Community heritage:
an immersive approach to disaster resilience

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Abstract

Geological disasters often cancel or alter the intangible heritage of the affected community. Even if (re-)constructing houses provides fast solutions to solve the emergency, these housings alter the community dynamics and organisation by changing the location and character of neighbourhoods. Such conditions can be observed in the aftermath of the earthquake in Albania in 2019.

The results of this project aim to implement community-based participatory design techniques to strengthen the resilience of tangible and intangible Cultural Heritage by using technologies in the areas affected by environmental risk or disasters.

The research envisages the implementation of promotional interventions in professional training and experiences of excellence, which can guide a transformative process in the immersive Cultural Heritage and Storytelling of communities affected by an environmental disaster. Following the earthquake in November 2019 in Albania, there has been a strategic recognition of cultural heritage as an essential driver of the country's sustainable development; therefore, there is a need to innovate heritage preservation processes, such as digital heritage. The created digital heritage is destined to become strategic and more widespread over time since individuals, organizations, and communities increasingly use digital technologies to document and express what they value and want to pass on to future generations. Therefore, a community approach to heritage is a participatory process in which we discover and negotiate our sense of self, place and community and which values the 'unofficial heritage' that includes everyday practices and narratives, local and personal histories, buildings and local institutions. The action focuses on two levels of exploration of the case study: the preservation of tangible heritage (composed of physical artefacts produced, including artistic creations, built heritage and other physical products of human creativity) and intangible heritage (practices, representations, expressions, knowledge, skills, and associated cultural spaces that communities and groups recognize as part of their intangible cultural heritage, passed on from generation to generation).

The emergence of non-professional historians within the community of citizens, and unofficial historical sources, represents a collateral shift from the usual canon of national history and heritage towards a more participatory narrative of research. Heritage goes beyond physical artefacts, built structures and historical sites. It is also an interaction of time, memories, emotions, and lived experiences. Ensuring that this intangible heritage also becomes digital is a crucial issue, especially for those countries that have suffered environmental disasters or are at risk (such as Albania after the 2019 earthquake). It is also crucial to equip communities in developing countries with the literacy to access, document, and preserve their tangible and intangible heritage. In these processes, design assumes the role of facilitator of community needs and, using advanced technologies, becomes an enabler in this process. For example, virtual and immersive reality are used to simulate an environment that is otherwise impossible in the real world. Thus, digitization practices represent an innovative tool for both tangible and intangible cultural heritage resilience.

Keywords

Introduction

The global crisis generated by the Covid-19 pandemic is hampering progress towards achieving the Sustainable Development Goals, particularly in those critical areas where progress was already limited, as the United Nations Report (2020) notes. From a political point of view, the Western Balkans, specifically Albania, represent a priority for Italy and the EU, thanks to their physical, historical and cultural proximity and the start of accession negotiations to the European community. The priority of this project is to support research and enable sustainability and circularity processes with technologies in the themes of Cultural Heritage and environmental risk. Compared to the new strategic perspectives, the two reference objectives of this project are framed in environmental and climate resilience and digital transformation.

The project plans to implement educational interventions in the field of professional training and the structuring of experiences of storytelling, which can guide a transformative process in the sector of immersive Cultural Heritage and Storytelling of the communities involved in an environmental disaster. Following the earthquake in November 2019 in Albania (World Bank et al., 2020), there has been a strategic recognition of cultural heritage as an essential driver of the country's sustainable development; therefore, it emerges the need to innovate the processes of heritage protection, such as through

digital heritage. This digital heritage created is destined to become strategically crucial and more widespread over time; more and more individuals, organisations and communities are using digital technologies to document and express what they appreciate and want to pass on to future generations. A community approach to heritage is thus a participatory process in which we discover and negotiate our sense of self, place and community and which values 'unofficial heritage', which encompasses everyday practices and narratives, local and personal histories, buildings and local institutions. All this combined generates a new sense of identity, which has been lost by the modernisation of lifestyle and, moreover, through dramatic, disruptive events such as earthquakes. The project focuses on two levels of exploration: training in safeguarding **tangible heritage** (composed of physical artefacts produced, maintained and transmitted intergenerationally in a society; includes artistic creations, built heritage and other physical or tangible products of human creativity) and **intangible heritage** (practices, representations, expressions, knowledge, skills, and associated cultural spaces that communities and groups recognise as part of their intangible cultural heritage, transmitted from generation to generation).

The emergence of non-professional historians within the citizen community and the industry-wide recognition of the need to develop diverse, non-official and popular historical sources represent a general shift in focus away from the usual canon of history and national heritage towards a more localised narrative of research. Heritage goes beyond physical artefacts, built structures and historic sites. It is also an interaction of time, memories, emotions, and lived experiences. Making sure that this intangible heritage also becomes digital is a fundamental issue, especially for those countries that have suffered environmental disasters or are at risk (such as Albania after the earthquake or Italy due to hydrogeological instability). It is also essential to equip communities in developing countries with skills and knowledge to access, document, preserve and share their tangible and intangible heritage. In these processes, design assumes the role of facilitating the community's needs. Using advanced technologies becomes an enabler in this process: for example, virtual and immersive reality is used to simulate an environment that is otherwise impossible in the real world, video gaming, drone use, etc. Digitisation practices represent an innovative tool for tangible and intangible cultural heritage resilience.

Immersive technologies as a tool for storytelling

Intangible heritage is often based, if not mainly, on narration when we refer to history and culture. The narrative is also the oldest form of passing knowledge and tradition from mouth to mouth, from generation to generation, long before written testimonies appear. It represents the treasure of a community, on a larger scale, the culture of a society. On this, the narrative paradigm formulated by Walter Fisher claims that all meaningful communication occurs via storytelling or reporting of events. Humans participate as storytellers and observers of narratives. Fisher elaborates on five elements:

"Starting with a notion of narration as something all humans already use in their communicative interactions, the narrative paradigm advances five presuppositions (p. 64).

First, humans are *Homo narrans* —they are innate storytellers. Second, the paradigmatic mode of communication is not an argument but instead is the provision of "good reasons." These reasons implicate important values and vary across communication practices, objects, and situations. Third, the production and assessment of good reasons are affected by human history, experience, and culture. Fourth, human rationality is ruled by our nature as narrative beings. This means that humans have an "inherent awareness of narrative probability, what constitutes a coherent story, and their constant habit of testing narrative fidelity, whether or not the stories they experience ring true with the stories they know to be true in their lives". Fifth, the world is not a set of puzzles to be solved. Instead, the world is known as a story, and there are always a range of potential stories to choose among in explaining the world and our place in it" (Stroud, 2016, page 1)

As it emerges, that narrative is based on good reasons and not on scientific data; there is a risk of alteration of historical facts by the emergence of non-professional historians within the community of citizens, and unofficial historical sources, which represents a collateral shift from the usual canon of national history and heritage towards a more participatory narrative of research. Nonetheless, a community approach to heritage is a participatory process in which we discover and negotiate our sense of self, place and community and which values the 'unofficial heritage' that includes everyday practices and narratives, local and personal histories, buildings and local institutions. The richness of determined geography is based on "mainstream" facts that build a kind of skeleton structure to which personal stories, vertical narratives and testimonials of traditions and facts are attached. An emerging innovative technology in the field of cultural heritage, Augmented reality (AR), Virtual Reality (VR) and Mixed Reality (XR) for sure assume a privileged role in building a digital twin of what the narrative (therefore intangible) together with tangible artefacts can offer:

"In fact, AR and VR allow you to discuss the beauty of the area, discovering what is hidden behind a work of art or a historic building, allowing you to better appreciate archaeological sites and museums, in short, enriching the visitor experience as a whole. Thanks to the incredible ability of immersive technologies to make the invisible visible, it is possible to create real journeys between historical eras and places, recreating particularly representative settings, buildings or moments in our history."[1] (Cappannari, 2022, page 100)

What has always been a vocal narration in a digital world becomes a visual narration, enriched with all elements an immersive technology can offer: 3D models, audio as music or vocal registration, images, animations etc. However, a full immersion into digitalized realities is currently limited to VR applications and works very well in indoor environments, as far as virtual reality recreates real digital spaces, entirely playing on the concept of suspension of disbelief and leveraging immersion to tell stories or make the user live experiences that can catapult into them. The technology requests the use of vision blocking screen to reach full immersion. In out-

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1   Translated from original language by Authors.

door environments, this is not applicable. At the same time, Augmented reality is an expansion or integration of the reality that surrounds us, an enrichment of our senses thanks to digital information also using pass-through technology that shows reality through a monitor, such as that of our smartphone. This way, adding digital content to the real environment overlaying holograms to the framed image is easy.[2] In many cities, there are available applications to amplify the information flow through AR technology.[3]

An interesting example is Buyeo, a town in South Korea rich in history that has recently become the first holographic city in the world: thanks to a social holographic augmented reality platform, the citizens of this historic town will be able to contribute to enriching the digital twin of Buyeo with 3D models, text, video and audio messages.[4] It reminds Google Earth of some years ago, where people could upload 3D models created in Sketchup to enrich the experience.

Methodological approach to disaster resilience through community participation

New technologies open new dimensions in the resilience of tangible and intangible cultural heritage of communities affected by environmental disasters, but not only; through experimental and experiential design, useful tools and enabling technologies can be created for the regeneration of a dynamic and participatory identity of communities whose tangible/intangible heritage is at risk which could lay the foundations for a future community of practice.

Community design, as recently defined and formulated, within the broader scope of territorial design, redefines certain challenges posed by the contemporary world and expands the repertoire of investigative and operational tools able redesign the territory and elaborate regeneration scenarios through the involvement of local communities (co-design, co-planning, co-delivery, co-assessment) (Brandsen et al. 2018). With this vocation, this research places design "at the center of the transformation process" (Sicklinger, Varini et al, 2019) with the aim of generating design actions by supporting communities in the identification, co-design and valorization of local tangible and intangible resources and in the definition of system strategies and regenerative design actions that have environmental, cultural, economic and social spin-offs in the reference territories, capable of increasing their value by reactivating their underlying potential. The project study intends to investigate and demonstrate that a transdisciplinary action between "Community Design" and "Design for heritage and cultures" can act as a regenerator in territories affected by environmental disasters. Reconnecting academic social design research with participatory, applied and experimental forms of knowledge and action research is an important mission for universities and institutions involved in cultural and environmental education and development. In fact, the complexity of urban micro-contexts in a panorama of climate change and territorial policies calls for greater interpenetration between academic research and action and inter-action research between public actors, private actors and civil society. The proposed research project

aims to develop a joint reflection on the city's challenges and formulate concrete proposals for a regenerative and integrated local development of resident micro-communities affected by ecological and environmental disasters. Faced with the complex and multifaceted nature of urban, environmental and social problems, interdisciplinarity enables the development of a global understanding, a transversal sensitivity and the adoption of an original perspective to propose new practical solutions.

The main methodological approach adopted involves experimenting with new forms of urban research that are both theoretical and practical through bringing together resident and temporary communities and mobilizing the knowledge of experts and locals to promote temporary community design workshops with a collective and interdisciplinary approach. A wide range of investigation and dissemination tools will be experimented with at the intersection of regenerative design, strategic and systemic design and co-design, adopting an open and participatory, dynamic and regenerative approach based simultaneously on research and practice and developing multiple visual outputs.

The case of immaterial heritage in Albania

Most of the inhabitants of Albania were woken up early on November 26th, 2019. A 6,4-magnitude earthquake hit the most densely inhabited area of the country, leaving behind 51 victims, more than 2000 damaged buildings, and around 5000 people temporarily or permanently displaced (World Bank et al., 2020). After the emergency interventions and when search and rescue operations were concluded, a more laborious and long-term problem arose. The displaced people needed new accommodation.

The European Union and the international community engaged in assisting Albania, reconstructing most of the destructed houses and facilities. To accommodate most people in an efficient way and in order to reduce infrastructure costs, not all destructed houses could be built at the original location. In the alternative, the government proposed new settlements, so families from rural areas are being allocated to apartment blocks on the peripheries of larger cities. These communities might have received back the lost houses, but the loss of intangible cultural heritage is difficult to estimate. The earthquake and the successive reconstruction process separated families from the community and eradicated communities from the territory. Narratives connect individuals to communities, and stories connect the past to the present of a settlement. The disruption of this intangible network that connects people, places, and times is an important loss that, being unquantifiable, is difficult to restore.

Digital tools and design strategies can assist in mending lost connections through the digitalisation of intangible cultural heritage. Digitisation processes have generally needed mediation from a professional figure, acting as a gatekeeper for smaller and rural communities in developing countries. Lately, design has been assisting in the removal of entry barriers. The

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large spread of digital devices, better access to the internet, and the creation of applications and user-friendly interfaces make the use of advanced digital technologies accessible to a large portion of the population, even in developing countries. This is reducing digital illiteracy and the digital divide. Online access to digitalised intangible cultural heritage will make it possible to restore lost connections of communities not sharing the same territory anymore. On the other side, the presence of the digitalised cultural heritage will create new connections and enlarge the network of participants in the shared memories, stories, narratives, and values.

These conditions favor new ways of remembering and celebrating shared narratives of the disrupted territories and communities. Design and innovative digital tools employed by VR and AR technology can so be used to mitigate the effects of the displacement of the communities.

Participatory strategies: ethical implications of the project

The research aims to explore possible approaches to participatory design practices, taking strongly into consideration the ethical implications of participants and their approach to intangible heritage. As long as the facilities have been reconstructed in Albania, and housing needs have been satisfied through the (re-)construction of dwellings, the main task is to rebuild the sense of belonging and identity of inhabitants who necessarily need to be the actors of this process. The choice of what to keep alive as memory, what to archive and keep available for later generations and what can be considered unnecessary will be a challenge for the community involved. Participatory strategies represent a new opportunity to increase human rights to access digital and public participation by and for digital technologies, supporting access to culture, education and information, facilitating economic and societal inclusion and access to quality public services in heritage and culture fields by diverse stakeholders.

The project is complemented by a programme of offline/online workshops with an international body of participants representing heritage institutions, university collections, students, NGOs, artists, and museum audiences. New approaches will be workshopped with these communities to improve access and interpretation of community heritage. Interaction with the target groups will inform the final selection of objects for the VR, thereby reversing the top-down approach of the digitisation workflows commonly used in cultural heritage institutions and moving toward more equitable community-level engagement. These workshops aim to question and debate who owns such collections and who may contribute to them, questioning the nature of co-creation and co-curation. The project envisions the setup of Co-created output in the form of an exhibition using technological solutions resulting from collaborative work undertaken in the workshops. These may be used by teacher or student in the present and the future, highlighting how knowledge acquisition, exchange of ideas, and collaborative thinking is key to developing interpretational skills suited to the complexity of today's world.

Lastly, there are legal and ethical considerations to be taken into account. It is important to ensure that any cultural heritage objects presented in the XR are done in a way that respects the objects and their cultural significance and context and that any use of the objects is done with appropriate permissions and in accordance with relevant laws and regulations.

Conclusions and proposals for future research directions

This research project straddles the line between re-elaborating memory - through participation and narration - and looking towards the future – through immersive technology and 3D digitisation. The future activities of the research aim to foster the resilience of Albanian communities' tangible and intangible cultural heritage in the 2019 earthquake-affected areas through experimental and experiential design that aims to create useful tools and enabling technologies for the regeneration of dynamic and participatory community identity.

Immersive and extended reality technologies in regeneration contexts could:

a) enable support capacity for community-based participatory, integrated, sustainable and inclusive management.

b) strengthen initiatives to protect and safeguard cultural and community heritage.

c) support less developed regions affected by the earthquake to develop sustainable and resilient reconstruction processes.

d) Implement community-based participatory design techniques to strengthen the resilience of tangible and intangible Cultural Heritage.

The use of Mixed Reality (XR) as a technological substrate for this participatory 'journey' offers solutions to academic communities in the target country with common working tools and technological knowledge for heritage conservation through an interdisciplinary approach; it also lays the foundation for the promotion of knowledge of heritage and cultural assets through new technologies such as video gaming, virtual immersive reality, use of drones to represent the destroyed architecture of ancient monuments, and other forms of digitisation. Based on a digital twin concept of existing and destroyed heritage, it will be possible to rebuild the lived environment how it was, augmented with narratives of those who lived in the place.

Future steps will investigate how to interact with and (re-)interpret digital heritage archives to engage meaningfully with the digitised heritage by exploring the objects and their narratives via extended reality artworks but also to create playful yet socially-engaged game-like experiences using extended reality (XR) technologies, disrupting dominant narratives, and representing marginal cultures and communities by embedding hidden stories, perspectives and artefacts that are currently obscured by heritage collections' (often unwittingly) dominant narratives. The new connections, meanings and nuances that will emerge will help demonstrate the novel uses of digital heritage archives to create rich, diverse, and layered narratives, which can invite and entice a wider community, to engage and participate more deeply with the memory "before" and "after" the disaster.

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