



Article

Designing with *Genius Loci*: An Approach to Polyvocality in Interactive Heritage Interpretation

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Abstract: Co-design with communities interested in heritage has oriented itself towards designing for polyvocality to diversify the accepted knowledges, values and stories associated with heritage places. However, engagement with heritage theory has only recently been addressed in HCI design, resulting in some previous work reinforcing the same realities that designers set out to challenge. There is need for an approach that supports designers in heritage settings in working critically with polyvocality to capture values, knowledges, and authorised narratives and reflect on how these are negotiated and presented in the designs created. We contribute “Designing with *Genius Loci*” (DwGL)—our proposed approach to co-design for polyvocality. We conceptualised DwGL through long-term engagement with volunteers and staff at a UK heritage site. First, we used ongoing recruitment to incentivise participation. We held a series of making workshops to explore participants’ attitudes towards authorised narratives. We built participants’ commitments to collaboration by introducing the common goal of creating an interactive digital design. Finally, as we designed, we enacted our own commitments to the heritage research and to participants’ experiences. These four steps form the backbone of our proposed approach and serve as points of reflexivity. We applied DwGL to co-creating three designs: *Un/Authorised View*, *SDH Palimpsest* and *Loci Stories*, which we present in an annotated portfolio. Grounded in research through design, we reflect on working with the proposed approach and provide three lessons learned, guiding further research efforts in this design space: (1) creating a conversation between authorised and personal heritage stories; (2) designing using polyvocality negotiates voices; and (3) designs engender existing qualities and values. The proposed approach places polyvocality foremost in interactive heritage interpretation and facilitates valuable discussions between the designers and communities involved.

Keywords: *genius loci*; co-design; polyvocality; heritage interpretation; annotated portfolio



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1. Introduction

The concept of polyvocality has gained prominence in connecting Human Computer Interaction (HCI), design practice and heritage research in a shared goal of diversifying accepted knowledges and lived experiences. In heritage, the move to critical engagement with a plurality of stories formed in response to acknowledging the implications of an unchallenged authorised heritage discourse (AHD) [1]. The AHD celebrates grand, old and aesthetically pleasing sites and focuses on retelling the lives and experiences of elites, alongside privileging Western-centric conservation and preservation practices. The key consequences of an unchallenged AHD are the exclusion of groups who are oppositional or sit outside the main discourse and the reinforcement of the knowledge and values that contributed to the establishment of the authorised heritage in the first place [1]. Such a discussion becomes a patronising objective which overlooks the role heritage has played in the lives of the communities of the past, present and future [2].

Polyvocality and its associated plurality of perspectives have become the goal of much heritage-related research. To achieve that, projects look at various aspects of polyvocality associated with heritage sites—from exploring knowledge production in museums [3], to designing web-based experiences prompting audiences to question dominant narratives [4,5], to relating material culture with plural narratives [6,7], to pluralising heritages using co-design methodologies [8–10]. In this multifaceted research space, we contribute to discussions of how we might support both communities and designers in co-design activities aimed at achieving polyvocal interpretations. We argue that, sometimes, in desiring to challenge existing realities, designers and participants might instead enact these. We identify the (co-)design process as an underexplored space where existing realities and values associated with authorised discourses are enacted. Focusing on this, we ask: (1) how a designer collaborates with a participating community in negotiating the variety of knowledges, experiences, values, authorised narratives and plural heritages; and (2) how this collaboration is translated into design artefacts and future heritage interpretation practices. This calls for a heritage tailored co-design approach.

In this paper, we contribute “Designing with *Genius Loci*” (DwGL)—our proposed approach to designing for polyvocality, focusing on how more typical discourses of the past influence the presentation of divergent knowledges in interactive designs for heritage interpretation. Our approach complements existing co-design and participatory practices and builds on them by focusing on critical heritage theory and the specificities of how heritage is practiced by individuals and by organisations. We offer DwGL as an approach that attunes designers to the importance of meaningful polyvocality and how it is negotiated in the process of co-design, especially if the participating communities hold more typical views on what is “valuable” heritage. We thus centre our analytical account on the design space between design-researchers and participants to answer our research questions. This calls for embracing Research through Design (RtD) [11,12], which grounds our work in the process of design. In drawing heavily on RtD, our contribution to research here is not in evaluating designs with audiences but in analysing the activities surrounding the designs’ production, allowing for a range of conceptual and pragmatological insights to be articulated [13].

To this end, we structure our paper around two pillars: (1) conceptualising the approach and (2) applying it to co-create three digital designs. We describe how we developed DwGL during our work with a group of volunteers and staff at a UK-based heritage site—Seaton Delaval Hall (SDH), a country house in the North East of England. We used ongoing recruitment to incentivise the participation of different perspectives. We held a series of making workshops to explore participants’ attitudes to authorised and personal narratives. We built participants’ commitments to collaboration by introducing the common goal of creating an interactive digital design. We enacted our own design commitments to heritage research and to participants. These four steps form the backbone of our proposed approach and ensure that designers are provided with the space to be reflexive about the choices they are making and their effect on interactive designs and heritage futures.

We illustrate how the application of the approach guided the creation of three designs produced as part of the collaboration with SDH *Un/Authorised View*, *SDH Palimpsest* and *Loci Stories*. *Un/Authorised View* is a seated VR experience presenting audiences with six personal stories narrated and co-created by our participants. *SDH Palimpsest* builds on the VR design by asking how to better capture the everyday experiences of heritage within a VR environment. *Loci Stories* is an in-situ interactive display that invites visitors to use their voice to explore the participants’ stories.

We begin our account by contextualising the interpretation of country houses and continue by explaining why *genius loci* is an appropriate metaphor for the work we and other designers are doing in heritage-related fields. We proceed with an overview of the literature on polyvocality and heritage co-design before we detail how our co-design process unfolded and how the designs were co-created with volunteers and staff at SDH. We use an annotated portfolio to illustrate how the process and theoretical concerns took shape

into design modalities, interaction qualities and an overall design trajectory of maintaining a conversation with the volunteer. In our discussion, we first take time to reflect on the process of applying DwGL before we discuss the three lessons we learned and argue are the key takeaways from adopting DwGL, which can be further applied to design work in heritage that looks to expand on designing for polyvocality. Those include: (1) creating a conversation between authorised and personal heritage stories; (2) designing using polyvocality will negotiate voices; and (3) designs engender existing qualities and values. We then outline the limitations and the scope for future applications of our approach.

2. Theoretical Background

This work is situated in a country house in the UK which is open to visitors and is supported by its volunteer community. We begin by describing the interpretation of these typically managed and institutionalised properties and why it is important to diversify the stories told in these heritage places. We discuss why we choose the term *genius loci* to refer to people and communities that have a close relationship with heritage sites. This is contrasted with the term's origin and its recent use in the design literature. Finally, we examine design work in polyvocality, explaining how we understand "voice" in our research, and discuss the importance of engaging with local and volunteering communities. We position our work within the intersections of heritage theory on polyvocality and design practice towards diverse knowledges.

2.1. Country Houses and Dominant Narratives

Country houses in the UK are a landmark of English national identity and heritage [14]. (We acknowledge that narratives of national identity are necessarily different for Scotland, Wales and Northern Ireland.) Country houses are historic properties, often with considerable land holdings, which are normally several centuries old (often with older foundations) and were occupied by the aristocracy and privileged classes [15]. Country houses have come to epitomise "the essence of a certain kind of Englishness" [16], as related to the narratives of Enlightenment progress, innovation and industrial spirit. These properties have been kept intact in times of adversity to bestow to the future a "unique embodiment of English character" and to become the heart of the national heritage [14], commemorating heroes, collectors and innovators. Many such properties remain private homes and are occasionally open for display [16]. Others have made complete transformations to museum standards, often acquired and looked after by charitable organisations such as the National Trust and English Heritage.

With this unique status, country houses have cultivated strong public interest in the UK, becoming a popular visitor attraction, meaning the charities adapt their role to meet the demands and expectations of contemporary visitors. Stately homes that have undergone a museum model transformation follow a business-like way of preserving and presenting the estate. This spans from the museumised layout of the house to the management of the larger estate and gardens and includes visitors' services such as tours, catering and seasonal events, among others [16]. The sites are usually presented in an "as found" condition that conveys a sense of stability and the false impression that these properties are objective displays of the past [17]. Importantly, the sites' visitors offer focuses around "one story that should not be missed" [18]. At large, this overarching story is related to the English nobility, centred on the individuals who built and made the properties famous.

Smith [1] summarised this pervasive form of heritage interpretation as authorised heritage discourse (AHD). The process of authorising heritage is defined by a narrow discourse that reflects concerns about identity, nation and social cohesion which stand together in the face of conflictual readings of the past. Through the lens of AHD, heritage is seen as monumental and abiding; the narratives and values associated with it become intrinsic, whilst diverse readings of the past are seen as threatening to the perceived sense of identity and "real" history [19–21]. The AHD imposes one dominant reading that is legitimised through grounding it in material remnants of the past and rejecting associative

values and experiences of heritage. In relation to country houses, much of their appeal is connected to the aspiring middle classes and to maintaining social and cultural values perpetuated by the quintessential Englishness of the aristocracy [19].

Country houses and their management have been a profuse research area in heritage studies [14,15,19,22,23]—these spaces are under criticism for being both elitist as well as “woke” [24,25]. We argue their position calls for further attention to how they present the multiplicity of histories. Ryan and Vagnone [26] argue for designing interpretations of historic house museums, such as country houses, that showcase the complexity of family life, are open to exploration for visitors and prioritise building relationships and developing relevant narratives with communities close to the properties. As interaction design and digital technologies play an important role in how different audiences engage with the past at heritage sites [4,27], we recognise this issue as requiring urgent attention in relation to the co-design of interactive digital artefacts with communities. We take the stand that an interpretation of heritage sites that does not consider local perspectives on historical narratives limits the potential of dialogue between different publics and the complexity of heritage experiences. We position our work in a space where authorised, personal and community narratives will be in a continuous dialogue with each other. We offer our approach “Designing with *Genius Loci*” as one way to address the co-design of digitally mediated and interactive interpretations that aim to engage in such dialogue.

2.2. Why *Genius Loci*

In this section, we take the time to define the scope of how we (re)use the Latin phrase *genius loci* (spirit of place). Originating from classical Roman religion, *genius loci* referred to the “*genius*” of a place—its presiding spirit, i.e., god or deity, that looked after the place. “*Genius*” then became known as a guardian spirit—of people, places, buildings, etc. [28]. Presently, *genius loci* has inspired diverse thinking, and it is typically interpreted as a place’s unique character or atmosphere, referring to the experiential body of associations related to this place, with “spirit” encompassing feelings, moods and attitudes [29]. The concept encompasses the intangible qualities of a place that are manifested in both tangible and immaterial signifiers [30]. *Genius loci*’s enticing characteristics of feeling and experiencing are famously discussed in relation to phenomenology [29] and found fruitful ground in landscape and architecture design, where the associative spirit (as in the atmosphere) should be acknowledged and worked with rather than forced onto the landscape, thus avoiding homogenous design [31–36].

This interpretation of the term strongly relates to prominent discourses that place can be defined and discussed as experiential. Namely, place’s relations to humanity, human actions and forms of meaning creation are experienced and not pre-defined. Tuan argued that place is a centre of meaning, incorporating people’s experiences and aspirations: “Place is known not only through the eyes and mind but also through more passive and direct modes of experience, which resist objectification” [37] (p. 152). Transforming a space into a place involves deep and intimate knowledge—from the phenomenological effect of being in a space, invoking sensorial experiences, to the knowledge of the past and history of a place [37], enacting this in the present. Erickson [38] suggested that places, rather than spaces, are the environments invested with actions and meanings. In that sense, humanity takes space and creates place through social practices [39]. Although we inhabit spaces, it is places that are experienced—these places are representational, simultaneously, of the past and present experiences of being in the world [1,40]. We position ourselves within this understanding of place as experiential—place invokes sense of belonging and of shared as well as divergent lived experiences. Place becomes meaningful and dynamic through an embodiment of feelings, thoughts and values.

Place as something experiential, and *genius loci* as the atmospheric qualities of a place, have informed interaction design work. Bidwell and Browning [41] argue for an integration between the natural environments and computational worlds by embracing *genius loci*’s phenomenological qualities. Jacquemin et al. [42] create an augmented performance to

restore the 18th century atmosphere of a church, revealing its spirit and putting it in dialogue with a contemporary performer. Torsi et al. [43] analyse *genius loci* according to dimensions related to HCI, such as: enchantment, ambiguity, bodily experience, the topology of the place, the dialogue between the past and the present and the perceptual gestalt. The goal is to design an interactive heritage narrative, bringing to life the events of an ancient Roman colony. We value this work and recognise the powerful potential *genius loci* has in the fields of HCI design and heritage.

We previously introduced our interpretation of *genius loci* and its relation to designing within heritage [44]. *Genius loci*, in our research, is inspired by the concept's original and literal translation. We put aside the inherent atmosphere of a place and instead focus on the people who create that atmosphere. For us, the *genius* or *genii* (plural) of a place—the “spirits”—are the people who have a close relationship with that place, who look after it with their everyday activities and by telling stories and keeping memories. We interpret this close relationship as an active act of creating and imagining place. However, our *genii loci* are more than just story tellers—they are caretakers. Even without their narrative devices, they constantly shape the space around them. As the site acquires new stories from them, they, in turn, acquire new stories from the site. These people have shared experiences as well as divergent relationships with the authorised narratives. This is the meaning of *genius loci* as we use it in presenting our proposed approach.

Yet, *genius loci* carries a different connotation in heritage interpretation and management. When the interpretation of a place is handed to institutions, the place is reimagined by translating *genius loci* as “spirit of place”, and place becomes a signpost for a set of predetermined values. We acknowledge that there are ontological differences between Western and Indigenous world views that shape one's engagement with place, and, in fact, in Indigenous practices, a sense of place is intricately interwoven with experiencing and being in the world. However, here, we focus on how the concept was appropriated by some heritage organisations and discourses. Although it is provided with the intention of acknowledging the diversity of world views, the ICOMOS's definition of “spirit of place” as being: “the tangible (buildings, sites, landscapes, routes, objects), and the intangible elements (memories, narratives, rituals, festivals, traditional knowledge, textures [etc . . .], that is to say, the physical and spiritual elements that give meaning [. . .] to a place” [45] is used for top-down interpretations. Through the lens of AHD, “place” is scripted and regulated—it provides physical boundaries that have been defined and can thus be managed and inscribed with the desired meaning, which helps construct the desired sense of identity [1]. The “spirit of place” is essential to all monuments and sites; it renders them “places of significance” requiring conservation, protection, rehabilitation or enhancement on the international level [46].

What is observed here illustrates the tendency of heritage management to: “extract ‘place’ from its physical and wider cultural contexts and manage it in much the same way as the ‘site’ of traditional management conceptualisations and practices.” [1] (p. 78). In Western heritage management, “place” substitutes the impersonal archaeological and architectural “site” [1]. The archaeological/architectural “site” is a restrictive term, as it invokes images of primarily expert-defined scientific and aesthetic values. As such, “site” was an impersonal space for those outside the scientific community, whereas, in the creation of identities and belonging, there was a need to imbue these “spaces” with the necessary meaning-making activities to become “places”. The language shift combines the need to validate the scientific significance of a “site” so it can then become a “place” that is associated with the expert-selected values. The result is the “spirit of place”, used to strengthen belonging through narrativising values and beliefs, determining an overarching feeling and atmosphere, often from a top-down perspective.

For us, the issue with the institutionalised term “spirit of place” lies in this extraction of place from its intimate and experiential qualities. Although it has the power to bring more external people together to care about a place, adopting an essentialist “spirit of place” limits the space for non-professional voices to contribute their divergent expertise and

perspectives. The authorised “spirit of place” narratives draw heavily on past stories and histories; they become static snapshots. Yet, communities are dynamic. They are defined not only by being in the past or present, but they also have their own history which impacts how stories are told. “Spirit of place” overlooks that a sense of place can be established by a community prior to an institutionally imposed interpretation [2]. We then ask how design researchers might think of “spirit of place” as less prescriptive and more as an opportunity to support critical heritage theory in design practice. We propose that designers think not about the interpretative “spirit of place” but about the *genii loci*—those people with a deeply rooted and personal knowledge of a heritage location.

Even if the phrase *genius loci* is Latin for “spirit of place”, repurposing it becomes a symbolic coup—taking over one dominant way of expressing the importance of heritage sites and shifting the focus to the people who make the place in the present rather than to signifiers of “the past” determined by certain experts. Our scope for DwGL aims to expand heritage interpretation and reframe institutionalised uses of the past—it brings attention to which groups are allowed to participate in the present and influence the future of heritage. DwGL stresses the importance of recognising people and groups as experts of their own heritage experience. Doing so is not about equating or privileging certain experiences over others but nuancing and communicating these experiences. This is why we choose to say “designing with” rather than “designing for” *genius loci*. Our approach is one of co-design [47] insofar as “co” finds its root in Latin, meaning “together, joined with”. We are neither designing for the institutional “spirit of place” of our heritage site nor designing digital technology for the volunteering community. We designed with them—with them in person, with them in mind, and with their expertise guiding our decisions. To illustrate this and the applicability of DwGL, we turn to the work done in the sphere of polyvocality related to co-designing with communities interested in heritage.

2.3. Voice, Polyvocality and Co-Design with (Heritage) Communities

Heritage places have many stories to tell and are linked with different communities and voices with whom designers might engage. There are different dimensions of “voice” that a researcher encounters on their ethnographic account—from engaging with “voice” in relation to power and legitimacy [48] to the ethical dimensions of negotiating “voice” as the account given by a researcher and their participants [49]. We refrain from using the phrase “giving voice”, as it alludes to the idea that, if voice needs to be given, then the agency lies elsewhere and not with the individual whose experience we are engaged with [50]. Engaging with “voice” goes beyond allowing someone to speak to engaging critically with listening—that is, recognising what others have to say and acknowledging their ability to give a reflexive, continuous and ongoing account of their lives [51]. In this paper, we engage with “voice” as it relates to people’s lived experiences, perspectives, and stories, and whether these are included in cultural heritage interpretation. We are particularly interested in how such voices interact with the notion of AHD and to what extent different experiences are heard in heritage interpretation. In some cases, voices might side with dominant discourses of the past by rejecting the realities of the present [52], and in others, voices are actively challenging established practices and contributing towards more inclusive societies [53]. As we work with communities in heritage, it is important to think about the process used to represent those voices in our designs. We may listen to all voices, but are all perspectives to be amplified, and how do we approach decisions around oppressive voices [49]?

In diversifying interpretations, design-based research has looked at the notion of polyvocality—the presence of many voices as opposed to one [54]. Arrigoni and Galani [27] look at the potential of digitally enhanced polyvocality to create reflective spaces. Marshall et al. [55] co-design in museums to facilitate engagement with various perspectives on a historical event. Petrelli [7] emphasises the role of design to nuance visitors’ opinions and present multiple perspectives and conflicting stories. Such work

opens opportunities for visitors to encounter an historical event from different past viewpoints and arguably creates a more evocative experience for visitors.

Applying polyvocality as a broader engagement with past stories is criticised as being representative of those who authorise heritage. Such version of polyvocality does not consider the complexity of heritage experiences across time and rarely involves those who are directly implicated by authorised heritage discourses in the present [56]. For instance, Mason et al. [54] raise concerns that polyvocality may become marginalised when made distinct from other forms of interpretation. As diversifying narratives are usually presented as markedly “othered”, audiences are not encouraged to consider that there is an element of otherness in them [57]. Polyvocality is thus often restricted to simply confirming the coexistence of multiple past perspectives instead of exploring how this plurality of experiences dynamically shapes and challenges beliefs enacted through heritage narratives in the present. Not only does heritage have many uses, it also has multiple producers, both public and private, official and non-official and insider and outsider, each having varied and multiple objectives in the creation and management of heritage [58] (p. 2). These objectives influence how plurality and heterogeneity are presented when interpreting heritage. When this is not accounted for, polyvocality conflates and equates the different voices heard rather than reflecting on the inequalities that these stories hold.

It is not that previous work reinforces more typical discourses intentionally. Indeed, many of the insights presented and the technologies developed are contributing to how we might engage with the past more vividly. Instead, we identify a need to structure key considerations for designers who work in heritage. Since digital designers will inevitably be faced with making choices regarding what interpretation is taken forward, in our research, we work with an understanding of polyvocality that includes multiple perspectives and accepts the potential clashes between “authorised” and “alternative” voices but also considers the link between these. Here the notion of plural heritages [10,58] is a useful anchor. Plural heritages acknowledges that pasts, heritages and identities within society are shaped by existing, deeply structured inequalities and the diversity of lived experiences and their opposition [58,59]. Thus, polyvocality for heritage interpretation is not solely grounded in bringing the past to life through different perspectives but also in actively examining the authorised narratives with the lived experience of heritage in the present, making sure the latter are not relegated as alternative.

Designing towards meaningful polyvocality requires the participation of communities who are most affected by prevalent interpretation strategies [8,10,60]. Communities can be based on geographical, historical or cultural characteristics [61], whilst they can also be “communities of practice” [62] formed around common goals, participating together in a process of collective learning and doing. Both definitions are important for heritage and design research and underpin much of the work done in that area [63]. More broadly, interdisciplinary research is illustrating that part of what constitutes heritage is a process of researching and being involved with the past, undertaken with or by the communities for whom it is relevant in the present and with the goal of shaping the future [64]. For example, Ryan and Vagnone [26] advocate for creating interpretations that reflect the diverse character of present-day communities living in proximity to heritage places.

Ciolfi [60] has highlighted that HCI researchers have not engaged with volunteers and local interest groups as important communities within and between design in heritage. Ciolfi and Petrelli [65,66] had previously collaborated with heritage volunteers as part of a design ethnography where volunteers inspired and gave feedback on the developed interaction concepts and prototypes. Although the designed artefacts reflect volunteers’ sentiments and knowledge about the specific site, these insights are not interpreted in relation to reinforcing heritage narratives and identities in the community. In fact, Franco [67] cautions that many nonhistorical disciplines engage and describe communities in overly romanticised and idealised terms. Jones and Leech [68] also warn that traditional historic values are privileged, even in community-led initiatives, with respect to management and conservation.

We are cautious that co-design work in heritage does not reflect upon communities' own heritage-authorising processes and their adherence to more typical stories of the past, nor the implications this has on the designed artefacts. Designed artefacts have consequences for how heritage is performed, understood and enacted. As a consequence, studies are less concerned with improving and reflecting upon the role interaction systems play in reinforcing authorised heritage—both in communities and audiences.

In our work, we also co-design with a volunteering community based on geographical proximity and common interest. We approach this community as one that has a voice capturing different knowledges, whilst keeping in mind that volunteers may have internalised dominant narratives that shape their identity as a community and the research collaboration. Claisse et al. [8,69] previously engaged with a volunteering community, their identity and their intricate role in keeping heritage properties running. Commendably, this work explicitly engages with AHD and furthers co-design research into polyvocality by leveraging open-ended interactions, extending the engagement with heritage over time and aiming to invite visitors to a process of personal exploration and discovery. Whereas these researchers focus on co-designing methodologies to create interactive systems, we additionally inquire into the contemporary heritage phenomenon and into how embedding an understanding of that into co-design practice might inform designing for meaningful polyvocality.

Research that informs thinking in this direction includes the edited volume *Cultural Heritage Communities: Technologies and Challenges* [63], in which design researchers begin expanding the more typical HCI view of heritage as a site for using technology to support visitors in their experience of heritage. Instead, the authors explore fragmented and nuanced relationships between heritage, communities and technologies. Other community co-design work further attunes us to embracing polyvocality. By working with a community with lived experiences of place-change, Schofield et al. highlight how the pluralism of narratives creates a bridge encouraging a sense of connection between different times, places and people [59]. The research points to the inequalities between the different lived experiences of heritage places and the authorised interpretations of the sites. The question that previous work and our current work addresses is how to sustain a discussion on multiple levels.

Our aim is to bring these discursive dimensions—partially addressed by previous research—together into a co-design approach for heritage. We identify a need to engage with design for heritage beyond telling stories of the past, instead working towards meaningful polyvocality that involves listening to the lived experiences of different groups and considering how those experiences influence the design of digitally mediated heritage interpretation. We focus on how dominant narratives are performed by the community that co-designs—how members conform, oppose, internalise and externalise authorised perspectives on heritage values, and how these play out in interactive artefacts. Designers should then be supported in negotiating which voices are amplified and questioning whether the designs created enact existing realities we have set out to change. We argue that a heritage-specific co-design approach will aid to simultaneously explore divergent perspectives, commit designers' practice to critical heritage and result in design artefacts that can be examined against more typical discourses of the past. To this end, we propose our approach, DwGL. DwGL's contribution in this paper is twofold. First, we provide a description of what the approach pragmatically consists of—its steps, what our decision-making process was and how it could be built upon. Secondly, we provide the lessons learned from applying the approach that will inform how interactive designs are created when supporting meaningful polyvocality. In the following, we present the structure of our approach and how it shaped the design of three bespoke artefacts.

3. Designing with *Genius Loci*: Describing Our Proposed Approach

In this section, we detail our approach to DwGL. We propose it as “Designing with *Genius Loci*” to follow the convention of presenting foreign terms in their singular form.

Since we argue that there are many people who are the “spirits” of a place, we use the term’s plural form, *genii loci*, when we refer to participants in our project.

The approach described here is informed across our long-term engagement with the volunteers and staff community at SDH. When we began our work at SDH, we had not predetermined the steps of the approach; they took shape organically during the design work. Over the span of three years, we developed our DwGL approach through an iterative process of engaging with the below outlined methods of working with participants, applying our RtD practice to analyse and reflect on our design work and synthesising that into coherent steps. RtD facilitates our ongoing learning about heritage interpretation as we co-design with our community, whilst RtD also supports us in critically reflecting on our research methods, intermediate prototypes and ideas [70]. This iterative process informed how we conceptualised and divided the work we had done into the four steps of our proposed approach. Importantly, structuring the approach into four steps allows us to build in key points of reflexivity. We aim for DwGL’s steps to support designers in assessing whether the collaboration and their selected methods, tools and techniques are supporting meaningful polyvocality. Adopting DwGL means that designers are attuned to the values, beliefs and stories they are engaged with and to how the interactive decisions they make reinforce or nuance the issues at hand.

We present our longitudinal design research by describing DwGL in a step-by-step manner based on our RtD. As a result, this section presents the steps of DwGL individually, including the methods we employed in each. We begin by providing background on our heritage site and the participants we worked with to situate this work. We structure the rest of this section around the four main steps of our proposed approach. We outline the recruitment process. We describe the methods we used to explore existing attitudes towards heritage interpretation. We then present our strategy to build and enact commitments for both the participants and for ourselves as researchers.

3.1. The Site and Participants

The research took place within the context of working with the National Trust (NT)—a conservation charity looking after historic properties and landscapes in the UK [71]. We worked with one property managed by the NT—Seaton Delaval Hall, an 18th century English Baroque country house in the North East of England, UK.

SDH was acquired by the Trust in 2009 following a massive appeal that raised over 3 million GBP from thousands of people, charitable trusts and companies across the country [72]. The Hall is in a state of partial dilapidation, constitutive of its appeal to visitors. Starting in Summer 2018, SDH embarked on a programme of essential interpretation and conservation work to the Hall and grounds, which included improvements to the visitor experience through the development of indoor facilities, a new café and innovative interactive materials telling the story of the Delaval family. The Delavals lived at SDH from 1718–1822 and became famous for their notoriety and mischief. Many of the stories associated with the family—ranging from extravagant parties to a series of unusual deaths—have become a feature of the local lore. The property’s history was marked by a fire in 1822 that encapsulated the entire main building, leaving the central block as an empty shell. Initial stabilisation works were carried out in the 1860s, followed by further refurbishing in the 1950s. At this time, the inheriting family returned to live in the house and opened parts of it for visitors alongside organising thematic Medieval banquets frequented by members of the local community in the 1970s and 1980s. The house was last occupied in 2007 before becoming part of the NT and opening to visitors in 2010. The property is run by a mix of officers in leading positions, administrative staff and volunteers. In 2018, the management consisted of seven members including the general manager, conservation project officer, visitor experience officer, garden and landscape officer, partnerships coordinator and media and communications officer. The Hall’s operations are further supported by the administrative and collections staff and the registered volunteers, of which 70 used to volunteer

on regular basis across all volunteering departments, e.g., catering, gardens, room guides, maintenance, conservation and visitors' welcome.

As part of SDH's large conservation and interpretation project, the property was looking into expanding its visitor offer by experimenting with digital interventions. The NT has an established track record of working with contemporary artists and has been tentatively exploring the role of digital technologies for interpreting its properties. In SDH, the management team was interested in implementing new state-of-the-art technologies. Our project provided an opportunity to test different digital designs and meet our aims focused on polyvocal interpretations.

The design team consisted of three members who had previously conducted research and designed for heritage places. Violeta Tsenova is an artist and designer who led the project and brought expertise in artistic practice, heritage visualisation and heritage theory. She set up the collaboration, conducted the fieldwork, produced the artwork and media designs, led the creative direction of the three designs and worked on their technical iteration. Gavin Wood is an indie games developer and interaction designer who worked closely in supporting the technical development of the three designs. He provided a base platform for software development and a networking solution for *Loci Stories*. He also partook in workshops introducing digital technology to our participants and supported them in the early design experimentation. David Kirk works on interactive computational technologies. He supervised the project and was integral in setting up the project relationships, co-leading the initial workshops, coming to design ideation sessions and supporting the decision-making and iterative process. The team further contracted an animation artist to lead a workshop with volunteers and two creative agencies to iterate and build the physical designs of *Un/Authorised View* and *Loci Stories*. We acknowledge these collaborators in the respective stages of our design work.

We framed our project within the context of introducing digital interpretations by engaging with the property's volunteering and staff community and their experiences of the site and its significance. Volunteers are an integral part of running the Trust properties, and we acknowledge the complex position of volunteers in heritage management not as a separate entity but as one that is porous. We address this theme by carefully rethinking how we define the "volunteering" community. SDH facilitates a "One Team" strategy which acknowledges that the site is dependent on the collaboration between staff and volunteers. The groups share common spaces and are open to sharing their ideas, providing criticism and creating friendships. We recognise the difference between management (those in leading and decision-making positions) and staff and volunteers (those who support operations). Throughout the research, we blur the boundaries between staff and volunteers and stress the commonalities between these groups who support the running of the site and all hold personal stories about it. They are mostly local residents, with some who grew up close to the property and attended the Medieval Banquets in the 80s and some participating in site-specific research groups.

As ours was a long-term, three-year project, there were necessary changes to the makeup of the participants, their level of participation and their commitment to co-design activities. We began working with 33 participants across the management, staff members and volunteers. Six staff members and volunteers continuously co-designed with us until the end of the project in 2021, with the other participants dipping in and out of activities they found interesting. We attribute this to the time commitment required, the days on which we carried activities influencing the composition of volunteers who worked on those days and, as we will discuss in Step 1, whether they saw themselves as "fit to participate". In Appendix A, we include a table with detailed information on our participants and which steps of our approach they were part of.

We acknowledge that our participants are predominantly from an affluent group, and we are wary of romanticising their knowledge and experiences [67]. Their "voice" may have been previously overlooked in the design, but they are not a marginalised group in society. The participants we worked with were either employed or retired, with a high level

of education and life-long participation in democratic processes. Their ability to volunteer at a heritage property, such as a country house, indicates time and the freedom of socio-economic restrictions. For many of them, it is an opportunity to develop interests, socialise and form a community with like-minded people. Thus, we aim to abstract the lessons and key aspects of seeing these individuals as *genii loci* and use these to contribute to discussions on improving polyvocality in co-designing interactive interpretations for heritage. Below, we offer an exhaustive compilation of methods across our entire engagement.

3.2. Step 1: Recruitment

We are interested in different perspectives at the heritage site. Recruiting a diverse set of participants is never easy, which makes this step an essential part of this approach. Here, we present our initial recruitment as a step of the approach, although we recognise that recruitment is ongoing. We considered recruitment from the outset. Participants will have changing responsibilities and situations around their daily lives, so we prepared for the fact that the initial makeup of the participants would change and that different recruitment methods might be adopted.

Our work was done in the context of a large heritage organisation, so recruitment had to go through various stages of gatekeeping. First, our project had to be introduced to the volunteers—volunteers were contacted by a volunteers' officer about the research through their usual communication channel. The overarching goals of the project were explained, outlining that the first author was to spend time at the property getting to know it and the people (this forms aspects of our second step). Having our research introduced to the community was both a good entrance and ensured that, as researchers, we did not overly push people to participate. As our involvement commenced, a signup sheet was placed in the common room where volunteers and staff take their breaks, engage with additional materials and discuss projects and opportunities to take part in. In this way, the recruitment blended with these individuals' established ways of choosing what to partake in and what not to partake in. This leads us to the notion of continuous consent—these are volunteers whose lives and relationships with the site change. We need to be mindful of their perspective and allow participants to contribute only what they feel comfortable with and when they are able to without being excluded from the long-term development of the project. To this end, we had participants dropping in and out of workshops and activities, sometimes able to commit to creating stories and other times wanting to engage with broader discussions on creating interpretative installations. This form of continuous consent is also additional to any consent process that allows people to withdraw—participants should not feel obliged to remain.

Throughout our continuous recruitment and engagement with the volunteers and staff on-site, we noticed that certain volunteers did not see their roles as key to interpretation. Interpretation was understood as telling the narratives of the Delaval family. Those working in maintenance, in visitors welcome team and some in the gardening team expressed the opinion that they were not fit to contribute to the project. During the workshops with some volunteers later on, they noted that the activities are attended only by room guide volunteers, whereas much knowledge is held by others. We reflect and elaborate on this in our discussion.

3.3. Step 2: Exploring Attitudes

We committed ourselves to a longitudinal engagement, and there are methods that work especially well in this space. We were particularly interested in exploring attitudes at the site. We also did not want to emphasise barriers between the paid staff and volunteers whilst we worked toward bringing divergent heritage perspectives together, putting them on equal planes whilst recognising the differences or similarities in the lived experiences. Participants at our property have a "voice", meaning it is important to just listen to them from the outset rather than approach the site with a pre-set idea of what the designers will make. The methodological orientation of DwGL is therefore aimed at

investigating how different knowledges are used in heritage interpretation. We undertook the following activities:

Observations and collaborative walking—We began our fieldwork by familiarising ourselves with the perspectives on-site. The first author spent a week shadowing the management team, sitting in on meetings and mapping the parameters and timelines for the renovation project. She attended volunteer-targeted events, including annual debriefings, thematic talks, and training events. This was followed by the first author volunteering at the property across its different departments. This allowed for conversation and building rapport with the volunteers in gardening, catering and maintenance. She spent time with volunteers and shared lunch breaks and collaborative walks whilst listening to volunteers' experiences and concerns. These observations attuned us to how volunteers see their role, the way visitors behave on the property and what the common expectations are of the interpretative offer.

Cultural Probes—We continued our activities by adopting cultural probes [73] to complement our observations and capture personal values. The main goal for the probes was to elicit values related to the heritage place. Our probes were open ended and were aimed at capturing how participants would interpret prompts such as “stories”, “objects” and “places”. We distributed probes to both management and staff members and volunteers. The probe pack consisted of three activities for management and four for the volunteers (Figure 1). We asked participants to (1) tell us their favourite story on a postcard; (2) identify a favourite object from the site and either draw it or attach a photo of it; (3) write a letter describing their favourite space/place on the property (both groups) and (4) write how they engaged visitors with different stories (volunteers only). The probes helped us grasp how participants negotiated personal and authorised narratives by noting whether they would emphasise the spirit of place interpretation or their own stories and community histories.

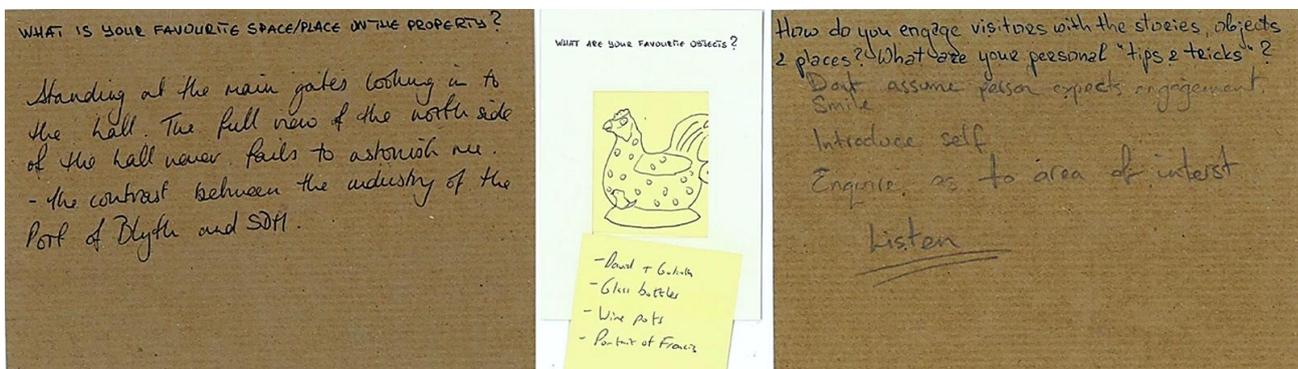


Figure 1. Three filled-in probes capturing favourite places and objects and tips to engage visitors.

Focus Groups—We conducted structured activities with the participants through focus groups to fit within the established schedule of meetings between the staff and volunteers. We held two focus groups—one with five members of the management team and one with eight volunteers. Initially, we worked with these groups separately to compare the attitudes towards the authorised and personal interpretations within the groups and to determine whether they were closer in their ideas and sentiments. We did not want the presence of management to influence the opinions of the volunteers and other staff members. Both focus groups started with unpacking and discussing the cultural probes together before moving forward to discussing how digitally mediated interpretation had been handled at other heritage sites.

Making Workshops—We carried out a making workshop to start engaging participants with different digital modalities and explore the routes to interpretation that they wanted to take. For us, it was important that there was no end-goal to the making activities; the participants could explore the resources provided on their own terms. We thus provided a mix of analogue and digital materials. The more familiar tools such as

cardboard, markers, pencils and plasticine eased the exploration and engagement with the educational digital tools such as BBC micro:bit boards (an open-source development board that can run simple code from a website). Participants ideated four speculative designs during this step (Figure 2). The resulting speculative artefacts captured the knowledge, ideas, beliefs and attitudes towards authorised stories. As spirit of place is an important guiding strategy, these designs were focused on communicating the 18th century stories. The designs attuned us to the various views of what visitors-worthy experiences are and captured the enactment of heritage values.



Figure 2. Speculative prototypes telling stories of the Delaval family through projections in turret rooms (**top right** and **bottom left**), AR (**bottom right**) and at unconventional locations (**top left**).

3.4. Step 3: Building Participants' Commitments

In step 3, we strengthened the collaborative engagements through building commitments. Whereas in step 2, methods were used to listen to how the *genii loci* used their “voice”, here, the engagement with digital technology takes digitally mediated heritage interpretation away from the abstract. Our participants already had an attachment to the site by being there and by telling stories, so we leveraged storytelling to facilitate building commitments in our project. In other applications of the approach, designers should get attuned during the exploration step to what made participants care about the heritage site and incorporate that into the following steps.

We committed ourselves to making an audience-facing installation together—*Un/Authorised View*. This was partly motivated by the fact that heritage organisations and their staff and volunteers focus on finished products rather than seeing the design process as an actively transformative work [74]. We highlight that, to solidify the shared interpretation, we merged our participants' groups. In the following activities, the volunteers and staff began working together. In this stage, we had 11 participants in total, 6 of which (3 staff, 3 volunteers) created content for the *Un/Authorised View* installation, whilst the other

participants remained committed to contributing different forms of expertise at different stages of the co-design process. The goal for this step was for participants to recognise their own experience of heritage as part of the site's interpretation. To achieve this, we introduced interactive paradigms gradually and then supplemented them with artistic practices to further consolidate the technology.

Technology Workshops—We carried four workshops that explored potential technological modalities more in-depth. Augmented and Virtual Reality (AR/VR) had been previously discussed, and our aim was to establish participants' expectations and to better familiarise them with these technological paradigms. We discussed AR and VR functionality and modes of engagement. By the end of the first workshop, the participants chose to work within the VR paradigm. We knew VR was going to be a steep learning-curve for the participants, so we considered ways of consolidating the technology. In the following two workshops, we handed participants a 360° camera and went on collaborative walks to capture the place. The participants engaged in doing "their own thing" with the technology to gain confidence that their own stories were truly interesting and saw VR as a medium that facilitates their focused expression. When being hands on with the camera, the *genii loci* thought about recording aspects of the site that may be lost and those that corresponded to their ways of interpreting the property through personal experiences. In the final workshop, together, we reviewed and themed existing ideas, some of which fall within more authorised narratives. This prompted the participants to think about how to link the official interpretation stories with their own. They also expressed a desire for the content presented to visitors in VR to be more imaginative than the content we had already recorded. The participants were worried that simply recording videos would show visitors "what's already there" rather than expanding the offer. Despite elevating feelings of VR intimidation, the participants felt unsure about their skills to create the VR content they imagined. We had to negotiate concerns about the production and aesthetic qualities of their stories and decided to invite the artist and animator 'LR' to co-lead three content creation workshops.

Content Creation—We held three workshops focused on content creation. We presented the artist LR to the participants. LR works across photography animation and sculptural platforms, with a special interest in stop motion animation and model making. Many of the volunteers take part in arts and craft activities on-site, and that knowledge of making corresponded with the premise of stop-motion animation, allowing the participants to build on existing skills and practices to create artwork for their stories. The following two workshops allowed participants to capture their stories and work together. The participants went on walks around the site to collect materials to be animated, whilst one participant decided to draw their animation (Figure 3). Pragmatically, during both workshops, two animation stations were set up, each one supervised by either the first author or LR. This required the participants to work collaboratively whilst focusing on one story, making compromises as to whose story is recorded during which workshops. The participants discussed routes to curate their stories and reminded each other of the various aspects required to produce a stop-motion animation. They often reviewed how the animations were coming along, making required changes, beginning anew and gaining confidence in their skills. In the final workshop, each participant reflected on the story they had chosen, how they had created it and what it meant to them to be able to share it.



Figure 3. Captures of participants' animations: a drawn stoat, a car, an abstract fire using flowers.

The six stories: Three stories belong to the volunteers and three to the members of the support staff whose roles are referred to in brackets as (v) and (s), respectively. Caroline (v) had previously spoken about the significance of the jackdaw birds in the area and their "role" in starting a fire at the property in 1822. Her vignette focused on a personal story of clearing up jackdaw nests in her neighbour's house. Tony (s) wanted to give a glimpse of what life is like in the gardens when nobody is around and to show different viewing angles, getting low to the ground like much of the wildlife. John (v) was eager to share how it took him 10 years driving past the property before he decided to explore it and become part of its volunteering community. Tina (s) held a personal memory of creating paper bats in a craft activity inside the Hall with her granddaughter. Seven years later, Tina emphasised how important that was for them both. Heather (s) reflects on the layers of histories hidden within the material aspects of the site. Lastly, Liz (v) was one of the less confident participants, and she was unsure what story to tell. Her initial ideas brought her to the authorised stories already present on-site. However, after collaborating with other participants and seeing them sharing their own memories, she decided to focus her story on her personal change since she started volunteering. All stories are available on the project's website (a link is provided in the Supplementary Materials at the end of the paper).

3.5. Step 4: Enacting Designers' Commitments

In a long-term co-design process with the *genii loci*, the data should be analysed continuously, and responding reflexively to this growing data corpus allows us to be equally reflective as to how we define our approach. In this step, the designers and collaborators iteratively realise the design artefact. This act of prototyping means simultaneously moving forward with the design whilst remaining open and receptive towards other people's experiences and ideas. Although we were always dedicated to working fairly with our participants, as we went through the previous steps of the approach, we became attuned to the personal heritage experiences of the *genii loci*. We understand it as *an individual's lived experience of their engagement with heritage narratives, knowing, locating and shaping their identities in the processes of interpreting heritage and historical tales*. This included SDH's *genii loci's* commitment to representing their own lived experiences authentically. Their lives were not as open to interpretation as the past was. Simultaneously, the stories they wanted to depict are deeply rooted in the site and the meaning it had for them—whether it involved becoming part of a community or undergoing a personal transformation. Throughout our fieldwork, we were faced with two routes to complete the co-design process. In the following section, we offer our designs as examples of how commitments can be enacted and sustained.

4. Designs

Applying DwGL, as described in Section 3, led to the creation of three designs: *Un/Authorised View*, *SDH Palimpsest* and *Loci Stories*. We experienced working with our proposed approach in two distinct scenarios. For the *Un/Authorised View* artefact, we had the opportunity to work together physically with our *genii loci*. For *SDH Palimpsest* and

Loci Stories, our work was interrupted by the COVID-19 pandemic. We offer our process as an example of how the approach can be applied when designing away from participants by enacting and sustaining commitments and reflecting on the design decisions made.

4.1. Co-Design Together: Un/Authorised View

In working with the *genii loci*, we wanted to both understand and implement their expert knowledge of the site. We applied McCarthy and Wright's [75] notion of "dialogically productive distance" to help negotiate roles and contributions. This was an important positioning. For example, in creating a VR experience, we want to create an "experience" with participants and not be consumed with a deep dive into the specificities of the software and engineering. Moreover, asking the *genii loci* to become "engineers" would likely reduce the authority of their contribution and discourage participation. Instead, participants are still "makers" through the application of their expertise. We find that participants grow in confidence as we bring aboard their ideas and even concerns—contributions that are grounded in their personal and professional identities [76]. The productive distance also provides time for individuals to think separately and independently before joining together. In creating *Un/Authorised View*, the *genii loci* contributed: (1) their personal lived experiences of heritage; (2) feedback on VR and how to better accommodate design for various audiences—for example, around usability; and (3) their insights on visitors' behaviour. We work with the proviso that, although this design was created and ready for installation, it was never realised on-site at SDH due to the COVID-19 pandemic.

We held two installation design workshops to focus on designing the space and iterating VR interactions. Our application of the DwGL approach shows that volunteers take into consideration the full experience of visitors, are attuned to patterns of movement and opinions and are sensitive to potential problems in various locations on-site. Co-designing the space together with the participants was integral to the installation and to achieving a coherent experience within the wider site. The participants had already pointed to a space they found suitable for the VR experience. The installation space on-site was selected to accommodate a seated VR experience and facilitate a more personal engagement with the technology, avoiding crowds and providing occasion to experience the work alongside the volunteer. We designed the installation to maintain the audience's privacy and ensure an undisturbed personal experience that fits within the physical characteristic of the space. A side panel is facing the entrance to the room, concealing the viewer whilst opening the rest of the space to them privately (Figure 4). The side of the panel visible to audiences was to be adorned with graphics to invite curiosity of what is in the space behind.

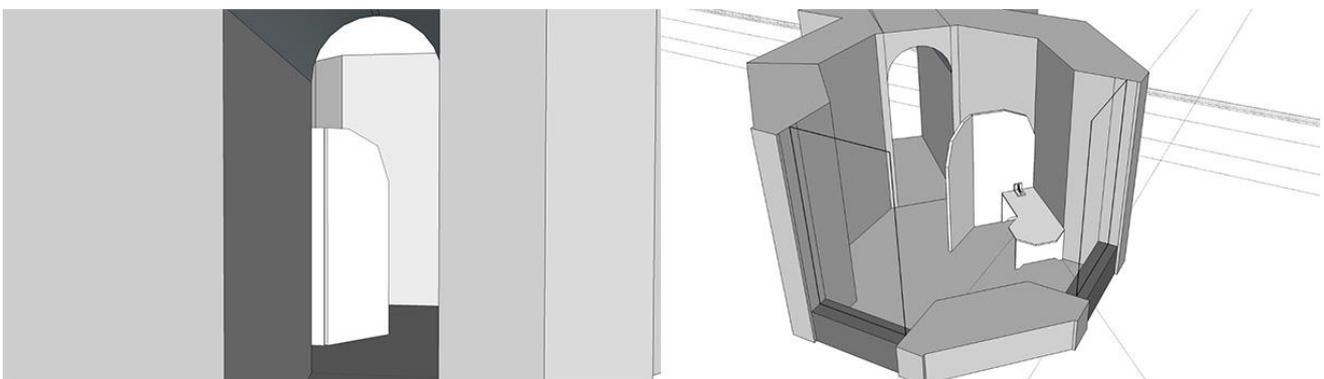


Figure 4. Visualisations of *Un/Authorised View*'s physical space design. Graphics courtesy of Chris Osborne and used with permission.

We found value in discussing the interaction and navigation inside VR environments and how that could be opened to different demographics. We had informal discussions on the use of gaze interaction, which we decided was both an appropriate and intuitive

paradigm. Gaze in VR mimics our visual and head response in the real world when we find a subject that catches our attention. In the workshops, participants tested the gaze paradigm based around selecting which vignette to watch. Here, we use gaze targets instead of “buttons”, as, in this context, we emphasise the importance of looking as a user interface.

On testing the interaction time, the participants had a strong opinion about the duration of gaze needed to trigger an event. They decided this should be less than five seconds, while the gaze targets must be more obviously interactive—these effects are important given that the VR paradigm is new. Together with the *genii loci*, we decided that audiences would watch each story vignette once. After watching the story, its associated gaze target would become unavailable for selection. This allowed visitors to understand their progression through the experience while implicitly prompting them to remove the headset and return to the physical reality at the end. We were able to detect the removal of the headset, allowing the experience to be reset. This contrasts with typical encounters of non-VR video exhibitions, where we find videos part way through—visitors inevitably wait around for the video to start again and see a repeated and somewhat spoilt narrative.

By the end of the two workshops, *Un/Authorised View* was devised as a seated experience where a volunteer leads a visitor to a dedicated space to experience a personal interpretation of the site. The visitor is presented with six stories based on the lived expertise of the staff and volunteers, each narrative revealing a memory, introspection or self-reflection in connection to the site. Visitors were to choose which story to watch, triggering it through gaze interaction. By watching each story only once, the audiences were to continue their exploration of the site and be encouraged to engage with more volunteers and listen to their stories.

4.2. Co-Design Apart: SDH Palimpsest and Loci Stories

The COVID-19 lockdown posed a physical barrier to work in-person with our participants, and we fully recognise the difficulties of the staff and volunteers at the heritage organisation who were unable to conduct business as usual and carry on their work, which has so much meaning in their life. Our *genii loci* became part of the research team who actively contributed their time, expertise and lived experiences in creating digital interventions and shaping the creative production of heritage. As a physical and emotional barrier impeded our traditional co-design process, we chose to explore whether the commitments we had built over steps 1–3 of our proposed approach could be translated into two other artefacts, where a designer’s creative practice was employed as a response to already collected data and as a route to enact our commitments.

SDH Palimpsest

The *SDH Palimpsest* is our design response to the COVID-19 pandemic in 2020 and demonstrates our commitments when away from participants. We had the opportunity to build on the design of the virtual environment for *Un/Authorised View* and ask ourselves how to better capture the everyday experiences of heritage. The *SDH Palimpsest* is a VR environment that utilises “layers” of various media to create resonances between the past and present.

We were guided by two pillars created through our work to date. First, without the knowledge generated by working with the *genii loci*, addressing the themes of “heritage experience” would not have been substantiated. We draw upon the role of the heritage volunteer as an expert of their own experience and see VR as an opportunity to communicate their own stories and unique perspectives on places. In the absence of both site and participant access, we decided to immerse ourselves in VR, sense-making within the virtual environment in an act of self-reflection with participants’ site-specific work. Re-connecting with participants’ insights and knowledge allowed us to further explore a prototype VR experience that retains a close connection to the staff and volunteers’ values. Secondly, there is a multiplicity of media formats that cultural heritage projects produce in their aim to visualise and design interactive audience-facing interpretations. Cultural heritage has

become the realm of multiple data types, covering 2D imaging, reflection transformation imaging (RTI), 360° imaging, point clouds and 3D models, among others. Our project had produced a large corpus of data of differing types that might come together in a VR environment. We wanted to explore how to use such materials in a coordinated manner that opens space for new interaction and visualisation methodologies to use different media in a synergic way [77].

Accordingly, we began creating a design response with the materials collected during the fieldwork. We used an Oculus Quest headset to freely immerse ourselves in the words and worlds of the participants. We complement our approach when designing away from participants by thinking of our development of *SDH Palimpsest* as “designing from within” [78]. This method allowed us to immerse ourselves in the work created by the participants and make sense of and respectfully communicate their personal experiences. The heritage experience is about passing on knowledge and enacting and revising values and meanings in appropriate contexts and times [1]. It was important to translate this into the VR environment.

We brought participant-generated material inside our VR design space and began reconsidering how they interacted with each other and how the stories connected. To increase our immersion, whilst we were designing within VR, we listened to audio from the fieldwork workshops. By incorporating these materials, we were placed directly into eavesdropping on the participants’ everyday experiences of heritage. As a response, we used the Tilt Brush tool to create 3D models to serve as gaze targets, each capturing the essence of the participants’ stories. Our *SDH Palimpsest* layers the participants’ 360° video, incorporates their spoken word, references their materials, combines traditional drawings into a collage of the wider heritage experiences on-site and offers concrete 3D elements that capture the participants’ personal stories and which serve as gateways to the individual vignettes (Figure 5).



Figure 5. The six 3D gaze targets, courtesy of Violeta Tsenova as the artist.

The palimpsest is a working metaphor for our design. Historically, palimpsests are manuscripts in which the text from a page (or pages) has been erased to create space for new writing, with marks of the original texts still partially visible [79], a practice prompted

by the material scarcity of paper. Yet, with time, the ink of the primary writings became visible through oxidation and resurfaced back on the paper, mixing with the new texts. When we design and create representations of experiences and of heritage, we make choices about what to keep and what to discard of. As designers, we are not able to perfectly re-contextualise the information that participants relay when we are analysing the data—and this becomes a greater truism with passing time. For us, the act of a designer immersing themselves in fieldwork material presents them with this subsequent re-materialisation of a “script”—or, in the case of cultural heritage design, the otherwise submerged experiences that the *genii loci* have with the place. Such experiences are not immediately apparent. The resulting prototypes and environment are not simply a creative art experiment but investigate how design can better address, talk about and incorporate the *genii loci*'s experience into designed artefacts.

Loci Stories

The final design we present is *Loci Stories*, created utilising all the materials and knowledge gained until that point and exhibited at SDH in May and June 2021. *Loci Stories* presents a different embodiment of DwGL when apart. This design took place during lockdown in the UK, leading to the ease of measurements. At this time, we were unable to co-design in person, as our participants still had not returned to the property.

Loci Stories is a voice activated interactive display in the form of a column with three screens on three of the structure's sides (Figure 6, top). *Loci Stories* was voice activated partly as a safety measure to reduce physical touch with the display and as an opportunity to design around the voices of the participants. This modality also aimed to emphasise the importance of talking and listening to the *genii loci*—encouraging visitors to speak to our installation. The audiences encounter the display at SDH's Central Hall. Each of the display sides is associated with two of the stories created by the participants. To watch the stories, the audiences are prompted to say out loud one of two words—“discovery” or “morning” on side 1, “fire” or “muses” on side 2 and “memory” or “change” on side 3. These evocative words triggered the *genii loci*'s vignettes. Encouraging visitors to speak aloud words such as “fire” is exciting. For SDH, such interaction confronts our preconception of how to behave in a heritage site, whilst the word “fire” is fitting—it relates to an important event in the place's history.

This design adds a new layer to the Hall's soundscape leveraging computer networking. Whilst a video is played on one of the display sides, on another side, short audio snippets are triggered. The clips are from workshop discussions between the *genii loci* in which they share and reflect on their various experiences. This second layer of conversations was introduced as the main story vignettes were ending, thus layering voices and prompting the audiences to walk around to other sides of the display. The layered sounds meant that audiences need to listen harder, just as we listened harder throughout the long-term design process. This was further emphasised by the design of the display. Instead of putting the screens next to each other and having sounds coming from the logical left and right, the column created a discrepancy where sounds mixed. For us, this decision was motivated by how different perspectives and stories mix at heritage sites, which is sometimes easy to understand and otherwise difficult to reconcile.

Loci Stories was our way of getting the most out of our creative practice whilst remaining committed to our participants. The graphics we created for the installation combined images from the participants' stories, photographs from the workshops and the making that took place, as well as the first author's drawings as another way to remediate and contemplate why certain practices and areas of the site are important (Figure 6, bottom). As a result, some areas of the illustrations alluded to the present, whilst others focused on the past. Simultaneously, we worked within the larger interpretation of the site, so our design in terms of both the materials and the colour palette was created to fit within the space. It corresponded to the wider interpretation scheme of the property and stood out in the Central Hall where it was exhibited.



Figure 6. *Loci Stories*—visualising the dimensions and position of the three displays (**top**, courtesy of Raskl and used with permission); and the three graphic panels (**bottom**).

5. Annotated Portfolio

We use annotated portfolios [80,81] to showcase our designs. The portfolios are based on established annotation strategies and illustrate our key ideas, considerations and developments of both the artefacts and the co-design approach. We begin with an annotation of the interaction qualities and design domains [80], applying this to the co-design with the *genii loci*. We then use an annotation of trajectories [82] to illustrate how our proposed approach makes polyvocality visible, facilitates a conversation with the *genii loci* and creates a space for future design in relation to heritage interpretation.

5.1. Mapping Interaction Qualities and Design Domains

Our project responded to the broader design domain of better engaging heritage volunteers in interactive design [8,60]. As we engaged with the co-design activities, our approach started fleshing out. Simultaneously, whilst DwGL was informing the design artefacts, reflecting on them helped us rethink the structure of the approach. We capture this cyclical process by annotating the design domains and the interaction qualities for each artefact. We explore how the volunteer's expertise in telling stories in conversations manifests in the designs.

Un/Authorised View was designed to be private and contemplative, like the *genii loci*'s personal stories (Figure 7). Guided by the volunteers and staff, who reflect on their own experiences on-site and working with VR, the design's interaction qualities seek to place the visitor in this reflection through a passive conversation. The physical form of the design enhances the intimate feeling by secluding the experience from the busy Hall. The interface is measured and progressive and provides time for reflection. We facilitated this practically by limiting the freedom of movement, using timed gaze targets in encouraging audiences to look and ensuring that audiences were onboarded. This complemented the

design guidance from the *genii loci* who called for comprehensive installation instructions, which we linked to the volunteer as a guide to the experience.

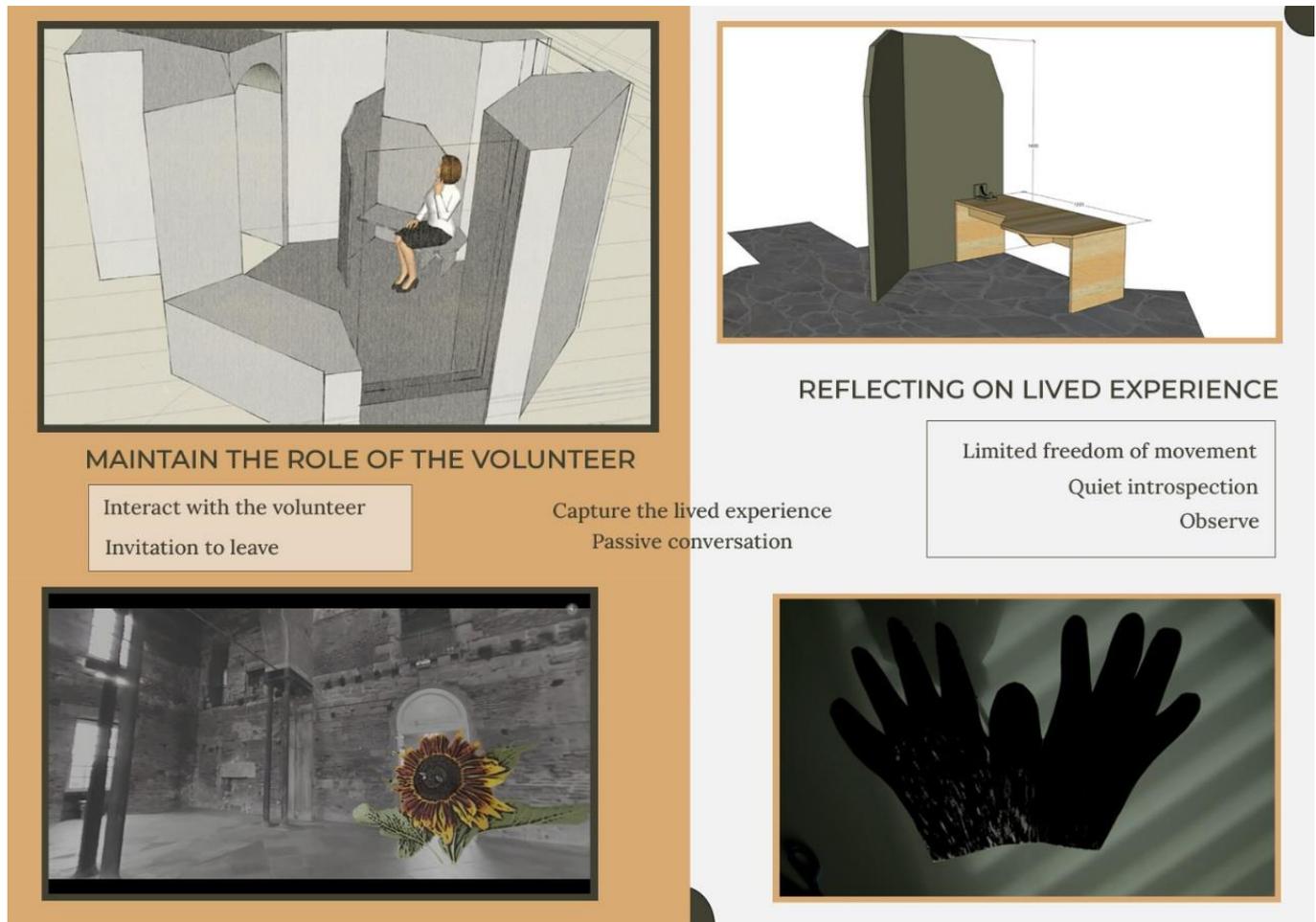


Figure 7. Un/Authorised View Design Domains and Interaction Qualities.

Moreover, the co-design process revealed that the volunteers were apprehensive that technology might replace them. At various stages of the work, the volunteers showed that they were experts in distinct aspects of this design. Here, there was opportunity to draw from how they can lead conversation in storytelling—for example, by asking what visitors are interested in. Likewise, the design needs to lead and assist its audience, factoring in their preference to engage with stories that sparked their interest. This thinking also informed our “invitation to leave” interaction, which resets the experience when the headset is removed. We allow visitors to leave at any point without being pressured to reach the end of the experience—the conversation that is facilitated by the design can be left if the visitor finds themselves uninterested. Simultaneously, we restrict time on the technology just as volunteers weigh up the amount of depth to inform visitors before they let them explore the physical site. With this, we worked in the design domains of maintaining the role of the volunteer and reflecting on lived experiences.

SDH Palimpsest also focused on creating a critical and introspective conversation—this time between the volunteer and designer (Figure 8). Visually, the design brings together layers of different media and artwork generated both by the *genii loci* and by us. These visuals guided us into a design domain that explores the layering of experiences—similar and divergent. The design allowed us to explore the materials in different literal perspectives and familiarise ourselves with the figurative heritage perspectives of place and experience (the *genii loci*'s and ours). The varied materials represented a distinct

experience—that of knowing the wildlife on-site and of connecting to or distancing from the dominant narratives and our own documentation of the fieldwork. This attuned us to a design domain in heritage related to the designer’s role in interpreting lived experiences. Subsequently, we leveraged these experiences in building on the interaction decisions. We were surrounded by the *genii loci*’s voices, which made us focus on listening and encouraged us to use sounds and visuals in prompting the audiences to look around. In the design, we were able to foreground materials over others by direction—but also by exploring them up close—which resulted in combinations of showing, hiding, ordering and scaling artwork. In the design, we wanted to retain this freedom while ensuring that it made sense to visitors. The design asks the audience member to look around, listen to snippets of workshops and explore the space before they are invited to focus on a story. We further maintained our gaze timed interaction and the invitation to leave and restricted mobility, continuing the theme of reflection.

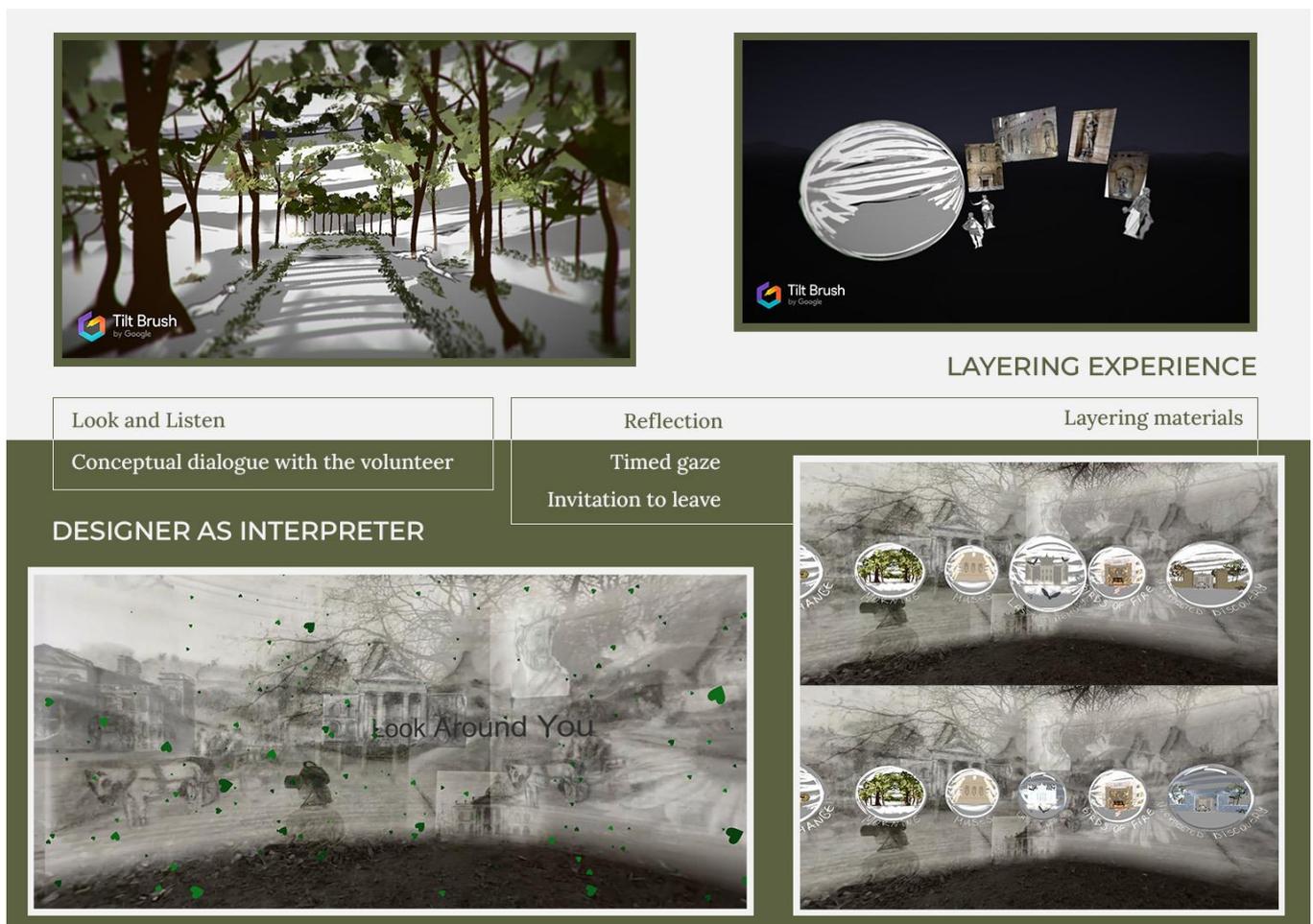


Figure 8. SDH Palimpsest Design Domains and Interaction Qualities. The artwork painted in Tilt Brush is presented here under Tilt Brush standard license and is courtesy of Violeta Tsenova as the artist.

We explored a layered interpretation domain in the *Loci Stories* design (Figure 9). Aesthetically, we continued layering artwork to correspond to the interplay between authorised and personal narratives and past and present experiences. The interaction qualities of the design also explored aspects of layering that we could not implement in VR. We networked the voices and stories of the volunteers in the physical space. The networked voices encouraged people to move around and listen to the stories differently. No longer a private reflection, the multiplicity of conversations was taking place in public. Listening

harder becomes a key interaction quality. Although visitors might be listening to one story, another one would be introduced on other sides of the display. This is supplemented as a layer of discussion, making its way into hearing people in the space speaking over and with each other—about the design, about the stories, about their connections to the area, etc. Finally, as we aimed to engage audiences in the creation of polyvocality, we invited the literal use of voice to trigger content. We provided minimal instructions, encouraging exploration and saying aloud evocative words such as: “fire”; “muses”; “discovery”; “morning”; “change”; and “memory”. These words come directly from participants’ videos and highlight the duality of the stories, each containing both authorised and personal interpretations of the site.

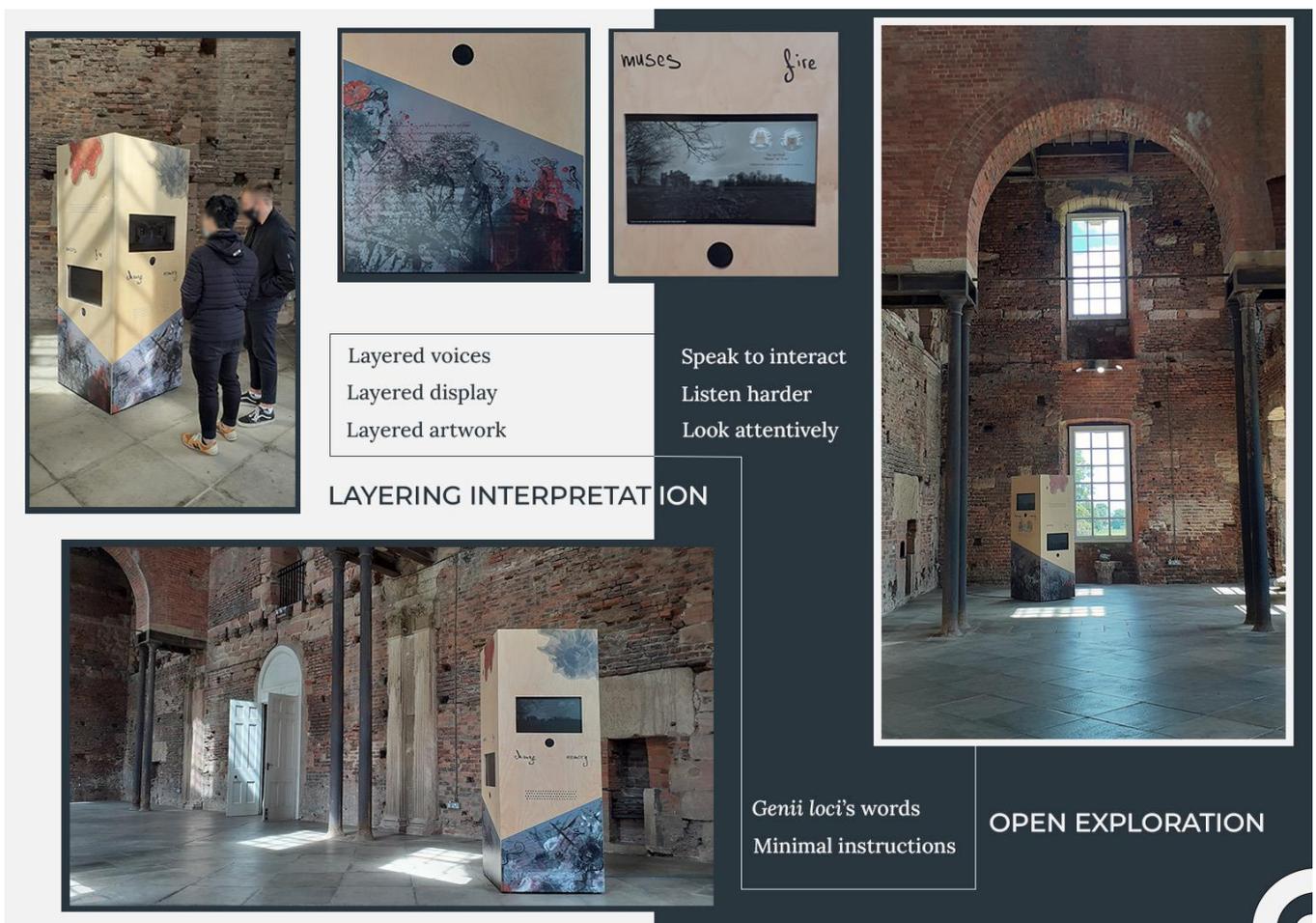


Figure 9. Loci Stories Design Domains and Interaction Qualities.

5.2. The “Designing with Genius Loci” Trajectory

Here, we illustrate how the trajectory of designing for conversation unfolded throughout our approach (Figure 10). Although the design domains and interaction qualities capture common traits for all designs, there is more to infer on how DwGL facilitated listening to the volunteers’ perspectives and capturing them in the designs. Each design was exploring a slightly different approach to presenting these voices, each artefact building on top of the previous. The artefacts were developed sequentially, responding to different events and circumstances, and the resemblances between them are not surprising. The overarching trajectory we captured is how our design decisions and developments continuously put us and/or the audiences in conversation with the *genii loci*.

In *Un/Authorised View*, we began by engaging with the volunteers’ stories and creating visual elements that captured their experiences. This led us to recognise the deep interplay

between authorised and personal narratives—at times challenging each other, at times complementary to each other. For example, Caroline’s story connects the fire at SDH in 1822 to her own experience of cleaning jackdaws’ nests from her neighbour’s house’s chimney. With the participants, we translated these narratives into a private experience where we asked the audiences to observe the stories in private. Such an onus on looking aimed to guide the audiences to previously overlooked aspects of the site. As our *genii loci* remarked: ‘you’re seeing bits you wouldn’t see normally because you’re not being distracted’ as ‘you have more concentration there [in VR]’ (Mary and Caroline, both v). The conversation with the *genii loci* here took shape in paying undivided attention to one narrative at a time. Further, the audiences being led to the installation by the volunteers facilitated a dialogue that might not have occurred otherwise.

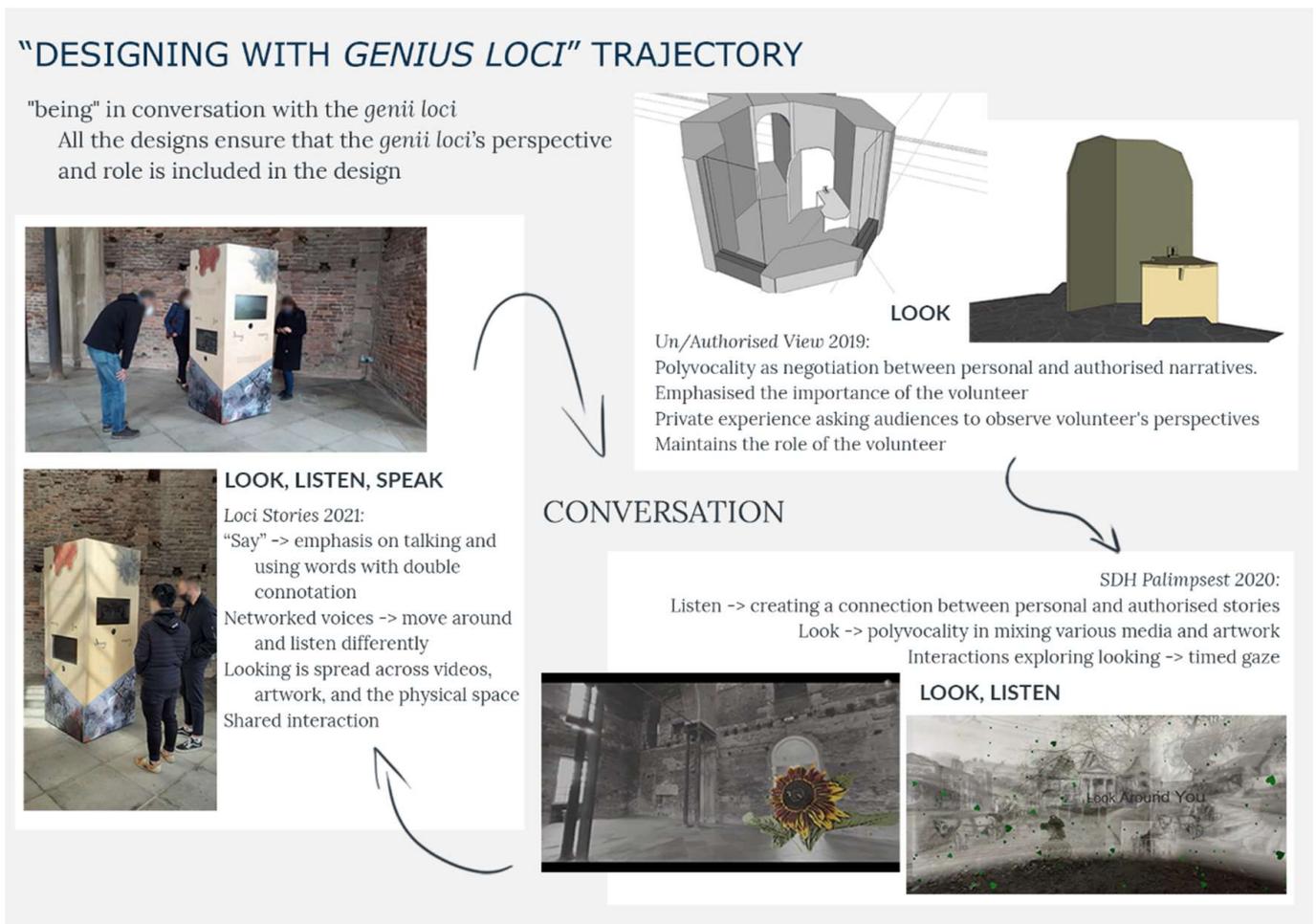


Figure 10. “Designing with *Genius Loci*”—Design Trajectory of Conversation.

As we progressed with designing *SDH Palimpsest*, “looking” was further developed by our exploration of combining and negotiating the different media and artwork. Here, the gaze targets’ aesthetic is beyond an interaction with a UI. Their quality is aimed at a nuanced way of interacting by employing the timed gaze introduced in *Un/Authorised View*, encouraging people to look and pay attention. Moreover, listening to the workshop recordings as we designed increased our attention to the intricacies of the conversations being had. Listening to the *genii loci*'s stories was always present, yet, in this design, we introduced listening to snippets of the workshops as part of the exploration stage. With that, we engaged with an interpretation of lived experiences that captured the richness of heritage—not just the authorised or the personal but also the everyday act of engaging

with the place. Here, we put looking and listening together—the visual layering of media would influence where the gaze falls and, subsequently, what is listened to.

All this informed the networking of voices in *Loci Stories*, which transformed our design into a public display. Having networked voices encourages people to move around and listen differently. Building on the idea of a layered palimpsest and drawing upon the paradigm of a cocktail party, audiences have to choose what to focus on and listen to—they need to listen harder. In this design, it is listening that determines where audiences choose to look. The layering of the voices further mimics the volunteers telling their own stories—sometimes listening to or talking over each other, eager to answer questions. Finally, we incorporated the audience's own voice as co-creating literal polyvocality. The audiences have to say the words that would start a story—each word relating to the physical place with its authorised stories and to the personal heritage experience.

The trajectory of “conversation”, for us, was about the engagement to understand the volunteer, the place and the interlinked stories. The qualities of looking, listening and speaking are powerful conversational elements that informed our designs and can continue being explored in designing for polyvocality.

6. Discussion

In our project, we engaged critically with more typical discourses of heritage interpretation to conceptualise an approach to designing for polyvocality. For us, polyvocality goes beyond hearing a multiplicity of voices but embraces negotiating how divergent perspectives interact. The preceding sections described how our proposed approach—“Designing with *Genius Loci*”—took shape and informed the creation of three designs.

In much design research, a clear narrative of evaluating a design is typically preferred, yet doing so often overlooks the lessons learned and the broader themes that need consideration in design practice [70,83]. Here, we embrace our RtD and discuss what our proposed approach and its application in the design of the three artefacts teaches us about co-design with heritage-related communities. First, we reflect on how our choice of methods and tools shaped the unfolding of the DwGL approach, and we illustrate how it helped us assess the challenges of working with polyvocality. The approach we proposed is structured around four steps—ongoing recruitment, exploring attitudes, building commitments and enacting designers' commitments.

We then discuss three lessons learned from applying DwGL in creating our designs: *Un/Authorised View*, *SDH Palimpsest* and *Loci Stories*. The lessons are: designing with authorised and personal narratives, negotiating interpretative voices and designed objects do not engender new values. With that, we reflect on the repercussions of a designer's choices, their role as an interpreter of experiences and polyvocality and how considering the plurality of perspectives dynamically shapes the interaction qualities of designs. The lessons provide detailed insights that can be used to both critique and further our work, while also guiding other peoples' efforts in this space. We encourage designers to test other methods within the structure of the proposed approach whilst referring to our lessons learned. Lastly, we outline the research limitations and the scope of applying our approach within and outside of cultural heritage and its audiences.

6.1. Reflections on “Designing with *Genius Loci*”

DwGL falls into a paradigm where the spirit of a place is shaped and developed by the communities with close ties to heritage places and those people's practices of heritage. Our attitude towards recruitment in **step one** was flexible and open-ended. In our case, the participants could come and go to different workshops, join whenever they felt comfortable and contribute their own expertise. Many of our workshops were designed in packages that built on each other. Yet, any participant could join at any stage and be onboarded in a welcoming environment by their colleagues and friends—not just by us as researchers. Such an ongoing open invitation removed some participation barriers by allowing those interested to continue returning and seeing their input directly influencing the design. This

is most obvious in the *Un/Authorised View* design, where the participants who attended our exploratory workshops returned for the installation design workshops without being part of the content creation workshops.

Despite our open invitation, we faced a lack of divergent volunteering voices. We worked predominantly with room guide volunteers who were self-reflective and acknowledged that they represent a small contingent of the expertise on-site. We attribute this limited diversity to our initial introduction of the project as focused on “heritage interpretation”. The term holds certain connotations of expertise, and the volunteers working mostly in catering, gardening and maintenance did not see their experiences of the site as connected to such “interpretation”. We found it difficult to engage these individuals, and only two members of the gardening team (both staff) continued to take part in our activities. In that sense, the participants we worked with come across as fitting within established expectations of who tells heritage narratives and what these narratives consist of. If we are to be proponents of different knowledges, we need to bring in the knowledge held by those other volunteers. If this is to happen, future projects should be framed as working towards a comprehensive understanding of the place, and we must change the language that is used around heritage interpretation. Recruitment in co-design is of utmost importance, yet the language used around recruiting participants for heritage co-design projects has not been previously considered. Our proposed approach highlights the discrepancy in the makeup of participants which arises when using “authorised” language. DwGL, then, adds value for how researchers will approach their work with communities who might see themselves as “irrelevant” to interpretation.

In **step two**, we explored attitudes to gain a deep understanding of how heritage beliefs and values are reworked, recreated and subsequently translated in digitally mediated interpretation designs. It is important to use appropriate activities, and these also need to fit with the development of the project. We find parallels with Claisse et al.’s [8,69] engagement with volunteers at a historic house. We build on such work, as our proposed approach places emphasis on inquiring into the relationship between participants, their personal experiences, authorised discourses and interpretation. In other design projects in heritage, methods have been applied with the intention to capture perspectives from the past and improve the overall visitor experience [6,84]. Instead, our selection of methods aimed to explore participants’ personal sentiments and their expectations of typical heritage narratives. We became attuned to the importance of spirit of place interpretation but also of the participants’ own stories and aspirations as to how the place could be reimagined [44]. Rather than designing for spirit of place, which reaffirms institutionally predetermined stories, we tailored DwGL to capture the complex role of negotiating what is expected of heritage interpretation and what participants experienced personally.

For instance, during the focus groups and making workshops, the participants were thinking about insights related to visitors’ behaviour, updating content and diversifying the visitor offer by re-imagining how typical narratives are delivered. Their interpretative focus was placed on the Delaval stories. We juxtaposed these design attitudes with the stories shared during observations and collaborative walking and those recounted in the cultural probes. These were stories of personal experiences and of fear that more modern aspects of the property’s history might be lost. The sentiments were not disentangled from the official spirit of place. Instead, they illustrated the interplay between authorised and personal narratives and how participants internalise this connection. We call for a nuanced understanding of the role of the volunteer at heritage sites, since they simultaneously enact authorised values and want to be recognised as key interpreters of the place. Importantly, we argue that DwGL will support designers in heritage to engage with how a community enacts, rethinks or challenges the heritage values, as this will have implications for the designs created.

We focused our **third step** on building participants’ commitments to addressing the divergent types of experiences and incorporate them meaningfully in the site’s interpretation. In step two, we learned that the participants already had strong commitments to the place

and that they often enacted these through the act of storytelling. For us, it was important to take this act and use it as a tool to scaffold building commitments for this project. Like Rogage et al. [85], our approach aimed to explore heritage interpretation and stimulate creativity without placing emphasis on any given technology, whilst also ensuring that participants have adequate knowledge of the technology's possibilities. Placing the technology in participants' hands helps to mitigate this concern [44]. In this step, the engagement with different media takes digitally mediated heritage interpretation away from the abstract and institutionally pre-determined realm. Digitally mediated interpretation is instead handed over to the *genii loci* to be transformed into a shared resource by leveraging their own way of enacting commitments.

We found that this is better achieved if there is a tangible goal of collaborative engagement. Since many heritage institutions are not used to the design process being the transformative work [74], having a goal to work towards grounds the effort. For us, this began with the *Un/Authorised View* design. Such an outcome provides an anchor that there will be a return for the participants' time investment. The expertise of the *genii loci*, the design and heritage researchers and the creative practitioners gathered around the goal of co-creating a site-specific, audience-facing installation. We held technology design workshops, followed by artistic content creation. This facilitated creative engagement with the authorised discourse and allowed participants to play with and explore the different digital technologies and familiarise themselves with VR whilst discussing their own concerns. The examples generated include: the collection of 360° videos taken in SDH, the stop-motion animations created by SDH's *genii loci*, the adjacent material and artwork and the videos they produced. A point of success in championing the participants as *genii loci* was them agreeing to share their stories and embracing them as aspects of the heritage site to be communicated to visitors. We learned that, for participants, their personal experience is less open to interpretation in comparison to official narratives. As the latter happened in the past, there was more opportunity to speculate, whereas the stories of participants were to remain firmly grounded in their experience. Designers who engage with such groups in the future should be attuned to this aspect of community co-design work from the beginning.

Finally, in **step four**, we had to enact our own commitments to "Designing with *Genius Loci*", which became a promise of conversation. We had to take two methodological routes. The *Un/Authorised View* design followed a more traditional co-design process, whilst designing *SDH Palimpsest* and *Loci Stories* meant that we had to enact our commitments whilst away from the participants. Our designs create a conversation around what we had learned about personal experiences and authorised stories.

Such a conceptual shift of co-design becoming a conversation guided a change in the interaction qualities of our designs. This creates an outlook where a designer is negotiating stories and modalities of engagement. For instance, one level of conversation is that the role of the volunteer should be maintained—the *Un/Authorised View* interaction qualities included the volunteer leading and onboarding audiences to the VR experience. Reflection was deeply underpinning *Un/Authorised View*, but our own deep exploration of the materials during the designing of *SDH Palimpsest* informed an open exploration paradigm in *Loci Stories*. *SDH Palimpsest* builds on the shared stories by offering snippets of fieldwork conversations, whilst hearing these additional conversations prompted us to ask more questions. This materialised in the *Loci Stories* design, where all the lessons learned about the volunteers, their knowledge and the specificities of the site came together in the networked voices. We used interactions based on "look, listen, speak" paradigms and their potential to create a wider interconnection between the past and the present. We maintained the volunteers' own conversations with visitors after the latter had "spoken" to the *Loci Stories* installation and were then looking to engage in conversations with the volunteers on-site.

In this step, we had to act upon the clash between ideals and reality. We were committed to critical heritage theory whilst also being respectful of the people we worked with. We were set to work towards nuancing and challenging the prevalence of the authorised discourse in country houses. Yet, working with this community showcased that

challenging authorised discourses can be done in a way that builds on why people hold certain stories dear to them. We made the decision to champion the *genii loci*'s stories—they were tied to the locality and focused on the shared experiences of that community. This stands in contrast to engaging with their knowledge to design more typical visitor experiences [8,65]. We chose not to impose our own ideas of what diverse heritage interpretation is. Instead, we used interaction qualities such as look, listen and speak, to amplify an existing conversation—that groups within heritage sites make their own sense of place. We structured the conversation around the presence of volunteers and the fact that they hold distinct types of knowledge and experiences.

Designers in heritage will always work within a realm of storytelling, and our approach guides how stories are to be explored, nuanced and handled for their presentation in order to be valued by participants. We believe our approach ensures that we (1) make space for fluid participation (albeit, we hope that future work makes more volunteers feel like critical parts of heritage interpretation); (2) explore more typical discourses and how participants have built attachment to the heritage place; (3) leverage existing community practices and supplement them with design tools to build commitments in a co-design project; and (4) enact our commitments to the participants and critical heritage theory.

The four-step structure of DwGL supports a conversation on different levels. Our proposed approach takes as a premise that meaningful polyvocality includes an understanding of the different lived experiences which shape and challenge beliefs about what heritage is. This means that an approach to heritage co-design should inquire into the heritage phenomenon whilst designing interactive displays. We have argued that DwGL supports designers in exploring how dominant narratives are interpreted through personal stories. By exploring participants' relationships to place-meaning through the lens of authorised narratives, designers can make informed choices about the technologies they develop, since these technologies will influence the future of heritage. Our proposed approach investigates how design practice negotiates these conversations. In our case, it was about augmenting an existing conversation of how people make their own sense of place. For others, the application of the approach might shape a different discovery. Importantly, DwGL adds a dimension that has often been overlooked by previous co-design work in heritage—it calls for not romanticising the participating community.

In the following, we supplement our reflection on the structure of our approach with broader conceptual lessons when applying DwGL. We argue that these lessons have important implications when we design technologies that support co-design in heritage settings and when we present heritage interpretation through interactive displays.

6.2. Lessons Learned

In line with RtD, the overall engagement we outlined in this paper considers the themes, theories and questions pertinent to designing for critical heritage. For us, exploring and being faced with a range of interaction modalities meant that we gained a deeper understanding of co-design processes in institutionalised settings and how to approach the future diversification of stories, narratives and collections. Here, we elaborate on how applying DwGL has implications for design as long as these implications present consequential considerations and open design spaces that think more about the role of design and technology than the shape this technology should take [86]. We thus present three lessons learned from conceptualising and applying DwGL that go beyond the design of digital artefacts and inform broader areas of concern for co-design in heritage. These need to be acknowledged and critiqued if we are to design technologies that: meet the needs of the different parties involved; support the better facilitation of co-design; and reconsider what new frameworks of practice might follow. Below are the main reasons we encourage other designers to engage with and critique our approach, contributing to this area of design.

6.2.1. Creating a Conversation between Authorised and Personal Heritage Stories

When designing in the realm of critical heritage, we need to first determine what the more typical discourses present are. Those are the narratives pertinent to the places and situations we work in. In SDH, those were narratives related to the English nobility and the Delaval family. Throughout the paper, we emphasised that the premise of our co-design project was not to design for those stories. Yet, we require an awareness of the context in which we are going to work and an assessment of how it will influence the design process. We then need to pay attention to what personal narratives and experiences relate to the place. We listened to our participants and learned that their personal stories—even if not officially presented on-site as interpretation—are intertwined with the authorised discourses. What comes across as auxiliary knowledge or perspective is shaped and determined by the knowledge that is typically accepted.

We also put forward the notion that designers working in heritage should be aware that, often, the realities we have set out to challenge might be the ones we end up enacting. For us, creating designs that consider this aspect of critical heritage cannot be achieved without developing a sensitivity to stakeholders' cultural practices, the uses of heritage, social values, the prevalence of deeply ingrained authorised stories and the question of how to leverage these diverging strands. Our proposed approach offers a scaffold on the basis of which we can achieve that. In offering DwGL, we actively recognise that design practice is placed in this space where authorised and divergent perspectives intertwine. Although we set out to challenge authorised stories, the realities of institutionally predetermined heritage management and the broader discourse of heritage attuned us to the fact that there are structural determinants as to why our experiences of heritage and its interpretation are divergent from official narratives. If designers work in a context where the collaborative partners require the designs to focus on the more typical discourses, then designers might look for personal stories that overlap with the authorised ones to begin diversifying the interpretative offer. Despite not being given such constraints overtly, our designs managed to fit within that space and to be welcomed by participants and by management. They did not break the overarching narrative and were in fact complementary to the property and the more expected visitor experience.

There is value in negotiating compromises if we are to learn more about heritage, co-design and polyvocality. Our designs create a conversation around the interplay of stories, yet how we chose to present the designs does not mean they convey the plurality of experiences. When we had to design away from participants, we took on the role of interpreter between the authorised and the personal whilst remaining respectful of the lived experience of our participants. This guided the aesthetics of the designs—creating 3D dioramas and collages—and the exploratory interaction before selecting a story to watch. Performing this translating work involves further reflection on how our interactive systems reinforce more typical heritage discourses—both in communities and audiences.

Looking into a future of more radical co-design, an important implication that DwGL has is working towards creating interpretations that link different historical processes and the influence they have on lived experiences. Could designs interpret heritage spaces not as unifying but as contested? Could design for heritage be a space for democratic processes to take place? Our design work focused on showcasing the interrelation between personal and authorised stories, but those conversations need future exploration.

6.2.2. Designing Using Polyvocality Will Negotiate Voices

We work with an understanding that polyvocality should not be restricted to confirming the existence of multiple perspectives. If we are to design in ways that explore how the plurality of perspectives and knowledges shapes how beliefs are enacted through heritage narratives, then we need to recognise that some "voices" will not align with our values as designers. We stress that there is polyvocality across all types of narratives and that we need to negotiate what we are listening to in those perspectives. In our own practice, we noticed that, as designers, we make critical decisions about what to include and what

not to. We negotiated the celebratory aspects of the volunteers' knowledge by reducing the emphasis on the authorised stories of the Delaval family and championing *genii loci's* experiences in our designs.

This prompts us to speculate on cases in which participants' "voices" do not align with our own values. In our project, we did not experience overt discrimination with our participants and the stories they were sharing, but we can imagine a scenario where co-designing takes place with communities that might present discriminatory views towards diverse groups. For instance, in other heritage properties, volunteers have previously refused to wear the LGBTQ+ rainbow flag and have refused to attend their shifts [52].

We argue this is an important implication for design since it forefronts the question of what constitutes meaningful polyvocality. How would such voices be presented and dealt with? Would future designers want to stop their collaboration? How might they address the design of interactive interpretation technologies when contested histories are at stake? With this, we caution that DwGL does not mean to romanticise the *genii loci's* perspectives. When designing technology, we believe it is a designer's responsibility to make decisions that contribute to more just heritage-making practices, which includes lobbying to make divergent knowledges and discourses part of the typically accepted ones.

Nonetheless, we are against polyvocality being appropriated as a new authorised narrative. That is when polyvocality has been molded to fit within the existing narratives or is presented as auxiliary or in ways that could be easily shelved if audiences disagree. For example, another country house property reconsidered an installation that stirred visitors' opinions by stating that it was a student project installed for a brief period [87,88]. Simply having many voices should not be taken at face value as success for this approach or for future designs. Although we could criticise our own designs on the premise of offering appropriated polyvocality, in line with Ashworth et al. [58], we encourage designers to explicate how divergent experiences of heritage are shaped by wider inequalities. We believe this lesson opens space for future work that, rather than creating a simple story around polyvocality, leverages interaction modalities exploring the complexity and richness of life.

6.2.3. Designs Engender Existing Qualities and Values

Here, we want to bring together a key learning point stemming from the previous two lessons. Applying DwGL has taught us that the designs we create engender existing heritage qualities and values. In any art form, materials are selected and joined together in a process of editing. In designing for heritage, one of the key "materials" that is worked with are the stories. Stories are open to interpretation—which ones we choose and how we present them is in response to the demands and values we hold in the present, with a view to the values we want to champion for the future. Designers working within heritage and its related communities are positioned at the nexus between the past and present, between negotiating static and dynamic characteristics of the heritage experience. The result is a paradox that cannot be entirely resolved—the present keeps changing, altering the values through which a designer reflects on the past. How this issue is resolved depends on the approach. Designers might embrace the restrictions of cultural organisations or use them to innovate how histories are negotiated. These in turn lead us to highlight the key role of co-design in bringing stories together in creating more engaged citizens and a more just society. This means that DwGL is not about generating new stories but rather working with the ones that are needed to support the qualities and values we seek to champion for the future. What are considered "controversial" or "new" histories (e.g., LGBTQ+ histories and recognising that much heritage in the UK is built on colonialism and slavery) are stories that have always been there; their active suppression is being recognised and challenged. This is what the design practice makes explicit through its process of ideating, iterating and evaluating.

The key implication is that the designs we create are vessels that bring together these strands (of the values and qualities present in stories) and make explicit what we

as designers champion. In *Un/Authorised View*, we championed a design that facilitates reflection and looking. The interaction design is as much about the content as it is about taking place-meaning practices and informing interactions. Foremost, our design does not leave our *genii loci* side-lined. For *Un/Authorised View*, the volunteers are part of the VR experience. The volunteers at SDH are not “guards” who police visitors’ behaviour. Instead, the conversations which volunteers have between themselves and with visitors are at the heart of what they do; they want to share and bring a personal touch to the stories they tell. *Un/Authorised View* is conceived to maintain this exchange of stories by actively sharing the volunteers’ personal experiences with visitors. The design qualities leverage how volunteers engage with visitors in recounting the more typical stories of this place. We thus aimed to create a design that facilitates an experience in the here and now, bringing attention to what is continuously happening at SDH—exchanging values and meanings. We informed our interactions, exiting and resetting the experiences based on these conversations. We chose to design an interactive experience which encouraged more on-site exploration.

In *SDH Palimpsest*, we further understood the importance of emphasising personal heritage experiences, so our VR environment is layered with everyday conversations and further slows the experience down. *SDH Palimpsest* answers the calls for ways of mixing media modalities [77]. The current palimpsest presents participants’ 360° video that incorporates their spoken words and their materials with the first author’s traditional drawings into a collage of wider heritage experiences. We are guided by this choice of media both in how it can be presented and the style of interface that makes sense both practically and diegetically. Directly combining materials such as text, voice, scans and photos has the potential to let the designer play and improve interactions that could communicate these heritage experiences.

Our *genii loci* have an expert sense of the visitor experience. They understand how audiences adjust to new exhibits and their interfaces but also more specific visitor behaviors and preferences. We leverage these insights as we start thinking about experiences as trajectories and, as such, the interaction design better bridges the physical with the digital world. In *Loci Stories*, we put forth a shared experience where all the narratives are layered as a soundscape, moving away from a private reflection to a public one. *Loci Stories* thinks about the interaction as a conversation with the present-day voices. That conversation initially is guided as the audience is led around the work. Yet, the piece becomes unstructured as it allows its audience to return to stories and even play stories upon each other, as inspired by our earlier layered *SDH Palimpsest*.

DwGL guides us that, by piecing our design artefacts together, we are selecting between what to include and what to leave out. Designers are actively participating in creating a new awareness of the existence of stories, narratives and who recounts them. DwGL allowed us to base our designs on theory, practice and empirical studies with our participants. In the end, this teaches us that neither the stories nor the goals of the interactive designs are “new”. Instead, they are the ones that we put against and alongside the more typical discourses of the past and of heritage.

6.3. Limitations and Future Work

DwGL was developed in the context of a certain type of heritage organisation—the National Trust in the UK—and with one property’s community of volunteers and staff. We worked with an institution that is faced with the demands of the present day economic and socio-cultural processes, and how it responds to them is key to its future.

Our work here was provided with the stipulation that it was iteratively designed with participants and reflected on the basis of heritage theory. We acknowledge that the interaction qualities we presented could be improved upon through audience testing. Similarly, the COVID-19 pandemic influenced the level of participants’ involvement in the later stages of prototyping the designs, which resulted in a two-way application of the proposed DwGL approach—one with participants and one of designing away from them.

A key challenge we encountered was the recruitment of more perspectives present on-site, we thus consider the makeup of our participating group as a limitation which we addressed through reflecting on the type of polyvocality our designs embodied—our designs do not overtly challenge the more typical discourses. The value of DwGL lies in recognising how and whether polyvocality is appropriated and encouraging other designers to also reflect and acknowledge that.

Discussions on polyvocality will remain relevant, and they need to continue being developed, opening more space for our proposed approach to be applied in this design setting. Simultaneously, we are aware of the differences in the approach's future application in other heritage institutions and areas of design as well as outside organisational contexts. For example, heritage organisations outside the UK and the Global North will have different cultural practices. Given this backdrop, a direct application of the methods we used may not be the most beneficial route. In such situations, our work can be used as a lens to critique proposed work or an existing project to strengthen the visibility of polyvocality. These different cultural contexts will likely still have *genii loci*—people with knowledge whose experiences and stories will nuance top-down narratives. DwGL will help designers listen to those with different experiences of heritage, situate the authorised contexts within which these experiences occur and consider how our designs might negotiate, challenge or enact more typical narratives. It will remain important that designers attune themselves to how authorised and personal narratives interweave and understand how those dynamics contribute to the design of interactive artefacts for the given context.

It is then imperative for the concept of *genius loci* and the derived approach of DwGL to go beyond the SDH site and beyond volunteers at heritage organisations. This may take place with heritage on the fringe—Schofield et al. [9,59] report how the official interpretation of a historic neighbourhood erases divergent histories, memories, inequalities and place-making practices—or in heritage practices such as beekeeping [89], among others. The people taking part in these projects are *genii loci*—they have knowledges and lived experiences that reveal the plurality of why a place, or practice, matters. In a non-institutionalised setting, *genii loci* can be applied within self-organisation practices (i.e., DIY heritage [90], autonomous heritage groups [91]) and memory practices and rituals (i.e., taking over authorised practices and subverting their use by marginalised groups [53]), and the approach can explore ways to communicate these to wider audiences.

Importantly, since the approach is not prescriptive to any one type of design practice, the exploration and design outputs could take different shapes and bring insights different to ours. In relation to applying DwGL to co-design for interactive displays, we are interested in future work that would adopt the DwGL approach to the design of improved dialogic interfaces [92]. Future work that develops our proposed approach in such a direction might also explore how audiences can be exposed to divergent stories in the long term such that what is “contested” becomes familiar and is better understood. We also envision a possible future for DwGL where the approach informs the design of community platforms or platforms to work with communities. The implications we outlined offer intersections for designing technologies that support communities in heritage contexts designing in collaboration.

DwGL might also be applied outside heritage contexts—for example, in working with a community centre, Wood et al. [93] identify the role and experience of playworkers as being key to successfully engaging with young people. In that work, the authors describe the common discourses used by playworkers—for instance, letting the child lead and recognising children as experts of their own experience. These directions help orient the design focus on the children rather than placing the organisation's interest first. In community organisations, we can find that these discourses are different from the authorised discourses, and the directions being taken by organisations are often driven by the need to acquire funding for future work. The application of DwGL in this setting could help identify quieter voices who could contribute to the design and help forefront the hidden qualities and values in that play provision.

7. Conclusions

In this paper, we presented DwGL—our proposed approach to working with polyvocality when co-designing with communities related to cultural heritage. We developed DwGL in the context of working with the volunteers and staff at a heritage site in the UK. Our proposed approach fits within wider conversations and turns toward capturing polyvocal stories, acknowledging plural heritages and incorporating reflections critically into design artefacts [10,56,85]. What we presented, and what previous studies have reported, leads us to encourage designers working within heritage settings to reflect on and work critically with polyvocality.

We described our research process as our proposed approach of DwGL. In step one, we considered and negotiated how participants were recruited—a process we deem as always ongoing. In step two, we took the time to execute fieldwork to explore the attitudes towards authorised and personal stories at heritage sites. The third step was engaging in design prototyping, which built commitments among our participants and championed their stories and interpretations of the place. Finally, in step four, we detailed how we, as designers, had to enact our own commitments to both the *genii loci* and to critical heritage. Our proposed approach and its four steps guide interaction designers in this field to design for meaningful polyvocality that accounts for the differences in the lived experiences and interpretations of heritage in the present, resulting in designs that do not simply present multiple voices from the past.

We applied our proposed approach to co-creating three designs—*Un/Authorised View*, *SDH Palimpsest* and *Loci Stories*. Our designs explore how the lived experience of volunteers informed design decisions and interaction qualities. In our work we captured how our *genii loci*—the volunteers—saw the technology in heritage interpretation, leading us to maintain the role of the volunteer, choose a slower interactive experience of looking and listening, and network sounds and literal voices. Analysing how we applied DwGL to our designs attuned us to a design trajectory of conversations. Our lessons contribute an orientation of DwGL that is designing using conversations—our designs are a conversation with the *genii loci* and with heritage more broadly. The lessons that implicate approaching design in heritage (and beyond) lie in (1) creating a conversation between authorised and personal heritage stories; (2) understanding that designing using polyvocality will negotiate voices; and (3) understanding that the designs we create do not engender new values but capture ones that already exist and are those that we want to champion for the future.

Since not all designers will have the same practice nor the same understanding of critical heritage theory, the premise of our proposed approach attunes to key aspects of such theory and allow designers to utilise their own creative practice to learn something new about heritage and designing for polyvocality. The strength of DwGL lies in providing points for reflexivity so that designers develop a sensitivity to stakeholders' cultural practices, the uses of heritage, social values, the prevalence of deeply ingrained authorised stories and the question of how to leverage these diverging strands to scaffold interactive designs. We urge designers who adopt DwGL to discuss how their decisions influenced the visibility of polyvocality in the interactive designs created. DwGL is our proposed approach to polyvocality in interactive heritage interpretation, and it facilitates conversations between designers and communities that we believe are worth having.

Supplementary Materials: The following supporting information can be accessed: The six stories: <http://www.locistories.com/stories/> (accessed on 17 May 2022).

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Appendix A

Below is a table of the 33 participants who took active part in our project. We outline their roles but omitted their alias used to report the findings in order to respect anonymity. We elaborate on their level of participation and contribution to the co-design as we discuss each step of the approach in the main body of the paper.

Table A1. Table of participants.

N	Participant Role	Step 2: Exploring Attitudes	Step 3: Building Commitments	Step 4: Enacting Designers' Commitments
1	General Manager	Yes (all activities)	No	Yes (approving exhibition materials)
2	Regional Visitor Experience Officer	Yes (some activities)	No	No
3	Visitor Experience Officer	Yes (some activities)	No	Yes (approving exhibition materials)
4	Social Media Officer	Yes (some activities)	No	Yes (approving exhibition materials)
5	Garden and Landscape Officer	Yes (some activities)	Yes (some activities)	No
6	Local Partnership Co-ordinator	Yes (some activities)	Yes (some activities)	Yes (approving exhibition materials)
7	Volunteers Coordinator and Admin	Yes (all activities)	Yes	Yes
8	Conservation Team Staff	Yes (all activities)	Yes	Yes
9	Gardening Team Staff	Yes (all activities)	Yes	Yes
10	Intern	Yes (some activities)	No	No
11	Volunteer (Room Guide)	Yes (some activities)	No	No
12	Volunteer (Room Guide)	Yes (some activities)	Yes (some activities)	Yes (some activities)
13	Volunteer (Room Guide)	Yes (some activities)	No	No
14	Volunteer (Room Guide)	Yes (all activities)	Yes	Yes
15	Volunteer (Room Guide)	Yes (some activities)	No	No
16	Volunteer (Room Guide)	Yes (some activities)	No	No
17	Volunteer (Room Guide)	Yes (some activities)	Yes (some activities)	Yes (some activities)
18	Volunteer (Room Guide)	Yes (some activities)	Yes (some activities)	Yes (some activities)

Table A1. Cont.

N	Participant Role	Step 2: Exploring Attitudes	Step 3: Building Commitments	Step 4: Enacting Designers' Commitments
19	Volunteer (Room Guide)	Yes (some activities)	Yes	Yes
20	Volunteer (Room Guide)	Yes (some activities)	Yes	Yes
21	Volunteer (Garden)	Yes (some activities)	No	No
22	Volunteer (Garden)	Yes (some activities)	No	No
23	Volunteer (Garden)	Yes (some activities)	No	No
24	Volunteer (Garden)	Yes (some activities)	No	No
25	Volunteer (Garden)	Yes (some activities)	No	No
26	Volunteer (Garden)	Yes (some activities)	No	No
27	Volunteer (Café)	Yes (some activities)	No	No
28	Volunteer (Café)	Yes (some activities)	No	No
29	Volunteer (Café)	Yes (some activities)	No	No
30	Volunteer (Visitor Welcome Hut)	Yes (some activities)	No	No
31	Volunteer (Visitor Welcome Hut)	Yes (some activities)	No	No
32	Volunteer (Conservation)	Yes (some activities)	No	No
33	Volunteer (Conservation)	Yes (some activities)	No	No

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