are ubiquitous and provide opportunities to promote social inclusion and support cohesion. In this paper, we present the design and evaluation of a CH-oriented digital storytelling application, in support of participatory approaches bridging cultural heritage and vulnerable communities, to promote social inclusion and cohesion by leveraging polyvocality. Our results stem from a cross-European project focusing on three vulnerable communities and provide evidence and design guidelines for future work in this critical domain supporting meaning-making and participation as a form of integration. Overall, participants valued the concept of the storytelling app as a tool for promoting inclusion and cohesion (inside and across communities). Inclusion manifested and was valued as empowerment via engagement, participation and co-design activities. Cohesion, on the other hand, is manifested through exploring different territories and modes of viewing (supported by geolocalization and connection with the surrounding cultural heritage) and sharing and viewing personal stories across communities (cohesion enabled through connectedness). Our study also provides cultural and social stakeholders insights into supporting vulnerable communities through participation in the cultural heritage discourse. The app enables self-expression, leading to a polyvocal point of view on the city's heritage (and the CH within it) and can impact areas such as tourism (e.g., escaping the mainstream of tourism) and political activism. Through this research, we highlight the complexity of the concepts of inclusion and cohesion, considering how participants address the app's purpose; inclusion as sharing and participating, and cohesion as embracing different perspectives and polyvocality. We provide evidence that digital apps can function as social probes, making community boundaries visible and highlighting different backgrounds, cultures, contexts and social challenges.

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A BARCELONA STORIES

From the migrant women of Barcelona, the stories celebrate activism and manifesting their rights in the new society, going to the street to make their rights heard. From marching together along the Rambla, to gathering with fellow migrant women to face together the hardships of the migrant life, the stories reflect a nostalgia for home but also a strength, curiosity, and life force that comes from taking their destiny in their own hands and improving their way of life, even if that meant leaving home and migrating to another country.

A.1 Mi barrio mi hogar / My neighborhood my home

In Arabic the word Raval means neighbourhood and I live here in the El Raval neighbourhood of Barcelona. In a small attic but with a lot of flowers, herbs and a good view. I have already embroidered simply, limited by La Rambla, Pelai street, Ronda Sant Antoni and Sant Pere, it is said that El Raval has the shape of a diamond... A very raw, multicolor-multi-flavor, which three years after my arrival I already feel as my own. Around here several times a week I head to La Bonne from where with my companions from Sindihogar we face up to this migrant life. The story of struggle that we face every day is for another chapter. For now I will continue this story, about the class unity between women beyond their race or origin... The story of female poverty of my neighbourhood of working-class origins. And I come to this Rambla - Because very close, in this small street, is located the Lokal, a meeting point for struggles and resistance: bookstore, music store and community self-organization. Founder and soul of LoKal, emblematic Barcelona activist, Iñaki García, has been part of the group that has managed this place for 30 years. The book that he shows me is: The Women's Revolt. It is about the historic uprising of 1918. Of that January so cold and hard, as combative in Ciutat Vella. Little is missing to the end of the Great War. The enormous benefits brought about by Spanish neutrality have not impacted wages. The daily wage has been frozen since the beginning of the conflict. Middlemen and traders hoard and speculate on essential products. Coal is scarce and adulterated in a spiral of upward prices, which drags down food and rent. The working-class households cannot ensure subsistence, and the women decided to fight the situation. Textile workers, from the factories or small workshops, are the ones who start the revolt. Yes, we can say that the history of the poor is unofficial, but that of the women who have taken to the streets to fight for their demands is not even that, because they have been made invisible. A migrant is someone who seeks to live fully. And to do it well, a fair share of curiosity is needed. My neighbourhood, my home, the history of my new people... I'm interested in everything!

A.2 La Rambla

Las Ramblas, when I walk here, I remember 1st May, 2019, that day we held a demonstration where for the first time, I went to the streets to demonstrate as a working woman in Barcelona and against the violence of the immigration law. That day I shared laughter, cries of protest, and dances, and above all, I discovered that I was not afraid to protest in a new country, where I am a foreigner. My compañeras from the sindihogar/sindillar struggle gave me the confidence and security to go out into the streets, to demand my rights. And since that day, every time we go out into the street, fear is present, although it is less and less, what I feel above all: the strength of the fight together!

A.3 El arbol no te cobra / The tree does not ask for money

Being thousands of kilometres from my country, only memories sustain me; the days will pass like soap bubbles bringing closer my return to the land where I was born, a land to which I am transported mainly when I walk through the Boqueria market and contemplate the variety of tropical fruits characterised by their colours, aromas, shapes and flavours, as well as the incomparable pleasure of tasting them directly from the tree at my grandparents' house, "Riches that I don't have now, and they



Fig. 4. Accompanying image for "Mi barrio mi hogar / My neighborhood my home" story (A.1)



Fig. 5. Accompanying image for "La Rambla" story (A.2)



Fig. 6. Accompanying image for "El arbol no te cobra / The three does not ask for money" story (A.3)

make me realise how lucky I was". On the other hand, touring the Gothic Quarter and contemplating its architecture and colonial style transports me to the historic centre of the beautiful Cartagena de Indias where you can also see colonial houses, churches hundreds of years old; beautiful wooden balconies, windows full of flowers and how to forget its sunsets from the wall.

B PARIS STORIES

The community from the priority neighbourhood of Paris, District XIX, recounts and remembers their neighborhoods gone iconic buildings such as the hospital Claude Bernard, and how they spent some time there when they were children. But also the long queues of refugees standing outside the refugee center which has now been demolished. The community member wonders what happened to those who used to queue outside that building. Did they get integrated in the new society and where they are now? The community members reflect on the changes in specific spaces that were once derelict and polluted but got rescued by community action (such as the space transformed into a garden).

B.1 L'hôpital Claude Bernard / The Claude Bernad Hospital



Fig. 7. Accompanying images for "L'hôpital Claude Bernard / The Claude Bernad Hospital" story (B.1)

I am going to tell you the story of the Claude Bernard Hospital, which extended from the Porte d'Aubervilliers to the Saint-Denis canal. I was hospitalized there at age two, suffering from rubella, my mom being pregnant with a second. So I was isolated, and she came to see me behind a window. Then the hospital was destroyed, demolished and then remained a wasteland for a very long time. Subsequently they built buildings on the site, they kept the square, then built a cinema, and finally offices, housing, the health center, a dentist, a bank, etc etc. And I find myself, 63 years later, living in one of the building blocks that was built on the site of the Claude Bernard hospital. France.

B.2 Le jardin Ver Têtu / The green stubborn garden



Fig. 8. Accompanying images for "Le jardin Ver Têtu / The Ver Têtu garden" story (B.2)

In 2008, my children were attending the Curial School. Contamination of the soil led the city of Paris to decide on a relocation of the school classes, during the construction period and put in place buses to move students every day to other schools. Part of the work plan was the construction of a garden. In 2013, the Régie de quartier du 19 launched an open call for applications interested in gardening in a community garden. A group of around ten enthusiastic gardeners was created around the garden coordinator to finally get started. The beginning was very hard because there was a lot of weeding to do and it was necessary to build composting bins because we would never manage to get the field completely clean. The City of Paris provided the composters. So in the winter, we prepare the containers, then we sow in spring and harvest in the summer. The garden was finally opened to the public in 2016, the group has grown a bit since then, but not that much. The flowers kept growing in the solid ground and during the confinement, the garden remained closed and when finally reopened... It looked beautiful. The garden is a gathering place for neighbourhood celebrations, picnics and several associations.

B.3 Le pont / The bridge



Fig. 9. Accompanying image for "Le pont / The bridge" story (B.3)

I came to live in this neighbourhood about 22, 23 years ago, in the late 90s. It was murky, there were only three apartment buildings and the Macdonald warehouses and Macdonald Boulevard between two doors. There was nothing to see, nothing to do, no food stores, absolutely nothing at all. We only wanted to get out of it to go to the other side of the bridge on foot or by bus. There was no metro here, to start being in a city. You could notice in the morning when you were walking or taking the bus, a very long queue of people, men, women and children. Very early in the morning and until the afternoon, a particularly wise queue, no jostling, well aligned to the sidewalk. There were no police, guards or security watching them. I wondered what it was about. Are they there for overnight accommodation? by day ? food aid? But when I learned that it was a centre dedicated to asylum seekers in France, I felt ashamed of this reception on this sidewalk in all weathers. And one day, the place closed and was destroyed and overnight there was no longer any trace of you, asylum seeker in France whom I saw so many times, so many hours on the sidewalk and I want to tell you that you succeeded get your asylum or not, I hope you haven't fallen into hiding and the rough hiding of life. Whether you returned home or not, know that your passage is inscribed in the memory of the neighbourhood and the people of the neighbourhood, although now it is a totally different city. Also know that if you come back to this neighbourhood, if you find yourself where this place was, where you waited for so many hours, you will see many refugees. If you go back to this old address, you will recognize yourself.

C LISBON STORIES

The Lisbon communities' stories mostly look at the city through the eyes of those born elsewhere who encounter another culture with curiosity and an open mind. They welcome spaces where people gather to celebrate and manifest through music, social and multicultural events, gardens, riversides, and monuments. A migrant participant reflects on the personal enjoyment and liveliness of the Rossio square, until almost by chance, the somber history of the character of the statue towering on the square came to light. From then on, that square took on a different light. On the other hand, places such as Alameda square is cherished as a green space where people get together and celebrate a sunny day, a music jam session or carnival festivities together.

C.1 Dom Pedro IV



Fig. 10. Accompanying image for "Dom Pedro IV" story (C.1)

I've been in Lisbon since 2013, I didn't know the history or the Portuguese culture very well and I walked by, lived, met friends, danced, and stopped a thousand times in Rossio square, but I never knew who the gentleman was up there. Either because of my lack of interest in stopping for a moment to ask who it is, or because the statue is too high and you can't see it, or maybe because I was too preoccupied celebrating the 25th of April with my friends, running to catch the train or getting ready for a date. The happiest memory I have of this square is April 25, 2014, which celebrated the 40th anniversary of the revolution, and which made me understand, know and love Portugal more. My friends and the people around me have inspired me until now, not to mention the music, noise and energy that emanated from that day! Returning to the statue, all I know is that its stairs brings together demonstrators, events, tourist groups or simply friends or lovers. The day I found out who Dom Pedro was, at first I don't know if I memorized and understood everything, but I realized the sad and frightening historical symbolism that presides over the center of the city and where everyone passes with their eyes turned to the ground. I go to this square with a different look now and I am curious to better understand its history, as a hidden part of the place.

C.2 Fonte Luminosa / Luminous Fountain



Fig. 11. Accompanying image for "Fonte Luminosa / Luminous Fountain" story (C.2)

This is the luminous fountain of Alameda's square. I pass by here every day or almost every day and as you can see, it is an inviting space and all it takes is a few rays of sun for Alameda to be "occupied by people", some to sunbathe, others to leave the house, others to catch air and walk the dogs. Alameda and its luminous fountain is a space with a lot of potential. I have already attended many parties organized by the council. But what enchants me most about Alameda are the parties and/or moments organized by creative people. For example, I'm part of a carnival block / percussion band and in January and February our rehearsals are in the Alameda on Sunday afternoon and it's very beautiful to see people love it, and they applaud us it's very special mainly because nobody needs to pay, it's people entertaining people at zero cost in the public space, something that is increasingly rare.

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