Giuseppe Pace
Renata Salvarani *Editors*

Underground Built Heritage Valorisation

A Handbook

Proceedings of the First Underground4value Training School

Heritage and Community Identity, 1

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Underground Built Heritage Valorisation

A Handbook

Proceedings of the First
Underground4value Training School

Edited by

Giuseppe Pace and Renata Salvarani

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Preface

Giuseppe Pace and Renata Salvarani

Why publish a Handbook on a COST Action Training School? Hopefully, these pages may serve as springboard for a shared operational pathway for researchers, scholars, and professionals who together with stakeholders and local communities want to develop heritage-led community development. Each player holds a different point of view and the results of various experiences throughout Europe and its surrounding areas, are key contributions to successful actions.

This Handbook covers all lectures and research activities developed and presented in the context of the First Underground4value Training School. The School, a main focal point of the COST Action CA18110 "Underground Built Heritage as catalyser for Community Valorisation" was held in Naples, at the majestic Castel dell'Ovo overlooking the sea. It was a challenging experience that attracted 30 graduate trainees from 12 countries across Europe and Turkey.

The specific focus is on Underground Built Heritage (UBH), an element of value for communities, cities and societies, the fulcrum of transformations and processes of development, rebirth, and resilience.

By integrating multi-disciplinary knowledge with an innovative planning approach, this training experience represented a point where all knowledge, collected through the different activities, could be explicated and shared in training modules, as a first step for building capacity from both an academic and professional perspective on UBH.

Why a Handbook connected with a Training School? Training schools are a qualifying opportunity within a COST Action, an opportunity to compare concrete experiences based on case studies and case histories of different territories and cities.

For five days, the U4V Training School proposed morning multi-disciplinary lectures held by COST Action CA18110 member experts and professors, and afternoon research teamwork tutored by six researchers. On the sixth day, trainees presented their research outcomes in the form of posters that were awarded, and certified in a final ceremony. The School allowed trainees, trainers, tutors, professors, and other professionals to work alongside each other, express their opinions and either share or gain more knowledge relating to UBH, conservation techniques, valorisation strategies, planning and participation tools.

It was a collective learning process, where there was no distinction between professors and students, but rather all students, learning together about those intangible assets for seeding local community engagement in the UBH valorisation process. People from multiple European countries, both eastern and western, showed a vast range of cultural differences, not just on a personal basis but also in their knowledge, opinions, and ways of thinking. Trainers and trainees enthusiastically studied together, through interactive lectures on theories, methodologies and experiences, and research teamwork. For the action members, those lectures became an opportunity to better clarify the overall approach, and to question theoretical and methodological weaknesses. For the trainees, it was a valuable opportunity to behold and appreciate the fascinating and rich heritage of the underground, and learn how empowering local communities can be beneficial to the heritage valorisation process.

The enthusiasm and dedication of our trainees resulted in a number of detailed proposals of real-life case studies collected here, also thanks to the support of the tutors who successively became full members of the research teams and lead them in the very intensive and interactive effort of creating a research idea and explicating it through a poster.

This Handbook attempts to provide a first insight of this collective learning experience. It includes the lectures held during the training school, in relation to the COST Action Underground4value, and its main topic, the UBH, the technologic needs, and the approaches for UBH conservation, valorisation, and decision-making. The second part of the Handbook explores the four case studies investigated during the first year of the Action, from the perspective of local partners and of the researchers who embarked on a short-term scientific mission to each area They provide an account of the challenges they faced to organise living labs, involve local stakeholders, manage meetings, and achieve results.

The final part of the Handbook presents the posters produced as a result of the school and the ideas behind them.

Thus, this book is a research, project and management tool based on scientific comparison and experiences in real situations.

This Handbook will be implemented every year with the scope of developing new training modules for planners, local community facilitators, promoters, and decision-makers to integrate knowledge on underground space, cultural heritage studies and community-based planning.

In line with COST objectives, it responds to the need for involvement and enhancement of young researchers, organised in research and project groups, who co-authored the results and texts.

It develops shared operational lines in different areas of Europe, taking into account territorial specificities and the different degree of exploitation achieved, thanks to the participation of researchers and professionals from diverse *milieux*.

We can achieve such objectives if we follow a path that begins by clarifying the sense and the cultural and social perspective of valorisation activities.

That is why this Handbook and the accomplishments of the Training School, reflect the basic definitions of heritage valorisation, management, and planning and define a taxonomy through words, such as *meaning*, *semantisation*, *cultural value*, *historic landscape*, *community*, *participation*, *empowerment*, *sustainable transitions*, or *co-creation*.

When dealing with such major issues, UBH plays a particular and decisive role: in cities and landscapes it catalyses deep social dynamics, it becomes the engine of processes that involve the life space of the communities.

The theme of CA18110 Underground4value is validated by the activities and the results of this first Training School, a fulcrum of general and complex processes, transversal to the European challenges of Innovation, Social Cohesion and Sustainability.

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CHAPTER 1

An Introduction to Underground4value

Giuseppe Pace

1.1. Introduction

This chapter offers a first insight of the COST action CA18110 Underground4value, by summarising its objectives and the strategy for supporting Underground Built Heritage (UBH) conservation, valorisation, management, and decision-making through community-led development. To get Underground4value knowledge and competencies' needs, a primary element is to follow the action challenge of "…promoting UBH as a valuable resource to celebrate and preserve, and when sustainable, to re-use and valorise, realising its full potential to support local communities' development" [1].

This challenge puts together two different issues: from the one side, there is the UBH, a unique cultural resource, on the other side, the local community, which could greatly benefit of this resource through social innovation.

The first is context-specific, characterised by an historical and cultural exclusivity, but often largely unexplored, even not documented, and indeed under-exploited, also because once such sites lost their original purpose, they often remain parts of a hidden and forgotten cultural landscape. Individuals and groups of people, organised around common values and attributed with social cohesion within a shared geographical location, compose the second, the local community.

Why and how integrate these two issues is our main challenge, that is, how to stimulate social innovations in local communities through heritage management approaches? UBH is potentially at the heart of local community's sense of place, able to contribute to individual and collective identity, by influencing people's sense of belonging and of 'ownership' of localities, as well as daily routines, local rituals, traditions, ambiences, and atmospheres [1]. However, UBH valorisation demands for a reliable and interdisciplinary UBH knowledge base (i.e. archaeology, geology, history, spatial and urban planning, cultural anthropology, economics, architecture, and cultural tourism), to provide decision-makers, stakeholders and communities with historical and archaeological backgrounds, integrated geophysical explorations, and surveys of the earth and subsoil resource. Usually, these competencies

are owned by a global community of experts and professionals, the so-called "global heritage community", which sees cultural heritage as a living history incorporating social processes of both continuity and change in a cosmopolitan perspective [2]. Nonetheless, they rarely question whether all living histories are apt to create more sustainable societies, or if disadvantaged communities can really sustain heritage conservation in the face of social inequalities.

Therefore, a fracture on the heritage conservation and socio-economic development goals between global and local communities could arise because a different perception of the common good. To solve that, Underground4value promotes integrative networks, both local and global, to establish dialogues that can stimulate a sense of "cultural" community without which integration can only be superficial, if not decorative [3]. Only through substantial community engagement, heritage-led regeneration initiatives can generate sustainable, successful characteristic places, where people enjoy living, engender economic development through job creations and creating social well-being through crime reduction, health, education and social capital [1].

1.2. A Taxonomy of Underground Built Heritage

To establish a dialogue, it is primary to share definitions, concepts, methodologies, and instruments, and to make them clear to the public. In the multi-disciplinary context of the network developed in this Action, we started sharing different concepts and meanings from different disciplines and perspectives to bring us to state a specific cross-fertilised group of definitions, which can better represent our network.

In this process, a primary step is to create a taxonomy of UBH, structured on a set of definitions consistent with the ones proposed by UNESCO global community, which could also be a basis for an UBH official recognition by international organisations. The underground has significance for at least three set of meanings, if we intend exclude culture, politics, literature, and music. The first set refers to heritage, the second to geology, and the third to spatial planning (Fig. 1.1).

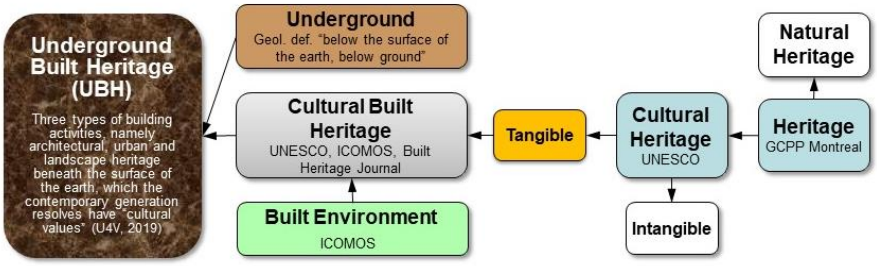

Figure 1.1: A Taxonomy for Underground Built Heritage (UBH)

Before developing new classifications, both structural and functional, of the spaces and their re-uses [4], organising a reliable UBH knowledge base, wide ranging, timely and economically accessible [1], and promoting new meanings [5] based on scientific approaches, methodologies, and outcomes, we considered crucial opening a common reflexion by an initial, general, definition of Underground Built Heritage (UBH), that is:

> Three types of building activities, namely architectural, urban and landscape heritage below the surface of the earth, which the contemporary generation resolves have "cultural values" [1]

This definition has its origins in the general definition of 'underground', as stated in the Cambridge Dictionary "*below the surface of the earth, below ground"* [6] and from Kamp & Owen:

> Earth's surface is continuously evolving and is the result of the complex interactions between Earth's internal (endogenetic) and external (exogenetic) processes. Endogenetic and exogenetic interactions result in landforms and landscapes that are the product of numerous different processes, and thus are 'polygenetic' in origin [7].

Evidently, these processes make possible that what is over ground today could be underground tomorrow, such as the archaeological sites. The other definition, relevant for UBH, is the one of (Cultural) Built Heritage, which UNESCO defines as "*archaeological, urban and architectural heritage*" [8].

More extended definitions are those proposed by ICOMOS and Built Heritage journal, both linked to the definition of *Built Environment*, meant as "*human-made (versus natural) resources and infrastructure designed to support human activity, such as buildings, roads, parks, and other amenities*" [9].

> *Cultural buildings, historic landscapes and archaeological sites*: a quantitatively minor part of the built environment: that part which the contemporary generation resolves has "cultural values", and accordingly merits special protection from the chances of erosion, in order that it can be better enjoyed by the current generation, and passed on to the future [10].
>
> *Architectural, urban and landscape heritage,* which includes assets already listed for preservation, as well as the potential heritage that still awaits evaluation and recognition [11].

Built Heritage is also a sub-category of Cultural Heritage, originally defined by UNESCO in the "1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention)" as follow [8]:

- *Monuments* (architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art, or science)

- *Groups of buildings* (groups of separate or connected buildings which, because of their architecture, their homogeneity, or their place in the landscape, are of outstanding universal value from the point of view of history, art or science)
- *Sites* (works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view)

However, since the adoption of the Convention, the UNESCO vision of cultural heritage has constantly evolved, developing in "the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations" [12].

In addition, very remarkable is the definition of Cultural Heritage introduced by the Council of Europe in the Faro Convention [13]:

> …a group of resources inherited from the past, which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time [13].

Following this taxonomy, Cultural Heritage is a sub-category of Heritage, which finally evolved in the following definition:

> Heritage means any asset or group of assets, natural or cultural, tangible or intangible, that a community recognizes for its value as a witness to history and memory, while emphasizing the need to safeguard, to protect, to adopt, to promote and to disseminate such heritage [14].

That definition mentions tangible and intangible heritage, which UNESCO classifies for Cultural Heritage as follow [15]:

- *Tangible Cultural Heritage*: physical artefacts produced, maintained, and transmitted inter-generationally in a society. It includes artistic creations, built heritage such as buildings and monuments, and other physical or tangible products of human creativity that are invested with cultural significance in a society.
- *Intangible Cultural Heritage:* oral traditions and expressions, including language as a vehicle of the heritage; performing arts; social practices, rituals, and festive events; knowledge and practices concerning nature and the universe; traditional craftsmanship.

Even more in detail, UNESCO defines Intangible Cultural Heritage as follow[1]:

- *Traditional, contemporary, and living* at the same time
- *Inclusive*: we may share expressions like those practised by others
- *Representative*: it thrives on its basis in communities and depends on those whose knowledge of traditions, skills and customs are passed on to the rest of the community, from generation to generation, or to other communities
- *Community-based*: heritage when it is recognised as such by the communities.

However, this is only a first try for an UBH taxonomy. As the reader will discover, several authors provided in this handbook their definitions of the same topics. Probable differences reflect different disciplinary and experiential approaches, which once framed in a general taxonomy can stimulate the dialogue and deepen concepts and definitions to achieve a common understanding.

1.3. **A state-of-the-art on underground studies**

In a similar way to the definitions and classifications, the background of studies on UBH management, valorisation, and planning is very limited and mainly specific to some typologies (i.e. catacombs, mines, archaeology, etc…), being developed throughout four disciplinary trends, such as heritage management, underground urbanism, archaeology and speleology, and sustainable cultural heritage. In addition, in the heritage planning context, urban and rural regeneration studies and experiences have gained a certain relevance.

Misunderstanding these different disciplinary backgrounds could be a limit for valuing authors' chapters, which on the contrary offer a fascinating multi-disciplinary exercise. Therefore, the following paragraphs provide a schematic overview of some of the abovementioned trends, starting with a short review of Cultural Heritage management, whose last decades' evolution has a paramount relevance for Underground4value approach.

1.3.1. ***Cultural Heritage management***

Underground Built Heritage has not developed a specific management field of studies yet. However, it can be considered part of the broader heritage management's international discussion, developed only in recent times [16] [17]. Before, all heritage issues were organised by each country's laws, administrative traditions, and procedures. Still today, the management of cultural heritage assets, such as our underground resources, is strictly dependent on national distinct political structures and laws, often closely tied to political history and land ownership practices.

Although still persist linguistic variations reflecting differences in tradition, history, geography, politics, and professional practice [17], international conventions, such as the ones of UNESCO and Council of Europe, have sought to codify common understandings of language and meaning. As stated by many Authors in this handbook, the current more comprehensive scope of heritage has been reached by incremental expansion, in similar way the definition expanded to include standing buildings, non-monumental heritage, landscapes, contemporary, and intangible heritage [17].

Current cultural heritage management approaches are originated by a paradigm shift from the concept of heritage use and exploitation to the one of conservation and acknowledgement of other ways of viewing the past [17]. This change depends on the replacement of the term "cultural property" with "cultural heritage", more interconnected with community and society [17]. Heritage is normally considered to be of concern to society at large, a resource for the public [18]. Being a resource, it must be actively managed, which is different from the more static concept of "taking care of monuments" [18].

General sources of differentiation in approaches to heritage management can be comprises under three headings: law, language, and learning [18].

About law, the most evident difference is between the Anglo-Saxon common law tradition, where society is self-regulating, and the Roman law tradition, where

much depends on the State, which regulates the society. However, other law traditions are equally relevant, such as the German law tradition survived in Scandinavia, with the right of the King as opposed to private ownership. At European level, the EU Treaty excluded in the art. 128 the harmonisation in the field of cultural heritage management [19], practically delegating the Council of Europe to care about heritage. It developed the Convention for the Protection of the Archaeological Heritage, the so-called Malta Convention, that has been very influential for many European countries, although not statutory and voluntary [20].

About language, there is little research into effects of language on heritage management practice. Although English is dominant at the global level, there are "mainstream" and "minority" heritage research communities in Europe. Mainstream communities, such as German, English, French, Italian, Russian, and Spanish, have a "full internal discourse on all relevant topics" [18], without need of participating in other discourses, differently by minority ones, which traditionally have a very outspoken international orientation.

Finally, academic traditions vary throughout Europe, although in European Union there is a uniform bachelor-master system[2] and the Erasmus programme facilitating exchange between universities. Still national differences have considerable influence on different ways of thinking at heritage management, but some European standards for heritage management have been developed. In particular, the Council of Europe produced the above-mentioned Malta Convention, as a result of changing views on heritage, on how to improve its survival, its role in society, and its integration in the spatial planning [18]. Some aspects have been then broadened by the adoption of the Florence Convention on Landscape [21]. The Council developed also practical standards for heritage management [22] and is the most actively concerned with cultural heritage [18]. Of particular relevance is its forward study to the Fifth Conference of Ministers Responsible for the Cultural Heritage in Slovenia (2001) [23], which contains a table showing the perceived "broad trends in cultural heritage management" at that time (Tab.1.1). These new concepts, after two decades, have not replaced the old concepts, but added a different perspective, indicating a shift to consider individual sites as part of a larger whole, such as the historic environment. Key objective of heritage management is not the individual artefact conservation anymore, but the sustainability of the larger whole. Although the last twenty years saw the acceptance of this conceptual evolution and its growing adoption, deficiencies both in the legal frameworks and in the organisational structures still make difficult to put it in practice. The idea behind the heritage management, says Willems, should be understood as "the management of change", being intimately connected to changes in management practices [18].

These changes are related to new concepts, such as the 'characterisation of heritage resources' [18] and 'cultural biography', which led to a trend toward integrated conservation projects, where professionals with different expertise work together on joint projects. These concepts are at the basis of Underground4value, which aspires, even more, to develop facilitators and multi-skilled professionals, for supporting community-led management.

Another development in heritage management practice is caused by the increasing privatisation and the possibility for the market to operate in the cultural heritage sector. This has led to develop standards and mechanisms for quality assurance in several European countries, opening an important field for development [18].

Table 1.1: Broad Trends in Cultural Heritage Management [23].

Theme	***From (old concept)***	***To (new concept)***
Definition of heritage	Monuments	Landscapes
	Buildings	Urban areas
	Sites	Historic environment / cultural heritage
Role of heritage in society	National unity	Respect for cultural diversity
	Generate revenue from visitors	Wider economic benefits/social benefits
- Decisions	State	Region/locality
	Authoritarian	Democratisation
		Participation
- Professionals	Experts	Facilitators
	Single discipline (e.g. buildings, archaeology)	Multi-skilled professionals
	Historical knowledge	Management skills
Significance	Old	Industrial Heritage
		Post-war buildings
	Aesthetics	Commemorative value
	National importance	Local distinctiveness
	Monocultural	Values of different cultures
	Narrow range of values	Wide range of values
- Interpretation	Expert-led	Community-led
- Responsibilities	State-led	Communities
		The market/private sector
	Heritage sector	Environmental sector
Management practices	Designation	Characterisation
	Separate conservation	Integrated conservation
	Site based	More strategic
	Technical research	Philosophical research

1.3.2. ***Sustainable Cultural Heritage***

Similarly, the literature on sustainable cultural heritage is not specific to UBH, but relatively more recent, if we consider that the connection between heritage and sustainable development was introduced only in 2002, with the 'Budapest Declaration' [24]. The Declaration expresses the need to "ensure an appropriate and equitable balance between conservation, sustainability and development, so that World Heritage properties can be protected through appropriate activities contributing to the social and economic development and the quality of life of our communities". In particular, it sees urban heritage conservation as a primary feature for sustainable development, by reducing poverty through economic growth, tourism and job creation [25]. In that context, the Recommendation on Historic Urban Landscape (HUL) exemplifies a relevant progress towards a planning approach, by focusing on cultural resources availability in a certain place [9]. Genovese's chapter 11 provides a specific reading on the HUL, which also is at the basis of the Action.

Another conceptual progress is the 'Florence Declaration on Heritage and Landscape as Human Values' [26], which introduces two relevant concepts, the 'landscape' and the 'community-based planning'. The first, "whether urban or rural, is a

new paradigm for harmonious development, offering an approach that can integrate economic, social and environmental processes" [26]. The second, founded on the "involvement of local communities, the recognition of, and respect for, their cultural heritage, as well as innovative and traditional practices can favour more effective management and governance of multifunctional landscapes, contributing to their resilience and adaptability" [26].

In addition, several EU projects, particularly in the framework of the INTERREG programme have dealt with cultural heritage and methods for its exploitation and management.

1.3.3. *Archaeology and speleology*

In the context of the underground archaeology and speleology studies' literature, the largest part of the advancements is related to the development of new technologies for surveying cavities and 'seeing through the ground', analysing their stability, monitoring environmental factors, and handling conservation treatments. From a methodological point of view, the main evolution is represented by the general classification of artificial cavities of the Commission on Artificial Cavities of the 'Union Internationale de Spéléologie (UIS)' [27], based on time and modality of realisation, and organised through a typological tree with seven main categories, each of them subdivided into sub-types. That classification could represent a useful tool for facilitating communication among researchers, and stimulating more detailed classifications. To that scope, the reader could investigate Varriale's Chapter 3, where is exposed a UBH dynamic classification, based on the analysis of UBH functions.

1.3.4. *Underground urbanism*

The underground space has always been a relevant part of any urban development, since the times of Jericho, the oldest known town, where houses were built half-buried to better ensure the place as part of the city fortification. In chapter 14, Elisei introduces Eugène Hénard, a French urban planner, as the first to conceptualise the use of the underground for planning [28]. However, in the 1930s it was another French architect and planner, Édouard Utudjian, to promote a systematic integration of underground space in the statutory planning system. As Michel Ragon describes in his presentation of "Architecture et urbanisme souterrains" [29], Utudjian devoted his life to the so-called underground urbanism, by establishing the

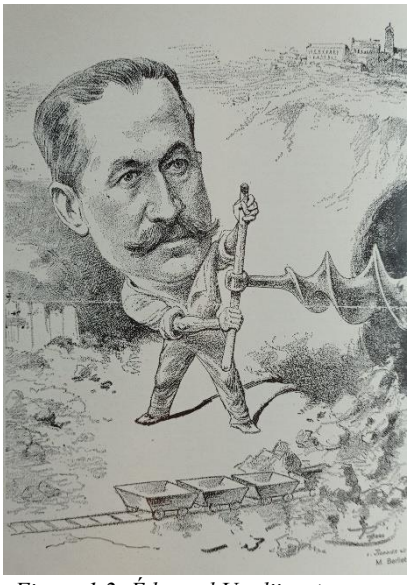

Figure 1.2: Édouard Utudjian (painting: M. Berliet) [29]

GECUS (Groupe d'Études du Centre Urbain Souterrain), coordinating as secretary general the CPITUS (Comité permanent international des techniques et de l'urbanisme souterrain) and creating the periodical 'Le Monde souterrain' (1934-1973).

Under the influence of Le Corbusier's rationalism, he promoted a tri-dimensional zoning for integrating the underground space in the surface city ("ville épaisse") [30]. That pioneering experience opened the field for many other initiatives, aiming at using underground spaces as a strategic resource, especially for dense urban areas, with respect to concurrent objectives such as densification, integration and securitisation of infrastructure and services.

In recent times, an increasing number of international groups of research, by means of several initiatives, have demonstrated the underground attractiveness in shaping a new urban vision. In particular, two cooperative actions are remarkable.

The first was the Associated research Centres for the Urban Underground Space (ACUUS)[3], founded in 1996 as an international, non-governmental organisation promoting partnerships amongst all actors in the field of planning, management, research and uses of urban underground space. The second, the ITA Committee on Underground Space (ITACUS) is a permanent committee of the International Tunnelling and underground space Association (ITA), promoting events and raising awareness of the need for planning for the future of underground space use[4].

Distinctively, ACUUS promotes methods, techniques and professional skills allowing the municipalities and developers to better intervene in the urban underground. Among their objectives, there is the aim of establishing a cadastre of the urban underground and to make it usable (and to be sold, bequeathed or rented) at certain conditions by all urban actors, public and private, especially through public-private partnerships. In terms of cultural heritage, ACUUS suggests that urban underground construction builders should consider, by necessary means and with the agreement of the local authorities, the conservation, the protection or the relocation of archaeological patrimony. In addition, it has developed the first online database for Worldwide Underground Space development[5]. However, ACUUS approach does not consider UBH as a resource for development and does not take into account any community-led strategy.

On the other side, ITACUS, together with other associations and organisations (ISOCARP, ICLEI, IFME, UNISDR), recently developed a 'Think Deep' approach and the 'Young Professional's Think Deep Program' addressed at stimulating interaction among interdisciplinary professionals in the field of the underground space [28]. That approach, based on Transition Management, believes that without a vision of the use of urban underground space, without a planning tool and a strategy for managing the use of this vast spatial asset, all underground developments will be on a 'first come, first served' basis. This will lead to spatial congestion and competition between resources.

The term 'Deep' is also part of the emergent 'Deep City Method' [31] developed at the *École polytechnique fédérale de Lausanne*, which aims at supporting urban planners to decide how to best exploit underground resources, and assisting cities in extending their legal systems into these traditionally lawless areas. Based on a

macro zoning of the underground urban space at a city scale, the approach selects high potential land parcels for short-term development, while it reserves special protection areas for valuable geo-resources protection for long-term use.

However, both approaches provide planning tools for the underground space, without any consideration of cultural rights, of rights to the heritage, or at least that the communities have a stake [17].

Another similar initiative is the COST Action Sub-Urban (2013-2017)[6], which aimed at establishing a *European network of Geological Surveys, Cities and Research Partners*, for improving how to manage the ground beneath the cities. To that purpose, the Action developed the SUB-URBAN Toolbox, "a collection of recommended methodologies and workflows, case studies, reference documents, external web sites and other supporting materials, guidance documents and best practice documents that gives the users a feel of what can be achieved in their own organisations and that helps users to address issues with a fraction of the costs"[7].

Finally, a recent book on underground urbanism [32] tries to associate the tridimensional planning concepts with architectural design and solutions, by presenting a wide collection of case studies. However, it is addressed to city planner and architects, focusing on a comprehensive architectonic vision of the urban context, with little concern about citizens needs and other-than-the market stakeholders' interests.

1.3.5. ***Urban and Rural Regeneration***

Finally, it is significant to include in this brief survey the massive literature on both urban and rural regeneration, which are at the basis of several studies and European research projects, such as ROCK (Cultural Heritage leading urban futures)[8] and RURITAGE (Heritage for Rural Regeneration)[9] funded in the framework of EU Horizon 2020. Urban literature highlights the potentialities of heritage-led urban regeneration initiatives [33] [34], by considering the built heritage as a valuable catalyst, which contributes to individual and collective identity, social cohesion and inclusion. Adaptive reuse of heritage resources can provide a sense of stability and a sense of continuity for people and societies. Rural regeneration literature has recently placed greater emphasis on enabling and empowering local people in rural areas to take greater control over their own lives through 'bottom-up' development approaches that involve local people in their planning. This approach is encapsulated at EU level under the name of Community-Led Local Development (CLLD). CLLD is defined as "a tool for involving citizens at local level in developing responses to the social, environmental and economic challenges we face today" [35]. On this argument, Chapter 10, 12, 15, and 17 provide different keys of analysis.

1.4. **Underground4value Challenges**

Underground4value is rooted in the initial recognition that, although many success stories [4], UBH preservation and valorisation finds relevant and generalised

constraints. First, there are significant knowledge gaps as UBH sites are largely unexplored, even not documented, and indeed under-utilised [1]. Second, geotechnical, and geo-environmental concerns, together with the presence of archaeological sites and infrastructure, deliver a perception that the underground space is a high-risk and costly area of intervention [1]. Third, planning takes into account the "underground" for its 'invisibility', as a potential available space, especially when limited surface space is unable to meet the demands of new urban functions [1].

To fill knowledge gaps in many different aspects (i.e. archaeology, geo-technics, history, cultural anthropology, economics, architecture, cultural tourism), communities should acquire specific competences and skills or be supported by external expertise. That brings to another important gap of local communities, too often lacking of scientific and technical knowledge, technological capabilities, and financial resources for a satisfactory conservation and re-use of UBH sites. In particular, they demand for surveys to understand complex damage and decay mechanisms, long-term environmental processes and medium to short-term natural, human, and ecological risks. In a word, they ask for being guaranteed on the resource safety and accessibility. Without surveys and monitoring tools, missing or considered too costly, many underground sites, once lost their original function, frequently remain hidden and forgotten landscapes, lying abandoned and in a bad state of conservation. Therefore, filling knowledge gaps and building capacity at local level represents a major challenge for Underground4value.

Another potential gap is represented by national and regional planning approaches to cultural heritage, which can be strictly conservative, transforming the UBH in a constraint to local communities' needs and potentialities, or can use the UBH for generating spaces of pure consumption and gentrification [36], or developing 'entertainment-led regeneration' [37]. The underground, as for the "underground urbanism", is seen by planners as a space for hosting transport interchanges, car parking, common canals for utilities, warehousing, and hazardous materials storage, and even sport facilities. The existence of UBH and associated needs of conservation can, therefore, become a constraint and a cost for any underground space usage, given the absence of a specific legislation on underground heritage and little evidence of a policy-driven conservation and valorisation of UBH at European level [1]. On the contrary, it would become a strategic opportunity at local, urban and regional levels, if developed in a context of community engagement, with more effective coalitions of 'actors' supported by structures that encourage collaborative relationships in terms of regeneration policies, citizen entrepreneurship, social innovation and sustainable tourism.

Changing this perspective is another primary challenge of Underground4value. It requires an innovation in the development path, by introducing new practices and behaviours that enable society to meet its needs in a more sustainable way. To that scope, Underground4value promotes among planners, decision-makers, and citizens the awareness that physical approaches can only be part of the solution to communities' problems, and that planners should better "…address how people mix and connect, their motivations, and whether they 'own' where they live" [38]. Heritage

is a social, cultural and economic asset for urban development and aims at "…preserving the quality of the human environment, enhancing the productive and sustainable use of urban spaces, while recognising their dynamic character, and promoting social and functional diversity" [9].

This approach demands to acquire and test tools for encouraging dialogue and engaging stakeholders across society "to determine where we need to go and how we are going to get there" [39]. These tools should support local communities' sustainability transitions, by stimulating and facilitating their empowerment, connecting natural, social, cultural, political and economic environments, gauging impacts across different spheres of life, and grasping the importance not only of 'hard' but also of 'soft' infrastructures" [38].

As several times introduced, a main reference for promoting that change towards a sustainable use of UBH is the "Recommendation on the Historic Urban Landscape (HUL)" [9]. It implies the application of a range of traditional and innovative tools, based on civic engagement, knowledge and planning tools, regulatory systems, and financial tools to adapt to different local contexts and built heritage. Expressly, the civic engagement tools aim at involving and empowering different stakeholders, supporting their capacity building, and helping them to identify key values in their urban areas, to develop visions, goals and actions to safeguard their heritage and promote sustainable development. HUL management, therefore, calls for the integration of these tools in urban governance dynamics, in order to facilitate dialogue by learning from communities' histories, traditions, values, needs and aspirations and mediating between groups with conflicting interests [9].

Using as starting point HUL, a flexible and general conceptual framework characterised by "soft-law", Underground4value tries to implement and adapt voluntary planning to different specific contexts, opening the door to a dialogue without entering in contrast with existing planning arrangements. HUL follows the same direction of sustainability transition approaches [40], which demand for changes in interdependent societal systems and across multiple scales – from the supply chains to the communities and individual citizens' behaviours and values – and imply complex and uncertain processes, mainly depending on experimentation, learning and sharing ideas [40]. The reader will find adequate information about informal planning and transition management approaches in the Chapters 16 and 17.

Underground4value believes that establishing and implementing a wide multinational/cultural/sectoral network of academics, practitioners, decision-makers, and innovators would develop, experiment, implement and disseminate such integrated approach, promote innovation and the fullest open exchange of good/best practices.

1.5. **The Objectives**

The three Underground4value main objectives can be synthesised as follow [1]:

– To provide a balanced and sustainable methodology for supporting the conservation and re-use of the UBH, by classifying different approaches through case-studies, by adapting, operationalising and testing the "Recommendation on the

Historic Urban Landscape (HUL)", and by introducing new innovative technologies for the UBH knowledge, preservation, and valorisation

- To realise the potential of UBH for empowering local communities, by supporting their active involvement, stimulating bottom-up initiatives (e.g. Living Labs), and guaranteeing continuity of use and significance to the underground historic fabric, revitalisation of the public realm and skills development for townspeople.
- To develop new skills for planners, decision-makers, promoters, and local development facilitators, by testing and running a new training course on UBH, which will integrate multi-disciplinary knowledge about the underground heritage with a planning framework based on HUL and boosting cultural planning, strategic spatial planning, transition planning and management.

1.6. **The Approach**

The proposal Underground4value was the result of a few people work [40], which shared the vision of a UBH able to catalyse local development, to build new significance, to foster cultural transitions, and to create or reinforce a sense of community in the local people, thanks to its long history going back to several thousands of years. This vision gives a central role to culture, considered as the total way of life of a people [2] and embodied in people's skills and talents (i.e. historical, industrial and artistic heritage representing assets including architecture, landscapes or landmarks, but also local traditions, festivals, rituals or stories, food and cooking, and "cultural industries"). A cultural approach can strength social cohesion, increase personal confidence, improve life skills, people's well-being, and develop new training and employment routes. In addition, it can support UBH conservation and re-use, and transform it into an element of local distinctiveness, as an imaginative cultural resource, the significance of which is embodied in landscapes and traditions and creates the identity and values of a territory.

Even more, by re-associating multiple uses and giving capacity for development at all levels (regional, local) and all temporalities (short, medium, and long term) this vision is strongly rooted in an ecological UBH, as a place of equilibrium for nature, identity and attractiveness, which generates positive and self-sustaining "natural" interdependencies.

The challenge, as the reader can easily understand, would be translating that vision into a balanced and sustainable scientific methodology shared by a large community of scientists, practitioners, administrators, and citizens, capable to build capacity for unlocking this potential connection between UBH and local community and transforming it in a positive socio-economic and environmental resource.

For supporting this approach, it promotes archaeological and historical research and makes profit of the digital revolution, for connecting the local with the global community by delivering a global vision of the UBH site, as well as a detailed high-

resolution reconstruction of the more interesting items of the heritage, using a multiscale approach from landscape to archaeological sites or monuments, to the single artefact.

The chosen methodology operates a series of yearly structured activities, with internal networking meetings, the so-called working groups, for advancing in theory, methodologies, and analysis, and external networking activities, such us missions, local workshops, and living labs, whereas knowledge transmission and exchange will reveal practices, imaginaries and local cultures associated with the UBH, renew their interpretation, and stimulate knowledge and the perspective vision of local communities. A one-year scheme is described in Fig. 1.2.

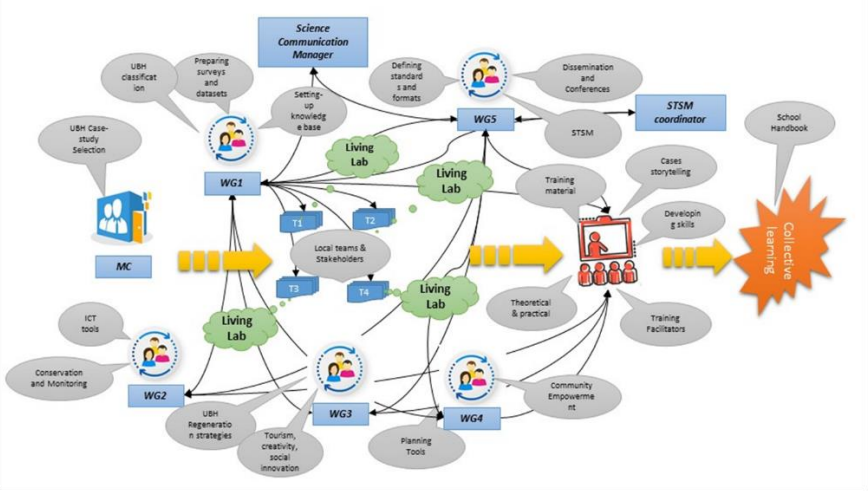

Figure 1.3: Underground4value one-year scheme

The working groups promote the cross-fertilisation of the knowledge among scientists (i.e. historians, architects, engineers, archaeologists, planners, geologists, etc.), practitioners, public officials, and technicians, being rather limited such interdisciplinary initiatives in the field of UBH. Action members are distributed in five groups: three working groups are thematic, as follow:

- Underground Built Heritage conservation and monitoring (WG2)
- Underground Built Heritage reuse and valorisation strategies (WG3)
- Underground Built Heritage planning approaches (WG4).

Other two working groups provide methodological and organisational contents, by preparing knowledge base contents, assessment tools, communication, and dissemination strategies:

- Knowledge Base Development (WG1)
- Dissemination and exploitation strategies (WG5).

Results and materials produced by the working groups support both the assessment of case studies and the training school contents. All methodological advancements will be tested and modified on four case studies every year. The case studies are proposed by a host institution, which set ups a living lab on a specific topic related to the UBH valorisation, engaging public and private stakeholders in a process of co-creation. A Short-Term Scientific Mission (STSM) is, then, plausibly performed in each case study by a former Training School participant. The small team, composed by local host institution's members and the STSM expert, activates interaction mechanisms with various actors, such as public institutions, private stakeholders, and local communities, with extensive experience regarding specific elements of UBH. However, establishing community participation and collaboration does not happen spontaneously: people do not automatically become interconnected, interdependent, and share responsibility and common goals. Community participation, especially in terms of empowerment, is critically dependent on the processes followed during its establishment and implementation.

The third element is, therefore, the design and test of training modules for accepting the Council of Europe challenge [23] to create new profiles, such as facilitators and Multi-skilled professionals (see Tab. 1.1). The Training, addressed to planners, decision-makers, promoters, and local development facilitators, is based on scientific approaches (regional sciences, urban geography, computer sciences, and economic policy). The input of disciplines in the humanities supports cultural issues, as well as strategies and tools for urban/rural regeneration policies, sustainable tourism, community empowerment, and UBH conservation.

The training schools are organised in cities characterised by relevant UBH, aiming at stimulating the development of new skills in the field of planning and decision-making. The training aims at expanding the HUL framework by developing new specific modules about UBH and introducing Strategic Transition Management (STM) [40]. It provides decision-makers, citizen activists, leaders, planners, scientists, and conservators with tools for stimulating, developing, and supporting real-life experiments (Living Labs) in a goal-oriented modulation, aimed at shaping processes of strategic dialogue, co-evolution, and co-creation [40].

Overall, this scientific approach aims at building culture, engagement, and value at local level, by developing awareness and engagement on preservation of UBH unique environmental and cultural aspects, and making at the same time locals more resilient to globalised systems of production and consumption, and guaranteeing social cohesion and inclusion. Greater emphasis must be placed on enabling and empowering local communities to take control over their own lives through 'bottom-up' development approaches that involve local people and their businesses.

1.7. **Some final remarks**

The training activities represent a fundamental milestone for integrating underground space, cultural heritage studies and community-based planning. Although

not an educational programme, lectures and research activities propose some methodological advancements, specifically in reference to UBH classification, monitoring technology, valorisation strategies, and community empowerment frameworks.

The training modules, in fact, aim at implementing the UBH knowledge base in the classification of artificial cavities, by linking the typologies to their functions and potential re-uses, and promoting archaeological and historical research for each case-study. Nonetheless, they introduce technological developments of UBH non-invasive diagnosis, innovative ICT tools systems for sensoring and data collection, multiscale approaches, from landscape to archaeological sites or monuments, up to the single artefact, for detailed high-resolution visualisation and reconstruction of the more interesting items of the heritage [1]. Also, they integrate different planning approaches through a transition management approach, and developing bottom-up initiatives, such as local living labs. The research groups, finally, contribute to discuss theoretical and practical issues related to the selected case studies, the interaction with local communities, the continuous technological innovation, and the regional strategies.

We believe that our effort can value the underground space not only as an affordable solution for locating new urban functions and saving surface space for urban development, but also as a depository of the local identity and history, and placing its cultural component as a catalyst for a broader strategy of community engagement and regeneration policies. And yes, our final goal is to make the reader aware of this realistic opportunity for integrating culture and identity into local (and regional) decision-making processes, by preserving and valorising the UBH with a planning approach holistic, flexible, innovative, experimental, people-centred, humanistic, cultured, and open-ended.

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PART 1

LECTURES ON METHODOLOGY

CHAPTER 2

Symbolic implications of use and re-use of underground urban spaces

An historical interpretative framework

Renata Salvarani

2.1. Introduction

Underground Built Heritage (UBH) plays a specific role in structuring and transforming urban spaces, intended as multi-layered settled areas featured both by social and cultural aspects and by deep symbolic implications still interacting with contemporary planning decisions. Its specificity can outline general urban history's items, crucial steps into the processes of settlement transformation, together with forms and modalities of the processes of spaces semantisation and re-semantisation.

The analysis of situations and case studies helps to clarify and to define key concepts, definitions, and practices in urban planning processes, settlement transformation and heritage enhancement. Perspectives of integrated enhancement of urban environments are also highlighted, as well as urban planning actions based on the cultural and identity dimension of heritage and societies.

The same general definitions are clarified and enriched by new aspects when considered and applied to UBH.

2.2. Looking forward an integrated definition of multi-layered city

As a living body having or involving several separate layers, strata, or levels, a multi-layered city has been considered from functional and structural points of view. Social implications, such as the presence of different groups, economic distinctions, or population dynamics, can be subsequently analysed as relevant elements, in both a perspective of city management and social cohesion policy. Only recently, the concept of city with more than one level has been applied in the urban history context and around the urban heritage, looking over the functionalism's approach.

If we consider the urban genesis, we cannot avoid dealing in depth with the cultural implications of every change. Conscious and volunteer decisions, resilience processes, settlement transformations, as well as the organisation of production are part of a general social system based on networks of values, foundational narratives,

and behaviour models. The material and non-material urban heritage, originated from this complex milieu, is an active component of general processes.

Such an inclusive understanding of urban heritage focuses not only on isolated heritage sites and objects, but also on a wider physical, cultural, and social context [1]. This means that the diverse meanings recognised by people in urban landscapes become relevant and affect contemporary and future general decisions [2].

Multi-layered cities and urban landscapes as dynamic, composed and mediated contexts are defined also by the principles set out in the UNESCO's (2011) Recommendation on the Historic Urban Landscape [3], which offers a new approach to conservation, addressing the challenges of current urbanisation trends [4].

Going over this codified basis, once recognised how citizens identify themselves with the city, we still need to pay attention to the memories associated with places. The memory itself provides continuity in a context of change: "The meanings carried forward from the past are grasped by virtue of the memory of individuals, with the help of instruments that support social memory such as books, documents, photographs, buildings and so forth" [5] [6]. Traditions, non-material heritage, narratives, together with the web also, can be spaces where the meanings of urban landscapes are discussed and remembered, a sort of living repository of interpretative tools for the symbolic and identity continuity of a community. In this sense, a multi-layered city could be defined as a *unicum* originated by stratified transformations effecting not only material structures and infrastructures, but also organisational systems, cultural forms, identities, and memorial narratives. Its assets are the result of several transformation processes affecting present-day social life and future planning and urban management perspectives.

2.3. A larger definition of Underground Built Heritage

In this inclusive methodological and interpretative perspective, UBH itself defines its features in a richer and more detailed way. Related to the idea of multi-layered city, the development of the urban history takes the character of a displacement of people and events in a series of places, created, and re-created according to needs, decisions, and willingness along the centuries. An innovative vision of the historical relationship between communities and spaces emerges, based on different elements, groups, human organizations, identities, events, and caesuras, integrated each other in shared spatial dimensions that, in turn, are active elements of general transformations.

Underground collects and conserve the traces of deep changes: UBH shows and emphasises the turning points along the historical life of urban societies. Aggregating and clotting signs, symbols, and community memories, it expresses meanings destined to last, becoming a mine of sense for generations. It happens, simply, for stratigraphic reasons: traces of previous phases of the city life remain covered by new architectures in a long duration settlement sequence of overlapping, building, destroying, and rebuilding in the same place.

But not only, underground spaces can be intentionally chosen for functional reasons as shelters, houses, cemeteries, passages, galleries, organised systems for

daily life. In addition, they can also be created and adapted for symbolic uses, such as ritual ones or for memorial actions. In many cases, UBH shows its eminent symbolic feature and its close bond with cultural and identity dimension of a community. The dialectic relationship with built environment and public space is evidenced as well.

2.4. **Conscious uses and re-uses of underground spaces in multi-layered cities**

Which is the role of UBH in the multi-layered cities? Its origin does not coincide with a simple archaeological stratification: it is not a matter of spaces or built structures that result merely from processes of transformation of the inhabited environment, but we deal with spaces chosen to be functionalized or re-functionalized according to specific aims and finalities. Just in relation to their anthropic destination, they become the object of building interventions, architectural transformations, and structural adaptations. In other words, we deal with uses and re-uses originated by specific transformations occurred into a society.

The act itself of building is an anthropological mark impressed in the heart of a semantic discourse: the UBH is the objective correlation of a general construction of meaning passing through a new semantisation of the space. By consequence, if we want to understand the asset of a multi-layered city and plan its future, we must consider its UBH and start from there to know its society and its living communities.

2.5. **Public choices and cultural features of the multi-layered cities**

Conscious and intentional anthropic use and re-use of underground spaces highlights specific characteristics of multi-layered cities and testifies their main processes of transformation. UBH is a corpus of traces about long duration processes of settlement, migration, substitution of population, change of uses. There are preserved footprints of resilience during conflicts, after natural disasters, in situations of persecution and social contrasts.

Each decision about the use of underground spaces appears to be accompanied by actions of marking and labelling the space itself: signs and symbols impressed in the stone show how and why the community changed, choosing that space, only and just it, for its life. An inscription, a monument, a religious mark, a name or, more monumentally and evidently, the shape itself of the space, the built architecture, point out a new passage, a different situation and a new born idea of the same community mirroring itself inside cavities, grottos or underground walls.

This material marking process is deeply interconnected with his own narrative (a foundational, identity, religious, devotional or memorial one): every element actively contributes to a semantisation and re-semantisation of the space, in a general creation of meaning which comes together to establish and to continue the community as such.

2.6. **Methodological keys and hermeneutic perspectives**

On a methodological level, the analysis of case studies highlights specific aspects and general phenomena. Particularly, the Euro Mediterranean area provides several emblematic urban situations showing the centrality of cultural dimension of multi-layered cities, together with the active role of their UBH. This happens for three main reasons. Firstly, Mediterranean civilizations have a pronounced, persistent, and specific urban character: by consequence, urban spaces are nerve points, crucial elements for the whole society, both in the historical past and in the present. Secondly, local urban communities demonstrated a strong persistence: generally, they settled in the same spaces for an extraordinary long lasting time. Thirdly, this basin has been a crossroads of different populations, diversified identity and various great religious traditions sharing the same spaces and building the same cultural landscapes, in many complex dialectic ways.

Thus, its multi-layered cities provide a rich and deeply thick stratigraphy of buildings and archaeological persistence. More, until now they are the result of a multi millenary stratification of different processes of semantisation and re-semantisation of the space, which originate unique cultural textures lasting till to present and founding contemporary global urban societies. UBH is important for consistency, number of sites, active role within societies, degree of representativeness of cultural processes and identities still evident in shared urban memories. The Middle Age centuries are the most relevant for its genesis, in connection with the confrontation among the three main monotheistic traditions and among their embodied and displaced identities.

2.7. **Case studies**

We can find the highest degree of such a complexity, displayed on an extremely long duration, in Rome and Jerusalem. Both are characterised by an uninterrupted settlement continuity and consequently by a dense archaeological stratification. They are recognised for a universal symbolic value, also as pilgrimage destinations and as siege of a plurality of representative religious groups. The religious and identity aspects are predominant in the genesis of heritage, which still plays an active role in global cultural dynamics. Within them, some case studies demonstrate specific dynamics evidenced around UBH.

2.7.1. ***Rome: Underground burial spaces transformed in martyrial devotional places***

The case of the suburban Rome south-west stretch of Via Appia demonstrates how the UBH have a key role in the extensive processes of sacralisation of the space. It testifies also in which manners underground spaces and sacred places have been gradually integrated in a unique devotional pathway inspired by the memory of martyrs [7].

If we consider the origins of the Christian fabric along the Via Appia Ardeatina, it emerges a linear symbolic connection between devotional architectural buildings

and cemetery areas as links of a network. In this case, some existing roads and walk paths have been solemnised by new religious cult sites and buildings and have become devotional paths featured in a Christian perspective. That part of Via Appia out of the roman walls boosted a massive increase in tombs and burial places, both above and underground. Since the third century, Christian graves became numerous and relevant, when the followers of Jesus proliferated in upper classes too. The waves of persecutions that succeeded until the beginning of the following century induced the community to bury the martyrs into marked spaces attracting memories, devotions, and further privileged tombs.

These *memoriae* fostered a cult of the new faith witnesses and the building of new devotional sites, emphasized and monumentalised after 313 AD. Amongst them, Nereus and Achilleus were believed to be buried close to a branch of the Via Appia, the Via Ardeatina, in the area of Domitilla catacombs. The location of the bodies was marked and celebrated with pope Damasus' captions (366-384), in the context of his larger and general action aimed to define a devotional and martyrial fabric superimposed on the previous suburban Roman structures. In this case, a basilica, semi hypogea, was built in the catacombs area, grafted in its system of underground galleries, rooms and corridors [8]. This building went to attract devotions, pilgrims, and liturgical celebrations, as a strong node of the Christian devotional network of the city.

On the same Via Appia, some other elements can support the hypothesis of the origin of a devotional path focused on another figure of martyr: the bishop of Rome Sixtus II. In the area of the underground cemetery, Saint Callixtus catacombs are the burial place of the third century's popes, a site of crucial relevance for the Roman Christianity, and beyond. Pope Damasus embellished the crypt, where tombs were cut and marked with celebrative elements of the presence of the bodies of his predecessors, particularly of the martyr Sixtus. Thus, starting from the ninth century, the Via Appia resulted dotted with memorial and martyrial sites linked in a unified form by devotional movements.

Nevertheless, we can assume this pathway was originated thanks to some intervention dating back to the beginning of the fourth century, variously mixed with the actions of the popes: around this first network may be based further spontaneous developments of devotional pathways, integrating in a natural way underground spaces transformed and re-semantised in a new concept of Christian space.

2.7.2. ***The Mandrione***

The case of Via del Mandrione in Rome demonstrates how the processes of settlement and de-settlement in underground spaces, within archaeological ruins, can be accompanied by a narrative capable of involving the entire urban society and encouraging the integration of marginal and marginalised groups.

Via del Mandrione connects via Tiburtina and via Casilina, flanked for most of its length by the arches of the aqueduct Felix, built in the 16th century and remained active until the eighties of the last century. Marginal area at the edge of the city (the name 'big herd' refers to the presence of pastures), it was settled sporadically by

homeless people from the countryside, whose number increased in the years between the two world wars.

In 1943, the evacuees of the violent bombing of the San Lorenzo neighbourhood occupied the arches from Porta Maggiore to Mandrione, in Tor Fiscale. The water supplied by the aqueduct was still drinkable and the heating was ensured by the thick arches, which accumulated during the day warmth sufficient for an entire night.

Food was produced by cultivating the surrounding land. After the end of the war and after the reconstruction, those precarious living spaces were not abandoned, but stabilized: they were occupied by communities of Roma and by families coming from internal migrations, from southern Italy.

The barracks, the arches closed with makeshift means, the caves and the cavities under the aqueducts formed a sort of longitudinal quarter, closed at both ends, whose inhabitants lived in unacceptable conditions. Their situation and the context of the Roman ruins transformed into slums became the subject of a narrative of denunciation that intersects anthropological studies, photography and neo-realist cinema[1].

In 1956 an inquiry was conducted by the anthropologist Franco Cagnetta and by the photographer Franco Pinna [9]. Backed by the publisher Giangiacomo Feltrinelli, it attracted important cultural figures, such as Elsa Morante, Goffredo Parise and Pier Paolo Pasolini. Two decades after, a large action of urban cultural awareness was promoted by Linda Zammataro, a teacher, who, during her experimentation in the primary school 'Giovanni Cagliero' in the Appio-Tuscolano district of Rome, faced the problem of integrating gypsies into the education system. Her scientific approach led to interact directly with the children family environment of the Roma community in the nearby alley of Mandrione [10].

An action of public sensitisation followed: Italian RAI produced two documentaries (*Al margine and essere zingari al Mandrione* by Gianni Serra), and two photographic exhibitions were organised (*Crescere zingaro al Mandrione*; *Zingaro a tre anni*, held at 'Continente Infanzia', Social and Educational Centre in Rome) [11]. The Mandrione abandonment by its inhabitants, who moved to their assigned new social housing, coincided with the demolition of the barracks to prevent them from being occupied by other desperate people. From that moment, it began a process of requalification and recovery of the territory, including not only the aqueduct, but also its UBH complex, as key elements [12].

2.7.3. *Jerusalem – Caves and grottos around the Holy Sepulchre*

In the complex context of the Old City of Jerusalem, a diachronic analysis of the system of caves and grottos' uses in the area of the Holy Sepulchre provides some interpretative elements about diversified processes of space re-semantisation carried out by different Christian groups, starting from the same scriptural foundation.

The area, corresponding to the North Western sector of the urban settlement surrounded by the Ottoman Walls, is characterised by the presence of caves and grottos, of both natural and anthropic origin. Originally used as cisterns or quarries

for the extraction of stone, since fourth century they become memorial places and spaces for worship because of the semantic attraction exercised by Golgotha and for the growing importance of the Anàstasis Basilica in the urban texture. In this case, we face with a memorial feature of caves and springs, connected with localised religious texts, in a perspective of a ritual use of underground spaces, distributed among different Christian groups.

In particular, in the Sepulchre area of the, the various moments of the story of the Passion, Death and Resurrection of Christ are located in different spaces and places, , based on the Gospels and related with a rich development of local devotions, articulated and spatialized over the centuries [13]. In connection with the main story, devotional narratives were born and developed. One of them revolves around the remaining of the scaffold on which Jesus was killed: The Cross becomes a symbol and a relic. The '*narratio* of Helena' is the most ancient and attributes the discovery of the Cross directly to Constantine's mother, originates probably from an oral tradition of Jerusalem, originally transcribed at the end of the fourth century by Gelasius of Caesarea in his ecclesiastical history, lost but partially reconstructed.

From the following century, a more detailed tradition is attested: the wood is believed to be thrown into one of the cavities not far from Golgotha and then found by the empress, in miraculous circumstances. Thereafter it became object of veneration [14] [15] [16] [17] [18]. The versions of the events differ in the various traditions of the Christian groups and Churches present in Jerusalem.

Similarly various are the cavities identified with the place of the discovery: some are inside the complex of the Holy Sepulchre, others outside, connected with the stationary path of the Via Crucis: Armenians, Greek Orthodox, Ethiopians and Copts make devotional memory of the discovery in different hypogeum places [19].

A division of the spaces is evident not only at the institutional level of the agreement between communities, but also related to the different spatialisation of the life of Helen's hagiographic tale. The reference texture is the processional and stationary devotions network performed by local churches and pilgrims, day by day, according to their respective liturgical calendars. In the contemporary context, touristic uses help to accentuate distinctions and tie each group to its own place of visit (with the economic consequences of the situation).

2.7.4. ***Jerusalem – Deep religious identities inside the Temple Mount***

The Temple of Jerusalem, the Judaism's symbol for excellence, over the centuries has been subject to destruction, transformations, and re-destinations equally symbolic. After the demolition of the buildings ordered by the Romans between 70 and 135 CE, the ruins, the embankment and the area itself on which it stood were at the centre of radical re-semantisations, reuses and redefinitions, accompanied by clashes and agreements, whose effects last up to the present day, impacting on fragile local and international balances. But what has been - and what is - the fate of the underground environments, the spaces inside the embankment, the open cavities between the walls and the foundations built in different periods?

During the construction of Aelia Capitolina, the Hellenistic ideal city superimposed on Herodian Jerusalem and its religious fulcrums, differences in level and cavities were filled to foster the creation of squares and of large open spaces and to facilitate direct access to the esplanade above the embankment [20] [21].

At Constantin's times, a part of the ruins of the Temple had to be still high: it was the looting of the Sassanids, in 614, to complete the devastation [22].

The subsequent Islamic conquest of the city also brought with it the choice of the area as a place for the construction of the mosques al-Aqsa and Dome of the Rock. It was only later that the location of the arrival point of Muhammad's night journey (*'isrā*) was defined in these spaces [23] [24], while the Jews continued to identify a place of prayer and nostalgia in the stones that remained of the imposing structures of the Temple.

The Latins, after 1099, superimposed their settlements and symbols to this situation. While the Dome of the Rock was intended to be a church, of the remaining structures the Templars made their headquarter. Even the underground part was affected by the use with architectural transformations, which were accompanied by the elaboration of new symbologies [25].

The end of the Crusader reign of Jerusalem saw not only the reaffirmation of an Islamic sanctity of the area, but a precise location of devotions related to Muhammad's night journey within the open underground spaces in the embankment, below the al-Aqsa mosque. Precisely, the corpus of individual gestures, devotions and traditional narratives has nourished, over the centuries, the continuity of the sense of belonging of those stones to single different religious traditions. While after the war of 1967 the esplanade and the buildings have been object of specific military-political agreements, the underground spaces have catalysed diversified narratives and opposed claims.

They have been the subject of excavations, studies, analyses [26] [27] [28]. At the same time, they continued to be places of religious devotion and areas of strong identity. Today we deal with a fragmentation of UBH among different religious groups, outside or at the edge of political agreements regulating the use of the above space [29]. In other words, the underground seems to have catalysed the deep nature of the relationship between religion and urban space, giving life to a proper geography of symbolic connections and expressing the material embodied dimension of long duration identity processes [30]. The opening of part of these spaces to tourism appears to overlap these trends, without influencing them: lay touristic implications create a light network that does not affect belongings and identifications but amplifies their implication in the international context.

2.8. **Conclusion**

UBH is the place of reuse par excellence: it is generated by adaptations and readjustments; it is the result of transformations of the space as effect of changes in society. Each change is accompanied by new narratives and re-founding narratives, which, in turn, are interconnected with processes of re-semantisation of the space.

In such a complex context, the UBH has the role of condensing symbols and meanings: it agglutinates and retains elements of high symbolic intensity. For this reason, studying its origin and dynamics in an active perspective of valorisations means acting within society and its deepest cultural living aspects.

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CHAPTER 3

A Methodological Framework for the Underground Built Heritage Classification

Roberta Varriale

3.1. Introduction

While approaching the study of Underground Built Heritage (UBH) or carrying on valorisation plans about UBH, a shared definition for the elements of cultural heritage that can be included or not in that class and a theoretical approach to their analysis are due. In fact, once this definition is given, scholars need a classification chart for those elements to evidence their communication power about their original functions and several instruments for the analysis of historical and contemporary reuses as well. In this paper we will try to answer to the following questions:

- What is the class Underground Built Heritage (UBH)?
- How can be the elements included in the UBH class classified according to their primordial function?
- How can be historical reuses analysed?
- How can contemporary reuses that include the valorisation of historical uses analysed?

3.2. What is the Class Underground Built Heritage (UBH)?

It is not the first time that scholars face the problem of pointing out a methodological approach to deal with artificial cavities. Gianluca Padovan was the first, in 2005, who gave a classification for types of those elements [1]. Padovan, a speleologist and a writer, published his classification only in Italian and his attempt perfectly answers to the needs of speleologists that rediscovered caves and that had to report about them. The second classification was given by the International Union of Speleologist (UIS) in 2013 [2]. It consisted in an international classification which considered several aspects, included the original functions of artificial cavities.

Those classifications, however, reveals two main criticises. First, they include all artificial cavities, not considering their value in the field of cultural heritage

that can, eventually, address valorisation projects. Second, they are static and do not consider historical evolutions in terms of functions, while those transformations in uses and shapes reveal to be particularly interesting in terms of enhancement and valorisation.

To consider those aspects, a new class Underground Built Heritage (UBH) was introduced. UBH is the class that includes all the historical artefacts realized in the underground and that became significant elements of local material and immaterial cultural heritage. Those elements detain a potential narrative power with reference to selected urban functions and historical reuses and, in consideration of the above-mentioned character, they can address future valorisation processes.

UBH dynamic classification basic chart focuses on the analysis of the communication power of UBH elements about selected functions (Fig. 3 .1). The Chart considers eleven functions that correspond to the management of Environmental Conflicts (E.C.) or Social Interactions (S.I.) and sometimes both:

1. Living space (E.C.)
2. Environmental Alert (E.C.)
3. Water (E.C.)
4. Sanitary (E.C.)
5. Religion (S.I.)
6. Knowledge (S.I)
7. Communication (S.I.)
8. Defence (S.I.)
9. Economy (S.I.)
10. Transport (E.C. and S.I.)
11. Food (E.C. and S.I.)

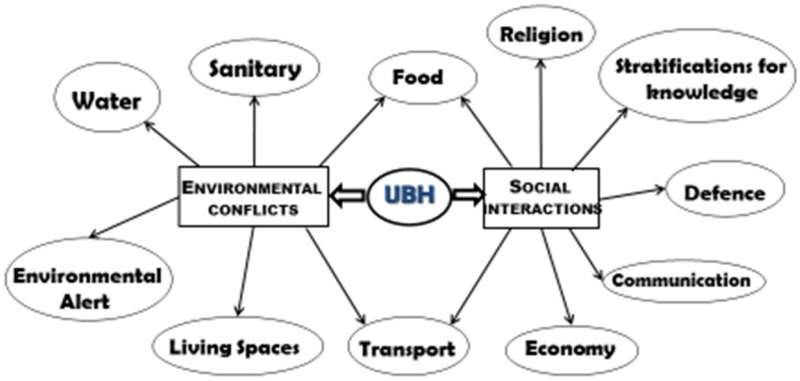

Figure 3.1: Classification chart for UBH

3.3. Types of functions

The first function examined is **"**Living space**"**. It includes various artefacts that represent several levels in the relationship between underground space and urban

settlements. The first level is represented by the transformation of natural caves into stable recoveries, this use reflects the passage from nomadic to sedentary life. At this level only small transformations were made by cave men to adapt the interiors of natural caves to the new needs, but those changes are fundamental to include them in the class UBH.

Sometimes rudimental doors, fire sets but overall wall paintings which represent daily life and animals at the base of their hunting practices. Mostly closed to the public, very recently a new approach to their valorisation include the use of replicas and virtual tours. The most famous case of innovative approach for the enhancement of vulnerable UBH refers to the valorisation plan dedicated to Lescaux cave. In that case a perfect duplicate of the original prehistoric cave with its wall graffiti was realised and opened to the public[1] and a virtual exhibitions, Lescaux 3.0, was adopted for the divulgation of troglodyte art at the museum MANN in Naples[2] (Fig. 3.2).

Figure 3.2: Lascaux cave paintings in the virtual reconstruction for the exhibition at MANN (Naples) (https://www.napolike.it/lascaux-in-mostra-al-mann-di-napoli)

The second level within this class refers to cases when underground was the place for urban development itself. In fact, the idea of negative building culture became worldwide popular to face and solve common adverse social and climatic adversities such as:

- sandstorms
- strong annual temperature ranges
- water scarcity

Typical examples of historical underground settlements are Matmata villages in Tunisia, underground and caved settlements in Turkey, Yaodong in China, and caved villages in Southern Italy (Fig. 3.3). Nowadays, those settlements were re-

converted into touristic facilities but in Iran and in China there are still cases of villages inhabited by local people in continuity of use. Studies for sustainable valorisation of those settlements have been carried on at comparative level between homogenous systems [3] or focused on selected case-study, like the case of Matera, European Capital of Culture 2019 [4].

Figure 3.3: Chinese and Sothern Italy caved settlements

"Environmental Alert" is the class that includes elements of cultural heritage that were not originally built in the underground but that were absorbed in the underground as an effect of the violation of selected natural linkages. That is the reason why they can be an *alert* against future abuses of natural resources and spaces. Typical example of this class is the city of Pompei which was absorbed under the new *0 Level* because of the eruption of the Vesuvius in 79 a.C. (Fig. 3.4).

Pompei, with its 3.805.094 visitors in 2019, is the most popular open-air attraction in Italy representing a UBH class[3] being 15th in the list that includes the most visited archaeologic sites in the world[4].

Figure 3.3: Pompei, via dell'Abbondanza

"Water" is the class that includes all the structure built in the underground to collect or to manage waters; both dynamic and static systems are included. This

function reflects the adoption of local skills and available technologies to manage this fundamental resource at given climatic conditions. Very often, however, those artefacts were realised to be also instrumentally used to communicate political, social, and economic influences. In the Mediterranean two different dynamic systems were historically adopted: the first, typical of the Northern Coast adopted a system characterized by aboveground arcades in the countryside and underground networks in the city centres; the second, typical of the Southern Coast, instead, consisted in underground pipes in the deserted areas and aboveground channels and pools in the oasis and in the cities [5]. There are also examples of contaminations between the two sides. In Sicily, the Arabic influence performed the construction of several qanat in Palermo while in Cartago, during the Roman domination, the second aqueduct in size and extension was built. Historical water systems, included all the artefacts built to allow public or private uses of waters, can be adopted to depict dedicated itineraries[5] [6].

"Sanitary" includes all the artefacts caved in the underground to manage sanitary issues of aboveground cities and that became elements of local heritage because represented technological advancements and significant innovations becoming part of social, cultural and economic development of the city where they were adopted. Both static and dynamic systems are considered (Fig. 3.5) but, however, not all historical sewers can be included in this class and are suitable for valorisation. *Les égouts* of Paris are a typical example of a sanitary network that was celebrated by local literature and that became part of the soul of the city, on the base of those elements it is at the core of a valorisation process (Fig. 3.6).

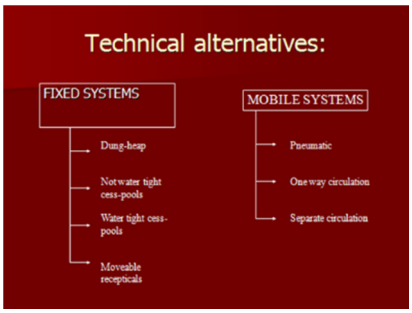

Figure 3.5: Static and dynamic sewer systems

Figure 3.6: Entrance "Musée des égouts de Paris"

"Religion" includes burial places, caved churches, catacombs and ossuaries: places to pray, to celebrate families or to cancel the effects of the epidemics from the surface of the cities. In each country we can find different declinations of the multiple uses of underground spaces for this function (Fig. 3.7). Longman Grottoes (Luoyang, China) are at 6th place of the most visited archaeological sites in the world, Ellora Grottoes (Ellora, India) at the 9th, and Xi'An Terracotta Army (Xi'An, Cina) at the 17th place [6]. In Naples, the Fontanelle Cemetery is one of the most popular cultural attraction of the city and it happens to be the case study selected for the Living Lab within the CA18110.

Figure 3.7: Necropolis in Turkey, Buddha caves in China, underground churches in Ethiopia

Underground is also the place for "Knowledge". Underground layers are physical pages of books about the history of stratified cities. The phenomenon is much more evident in stone or brick-built cities. Naples and Rome are perfect examples of stratified cities and in their underground layers we can find traces of their bi-millennium history. This potential has been at core of several valorisation projects. In Naples underground layers have been included in the architectural styling of selected stations of the new Linea 1: "Municipio" and "Toledo" stations. In Rome, "San Giovanni" station of the new built Linea C, reproduces all the historical levels in a so called "mandatory museum", according to the definition given by Achille Bonito Oliva in 2016 (Fig. 3.8).

Figure 3.8: Historical Layers in "San Giovanni" metro station Linea C in Rome

"Defence" is the function that collects all the escaping routes, bunkers, prisons, or military devices built in the underground to defend people, equipment or goods from attacks or robberies. In Naples, Bourbon Gallery and Second World War

shelters are the selected case studies within the CA18110 for this function (Fig. 3.9).

Figure 3.9: Shelters in Galleria Borbonica in Naples

In the underground both institutional outcry but even personal communication is easier. The attention to the given message is much more direct without external distractions. That is the reason why underground is the perfect place for "Communication". This potential was used during the Second World War by the Fascist regime to divulgate the patriotic approach to national resilience and, contemporary, by refugees to demonstrate against the persons in charge for the conflict and their poor conditions as well (Fig. 3.10).

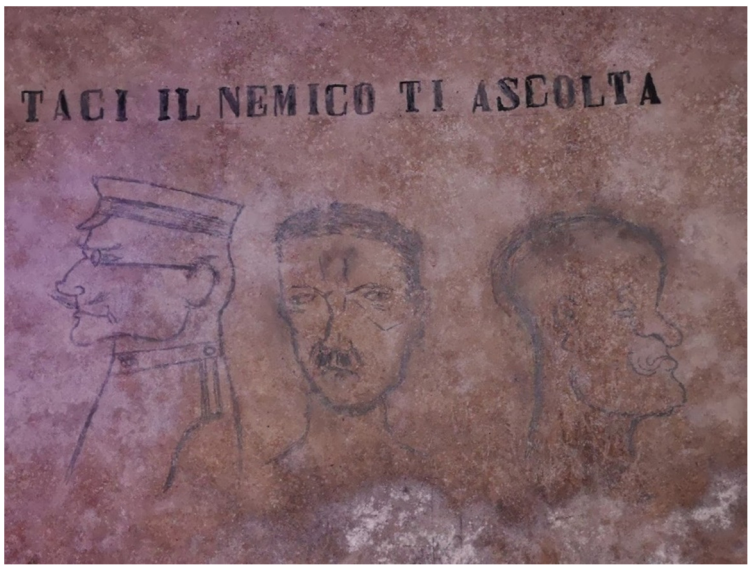

Figure 3.10: Institutional and outcry communications in a Second World War shelter in Naples

Underground is also a place for "Economy": in the first and in the second sector of economy several activities have been historical realised in the underground:

mines, animal's recovery and breeding, food production and conservation supported local activities and influenced the correspondent economies.

But "Food" has been historical managed in the underground also at private level: ice cells, canteens, and snow cells were largely adopted before the diffusion at private level of electric refrigeration devices. Underground was the place where several Italian food specialities were born, such as typical seasoned cheese, ice creams, olive oils and wines.

The use of underground space in the "Transport" sector supported the transformation of aboveground cities very much. Metro and funiculars, pedestrian and vehicles galleries interconnected various sections of the contemporary cities allowing easier and sustainable urban development.

3.4. Applying the classification to Naples case-study

The methodological approach briefly described can be adopted to analyse each territorial system: from a local one to a regional one up to an international one. In Fig. 3.11 the UBH basic chart introduced is applied to the city of Naples. It allows the analysis of single functions effectively managed in the underground of the city but, also the types of artefacts realized in this direction. On the base of the evidence that the city of Naples covers all the class listed in the methodological chart, Naples is an architype of underground city.

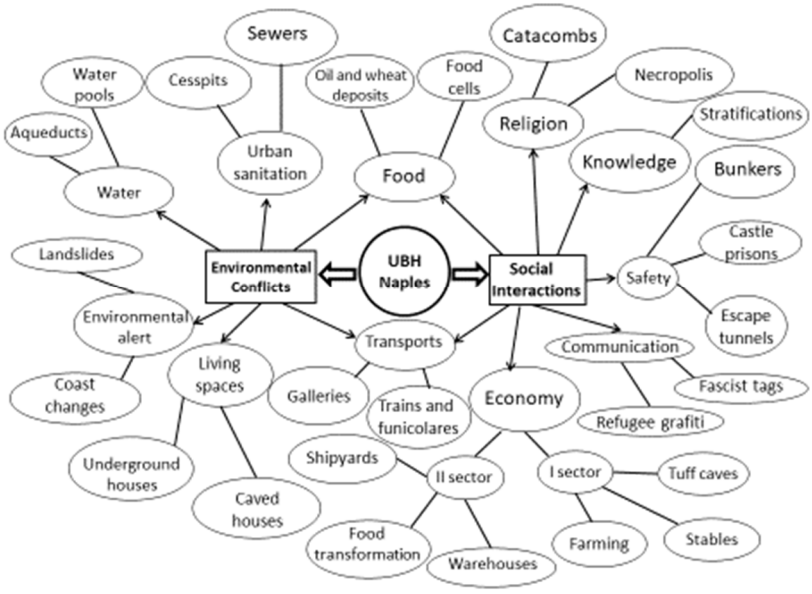

Figure 3.11: UBH in Naples: the chart

The same methodological chart can be also adopted for a more dynamic analysis, as shown in Fig. 3.12. On the left it underlines a specific type of cavities, the ones connected with the management of waters in the city of Naples. On the right

it was adopted to underline all the historical reuses of underground tuff caves in Naples.

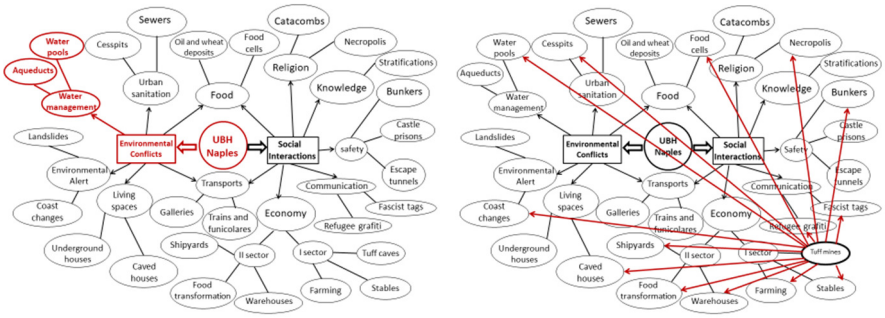

Figure 3.12: Dynamic analysis of UBH with the adoption of the UBH chart

3.5. How could UBH reuses be classified?

Contemporary re-uses can be classified according to the following scheme [4]:

- Re-inventing UBH: communication of historical functions, restoration, fruition as a cultural site
- Re-introducing UBH old functions: the historical sites restored and used again according to new parameters
- Re-interpreting UBH: the sites are restored, and new functions are located but the communicative role is preserved

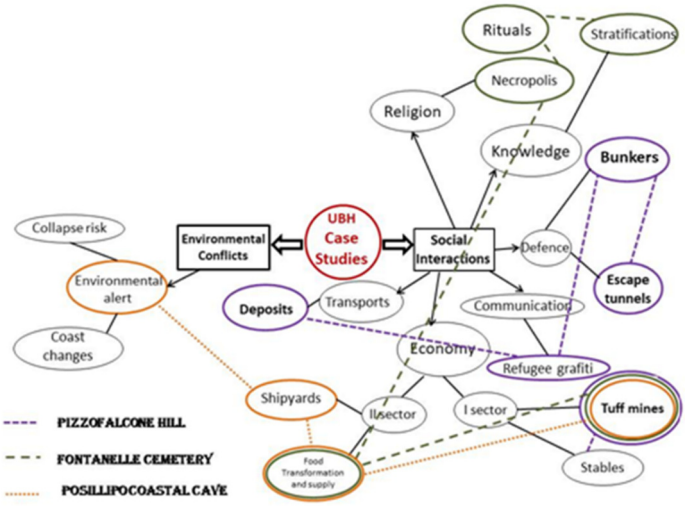

Figure 3.13: Pizzofalcone Hill, Fontanelle Cemetery and Posillipo Coastal Caves

In Fig. 3.13, the chart was adopted to study reuses in three selected case studies in the city of Naples: Pizzofalcone Hill, Fontanelle Cemetery and Posillipo Coastal Caves [7]. In the case of Pizzofalcone Hill, two starting point are estab-

lished in correspondence of the double original types of the cavities: tuff mines and escape tunnel. For each of them, the subsequent evolutions can be analysed in their temporal sequence by following the correspondent line. Both Fontanelle Cemetery and Posillipo coastal cave case studies have got a unique starting point and they are analysed by applying the same methodological approach.

In Fig.3.14, fluxes which combine historical and contemporary reuses for the case studies of Pizzofacone Hill and Fontanelle Cemetery are introduced [7]. In blue, historical functions and historical reuses are listed for each case-study. In red contemporary reuses, according to the introduced scheme of analysis, are underlined. It comes out as an evidence that, while in the case of Pizzofalcone Hill, re-introducing, re-interpreting and re-inventing actions were carried out in the valorisation processes, in the case of Fontanelle Cemetery only re-inventing as a cultural site was adopted. This difference is connected to the fact that, while in the first case-study the complex of cavities included a heterogeneous group of spaces with different grades of unicity and potential in reuse, in the second case the unicity of the cave didn't allow it. In fact, after the interruption of the religious use of Fontanelle Cemetery in 1969 by local bishop Cardinale Ursi to avoid the practice of adoption of skulls by local priers, the site was restored monitored and transformed into a museum.

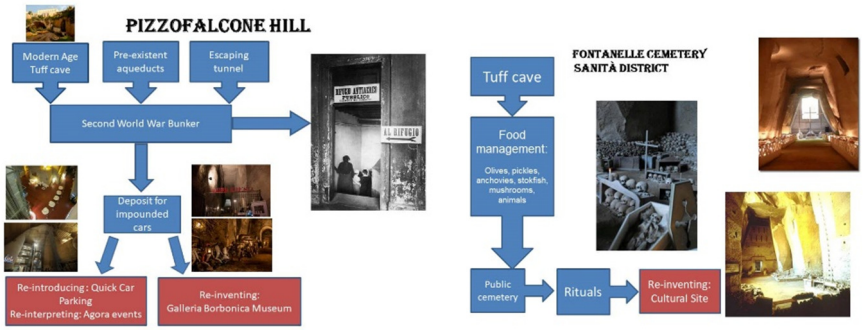

Figure 3.14: Fluxes of historical and contemporary reuses in Pizzofalcone Hill and Fontanelle Cemetery

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CHAPTER 4

Unstructured Textual Data Analysis for Underground Built Heritage (UBH) Knowledge Base

Pinar Karagoz

4.1. Introduction

In today's digital age, the size of data collection and digital information available on any topic has been increasing immensely. This calls for using mechanisms to store and manage data in an organized way. At this point, knowledge base appears as a practical solution to the need.

A knowledge base is a digital platform to host and manage a collection of structured and unstructured data to provide information about and to analyse a certain topic [1], [2]. For structured data, software solutions for storage, management and retrieval are available and at a mature level, mostly in the form of databases [3], [4]. In a knowledge base, in addition to structured data such as databases and forms, large amount of data is unstructured, mostly textual, in the form of documents, web sites, and social media messages. Within the scope of Cost Action 18110[1], to organize the knowledge, building *Underground Built Heritage (UBH) knowledge base* is a feasible solution for providing retrieval and analysis functionality on a collection spanning over a variety of disciplines and expertise. UBH knowledge base will include a variety of unstructured data such as descriptions of underground built heritage, surveys conducted, information collected from social media and web resources. The automated analysis of textual data provides a considerable potential for extracting the information from the content and to facilitate the use of and hence to increase the effectiveness of the knowledge base. In this chapter, we describe and discuss several computational techniques for text analysis that are already included and that can be incorporated in a knowledge base.

The most basic functionality that is commonly provided on any knowledge base is *keyword-based search* [5], [6]. This functionality is familiar from popularly used web search engines. For knowledge bases, a similar keyword-based search software mechanism, yet generally in smaller scale, is installed. Another analysis type that can be complementary to keyword-based search is *automated classification of the documents* [7], [8]. Once a classification system is defined for UBH, including ex-

ample classes such as *Urban UBH*, *rural UBH* or *UBH related to social interactions*, then the documents in the UBH knowledge base can be automatically annotated with such class labels. This is considered as a computational task generally solved through *Artificial Intelligence (AI) methods*. Another AI-based text grouping method is *text clustering* [7], [9]. In this automated analysis method, as the basic difference from classification, there is no predefined labels (groupings). The collection is automatically grouped according to the similarities between texts.

As another automated unstructured textual data analysis task, *sentiment analysis* (aka *opinion mining*) provides high potential for extracting valuable information for UBH on subjective textual content. Sentiment analysis [11], [12], [13] aims to automatically detect the orientation of the subjective information from the text as *positive* and *negative*. Sentiment analysis can be applied on a variety of content such as *transcripts of interviews*, *open-ended responses of surveys,* or *user-generated web contents*. In addition to general subjective orientation, *sentiment polarity for particular aspects* of the topic mentioned in the text can be extracted as well [14]. For instance, in a stakeholder interview on a particular UBH asset, the opinion on economical aspect and safety aspect of the UBH could be discussed. In addition to the overall sentiment orientation, the subjectivity value for economical and safety aspects can be automatically extracted.

For search engines, one of the trending research focuses is to improve user experience for search through AI-supported interactive solutions. Rather than keyword-based search, a user may directly type the question [15]. Such a user interface can enable UBH knowledge-based user to get answers directly for questions such as "In which countries are there social interaction related UBH assets?", instead of keyword-based search. Furthermore, such automated question answering systems can be enhanced towards chatbots [16] to answer a series of questions or to improve the information retrieval performance.

4.2. What is Knowledge Base?

In every project, the need for collecting and organizing the facts related to the domain and topic of the project in a systematic way is at the very basis. This facilitates the information extraction and hence the inference of knowledge for practitioners and the researchers. In the digital era, the state-of-the-art way of such an information management is using a *knowledge base* [1], [2], [17]. In Merriam-Webster dictionary, *knowledge* is defined as "the fact or condition of knowing something with familiarity gained through experience or association" [2]. Following this definition, we can narrow down the scope for our Cost Action and consider knowledge for UBH as the collection of facts, information, experience, associations related to UBH. As for knowledge base, there are various definitions such as "a store of information or data that is available to draw on" and "the underlying set of facts, assumptions, and rules which a computer system has available to solve a problem" from Oxford dictionary [3], or "technology used to store complex structured and unstructured information used by a computer system" from Wikipedia[4]. The definitions all focus on

the capability to *store* and *collect* information or data. Additionally, we observe that it is realized as a *computer system*.

In a knowledge base, the basic functionality is managing the storage of the collection and querying the data. These include insertion, deletion, update of the data and retrieval of the information according to the given filtering conditions. For structured data, these functionalities can be handled by a database management system (DBMS) as a part of the knowledge base. Since the users of the system are domain experts rather than information technologies specialists, the functionalities are provided through user friendly graphical interfaces. However, design of the user interface as well as the organization of the data vary depending on the types of data, query, and the users of the knowledge base. In order to support data management and information retrieval, especially for unstructured textual data, other facilities, which involve AI, can be included in the knowledge base, such as automated classification of the content (Section 4) or question answering capabilities (Section 5).

A knowledge based for Underground Built Heritage is to be shaped according to the type of data, type of queries and type of user, as well. The type of data is elaborated on in Section 3. The type of queries has high dependency on the data type. Therefore, we will discuss about querying in Section 3, as well. As for the user types, underground built heritage topic has interdisciplinary nature. Hence, it is preferable to provide a level-wise organization of data from basic to more advanced topics, organized and indexed under various aspects, such as social, economic, and historic, to answer the needs of different expertise.

4.3. Types of Data in UBH Knowledge Base

The data that is stored and processed in a computer system, in broad terms, can be classified into three types, as *structured, semi-structured and unstructured*, according to how easily it can be processed in an automated way. Data stored in a relational database is a *structured* data in the sense that the data is structured in tabular form and database management systems have modules that can directly process such data. By this way, complex queries can be processed on the structured data.

On the other hand, a textual document, or an image, being an *unstructured* piece of data from automated processing point of view, needs more specialised software solutions. In terms of information retrieval, for unstructured data, the way of querying is not formalized as in a database, hence, the outcome of the querying or the processing may not match well enough with the intention of the user. Such mismatch cases occur within well-known Web Search applications, such as Google[5], Yandex[6] or Bing[7], such that the user expresses the intention through keywords, however the result may not include the web pages or data that the user requests.

Semi-structured data type lies in-between these two, such that the data is partially structured through certain annotations. A well-known example is web page source document expressed in *hypertext markup language* (*html*). Certain parts of a web page, such as title, text body, or profile photograph, are annotated through the tags (markups) of the language so that the presentation of the web page can be automatically formatted.

Within UBH knowledge base, one may expect to have data of different nature belonging to any of these three types. In general, we can list the data resources that may be relevant for UBH knowledge base as follows:

- **Documents.** As in most of the data collections, the source of the majority of the data is of documents, i.e. textual data. Such data can be in a variety of forms such as academic papers or reports related to UBH, or project meeting minutes. Basic functionality on documents can be grouping with respect to manual annotation and keyword-based search on top of local collection within the knowledge base.
- **Image, Video and Audio Data.** Being related to geographical locations and assets, UBH involves data in the form photographs and videos displaying the UBHs. Such data are of unstructured type. Hence querying mostly relies on manual annotations, such as location where the photo or video that was shot, objects, artifacts related to the UBH or concepts related to the artifacts in the data. Under the existence of such annotations, the search can be fulfilled as a database query or a keyword-based search as in the document retrieval. However, manual annotation requires effort, and due to this most of such multimedia data lacks tagging. In such a case, machine learning based solutions can be applied for automated object detection and labeling. Audio data commonly accompany the video recordings. Besides, there may be solely voice recordings describing UTH artifacts or concepts. For such kind of audio data, transcriptions may be already available, or written transcripts can be obtained from audio data by using speech-to-text technologies. In automated analysis, common practice is to process the associated textual data rather than processing the audio data in the raw format.
- **Surveys**. Surveys are one of the well-known data collection tools in scientific research. Having an interdisciplinary nature UBH studies involve varity of surveys aiming to obtain various data collections such as expertise of the project participants, or opinions and comments on concepts. A survey can be considered as a semi-structured type of data, where questions involving selection in a scale or among the options can be easily converted to tabular, structured data. On the other hand, answers to open-ended interview type of questions are in unstructured text form, and they can be processed accordingly.
- **Interviews.** UBH knowledge base may contain information in the form of interviews including answers by an interviewee to the predefined set of questions. Such a data may be in the form of text or audio. In case of audio, it can be translated to text, and can be processed and queried as in document collections.
- **Maps.** Another valuable data source for UBH is maps. It is a common practice to map the geographic locations of the UBH artifacts on 2-D coordinates. A spatial database is a helpful tool to this end. Once geographical coordinates for UBH data is stored in a spatial database, they constitute a structured data over

which various spatial queries, such as *the artifacts in a given region*, or *artifacts within the proximity of certain geographical properties*, can be applied.

– **Web Pages and Social Media Postings.** It is a common practice to enrich a knowledge base with links to related web pages and social media postings. To be able to include them within the data collection, textual content of web pages or postings can be fetched through software modules, in the form of web crawlers and application programming interface (API) calls. Once the content is obtained, they can be queried and processed as in document collections.

4.4. Textual Data Analysis Functionalities in Knowledge Base

Among various data types that may reside in a knowledge base, the focus of this chapter is functionalities to be provided on textual data, such as documents, open-ended survey questions, interviews, etc. In the rest of this section, four different functionalities, from more basic to advanced, in terms of availability of off-the-shelf computational solutions, will be described.

4.4.1. *Keyword-based Search*

The basic functionality expected in a knowledge base is retrieval of the data with respect to a given search criteria. In a DBMS, such a search is applied on structured data over queries. Query language of DBMSs provide a vast set of constructs to express the data retrieval criteria. On the other hand, for textual data, on which such mature query languages are not available, the search criteria is merely defined over keywords, aiming to retrieve the textual content including such keywords [5], [6], [18].

The use case of keyword-based search is familiar from web search engines, which we frequently use in daily life. The most straightforward way of expressing query is only providing the keywords. However additional constructs may be used to express more complex search query expressions, including set operations of conjunction (and-ing the keywords), disjunction (or-ing the keywords) and set difference (excluding the keywords).

The technique behind keyword-based search in a knowledge base is like that of a web search engine, yet in a smaller scale. As shown in Figure 4.1, in an information retrieval system, the software architecture includes a document storage and index. For indexing, the document collection is processed so that the terms (significant words and phrases) are extracted and matched with the document. This indexing is useful for query answering in the sense that query engine can match the query keywords with the documents, and hence the documents including the keywords can be brought efficiently [19], [20].

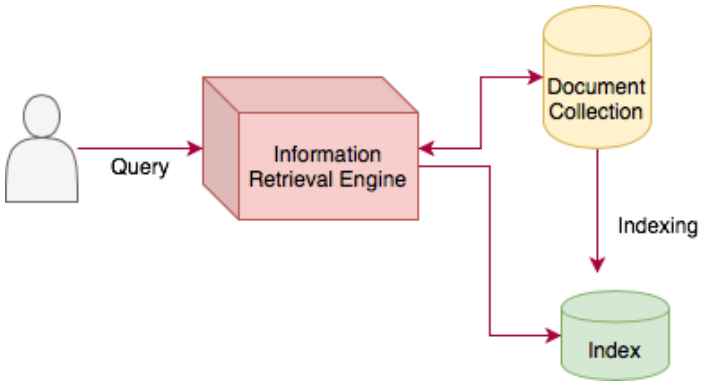

Figure 4.1: The general architecture for keyword-based search system

The summarised functionality has the limitation that it relies on exact matching of the search keywords with terms in the documents. To improve the search capability, semantic similarity of the terms can be included in the architecture in the form of an ontology. Being a term that is used in various disciplines, ontology may have different definitions. In knowledge management and artificial intelligence, *ontology* refers to collection of concepts and relationships among concepts [21]. It is stored as a graph or triple collection representing each concept as a node and relationship between two nodes as an edge in the graph. Given a term, which correspond to a concept, it is possible to get the related concepts from such a graph structure. Hence the related concepts can be implicitly included in the query, resulting in fetching the documents that do not directly include the search keywords, but having conceptually related terms. In Figure 4.2, a sample ontology is presented to represent example concepts around UBH and their relationship to UBH.

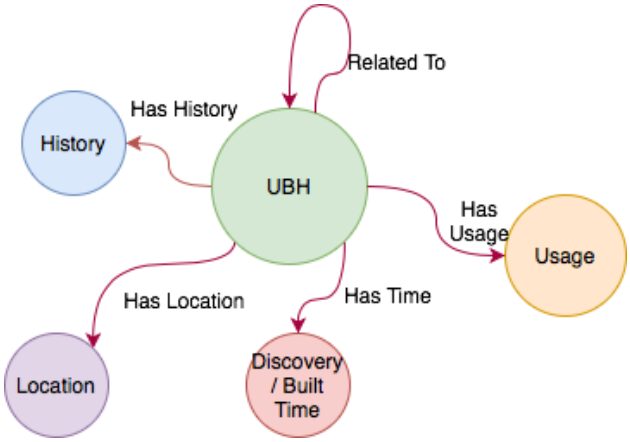

Figure 4.2: Sample UBH ontology

For example, in UBH knowledge, assume that the user expresses the search keywords as “rural, underground” aiming to find underground heritage in the rural area. Under syntactic matching, the documents including only these keywords can be brought. On the other hand, the terms “country”, “countryside” or “agriculture” are conceptually related to the intended query. With a semantic search capability through a domain specific ontology, other documents including conceptually related terms to the query can be fetched, as well.

4.4.2. *Text Classification*

Having a logical organization of the data in a knowledge base facilitates the access to the information. Having categories and grouping the documents, images, interviews etc. with respect to the predefined categories is the basic step to the logical organization of the collection. For instance, in *UBH domain,* the different aspects of the topic, such as *geography*, *history, economy, society, planning* can be considered as the categories for the data in the knowledge base. Furthermore, it is possible to have a hierarchy of categories, i.e. a taxonomy, to express a more detailed grouping, such as under geography, having subcategories of *coastal* and *inland* can be used.

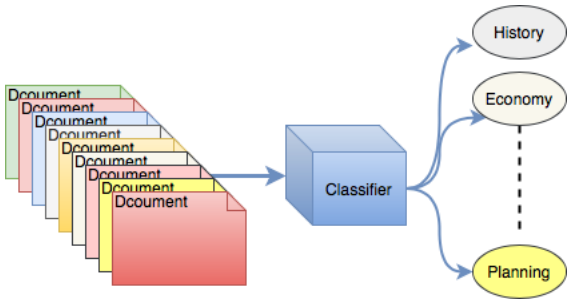

Figure 4.3: Overview of Text Classification

Given a predefined set of categories, the initial requirement is that data is annotated with the category. Depending on the design and the nature of the domain, it is possible to consider the categories to be exclusive or overlapping (i.e. it may or may not be possible to annotate the same piece of data with more than one category labels.) In either case, if the annotations are available, they can be stored in a database and the category information per document can be easily accessed.

However, under vast amount of data, such annotation is hard to obtain for the whole collection, and it is not practical to manually label a large collection. At this point, AI techniques come into scene to automatically annotate the data with a predefined set of categories. Under AI, a sub-group of machine learning, *classification,* or *supervised learning*, fits well for this problem [7], [8].

In supervised learning, the basic idea is to develop a labelling model from labelled instances and apply it to the unlabelled instances. The model can be in a more user-interpretable form such as a set of rules, or a block-box model such as one generated by a deep learning algorithm. In either way, given a data whose label is

not set, the model, which is implemented as a software, determines the label of the data. By this way, a vast collection of data can be automatically annotated, and logical organization of the data can be provided. General flow of text classification is depicted in Figure 4.3. As seen in the figure, given a collection of UBH related documents, classifier module, which includes a supervised learning model, can determine the class label of the document among a given set of classes such as planning, economy, or history.

Different types of data, such as documents and images, can be automatically labelled with respect to the same categorization. However, document collection and image collection should be processed separately, and different annotation models should be constructed for each data type. For example, consider the categories of *coastal* and *inland*, to be applied on UBH documents and images. For both data collections, for supervised learning to be applied, we need a set of annotated documents and images. By using annotated data as the training data set, separate models are constructed for documents and images. Following this, un-annotated documents and images can be labelled as either *coastal* or *inland.* Once the annotation is completed, knowledge base user can retrieve, for example, coastal documents and coastal images.

One important point about supervised learning, and also machine learning in general, is that each model has a *success value* measured on a set of test samples (i.e., a set of instances whose manual label is known and is compared against the automated labelling). The success value, which is determined through metrics such as accuracy, precision, or recall, tells how well the model performed on the test samples and claims the potential for success on the unseen data instances. Hence, it is a common practice to construct several models where possible and select the annotation model which gives the highest success score. Text classification is a well-known and well-studied machine learning problem. Although the number of academic studies proposing solution for the problem is high, the availability of the off-the-shelf software is limited. This is both due to the complexity of the problem in comparison to keyword-based search, and due to the variability in the language of the texts. Therefore, in order to provide textual data classification functionality (this holds for other type of unstructured data as well), it is needed to develop or customize a software module according to the predefined categorization of the domain specific data collection.

4.4.3. ***Text Clustering***

Clustering is a functionality similar to classification in the sense that it is useful for providing a logical organization of the data in knowledge base. The difference from classification is that, in clustering, there is no predefined categorization. Hence, the basic aim is to *group* (i.e., *cluster*) the data automatically according to some intrinsic features.

Clustering is also a machine learning approach, yet this time it is called *unsupervised learning* [7] [9]. The lack of supervision here is due to the lack of predefined categorization and annotated set of data. In the hearth of clustering lies *similarity*

metric, which is used for detecting the intrinsic similarity among a set of objects. Given two objects as the input, similarity metric is a function that returns a numeric value indicating the similarity between the objects. The metrics and the method of measurement vary depending on the type of the objects. But they are designed to generate the similarity value in a certain range, generally [0,1] such that 1 denotes the maximum similarity that can be obtained between two identical objects.

As the category labels are not known in this problem, the number of groupings within the data collection is not known as well. Hence, the clustering aims to construct as many groupings as that fits with the nature of the data. The objective function in the automated grouping is based on having *high similarity* among the objects *in a cluster* and having *low similarity* among objects belonging to *different clusters*.

A possible use case scenario as to how to benefit from clustering in UBH knowledge base is as follows. Assume that the users of the knowledge base are invited to upload academic publications related to UBH. Considering that the topic is of interdisciplinary nature and the users of the knowledge base are possibly from various backgrounds, the topics of the papers would vary considerably. Assume also that a categorization is not available at this point. The logical organization of the document collection can be obtained through applying clustering as shown in Figure 4.4. Furthermore, once the clusters are obtained, they can be labelled through manual inspection and these labels can be used as the paper categories in the rest of the life of the knowledge base.

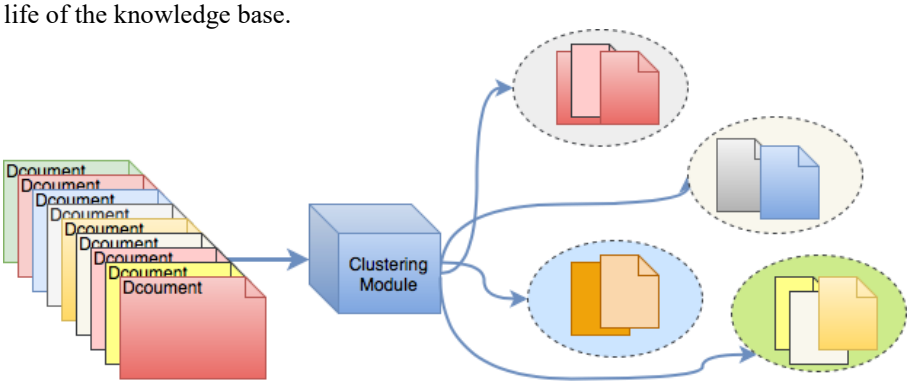

Figure 4.4: Overview of Text Clustering

A similar scenario can be applied to a collection of UBH related images. The similarity metric employed for image collection will be possibly different from that of a document collection. As an important note, the number and the nature of the clusters will most possibly be different for documents and images even though they may be provided by similar resources.

As in the discussion for the availability of text classification software, the readily available solutions for text clustering is also limited. Therefore, for providing automated text clustering functionality, it is needed to develop or adapt a software module for the domain of the knowledge base.

4.4.4. *Sentiment Analysis on Texts*

Surveys and interviews are important data sources that include opinionated content about a topic. Academic papers and reports basically focus on facts rather than opinions, yet they may include discussions about the positive or negative opinions on the results as well, which may be interesting to learn about.

Assume the following query that a user wants to submit in UBH knowledge base: *List the content that include positive opinion about conservation policies*. Such a query calls for understanding about the orientation of any subjective content in the textual data collection. Answering it is possible only if the content is already annotated according to the subjective orientation expressed in the text, such as *positive* or *negative*. However manual annotation for opinionated content is not vastly available. Hence automated annotation for subjective orientation of the textual content through *sentiment analysis* (a.k.a. *opinion mining*) can facilitate the problem considerably.

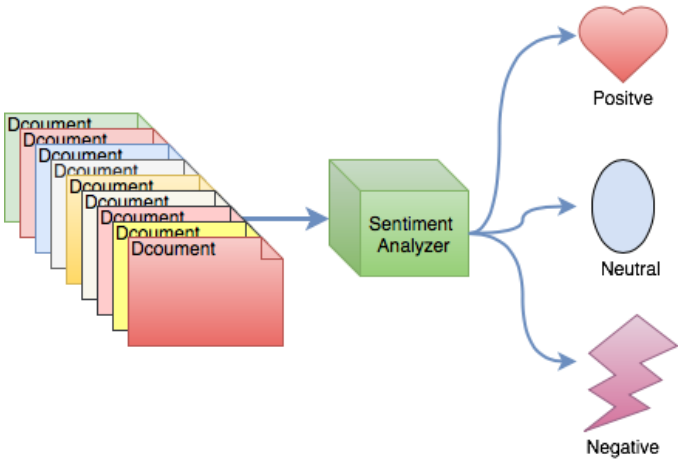

Figure 4.5: Overview of Sentiment Analysis on Text

Sentiment analysis is a computational technique that aims to analyse texts and to determine the opinion or feeling expressed in the text about the entities (Figure 4.5). Sentiment analysis problems can be grouped in three, according to the granularity of the analysis: *Document-level, sentence-level,* and *aspect-level (feature-level)* sentiment analysis [13]. In document-level sentiment analysis, the aim is to determine whether the overall sentiment expressed in the document is positive or negative [15]. Sentence level sentiment analysis focuses on determining the orientation of opinion in each sentence separately. Both document-level and sentence-level analysis reveal the overall sentiment without revealing which aspects of the entity are considered positive and which are considered negative. In aspect-level sentiment analysis, polarity of sentiment is detected for various aspects of the entity mentioned in a sentence or a document.

For sentence level or document level sentiment analysis, basically two different techniques are used. The first one is based on using a manually curated dictionary

that includes words/phrases and their sentiment polarity scores. For example, *good*, *well-preserved* are words with positive sentiment scores, such as +1 or +2, whereas *in poor condition*, *broken* are examples to words/phrases with negative sentiment scores, such as -1 or -2. The score 0 is assigned to words that are considered to be objective (or not to have subjective orientation). Hence such words are generally not included in the dictionary. The word list and the polarity scores are curated by linguists and cognitive science experts. It is possible to extend a sentiment dictionaries with domain specific sentimental words and their polarity scores. Given a sentiment analysis dictionary, the polarity of a sentence or a document is determined through the sentiment scores of the terms in the sentence or document. The score can be calculated through different aggregation methods such as:

- summing up the scores of the individual terms,
- summing up the scores of positive and negative terms separately,
- calculating the average of the polarity scores,
- having the maximum or minimum polarity score in the sentence/document.

The second sentiment analysis technique is AI-based. As in text classification, sentiment analysis on text can be represented as a supervised learning problem. A collection of sentences or documents with positive or negative sentiment annotation serves as training data set to construct a machine learning model. The constructed model is used for labelling the unannotated texts. For example, given a sentence, "*The cave we visited was in a poor condition"* can be automatically annotated with *negative sentiment polarity*.

For aspect-level sentiment analysis, as the analysis gets finer-grained, the difficulty level of the problem increases. For example, given the sentence, "*The walls of the cave we visited was in a poor condition, but most of the artifacts were preserved well",* the aspect *wall* is matched with negative sentiment score, whereas *artifacts* as the aspect of the topic has positive score. The complexity of the techniques used increases together with the analysis detail level. For aspect-level sentiment analysis, basic rule based solutions can be employed, but machine learning is the prominently employed approach in the literature. This problem is also considered as a supervised learning problem. But this time, due to the change in the granularity of the annotation, a specific case of supervised learning, named *sequence tagging,* is used.

In addition to opinionated content in the knowledge base, user generated content in social media provides a rich resource for sentiment analysis as well. Although social media is a huge content collection, it is sparse in terms of domains, hence finding the relevant content requires high computation effort. Once relevant content is obtained, such as content including *comments provided on a certain UBH cite,* sentiment analysis can provide sentiment orientation on the topic.

Although there are various open source sentiment analysis software tools available, most of them are general purpose and language specific. Analyzing collection

of texts in different languages and aspect-level sentiment analysis are still open research problems. Therefore, providing sentiment analysis functionality in UBH knowledge base requires development of a domain specific software module.

4.5. Advanced Features

In this section, we look into two more features that are becoming popular and have been studied for search related solutions in various domains: *Question answering systems* and *chat bots*.

4.5.1. *Question Answering Systems*

So far, we considered keyword-based search as the straightforward way of retrieving the content that we want to obtain among a document collection. However, while expressing the keyword query, users generally have a question in mind to answer and they express it in a simpler way in terms of a keyword collection. For example, consider a search query including the words "*cave, Göreme, age*", the user possibly wants to get "*What is the age of the caves in Göreme?*". Another example would be the keyword query "*number, cave, Napoli, downtown*" corresponding to the question "*How many caves are there in Napoli city centre?".*

Question answering (QA) systems aim to extract the answer to given question from a document collection, rather than bringing the relevant documents [15]. Although the history of QA systems dates to 1960's and 70's with the domain specific systems, BASEBALL [22] and LUNAR [23], it is still an active research problem. With the development in machine learning and natural language processing techniques, new solutions have been proposed for general purpose QA systems.

Because of the processing complexity, the type of questions in a QA system may vary. However, the studies mostly focus on *Wh-Questions,* which start with who, what, where, when, why, how, how many.

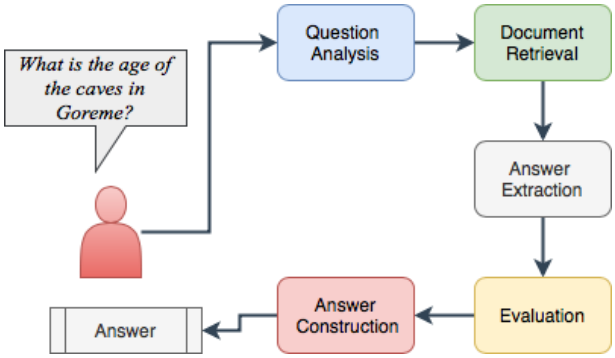

Figure 4.6: QA System Overview

In a QA software module, the steps of the solution are depicted in Figure 4.6. As shown in the figure, process starts with analysis to determine the type of the question and document retrieval query formulation. Once relevant documents are obtained, the parts of the texts that include the answer are extracted. It is possible that the answer is extracted from several documents and the extracted answers may be conflicting. In such a case, the obtained answer collection is evaluated to decide which answer to display.

QA systems are currently being used in web search engines such as Google. However, they are still in the phase of improvement. The maturity level of the available QA solutions varies depending on the language as well.

4.5.2. ***Chat Bots***

Imagine that, beyond answering the questions, your knowledge base asks whether you have further questions and even anticipates your next question and makes information recommendations. Here, in addition to the ongoing question-answer interaction, another important difference and difficulty is that the answers should be provided as full sentences as in a dialogue. Hence rather than just providing words or short phrases, a sentence is synthesized as an answer (Figure 4.7).

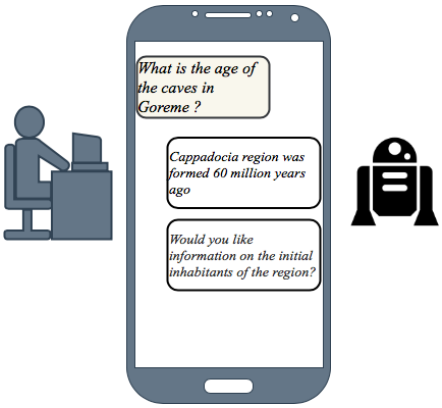

Figure 4.7. An example UBH chat bot dialogue

Such a behaviour for software modules is realized as *chatbots*, which is available as virtual assistants in many applications [16]. A chatbot is software that can conduct a textual or auditory conversation with the user of the application. The available systems are mostly rule based such that the question templates are assigned with predefined answers. The question of the user is matched with the template to determine the answer. Such chatbots are mostly domain specific, and the question answering performance depends on how detailed the patterns are constructed. An important limitation here is that they cannot answer the questions outside the defined templates.

AI based chat bots, on the other hand, use machine learning techniques to understand the intent and the context of the question. As the amount of interaction increases, the machine learning module can model the user behaviour in a more detail and can provide personalized and more accurate answers and dialogues.

In a knowledge base, having a multidisciplinary nature and users with different information retrieval expectation from the system, a domain specific dialogue system would be needed. In such a system, AI-based solutions provide many challenges and opportunities with a variety of user backgrounds and needs.

4.6. Conclusions

Knowledge bases provide a software platform to collect and manage the data and the information relevant to a given projects or enterprise. In UBH project, with a higher number of participants and under a variety of aspects, a knowledge base would facilitate the management and access of diverse types of data collections (in-cluding documents, images, videos, maps, etc.).

In this chapter, our focus is on facilities that can be provided to access unstructured textual data, such as documents, open-ended survey questions, interviews more effectively. In addition to basic keyword-based search on such text collections, there are further AI-based tasks, which can improve information access and retrieval capabilities in a knowledge base. Among them we focused on text classification, text clustering and opinion mining. Text classification and clustering can be applied to group the text collection, which will be helpful for logical organization within knowledge base as well for searching the collection. Sentiment analysis, on the other hand, is a processing specific to opinionated content, to automatically annotate the orientation of the opinion as positive or negative. Such an annotation is helpful for retrieval of text collection on a certain sentiment orientation.

For such capabilities, the commercial or open-source solutions are limited. However, with adaptations and additional development, they can be included in a knowledge base.

Furthermore, two recent technologies, QA systems and chatbots offer new challenges and opportunities for knowledge bases as a more interactive interface with the user. Although they require additional research and development effort, they will provide the next generation information retrieval functionality.

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CHAPTER 5

New Museology and Design Thinking Methodology

Tony Cassar

5.1. From Museums to Heritage Centres

Museums have been around almost as long as civilization itself. Since antiquity, humankind has always been driven to acquire and inquire about collections of objects and artefacts. By looking at the evolution of museums over the ages, one can get a better understanding of how artefacts have been preserved, presented and interpreted by their audiences over the ages. The English word "museum" is derived from Latin, yet its origins can be traced back to ancient Greece to the word Μουσεῖον, which referred to the temple where the nine Muses, daughters of Zeus and Mnemosyne, goddess of memory, lived. For the ancient Greeks, Mnemosyne was an especially important goddess. Through her came the ability to recall historical events and happenings, as well as the ability for powerful and persuasive rhetoric. Memories were orally passed on from one generation to the next through the knowledge embodied by the muses, especially myths, music, poetry, and lyrical songs. This was especially important at a time when for centuries memories were passed orally before writing could be used to record events [1].

The modern use of the word museum as a collection of artefacts can be traced back to Revolutionary France when, in 1793, the collections found at the Cabinet du Roi and the Cabinet d'Historie Naturelle were declared the property of the people and no longer belonged to the King. Modern museums sorting digital artefacts and making use of all multimedia and all forms of digital tools to enhance the visitor experience seem to once again emulate the ancient temple where the muses lived, taking once again the true meaning of museums closer to its original meaning [2].

The "Ashmolean Museum of Art and Archaeology" is the oldest public museum. Opened in 1683, by the University of Oxford, the museum houses a huge collection bequeathed by Elias Ashmole in 1677. Over the years, the original natural history collections grew to include also priceless collections of Egyptian and Renaissance

art. The original building, which housed the Ashmolean Museum, is today's Museum of the History of Science. The encyclopaedic spirit, the increased world exploration, and the industrialisation fuelled the Enlightenment. These influences can be seen in the opening of two particularly important museums at the time, the British Museum in London in 1759 and the Louvre Museum in Paris in 1793.

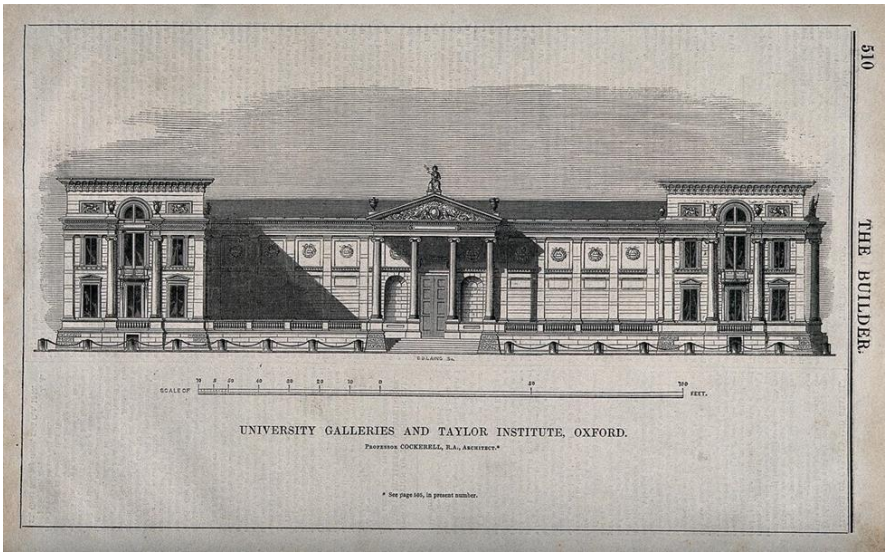


Figure 5.1: The Ashmolean Museum (in full the Ashmolean Museum of Art and Archaeology) on Beaumont Street, Oxford, England, is the world's first university museum. Its first building was built in 1678–1683 to house the cabinet of curiosities that Elias Ashmole gave to the University of Oxford in 1677.
Credit: Ashmolean Museum and Taylorian Institute, Oxford: panoramic view. Wood engraving by C.D. Laing after C.R. Cockerell. Credit: Wellcome Collection

In the UK, the 70s and 80s are often referred to as the 'heritage boom' as they saw the setting up of many open-air museums, as well as many indoor cultural heritage sites using new multimedia multisensory technologies to enhance visitor interpretation. Some of the established museums also chose to start experimenting with some of these technologies in their visitor experience. This was the beginning of the departure from the traditional orthodox museum experience. Open-air and folk-life museums were first established in Scandinavia, in the late 19th century. These museums provided a popular way of understanding the past by bringing it back to life. The successes of open-air museums, such as Greenfield and Williamsburg, may have helped prompt Disney to open their first Disneyland in 1955. Heritage sites started recreating historical events, allowing visitors to experience firsthand the historical period or event of the time.

Heritage centres can be considered as close relatives of museums. They attempt to recreate history using interpretative multimedia technology. These centres often focus on one theme, emphasizing spectacle rather than education. One such heritage

centre was "Royal Britain" established next to the Barbican in central London. The patriotic narrative of Royal Britain, featuring the life and exploits of British monarchs, used various multimedia effects such as reconstructions, projections, lighting effects and life-size representations of Royals. Another Heritage experience worth mentioning is the Oxford Story, meant to recreate the illustrious history of Oxford University. The visitor is taken on a journey through time via a series of exhibits meant to illustrate the University's history.

5.2. **New Museology**

Present day museums cover a wide range of human endeavour, not just the arts or sciences, but an endless list of topics such as entertainment, childhood, military conflicts, crafts, aviation, antiquity and much more.

'New Museology' is a term that refers to a new approach in museum practice developed in the early 1980s. It was the result of a rejection of the museums' traditional role in the society. In the 1970s, a general feeling of detachment from the modern world was attributed to museums, which were in a way considered outdated and obsolete. Some went as far as to say that they had become a waste of public funds [3]. Museums were completely focused on collections, with the curatorial role having absolute authority on the museum. Traditional museology was thus considered elitist, reflecting only the tastes of a select societal group.

A remarkably interesting definition of this new contemporary approach is given by Peter Vergo [4] in his book 'New Museology' where he states that:

> "At the simplest level I would define it, as a state of widespread dissatisfaction with the 'old' museology, both within and outside the museum profession; and though the reader may object that such a definition is not merely negative, but circular, I would retort that what is wrong with the 'old' museology is that it is too much about museum methods, and too little about purposes of museums; that museology has in the past only frequently been seen, if it has been seen at all, as a theoretical and humanistic discipline" (p. 3).

As a result, this new contemporary approach in museology was meant to introduce a new philosophy and approach to the relationship between society and communities vis-a-vis museums. A new style of communication and expression away from collections-focused models was introduced [4]. This new philosophy rethinks the relationship that museums have with communities, thus striving for wider access and representation [5]. In this new contemporary approach in museology, the public's role is widened from that of a simple visitor to one with the ability to control the curatorial function [6].

"New Museology" challenges the social and political roles of museums through encouraging new communication and expression styles. Contemporary museology strategy advocates integrating museums more closely with the multicultural social groups which they are meant to represent and serve. This new way of looking at audiences, including an increased awareness of audience diversity, is in line with the visitor centred, humanist approach of new museology [7]. The neo humanist museum, resulting from the new museology revolution, must place a lot of emphasis

on the individual's experience. Understanding the different users' needs, expectations and limitations will help museums create experiences which move away from a one size fits all model. The visitor-centred ethos of new museology is revolutionizing the way museums present themselves to their audiences and significant efforts are being put into making them more accessible to everyone.

5.3. **Digital tools and Design Thinking methodology**

Museums are complex social and learning environments called to satisfy the diverse interests of large crowds of diverse audiences during a limited time visit. Since the 1980s, influenced by the new museology, museums started taking a different approach on how to convey exhibit information to a wider public, by focusing on the context of a cultural artefact rather than simply on the object itself [8]. Within this exciting scenario, museums are often turning to digital tools to improve the way they attract and communicate with their existing and potential audiences. The importance of digital tools for visitor access have been amplified with the recent worldwide lockdown of the physical museums due to Covid-19, where digital became the only tool that museums had to offer. The visitor-centred vision promoted by this contemporary museology required new approaches to exhibition design and visitor engagement.

This paragraph discusses the use of Design Thinking as an effective methodology to encourage innovation and engaging audience engagement both within the physical and online presence of the museum. Effective museum design must also take into consideration the diverse existing and potential museum audiences as well as the great opportunities offered through technology and digital tools.

Innovation is recognised as one of the principal driving forces behind growth. Countries that embrace innovation usually fare much better than the ones that do not [9]. Museums are looking at innovation as the key to help them adapt to major changes affecting the cultural heritage sector. The three main forms of innovation happening in museums are [10]:

- Technological innovation in museum-visitor experiences,
- Museum management, and
- Organizational innovation

Innovation is fuelled by the insights gained through the understanding achieved from observing what visitors want and need. Design Thinking, described as a methodology, a culture and even a philosophy, is a system that ensures all forms of innovation activities are inspired by a human-centred focus [11]. It is an approach that uses creative problem-solving as a driving force for human-centred innovation [12].

John E. Arnold was one of the first authors to write about "Design Thinking". In his "Creative Engineering" seminars at Stanford University, he identifies four specific outcomes of design thinking [13]. These include:

- "Novel functionality" relating to innovative solutions for old problems or solutions for new needs
- Improved solution performance levels

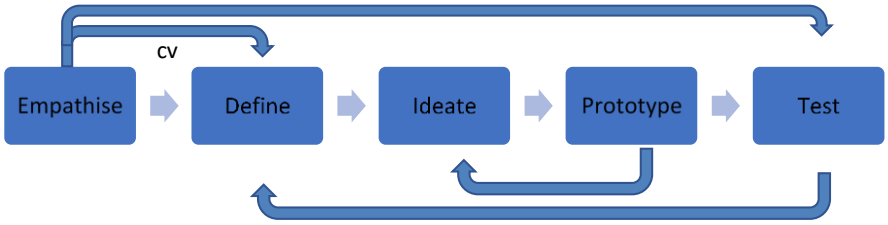
– Reduced production costs, and
– Improved profitability

The earliest education teaching research institutes about Design Thinking was introduced in 2005 at Stanford University, the Hasso Plattner Institute of Design, which is commonly known as the d.school. In "Theoretical Foundations of Design Thinking" [14] there is an overview of the historical development of Stanford University's design thinking programs, starting from the first innovation curricula of creative thinking, visual thinking and ambidextrous thinking that shaped today's Design Thinking methodology.

Design thinking is spreading worldwide in many different sectors that require innovation. More educational institutions, appreciating the positive benefits of this methodology, are implementing it in their curricula, some following the University of Sanford and Potsdam's d.schools in implementing their own design thinking schools. Design Thinking revolutionises the way people, companies and organizations look at innovation. The process of innovation becomes truly dynamic, continual, reflective, detectable, and most importantly human centred. Those organisations that adopt design thinking as the fundamental catalyst of their innovation process will be able to design completely new processes, services, and products in a sustainable and continuous way [15].

In the last decade, museums have also started using Design Thinking to help them innovate the way they manage themselves and communicate their collections to visitors. In fact, the process of design thinking can literally be applied to any setting, challenge, or problem within the museum. Design thinking helps museums to see issues as challenges that can be tackled and solved rather than just problems.

There are five main steps in the Design Thinking model proposed by d.school of the Hasso-Plattner Institute of Design at Stanford University. These are: Empathize, Define, Ideate, Prototype and Test (Fig. 2).



The Design Thinking Process is not a linear one and the five different stages are not always sequential, the different stages may sometimes occur in parallel or be repeated iteratively.

Figure 5.2: Design Thinking model (d.school)

5.3.1. **Phase 1: Empathize**

The design thinking process starts with gaining an empathic understanding of the issue or problem that needs solving. In a human-centred design approach such

as that being proposed by Design Thinking, empathy takes a central and important role. Empathy allows designers to set aside their personal assumptions and understand or feel what the other person is going through. Empathy is crucial in obtaining a valuable insight into the museum visitors' profile, needs and underlying problems that need to be addressed.

5.3.2. **Phase 2: Define**

Identifying the challenge is often one of the most important steps in the whole process. During this stage, all the information and insight collected in the first stage (Empathy) is analysed and synthesized to be able to define the core problem that needs to be addressed. The problem needs to be clearly defined from a human-centred point of view rather than simply from the museum's point of view. This stage will help designers to collect ideas on how to create features and functions that will allow them to target and solve the problem.

5.3.3. **Phase 3: Ideate**

In this stage the designer has understood the users and their needs in the Empathise stage, analysed these observations in the Define stage and, based on this information, is ready to start coming up with ideas to solve the issues in question. There are many approaches and techniques to deal with the ideation stage. The ideation phase will allow the designer to shift through all the identified ideas to find the ones which best solve the problem at hand.

5.3.4. **Phase 4: Prototype**

Prototyping involves the creation of an early sample, which is an inexpensive simplified version of the service or product to be able to test the concept or identify solution. This prototype would allow users, from both within the museum and outside, to test and evaluate the proposed solution. This stage will help the designers have a clearer view of how users would react to the solution being proposed. Prototyping offers many advantages to designers, which include the possibility to make practically same time changes and test new iterations, which takes us to the next stage.

5.3.5. **Phase 5: Test**

Prototyping will identify the solutions and allow designers to test the final solution meticulously. Although this is considered as the final stage, one would also see a loop between the last stage and previous stages until the testing is successfully completed. This is because results from the testing phase are then used to fine-tune the proposed solution and prototype in phase 4. Prototyping and testing are powerful tools for museums and used well will save the museum from very expensive mistakes and encourage innovation.

5.4. **Conclusions**

The Design Thinking Process is not a linear one and the five different stages are not always sequential. The different stages may sometimes occur in parallel or be repeated iteratively. Rather than sequential steps, each phase must be understood as a

component or node that contributes to a successful development process of innovative problem solving design. Each museum design project will be different, but the Design Thinking process identifies the five different stages of development that need to be carried out.

Museums need to embrace design thinking when designing their visitor experiences. Exhibition prototyping needs to become the norm as well as interviewing and understanding community expectations as an initial stage of the exhibition design. This process is not simply an effort in marketing, but an active effort to shape the museum's interpretation, with a blend of analogue and digital components. Museums must set goals which correspond to their community's own expectations, and regularly evaluate to what degree these goals are being met by the exhibition to adjust and iterate accordingly [16]. Effective design needs to engage the public, cultivate diverse audiences, help museums avail themselves of the benefits of digital tools and leverage the role of museums as players in cultural and economic ecosystems.

This methodology offers great potential for use with visitor centred museums. It allows museums and cultural heritage sites to design visitor experiences that reflect what the different audiences are looking for. It helps designers to create solutions that have been carefully analysed from a customer point of view, tested, and validated before being rolled out into the live visitor environment. One of the biggest advantages of design thinking methodology is the multi-disciplinary team approach, where different team members from different backgrounds contribute and work together to build these experiences. Attracting and engaging visitors to museums and cultural heritage sites has become particularly challenging as the latter need to compete with a wide variety of venues and activities that are all out to attract the public's attention and interest.

Design Thinking methodology introduces innovation as an especially important element in the design process, crucial to create effective and engaging visitor experiences. This approach will bring a much-needed balance within multidisciplinary teams entrusted with putting exhibitions together. Anyone who participated in such design teams could feel the often opposing forces between curators, educators, and designers. Design thinking puts designers at par within the academics of the design team to ensure their full and active participation in the exhibition development. This multidisciplinary approach focusing on the visitor experience rather than just on the curatorial collection interpretation needs is exactly what new museology is trying to achieve. Design thinking methodology allows designers to make the best use of new technologies that can be key to creating engaging experiences that attract visitors to museums and cultural heritage sites. Notwithstanding the potential of digital tools within the cultural heritage sector to improve visitor experiences, their effectiveness is directly related to the ability of the design team to understand how they work and how audiences can make the best use of them as a part of the visit experience. This is where the multidisciplinary design approach and the various stages of design thinking methodology bring together technology, curation, and audiences in creating memorable and effective visitor experiences.

Contemporary experience-centred museology encapsulates yet eclipses collection-centred and education-centred notions of the museum. An experience-orientated institution seeks to understand what today visitors want and derive from their visit to the museum rather than simply acting as educators for the benefit of their guests [17]. The research in audience motivation, expectations and categorization by John Falk is amongst the seminal works that have driven museums to better understand their clients.

As museums move toward a richer dialogical engagement with their audiences, both within their physical constraints but also with online and social media platforms, they must realize that, unless they change, they will become irrelevant.

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CHAPTER 6

Infrared thermal imaging
Principles and applications for civil engineering inspection

Robert Olbrycht

6.1. Introduction

6.1.1. Discovery of infrared radiation

Infrared radiation was discovered by Sir Frederick William Herschel in 1800 [1]. His experiment was based on dispersing sunlight into constituent spectral colours, as shown in Fig. 6.1. Different colours were pointed to thermometers, causing different temperature increases – the lowest caused by so called "cold colours" as blue, increasing towards "warm" ones as red. Interestingly, the highest temperature increase was noted even beyond the red colour, where no dispersed light was visible. Therefore, this invisible radiation was called infrared.

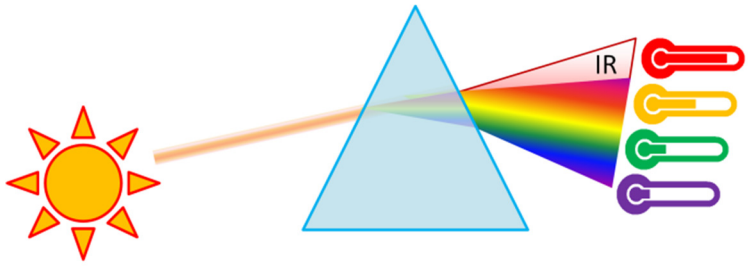

Figure 6.1: The concept of the Herschel's experiment

6.1.2. Discovery of infrared radiation

Nowadays, the broad infrared range of electromagnetic radiation is divided into sub-ranges. There are different divisions mentioned in literature, but from the point of thermal imaging, the most suitable is the one presented below:

- Near infrared (NIR, 0.75–1.4 μm),
- Short wavelength infrared (SWIR, 1.4–3 μm),
- Mid wavelength infrared (MWIR, 3–5 μm),
- Long wavelength infrared (LWIR, 8–15 μm).

Near infrared is typically used in remote controls for home appliances and for illumination in surveillance cameras. Although this wavelength range is invisible to human eye, it can be recorded with unfiltered visible light cameras (as surveillance ones), that are sensitive to it up to about 1 μm [2]. In practice, however, typical cameras (such as photo cameras) have this range filtered out, to provide spectral sensitivity matched to human sight.

To acquire images in short and mid wavelength infrared spectral range, one needs to use different, many orders of magnitude more expensive detectors, than for visible light. Often, such detectors require also cryogenic cooling and different optical materials for lenses.

In case of long infrared wavelength, one still needs to use special cameras for imaging in this spectral range. During the recent years, however, the technology of microbolometer detectors, that are sensitive for this spectral range, have become available at the price level acceptable for non-professional applications. Microbolometer cameras can operate without cooling and cover solutions from high-end market to low-end imaging purposes. One can even find this technology available for use with smartphones [3].

The question arises, which infrared spectral range (of the above-mentioned ones) shall be used for thermal imaging in civil engineering applications? To find the answer, one needs to use Planck's Law, given by (1), which describes the relationship between the temperature of object (black body) and the spectral density of electromagnetic radiation emitted by it under the assumption of thermal equilibrium [4]. In simple words, this law makes possible to find out the spectral range, in which room temperature objects emit most of the radiation.

$$M_{e,bb,\lambda} = \frac{2\pi hc^2}{\lambda^5\left(e^{\frac{hc}{\lambda kT}} - 1\right)} \tag{1}$$

where:

$M_{e,bb,\lambda}$ = spectral radiance of blackbody, $W \cdot m^{-3}$
T = temperature of blackbody, K
λ = wavelength, m
h = Planck constant $6.62607015 \cdot 10^{-34}$ J·s
k = Boltzmann constant $1.380649 \cdot 10^{-23}$ $J \cdot K^{-1}$
c = speed of light 299792458 $m \cdot s^{-1}$

For better interpretation, let us plot the spectral radiance versus wavelength for different blackbody temperature - Fig. 6.2. One can observe that black bodies under room temperature emit radiation mostly in LWIR spectral range. Increasing temperature results in higher radiance, with spectral peak shifted towards shorter wavelengths. For extremely high temperature values, corresponding to the photosphere of the Sun (about 6000 K), the spectral peak is located inside the visible light range, corresponding to green colour, explaining why human eyes are highly sensitive to it.

The presented analysis leads us to the conclusion, that thermal imaging in civil engineering applications should be performed in LWIR spectral range. Despite the fact, that in MWIR spectral range one can expect lower radiance, it also can be used for thermal imaging. In this case, however, one needs to use an order of magnitude more expensive thermal imaging camera with cryogenically cooled photon detector. Therefore, in practical applications, LWIR is commonly used, because of cheaper technology – uncooled microbolometer detectors.

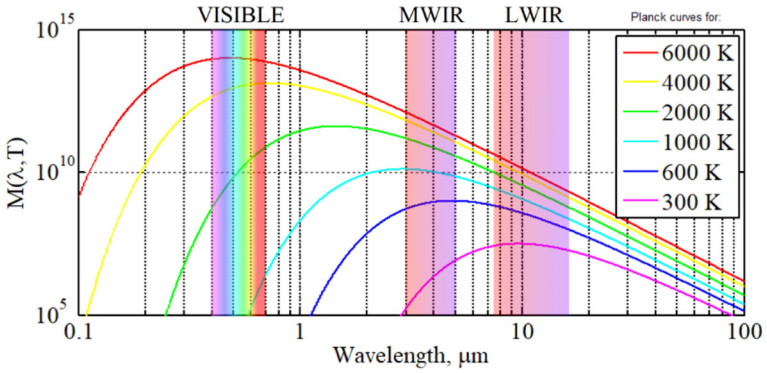

Figure 6.2: Planck curves for different blackbody temperature

The above considerations bring us also the proof, that infrared imaging does not require any sunlight illumination and can be performed even in total darkness. In case of visible light cameras, it is different, as objects in room temperature (about 300 K) do not emit any radiation in spectral range 0.4–0.7 μm. Thus, visible light imaging is based on recording radiation reflected by objects, or emitted directly by light sources as incandescent bulbs or the Sun. One might ask, how it is in case of thermal imaging – does it rely on radiation emitted by objects or reflected by it? This question is answered in the following part of this chapter.

6.2. Emissivity, reflectivity, and transmission

During the above analysis with Planck's law, a blackbody was taken into consideration. By theory, blackbody absorbs all the radiation that reaches it. In practice, however, the blackbody does not exist, so one can only create models of it. An example of such a model is presented in Fig 6.3(a), where radiation M_X enters the cavity through a narrow slit. It is subjected to multiple reflections inside, but cannot leave the cavity, what models the full absorption. To remain in the state of thermal equilibrium, the blackbody needs to emit the same amount of energy as it absorbed in a certain period. Hence, according to the Kirchhoff's law of thermal radiation, its absorptivity and emissivity for a given spectral range are equal [4]. This leads us to an observation that for a blackbody, the emissivity factor ε is equal to 1.

As previously stated, - in reality, instead of blackbodies, we deal with graybodies with emissivity $0 < \varepsilon < 1$. For a graybody, as shown in Fig. 6.3(b), radiation M_e reaching its surface is partially:

- absorbed (M_a – proportional to the emissivity factor value ε),
- reflected (M_r – proportional to the reflectivity factor value φ),
- transmitted (M_t – proportional to the transmission factor value τ).

For a graybody, one can note that (2) holds. It may be transformed to (3), leading us to (4), which is one of the most important relations for thermal imaging. It is worth noting, that (2)-(4) are valid not only for a single wavelength, but also for the entire spectrum of electromagnetic radiation, including the infrared camera sensitivity band.

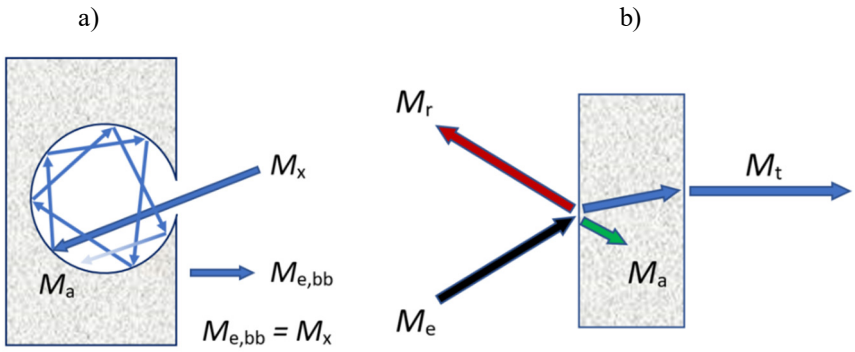

Figure 6.3: a) Blackbody model, b) graybody model

$$M_e = M_a + M_r + M_t \tag{2}$$

$$\frac{M_a}{M_e} + \frac{M_r}{M_e} + \frac{M_t}{M_e} = \frac{M_e}{M_e} \tag{3}$$

$$\varepsilon + \rho + \tau = 1 \tag{4}$$

Due to (4), one can identify the three characteristic types of mediums:

- highly emissive – with low reflection and transmission. Such surfaces are typically porous (in micro scale) and made of dielectric materials,
- highly reflective – with low emissivity and transmission. Such surfaces are typically polished and made of metallic materials,
- highly transparent – with low emissivity and reflection. Such properties are typical for gases and thin layers of different materials.

In each of the above cases, one should consider that for a given medium, the ratios between emissivity, reflection and transmission may vary significantly with

wavelength. This means that surfaces may behave utterly different for naked eye inspection and thermal imaging. To provide some examples:

- in visible light, glass is transparent, but for infrared it becomes opaque. It is different with silicon, that is opaque for visible light and becomes transparent for infrared,
- in visible light, a sheet of copper may seem matte, but it acts as a mirror in LWIR spectral range,
- humid air exhibits much lower transmission for spectral range 5–7.5 μm than for the rest of MWIR and LWIR spectral ranges.

What is more, the emissivity factor can change significantly while increasing the angle of surface observation, reaching 0 for 90° (optical path parallel to the surface). In practice, however, one can assume that the emissivity is nearly constant for the angles ranging between 0 and 30°. The largest changes occur for angles larger than 60°. On the other hand, 0° is also not recommended in practice, to avoid self-reflections in the inspected surface.

6.3. Thermal measurement in practice

In practice, especially for thick layers of materials used in civil engineering, one can assume zero transmission, leading to the conclusion that decreasing surface emissivity leads to increasing its reflectivity. The simple scheme of typical measurement with thermal imaging camera is shown in Fig. 6.4, where a measured object emits and reflects radiation proportionally to its emissivity and reflectivity factor, respectively, according to (5).

$$M_{cam} = \varepsilon_{obj} M_{obj} + \rho_{obj} M_{bkg} \tag{5}$$

where M_{cam} is the radiance reaching the camera detector and M_{bkg} is the background radiance [5].

Let us take an example of polished metal partly covered with matte paint – both surfaces heated up to 40 °C. For a polished metal we assume $\varepsilon = 0.1$ and $\rho = 1 - \varepsilon = 0.9$, while for a matte paint we assume $\varepsilon = 0.9$ and $\rho = 1 - \varepsilon = 0.1$. In case of this polished metal, it radiates only 10% of the radiance that would be emitted by the blackbody in the same temperature. The remaining 90% comes from the reflections. For matte paint it is the opposite. Hence it is difficult to measure the temperature of metals (and other highly reflective surfaces). However, if possible, one can cover part of this metallic surface with such matte paint or adhesive tape, thereby changing the emissivity at this surface from 0.1 to 0.9 and making the measurement much reliable.

There are situations, where the above solution it is not possible, and reflections can influence the measurement. Then one should control it by directing the camera towards the measured surface at an angle ensuring the reflections are coming from

known source. Ideally, this should be a surface with temperature of known value and uniform distribution.

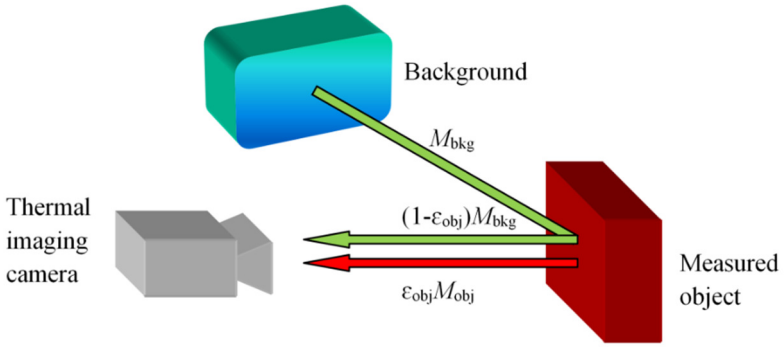

Figure 6.4: Scheme of a typical measurement with thermal imaging camera

In all cases, for proper temperature measurement with thermal imaging camera, one needs to pre-set the correct value of emissivity and background temperature into the camera menu or the software for while processing thermal images. It is worth noting, that there is another parameter, i.e. the temperature of the optical path (atmosphere between the camera and the measured object). It has negligible impact on measurements performed at short distances, but for longer ones it becomes more important due to the atmospheric transmission, which also should be considered.

6.3.1. **Reflections - influence and compensation**

Typically, in a single thermal image, one can find areas corresponding to surfaces of different thermal properties, including emissivity and reflectivity. It means that one can expect differences in the image caused not by surface temperature differences, but by different level of reflections. Let us take an example of a building shown in Fig. 6.5(a). Although it may seem that heat loss through the three upper rows of windows is different comparing to lower rows, in fact this is not the case. This difference arises because of sky reflections in the surface of windows belonging to three upper rows, in contrast to lower rows reflecting radiation coming from surrounding buildings and ground, as demonstrated in Fig. 6.5(b). Interestingly, the direction of radiative energy transfer can occur from the camera detector towards measured cold scene areas, opposite to the case with warm scene areas.

For inspection of thermal insulation of buildings, one needs to provide high temperature difference between the building interior and outdoor atmosphere. Thus, the optimal time for such inspection is winter in the night and typically, thermal images of buildings are acquired from the ground level. Hence, one may assume that nearly all the reflections at the walls come from the sky and it is worth noting, that the apparent temperature of the sky can be as low as -50 °C, especially during cloudless night. In such a case, the lower is the wall emissivity, the higher

is the influence of cold reflections, causing lower than real temperature measurement. To deal with this problem, one needs to input correct background (in this case apparent sky) temperature and wall emissivity. For different areas, one can define different values of these parameters – it can be done in the software for editing thermal images.

a) b)

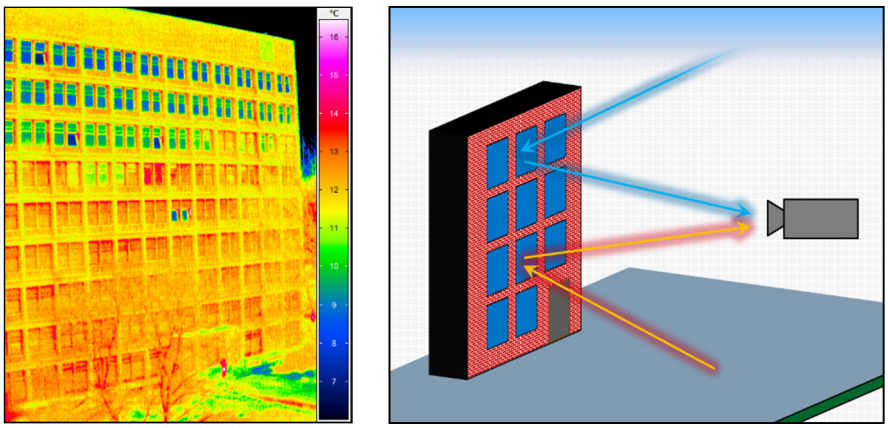

Figure 6.5: a) Thermal image of a building, b) illustration of sources of reflections

a) b)

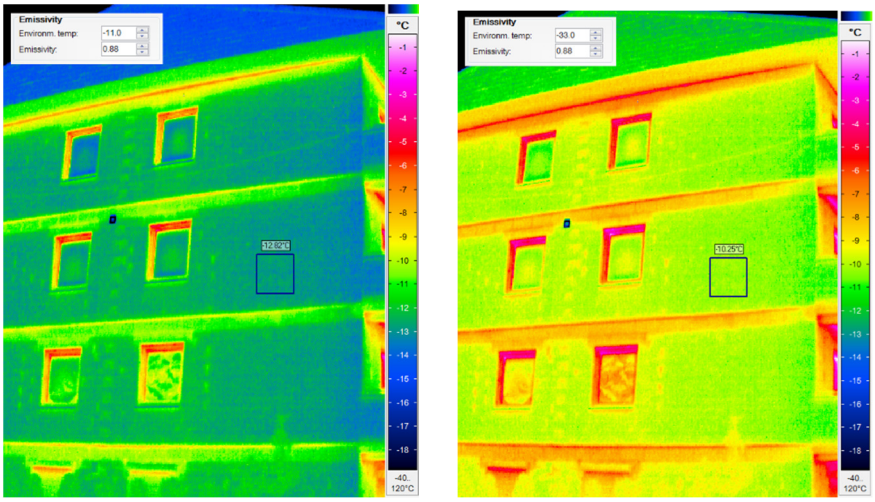

Figure 6.6: Thermal image of a building, with background temperature set to a) ambient, b) apparent sky

Let us demonstrate the influence of sky reflections on temperature measurement by comparing Fig. 6.6(a) and Fig. 6.6(b). In case of Fig. 6.6(a), there is incorrect background temperature value set in the camera (ambient -11 °C instead of

apparent sky -33 °C), what causes wall temperature readout -12.82 °C, which is below the ambient.

In case of Fig. 6.6(b), proper value of background temperature is used, resulting in more realistic wall temperature readout of -10.25 °C. In both cases, the emissivity coefficient was set to 0.88, but if this value was lower, the influence of background reflections would be more intensive.

This leads us to a conclusion, that areas of different emissivity may exhibit different temperature readouts, even remaining at the same physical temperature. There is, however, one special case, where the emissivity does not play any role for thermal imaging. It is when the background temperature is equal to the real temperature of the measured object. In such a case, there is no thermal contrast between the object and the background so the radiance reflected and emitted by the object remains at the same level [5].

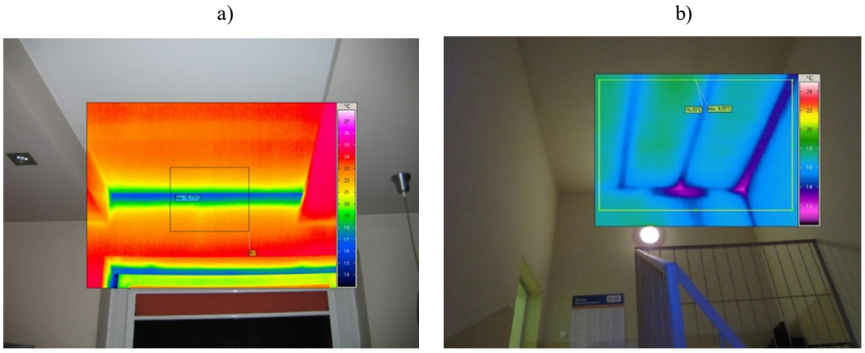

Figure 6.7: Visual light photos of a) room and b) staircase, with thermal images overlaid showing thermal bridges

In Fig. 6.6 one can notice the so-called thermal bridges [6], which are visible from the outside as areas with locally increased temperature. In these areas, there is a heat flow from inside to outside of the building, causing increased heating costs. In Fig. 6.7, there are examples (thermal images overlaid on visible light photos) of thermal bridges shown indoors, recognized as areas with locally decreased temperature value. If it decreases below the dew point, one can expect problems with dampness, possibly leading to mould or fungus.

6.4. Solar loading and active thermography

Let us consider a situation, where the temperature is similar indoors and outdoors. In this case there is no significant heat flow and thermal bridges cannot be detected. However, there can appear another stimulus – the Sun, which heats up the wall surface. In this technique, called solar loading, the temperature increase at the surface causes heating of underlying layers [7]. Depending on the thermal properties of these layers and especially its uniformity, heat can be absorbed at different rates in different areas, causing thermal patterns appear at the surface [8].

Let us take an example of a wall shown in Fig. 6.8. Visual light photo does not reveal any information about the structure of bricks and stones, except of an exposed linear part. Thermal imaging camera, however, provides thermal image with detailed subsurface structure. To a better visualisation, it was overlaid in the visual light photo. The span of the thermal image is less than 3 °C - for best effects, it is advised to use camera with low value of NETD (Noise Equivalent Temperature Difference), to maintain low level of noise with such narrow spans. In case of structures not exposed to the sunlight, as underground interiors, one can use artificial sources of heat instead (infrared lamps or flashlights) [9]. For better results, a sequence of thermal images can be acquired and processed by converting them from time to frequency domain (pulse phase or lock-in technique) [10]. It provides amplitude and phase images – the latter enables mitigating the influence of uneven surface heating with the lamps. Examples demonstrating the application of this technique for architectural monuments investigations are shown in [11].

Figure 6.8: Visual light photo of a wall with overlaid thermal image – thermal pattern revealing subsurface structure is due to solar loading

6.5. Conclusions

Thermal imaging is a powerful technology, well established for inspection in many branches of science and technology. For civil engineering inspection it can be used for locating thermal bridges to assess the thermal insulation. Another application, called active thermography, can bring information about subsurface structure of walls and other surfaces, thanks to thermal excitation coming from the Sun (solar loading) or artificial sources of radiation (infrared lamps or flashlights), e.g. active thermography can be a powerful tool for inspecting underground structures such as caves or underground built heritage. In all cases, it is worth

knowing the theoretical basics presented in this chapter, to avoid difficulties with interpretation of obtained results.

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CHAPTER 7

The use of innovative SLAM solution for a fast acquisition of UBH

Roberto Pierdicca

7.1. Introduction

In the latest years, surveying techniques have increased their productivity and accuracy. Such development has been fundamental for the Cultural Heritage (CH) domain. The growing availability of novel, robust and, in some cases, affordable tools has made possible the data collection of a wide variety of objects. Their purposes are countless, spanning from documentation to preservation, from restoration to valorisation [1]. The reason of this improvement is twofold: on the one hand, CH related researches gained more and more attention, given the huge importance that they represent for the whole mankind; the safeguard of cultural goods is even entrusted on their documentation, boosting in a sense the set-up of pipelines of work efficient and reliable at the same time.

On the other hand, their knowledge and accurate documentation is urgent; it can happen in fact that they could disappear for different reasons, both natural and human. There is not a single method applicable for recording every CH related subject and hence there is a strong demand for making the combination of data, coming from different sensors, more and more straightforward [2].

Surveying techniques can be roughly divided into two macro categories: direct (e.g. Terrestrial Laser Scanner) and indirect (e.g. Digital Photogrammetry). In different manner and with different costs, they provide a huge amount of 3D data, that can be processed to obtain a virtual reconstruction of the architectural/archaeological objects. These technologies are complementary for creating high-quality 3D recordings and representations. Figure 7.1 shows the "*big picture*" of the Geomatic techniques available, depending on the scale of representation of the object and on the number of data required to represent it.

However, even if are the most widespread technologies for data collection, they might present respectively some drawbacks [3]. Image based techniques are very friendly and cost effective, but they require a rigorous configuration of acquisition to achieve a good result. Further, they do not allow to acquire large settings, with

the exception of Unmanned Aerial Vehicles (UAV) that provides the documentation from a top view configuration [4].

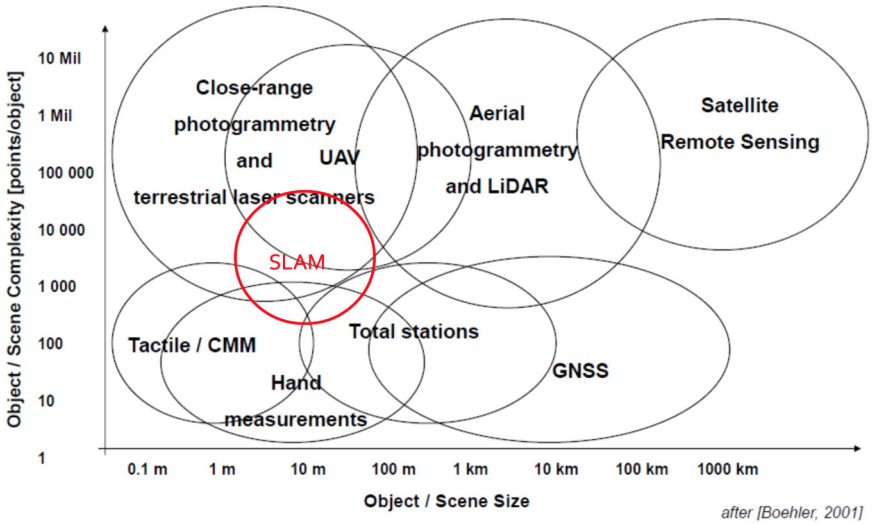

Figure 7.1: Geomatic techniques categorised according to object size (x-axis) and object complexity (y-axis).

TLS, instead, merges a remarkably high accuracy with high ranges of acquisition, but it is neither affordable, nor friendly. Thus, there is the need, especially for challenging environments like archaeological settings or Underground Built Heritage (UBH), to introduce new, fast and agile methods of data acquisition which enable the operator to collect large amount of data in a quick way and with an acceptable degree of accuracy [5]. As there is not the winning solution for every operational condition, most of the surveying projects related to large and complex sites integrate multiple sensors and techniques [6]. Towards this direction, producers are introducing in the market sophisticated tools which integrate multiple sensors in an all-in-one solution that in the literature are defined as combination of methods. One of them, recently introduced, is the SLAM (Simultaneously Localization and Mapping) technology [7], that allows to acquire millions of 3D points in a short time and with good accuracy in both indoor and outdoor locations. These new systems completely avoid the use of targets and ground control points. Despite their potential of increasing productivity in 3D digitization projects, data quality still needs to be carefully evaluated; this latter aspect is essential to test, in future experiments, their potential in UBH settings. That said, the aim of this chapter is to argue about the main features of Mobile Mapping Systems (MMS) for a fast and accurate acquisition of 3D data, bearing in mind that the common thread in the Geomatic research community is the combination of sensors and methodologies to reach the desired degree of accuracy. In the following pages, some case studies will be presented to provide best practices for the adoption of MMS, even called Dynamic Laser Scanning Systems, for surveying UBH. In Fig-

ure 7.2 the application fields divided in static and dynamic laser scanning systems is reported.

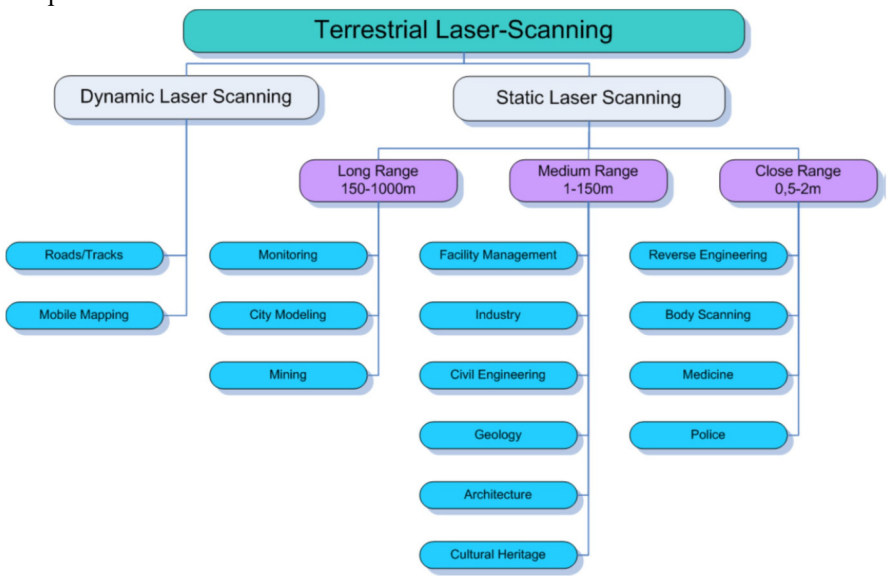

Figure 7.2: Dynamic vs Static Laser Scanning systems

7.2. Related Work

The fast improvement of new technologies, the increasing computational capabilities of processing platforms, and the development of more and more efficient algorithms of data processing, made the documentation of CH artefact entrusted on the collection of 3D point clouds. Even if rigorous pipeline of works based on topography and positioning remains a must-have for every survey, regardless its aim, it is paramount to create accurate 3D models starting from dense clouds of points.

This topic has been faced by several works and the literature presents a plethora of study cases in which monuments, artifacts and sculptures are virtually reconstructed by using a wide range of techniques and applications [8]. Of course, the adoption of different sensors and techniques depends on the final output for which the survey has been planned. Depending on scale, costs, accuracy and many other features, insiders should undertake the best pipeline of work [9]. For archaeological purposes, specifically, it is more often required a fast and agile data acquisition and processing [10] and this is for several reasons [11], at the expenses of accuracy. In fact, archaeological surveys are often unplanned, the sites are quite distant and located in impervious areas [12] or the areas are wide. For these reasons, some trends of data acquisitions are going towards the direction of exploiting new sensors which enable the surveyors to be fast enough to acquire the more data possible [13].

As stated by the same authors in their publications, the accuracy value is far from being usable for documentation purposes and a lot of work is required to make these sensors suitable for the purpose. From one decade ago instead, the trend moved toward the integration of different techniques, to exploit the benefit of each one [14] [15]. Notwithstanding, even if this integration is the best solution, requires skills, times and costs that are not always acceptable for archaeology where the budgets and the outcomes are entrusted on low and private funds. To summarise, the main requirements to take into consideration when dealing with challenging environments like UBH are the following:

- *Fast*: often, time constrains oblige surveyors to speed up the process of acquisition.
- *Unplanned*: UBH settings present setbacks which cannot be predictable during the planning phase
- *Agile*: the more the tools are complex, the more they become cumbersome, and this should be avoided
- *Cost Effective*: this does not mean cheap, but rather achieving the best results with reasonable costs
- *Easy to use*: as the survey may require long times, it would be preferable to have tools that could be managed even by non expert staff
- *Affordable*: in general CH suffers a generalised lack or resources, hence low-cost solutions are preferable.

MMS attempt to solve all the above-mentioned issues; in the next section a brief overview of the main components, are functioning principle are given.

7.3. Mobile Mapping Systems

For land survey, there exists three main categories of MMS: *Backpack*[1], *GeoSLAM*[2] and *SLAM*[3]. Backpack are the more accurate, as they integrate GPS and Omnidirectional Cameras that make the survey complete for every purpose. However, as we are focusing on UBH settings and no GPS signal can be received, this method will not be discussed in this chapter.

GeoSLAM and SLAM systems enable to perform surveys even in those areas where GPS coverage is absent. Consequently, they are suitable for UBH. In the next part, three case studies with SLAM system will be reported and this method deepened. Figure 7.3 shows the conceptual scheme of the main features behind the SLAM system.

The essence of SLAM is to give the 3D map georeferenced at the on field survey conclusion, solving the problem to incorporate LiDAR and visual odometry in the form of wheel encoders or inertial navigation systems to determine self-motion [16]. SLAM system is a flexible mobile mapping platform for rapid mobile scanning; a computer small enough to fit in a hand but powerful enough to process and view any of the data it captures. Its integrated 3D mapping and real-time position estimation allows capabilities not possible with fixed base scanning systems. SLAM is a stand-alone, light-weight instrument, with an integrated system of mapping and real-time position estimation. In realising ground-based survey characterised by long path on foot, the laser scanner is mounted on a small pole held

by hand. Hand-held scanning systems consist mainly of three components: mapping sensors for data acquisition, a positioning and navigation unit for data localization and a time referencing unit for data recording. The tool in which we will focus this chapter is the Kaarta Stencil 2, which depends on LiDAR consisting of a Velodyne VLP-16, connected to a low-cost MEMS (Micro Electro-Mechanical Systems) IMU (Inertial Measurement Unit) and a processing computer for localization and real-time mapping. VLP-16 has a maximum laser range of 100 meters and 360◦ horizontal FOV (Field of View) with a 30◦ azimuthal opening with a band of 16 laser beams. The LiDAR has a sub-centimetric accuracy with a value variation of ±30 mm and a speed of 300.000 points per second.

Figure 7.3: Visual representation of the SLAM functioning system and components

The acquisition phase uses complex parameters that should be set according to the type of environment the surveyor is dealing with. Specifically, these settings include values for the voxelSize, namely the resolution of the point cloud in map file, for cornerVoxelSize, surfVoxelSize, sorroundVoxelSize, those indicate the resolution of the point cloud for scan matching and display, and for blindRadius, that is the minimum distance of the points to be used for the mapping. The data acquisition should be set up for a closed path (close-loop) to facilitate accurate reconstruction of the surveyed region and avoid problems associated with drift, where the beginning and end of the route coincide [17].

A tracker camera, integrated to the SLAM device, needs to show, and save the trajectory made during the acquisition operations. The progress of the scanning can be monitored in real time via an external monitor attached with a USB cable. At the end of the acquisition phase with KAARTA Stencil 2, information about the configuration setting, the 3D point cloud characteristics, the estimated trajectory is stored in a folder automatically created by the MLS processor at every operation of survey. The system is portrayed in Figure 7.4.

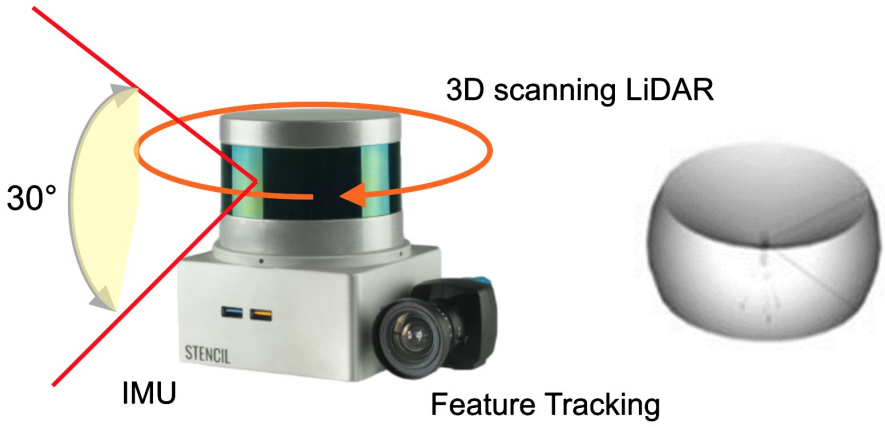

Figure 7.4: Main hardware components of KAARTA Stencil 2

7.4. Case Studies

MMS are particularly suitable for collecting many 3D data and can be exploited for different scenarios. In the literature, there is few information about the use of SLAM for surveying UBH settings, even if the solution is promising for indoor scenario. Given the above, in the following will be reported 3 case studies to better comprehend the potential and limitation of the system. The case studies chosen for this handbook are related to outdoor environments (archaeological and urban areas).

7.4.1. *Archaeological settings*

The first case study is an ancient Roman Amphitheatre located in the downtown of Ancona, a central Italian city. The Amphitheatre dates to the Augustus period (I-II century A.D.) and it witnessed different changes of use during the years, which covered relevant findings, but also provided several information about the evolution of the city. Its virtual reconstruction contributes significantly on sharing the site among the population.

The area is particularly suitable for this test, as with traditional scanning approaches it is not possible to use the same technique when capturing large scale outdoor scenes and tightly confined indoor spaces, because of spatial restrictions. Some pictures of the acquisition campaign are reported in Figure 7.5.

For assessing the performances of the tool, a comparison of dense point clouds obtained with different acquisition techniques was carried out. This to evaluate the usage of SLAM technology in combination with UAV and other TLS. Full results of the experiments can be found in [18], where the authors argue the necessity of integrating the MMS survey with the one performed with an aerial platform (Fig. 7.6).

Figure 7.5: The study area of the Roman Amphitheatre. Acquisitions steps made with both SLAM system and UAV

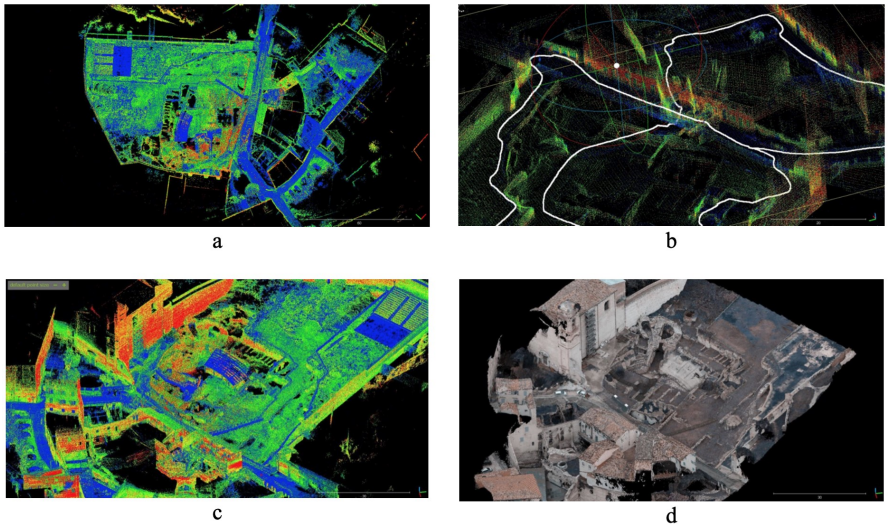

Figure 7.6: Results of point cloud processing. a) Plan of the study area, b) trajectory of the SLAM system, c) integration between UAV and SLAM point cloud, d) final output

7.4.2. ***Ancient Urban Settings***

The second case study presented is the 3D reconstruction of the ancient walls of San Ginesio, a small town rising on the top of a hill, at 700 m asl, close to Macera-

ta, in the Italian region of Marche. It was founded in the 6th century on remains of Roman settlements burned to the ground by Goths and Longbards that, after the fall of the Roman Empire, conquered these lands. In the 10th century some local Lords decided to build a fortress on the highest hill to dominate and protect the population in an appropriate place.
Most of the walls visible today dates to the 14th century and was completed in 150 years. Nowadays, due to the recent earthquakes hitting the central Italy (2009, 2016), the walls and the towers have been damaged, with ruins in correspondence of merlons and structural parts. In accordance with the methodology and the time of survey (based on both the instruments available and the accessibility to the site), the visible parts of the walls were divided in six sections. The general plan of the planned survey is reported in Figure 7.7.

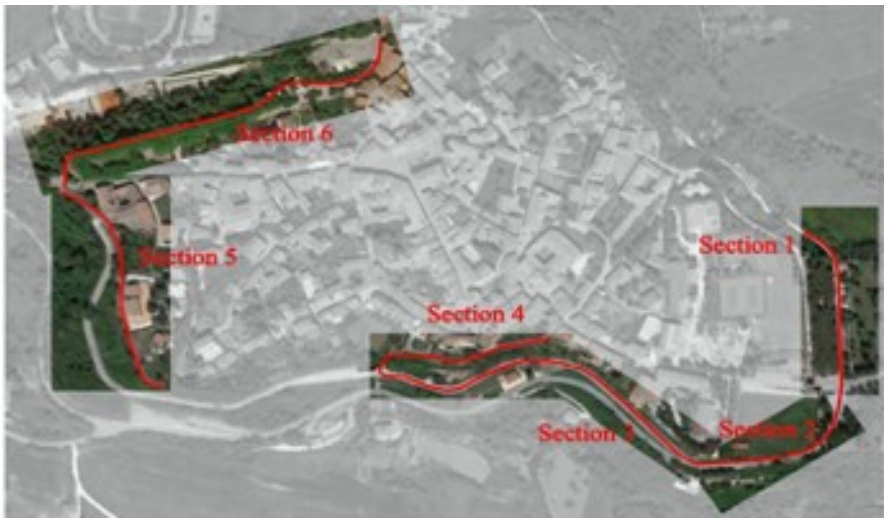

Figure 7.7: San Ginesio general plan with highlighted the 6 portions of the ancient walls

Since the scanning has been carried in outdoor environment, KAARTA Stencil 2 was appropriate for this type of survey. The objective of the survey, carried out through the town wall of San Ginesio, was searching for a methodology that might optimize the time of data acquisition and the following restitution, with less errors of projection.

To create a complete texturized 3D model of the walls, we decided to use different techniques of acquisition. They include the aerial photogrammetry with UAV and the mobile laser scanner with a SLAM technology. For the combination of the images acquired and the point clouds also a topographic survey was conducted using of Total Station (TS) and setting up a GNSS (Global Navigation Satellite System) network. The results of the data processing can be seen in Figure 7.8.

Figure 7.8: Result of the combined point clouds

7.4.3. ***Smart Cities applications***

The third case study presented is the use of SLAM system for the collection of 3D information regarding urban environments. For implementing the concept of Smart Cities, a geometrical knowledge of cities is the starting point. However, given the wideness and complexity of such environments, the use of fast tool of data acquisition and processing is fundamental. In this case, SLAM has been used in combination with spherical photogrammetry for acquiring the RGB information and GPS for georeferencing the point cloud.

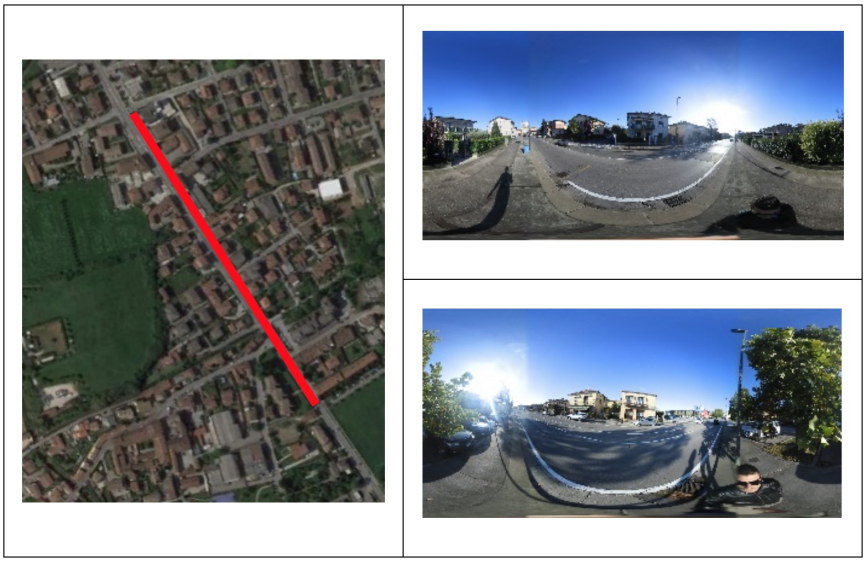

Figure 7.9: The study area in the city of Brescia

The future idea would be to have a fully exploitable and geometrically correct point cloud of our cities, by using metrical data in combination with SLAM 3D data. The study area and some omnidirectional pictures of the site are reported in

Figure 7.9. Computation results (Fig. 7.10) show that the system can be effective even for complex urban scenarios.

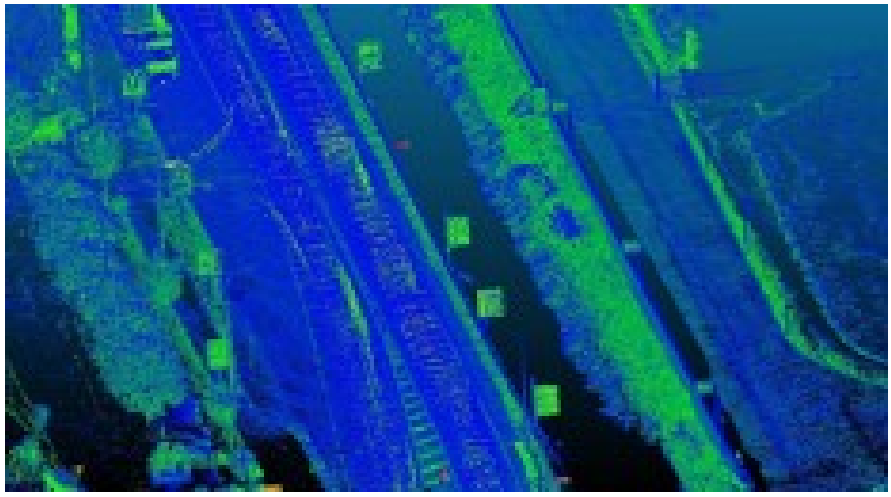

Figure 7.10: Point Cloud of a portion of a street, surveyed with the SLAM system

7.5. Conclusions

Surveying is the starting point for every project in which the knowledge of a certain site is required. Management, conservation, restoration, documentation, just to mention some. Three-dimensional (3D) digitization of Cultural Heritage (CH) sites have increased remarkably in recent years. Such method consists on the acquisition of billions of points (Point Clouds) allowing a thorough and accurate virtual reconstruction of sites or buildings.

The growing availability of novel and affordable surveying techniques made possible the data collection of a wide variety of objects. Among the well-known, and widely adopted, acquisition tools like Photogrammetry or Terrestrial Laser Scanner, Mobile Mapping Systems (MMS) are promising, since they allow the collection of huge amounts of data, reducing time and with sufficient accuracy. MMS rely on Simultaneous Localization and Mapping (SLAM), visual Odometry, GeoSLAM and the main advantage is that data can be collected very easily, without the need of post-processing procedures. In other world, their use is very agile since they do not need registration; their relative geo-referencing is made automatically by the tool itself when the operator walks along his path.

The entire domain of CH needs to adopt more and more efficient data collection tools to collect a growing number of data. To this end, the case studies presented demonstrate that the technological advances of the latest years are moving towards this direction. The Kaarta Stencil platform used in these cases of study has been compared with other state of art techniques to understand which is the maximum precision that can be reached, hence the ideal output to be produced with such tool. The main advantage is that there is not the need to perform time consuming post processing work, being the cloud already registered in its own lo-

cal coordinate system. Beside this, being an agile platform, it allows to reach impervious zones which are quite common for archaeological settings. The main advantage of using MMS lies on the velocity, besides being very friendly to be used. Moreover, the computation is made in real time, meaning that the post processing elaborations, which are long for a common TLS solution, are extremely fast. This is of course at the expenses of accuracy, even if for archaeological purposes it can be considered a valid alternative to the existing TLS platforms. In terms of accuracy instead, the TLS still revealed to be the most powerful tool. But keeping in mind that the new frontiers of data acquisition are moving towards mobile mapping solutions, we might expect that in the forthcoming years SLAM based system will grow, increasing the demand and consequently becoming more affordable for a massive acquisition of 3D data.

Finally, it is fair to say that, regarding the photogrammetric computation conducted with UAV or ground platforms, we can say that the RGB information is complementary. In fact, MMS do not rely on colorised data, at the expenses of the informative value of 3D data. Ground Control Points are still required, especially to reduce the drift error that may occur after long paths of acquisition. It will be interesting to validate such method inside Underground environments, where the lack of illumination and the complexity of geometries would make the survey more and more compelling.

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CHAPTER 8

Security considerations on UBH sites

Kerim Aydiner

8.1. Introduction

Underground cavities are environments where the restricted area(s) is/are used to conduct designated functions. Certain constraints need to be considered to accommodate functions such as transportation, ventilation, and the use of spaces. On the other hand, perhaps the primary concern is the structural stability of the cavities.

Structural stability is not only important for an underground cavity to sustain its own life, but it is also indirectly related to the safety of those living here. For UBH sites, an additional concern is the related with the transfer of the cultural heritage to the future generations. This requirement combines the goal of maintaining historic structures and the stability of underground cavities.

The concept of structural stability simply means maintaining the life of a cavity by preserving its dimension/shape as initially designed. In this respect, if the rock masses forming the boundaries of the cavity or the structure are not exposed to deformation, this indicates that is stable. Stability is related to the physical, mechanical, and textural properties of the rock mass in which the cavity is created. On the other hand, the load acting on the structure and the effect of air and water are the factors that control the stability of the rock masses. Although the relationship between them has not been clearly explained, the time also influences the worsening the stability related to load, water, and air.

It is important to properly ventilate these structures, in addition to ensure these structures to survive structurally. Cavities also need to be protected from possible floods (if open for the surface flooding). Leaks of water from the surrounding rock masses and the effects of possible fires are other potential security issues.

This chapter discusses the technological infrastructure that can be used to control the stability of underground structures. In addition, general principles are discussed for the water/flood in underground structures. However, technological resources have been scrutinized from the basic point of view of monitoring/control of possible threats.

8.2. Stability phenomena in underground cavities

Underground structures are constructed to house some work to be performed in a limited area. This situation means a series of limitations for these cavities. Possible constraints can be mainly listed as:

1. Access restrictions from surface
2. Movement / circulation restrictions underground
3. Restricted volume / space usage obligations
4. Difficulties in providing and circulating air, and
5. Difficulties in providing / locating safety equipment and devices underground.

As well as, while maintaining their defined functions during their active lives, these constraints emerge as major challenges when they serve purposes such as visits in later times.

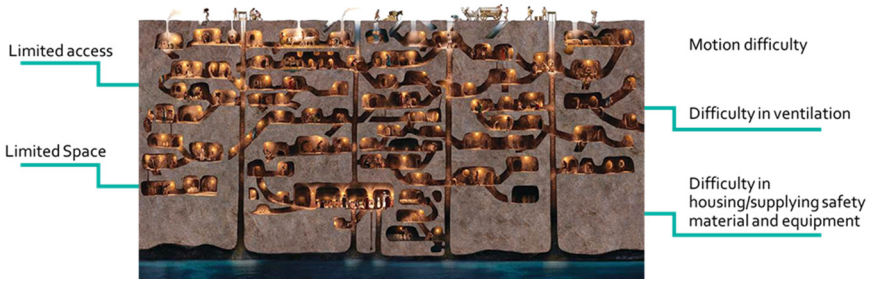


Figure 8.1: General limitations encountered in underground structures

In simple terms, the situation of being away from possible dangers and threats is defined as security. Characteristically, underground structures carry many security risks starting from the moment they are built. The most important of these risks are structural stability, water/flood, and fire. Each risk becomes more serious than it could be on the surface due to above defined limitations. The gratifying situation is that there is the possibility to estimate the occurrence of potential risks, when some extraordinary situations are excluded. It is possible to monitor potential risks with periodic measurements and observations. Under current technological conditions almost all monitoring work can be conducted in a continuous way by complex tools and devices. For the case of monitoring UBH sites, the work is related to:

1. Preventing damage to cultural heritage
2. Eliminating the possibility of people getting harm
3. Preventing time and material loss.

8.3. Theoretical foundations of stability measurement/monitoring

Before the construction of a cavity, at any point there is an equilibrium of stresses. When the cavity is created, the original equilibrium condition is disturbed, and original rock stresses seek a new equilibrium condition. In addition to

original stresses, at the boundaries of the cavity (mostly roof and walls) new stress components develop. These stresses are called as the boundary stresses and deformation of cavities and mostly these stresses cause to the deformation of the cavities.

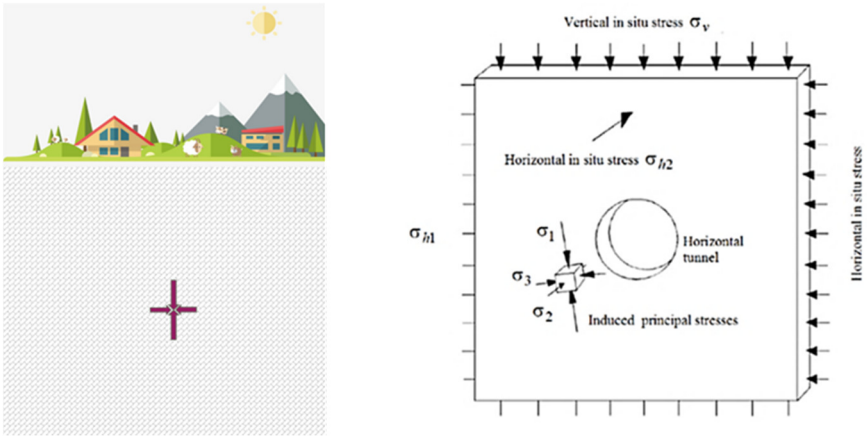


Figure 8.2: Stress distributions before (left) and after (right) the construction of a cavity

Stress is naturally found at any point underground due basically to gravity. Other factors, such as tectonic activity history of the site and the geological and material characteristics of rock masses, define the magnitude of stresses. Depending on the depth of the cavity, the magnitude and the components of the stresses vary. At shallow depths, horizontal stresses are not found due. With the increase of depth as the original rock stresses, vertical and horizontal stresses are encountered. Horizontal and vertical stresses cause the formation of tensile and shear stresses which lead to deformation of rock surrounding opening. Magnitude of stresses around the cavity changes with the distance from the boundaries. Higher stresses are measured at the boundaries and decreases with augmenting distance from the boundaries. Theoretically, at a distance from boundaries, equal to four times the radius (width) of the cavity, horizontal and vertical stresses reduce to the level of the original rock stresses.

The type and the magnitude of the deformations vary, depending on the depth and the shape of the cavities. Depth is related with the type and the magnitude of stresses around cavities. The shape of the cavity defines the concentration of stresses on the boundaries. Circular/elliptical shapes ensure the uniform distribution of stresses around the cavity. Rectangular shapes may lead to high stress concentrations on the corners. However, smooth corners are suitable for rectangular shapes. A proportion between the cavity width and its height have impact on the stress distribution. Wider cavities may have higher stresses at the center of the roof. Similarly, stresses concentrate on center of the walls. Closely located cavities may worsen each other's stress state and higher stresses act on each cavity if each of them has identical shape and dimensions. If one cavity is narrower than the other, it has higher effects of stress.

UBH cavities were located generally at shallow depths. Therefore, the stability problems of UBH sites become relatively simpler. But there is a new handicap, caused by the age of these structures (fatigue of material and the surrounding rock) and the weakened material resistance, due to severe underground conditions (humidity, temperature, microorganism effect). In addition, today, high-traffic motorways and railroads, residential areas with high building stock, and active mines or quarries close to UBH sites generate dynamic loads. These loads can be iterative, das vibrations of varying magnitudes, or static, adding to the lateral load. Important sources for the dynamic loads are the earthquakes of any magnitude. Therefore, the need to monitor structural stability of UBH sites becomes evident under these conditions.

8.4. Monitoring stability

Stability monitoring can be done at every stage of an underground cavity. In the construction stage, the basic aim is to obtain data and verify design. Monitoring after construction is maybe the most vital task in the life of a cavity. In this stage, monitoring is expected fulfil the following targets [1] [2].

1. Assessing and verifying the performance of the design
2. Calibrating models and optimizing design
3. Obtaining warning about ground behavior in advance
4. Assessment of safety / stability

Some measurement tools may directly measure the final data. However, many devices measure variables such as length, pressure, mass, and time, and convert them into the final data. Data produced for stability monitoring are primarily strain, load, pressure, deformation, tilt, and vibration [1].

Monitoring process may be designed to fulfil different needs. Factors such as the extent of the measurement site, number of variables to measure, type of variables and the measurement sensitivity define the extent of the measurement process.

Today, technological innovation offers many different types of measuring /monitoring tools or devices. Various operating mechanisms or principles for the monitoring or measuring tools include the following [1]:

1. Strain gauge
2. Vibrating-element
3. Inductive
4. Piezoelectric
5. Radiometric
6. Photoelectric

Considering the measurement technology used and the measurement objectives, the devices developed for the stability measurements of underground cavities form a wide spectrum. However, among these devices a couple of general purpose and widely used tools come forward. These tools are listed below, and

each group has several alternative tools designed generally using different measurement principles.

a. Extensometers
b. Stress meters
c. Strain gauges
d. Pressure Cells

These tools can be used to monitor both static/quasi-static and dynamic loading effects. In static/quasi-static loading conditions major source is the gravity loads of upper rock masses and surface structures (hills etc.). These loads are nearly fixed and constant loads and may lead to fatigue of opening walls and roof. Under dynamic loading conditions, rock masses surrounding any cavity are subjected to iterative loading. Earthquakes, blasting vibrations from mines and quarries, vibrations transmitted through rock mass from tall buildings and heavy traffic motorways and railways, depending on the duration and the magnitude of the dynamic loads, may produce sudden deformation of rock masses. Low magnitude and/or low frequency loads may result in fatigues and deformations in longer exposure times.

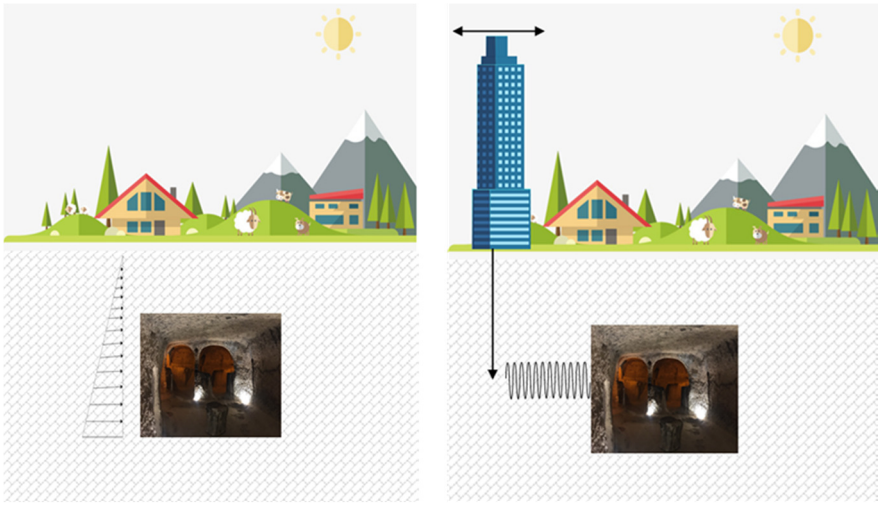


Figure 8.3: Static/quasi-static loading (left) and dynamic loading (right) conditions

In the following sections, among the widely used, measurement tools for displacement, stress and pressure are introduced, and many alternatives are found. This approach is partly related with the needs for the general stability measurements of the UBH sites.

8.4.1. **Extensometers**

Extensometers are devices used to measure the variation of distance between two points. To measure ground movements, they can be placed on the surface or in a borehole. In the borehole, displacements are measured along the borehole.

Currently, alternative extensometer designs are found for different measurement needs, places, and measurement methods. The most advanced extensometers are those using new measurement technologies, such as vibrating wire electronics, differential transducers, and fiber optics extensometers. High technology systems allow high measurement accuracies. Measuring accuracy of these devices changes between sub-millimeters to meters, depending on the type of the measurement system [2] [3].

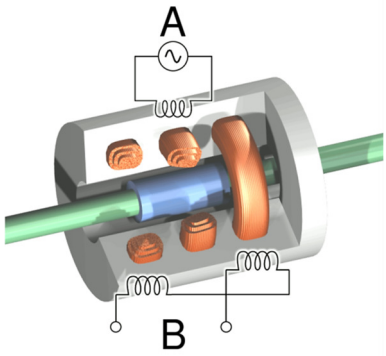


Figure 8.4: Structure of an LVDT [5]

In geo-mechanical measurements, extensometers are used to measure displacement, convergence, settlements, and joint movement. They are produced as borehole devices or tools, which are installed in cavities (tunnels, drifts, shafts, caverns, chambers etc.) between two fixation points. Different types of extensometers are listed below [3] [4]:

1. Rod extensometers
2. Bar extensometers
3. Tape extensometers
4. Wire extensometers
5. Magnetic extensometers

An electromechanical transducer (LVDT; Linear Variable Differential Transformer) is the main component of an extensometer. LVDTs are used for measuring linear displacement converting linear motion into a corresponding electrical signal. Basic structure of an LVDT is shown in Fig. 8.4.

LVDTs are robust and inherently frictionless transducers. They have a virtually infinite cycle life when used properly. AC operated LVDTs do not

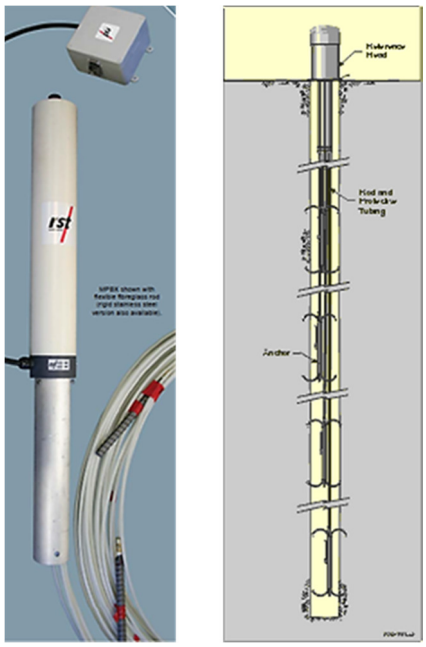


Figure 8.5: Rod extensometer [3]

contain any electronics, therefore they can be designed to operate at cryogenic temperatures or up to 1200 °F (650 °C), in harsh environments, and under high vibration and shock levels. These transducers have low hysteresis and excellent repeatability [5].

In this chapter, information will be given on those extensometers finding extensive use for displacement and stress measurements. The selected devices are available in versions suitable for both singular and systematic monitoring.

i. Rod Extensometer

A typical rod extensometer consists of a reference head, installed at the collar of a borehole, and one or more in-hole anchors, each of which is fixed in place at a known depth in the borehole. As the rock deforms, the distances between adjacent in-hole anchors change, as do the distances between the individual in-hole anchors and the reference head. This allows determination of the rate and acceleration of deformation in the rock mass intersected by the drill hole [3].

ii. Borehole Extensometer

In stability monitoring work, the borehole extensometers have extensive use. Wide varieties of borehole probe extensometers are commercially available according to their measurement capabilities and the technology used (such as magnetic, sonic, fiber optics and vibrating wire). The mechanical or electrical probe using extensometers can monitor distances between fixed points along a borehole. Accuracies for probe extensometers range between submillimeter to millimeter over distances of less than a meter [2].

Magnetic extensometers consist of spider magnetic anchors positioned along a PVC tube with a stable anchor at the base the borehole (Fig. 8.7. Left). The vertical movement of the anchors can be monitored manually with a probe. Multipoint borehole extensometers monitor displacements in a borehole at various depths. They usually comprise up to eight rods per drill hole and have manual readout or vibrating wire transducers (Fig. 8.7 Left).

Figure 8.6 Multi-point rod extensometer [4]

The Increx system, a magnetic extensometer design allowing automatic monitoring, is described in Fig. 8.7 (Middle). It consists of brass rings located at fixed intervals along the outside of the PVC casing. A probe measures distance between successive rings. Then, measured data are compared to initial survey data. With periodical measurements, it can monitor the type (compression or tension) of the deformations and their range. Measurement accuracy vary in 0.001 mm and ±0.01 mm/m [2]. This system has found broad use in monitoring vertical and horizontal deformations around underground excavations.

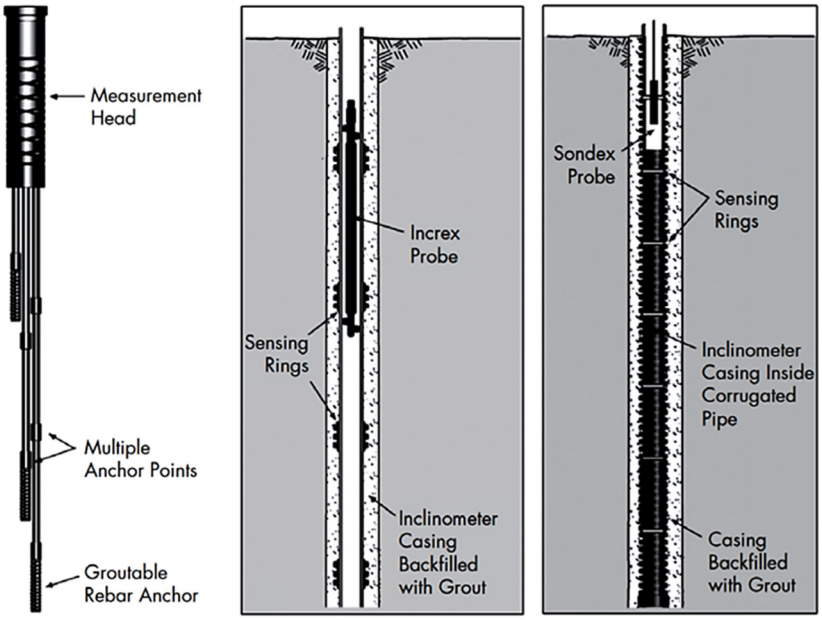


Figure 8.7: Different rod extensometer designs [2]

Another borehole probe extensometer (Sondex system), employing sonic probe extensometers, uses regularly spaced steel sensing rings and a corrugated Sondex pipe installed over inclinometer casing (Fig. 8.7. right). The annulus between the borehole wall and the Sondex corrugated pipe is filled with soft grout. This couples the pipe to the surrounding ground. This installation allows the pipe and rings to move with settlement or heave. As the probe passes a ring, an audible sound emits, and the depth reading is taken. These extensometers are suitable for roof, wall, and floor deformations [2].

Figure 8.8: Rod Extensometer and its installation [7]

ii. Digital Tape Extensometer

The Digital Tape Extensometer is a portable device used for measuring displacements between reference anchors fixed to an excavation or structure. Application areas of the extensometers are as follows in underground cavities.

a. Monitoring convergence (change in excavation face height)
b. Monitoring deformations (change in boundaries)
c. Monitoring displacement of retaining structures, bridge supports, and other structures (environmental effects of excavation)

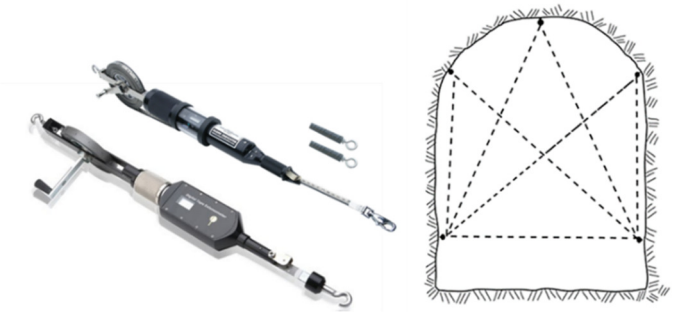


Figure 8.9: Digital Tape Extensometers (left) and digital tape extensometer application scheme in a tunnel

The extensometer consists of a precision punched steel tape, incorporating a repeatable tensioning system and dial gauge readout. The tape winds onto a reel, which incorporates a tape-tensioning device and a digital LCD readout. Measuring range is up to 30 m and measuring accuracy is up to ± 0.1 mm [3].

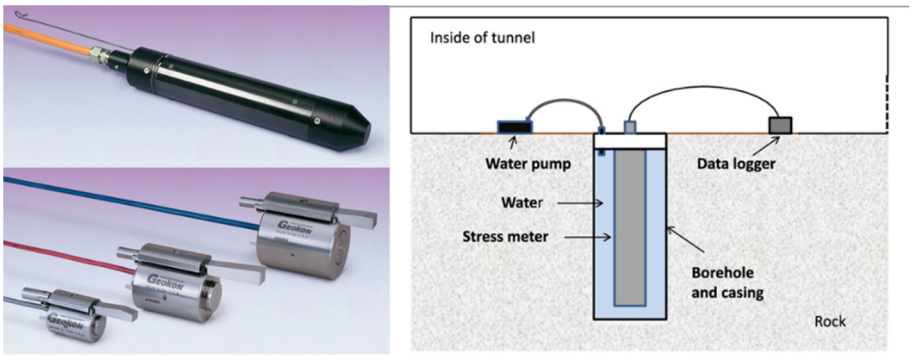


Figure 8.10: Different stressmeter designs (left) and installation patter of a stressmeter [3]

iii. Stressmeter

Stressmeters are used to monitor compressive stress changes in rock and concrete. They are installed in boreholes. A Stressmeter consists of a high strength steel proving ring wedged tightly across one diameter inside a borehole and a vibrating wire tensioned across the other diameter inside the stressmeter. Changes in rock stress cause a change in the resonant frequency of vibration of the tensioned wire. This change is read outside readouts. Measurement accuracy of the device is about 0.1 % of maximum value. Stresses are measured perpendicular to the sensor axis. The stressmeter must be grouted in the borehole.

iv. Pressure Cells

Pressure cells are used to measure pressure on a specific point. When the external pressure on the plates increases, the internal fluid pressure also increases. Steel tubing the fluid pressure is transmitted to a sensor. The sensor converts the pressure into a readable unit. Measuring accuracy is about 0.1 % of maximum pressure. The cells consist of two rectangular steel plates welded together around the periphery with a de-aired fluid occupying the space between the plates. A short tube connects the cell to a vibrating wire pressure transducer (Fig. 8.11 left) [4]. In the pressure cells, measurement principle is based on the vibrating wire system [6].

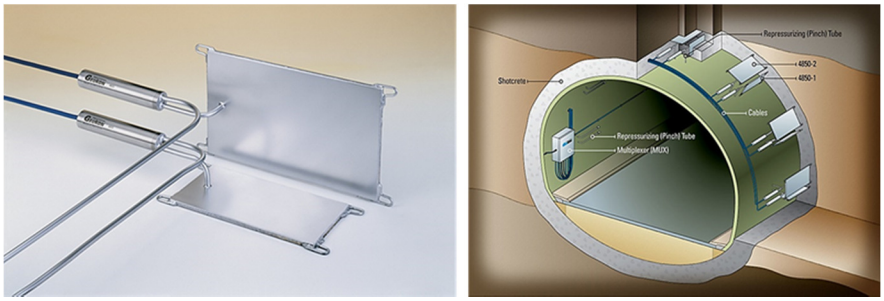


Figure 8.11: Pressure cell (left) and pressure cell network in tunnel [4]

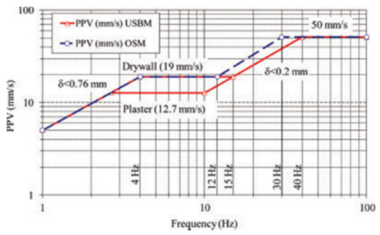
v. Vibration Measurement

Dynamic effects, such as earthquakes and blasting, generate vibration waves. Starting from the source, the waves spread away in the rock masses. As the vibrations move to different environments, their size decreases. Due to these reductions, vibrations disappear at a certain distance from the sources. Vibrations affect the surface and the underground structures they encounter. They can damage the structures depending on factors such as vibration magnitude, frequency of vibrations, and the quality of the affected structure. eason, earthquakes, repetitive blasting (mines and quarries), roads with high traffic loads and tall buildings can create dynamic loads with different magnitude and frequency. Therefore, it is an appropriate approach to monitor the vibrations, to which the surface and the surface structures are exposed. Vibration measurements are made using specially designed devices called vibration meters. These devices measure

Figure 8.12: Vibration meter [8]

the speed of displacement (peak particle velocity) caused by the thrust applied to the rock particles as vibrations propagate inside the rock, or the acceleration of the thrust caused by the wave. Peak particle velocity is measured for effects such as blasting, but the acceleration is used for tectonic effects such as earthquakes. Fig. 8.12 shows a vibration meter.

Interpretation of the measurements can be done on standard charts, tables, or



Structure type	Peak particle velocity (mm/s)		
	4–8 Hz	8–30 Hz	30–100 Hz
Commercial	20	20–40	40–50
Residential	5	5–15	15–20
Very sensitive	3	3–8	8–10

Figure 8.13: USBM RI 8507 (left) and German DIN 4150 standards (right)

criteria. Most trusted standards are USBM RI 8507 and German DIN 4150 standards (Fig 8.13). DIN standards can be applied for the sensitive structures.

8.5. Ventilation

Every underground cavity needs to be provided sufficient air for those living inside and for sustain work activities. In complex networks of cavities, such as Kaymaklı and Derinkuyu underground cities, the problem cannot only be related to providing sufficient air, but also guaranteeing its circulation in those complex

Figure 8.14: Jet fan (left), air quality detector (center) and air velocity measurement tool (right)

networks. On the other hand, during the periods when these cavities receive intense flows of visitors, an adequate amount of air needs to be supplied in every part, as well as dust and harmful gas air contents should be at the levels specified in the standards.

Feelings of inadequacy in the comfort of breathing may increase panic and fear. The amount of air that must be sent underground for each adult is 6 m^3 / s. Number of visitors at the busiest times define air needs. If there are some equipment, which consumes air, an additional amount should be supplied. For this reason, air velocity and air quality measurements should be made continuously or periodically in underground cavities, active in large areas in horizontal and vertical reach. In addition, following issues must be taken into consideration:

1. Shortcuts may lead to insufficient air at some parts
2. Every cavity should be connected to the network
3. Jet fans may be used to supply air to parts where sufficient air cannot be supplied by main air flow.

In UBH sites, air quantity measurements (amount and velocity of air) measurements and air quality measurements (CO_2, O_2, dust). In sites where sulphur, methane, CO_2 and CO leakages are possible from the surrounding ground, regular air quality and quantity measurements should be done. If any serious problem with gas leakage or generation is found, multi-agent (O_2, CO_2) devices may be sufficient for air quality measurements.

8.6. Water treatment

UBH sites may be affected by water leaks, which may come from the surrounding rock / ground, and low amounts of water flows or floods that may come through entries (main access routes, ventilation shafts, etc.). It is important to prepare a treatment plan beforehand for possible risks. When the risk is higher, regular monitoring of water flow (visual inspection) is needed. Additionally, equipment such as pumps, generators and discharge pipes should be made available.

8.7. Concluding remarks

Each underground cavity carries certain risks. In addition, UBH sites, many of which are incredibly old structures, have lower resistance to possible risks. For these structures to survive, it would be appropriate to perform continuous or regular deformation measurements. In addition, it is necessary to underline the following issues regarding the topics mentioned in this chapter. Characterization of surrounding rock mass for stability.

1. Structures and surrounding rock masses should be characterized for deformation/fatigue, behavior of rock under static/dynamic loads,
2. Visual inspection for slabs and cracking needs to be done on surfaces,
3. Instrumentation should be considered if potential for deformation is found,
4. Vibration monitoring needs to be done periodically/continuously where close to quarries, mines, heavy roads, and quakes (if possible)

5. Air quantity/quality control may be planned if a complex network of cavities is found, and
6. Auxiliary ventilation and dust and moist removal should be applied where needed.

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CHAPTER 9

Management and valorisation of Underground Heritage from Prehistory to the 20th century

The Maltese scenario

Shirley Cefai

9.1. Introduction

Protection of the past does not only impact the physical protection of the past fabric but also affects society. If society does not understand the importance of the past and hence the importance of transmitting it to the future, conservation would not happen. As will be seen in this paper, the protection of our past is linked with the knowledge that society has about the past, which then leads to the values that are attributed to monuments.

The article will start by explaining the development of the valorisation of cultural Heritage and will then provide a definition of Underground Heritage and how it is managed through case studies.

9.2. From Monument to Cultural Heritage

Since the 19th century, the concept of monument has changed drastically. In that period a monument would refer to a building or object which was created intentionally to serve as a memorial or a structure with monumental goals. An intentional monument would be a structure that was built to commemorate an event. A classic example would be the triumphal arches built in Rome to commemorate a particular event [1].

In the 20th century it was recognised that to protect our past, a system had to be put into place that would guide and regulate interventions on monuments. This was formally stated by Camillo Boito in 1883 at the 3rd Conference of Architects and Civil Engineers in Rome. This led to the First International Charter in 1931, which was the result of the First International Congress of Architects and Technicians of Historic Monuments held in Athens. The Charter is known as The Athens Charter for the Restoration of Historic Monuments, and its main aim is to try to define what a monument is and to outline the main guidelines as to how interventions should be carried out on monuments.

The definition of a monument as given by the Cambridge Dictionary at present is "An old building or place that is an important part of a country's history" [2].

On the other hand, the Athens Charter of 1931, defines monuments differently, such as: "Monument implies a structure or building that is built to honour a special person or event" [3].

With the development of the Charters, one should note how the definition of what is a monument is changed and developed from the beginning of the 20th century to the end of the 20th century. The Athens Charter refers to "monuments of artistic, historic or scientific interest belonging to the different countries" [3].

The Venice Charter of 1964 discusses on the other hand the 'concept' of a historic monument. This embraces the idea that a monument is no longer restricted to the individual structure or art object, but encompasses the urban or rural setting in which is found "the evidence of a particular civilization, a significant development or a historic event" [4].

The shift in the concern from the individual single architectural work to the urban context was due to the sense of loss society witnessed when the car was introduced in historic centres, as well as the demolition of large historic urban areas due to the bombings during World War II.

In the second half of the 20th century, society understood the importance of retaining even the intangible aspects of their environment and not only the tangible aspects. This implied that the concept of Heritage became wider as more objects where to be included in the list of places and objects to be protected [5][6][7][8].

Conservation is a complex on-going social process that includes the identification and valorisation of Heritage, its reuse, care, and interpretation. The definition of Heritage in the field of conservation developed from monument to Heritage, that included both tangible and intangible Heritage. Finally, Heritage developed into the concept of Cultural Heritage that now encompasses not only architecture (monumental and vernacular), but also gardens, industrial facilities, cities, and entire landscapes as can be seen in Article 1 of the World Heritage Convention 1972:

- ***Monuments****: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science*
- ***Groups of buildings****: groups of separate or connected buildings which, because of their architecture, their homogeneity, or their place in the landscape, are of outstanding universal value from the point of view of history, art or science*
- ***Sites****: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view.* [9][10]

9.3. Evolution of Values

As the concept of Heritage grew, the typology of values that needed to be considered expanded. At the turn of the 20th century, the first values which were identified were mainly age, use and newness value [1] [8].

> In the 19th century society was not yet prepared to understand historic value as this requires a scientific basis and an intellectual reflection. Hence in the 19th century, the values that did not need any specific education and hence could be considered as the values of the masses, were more easily acknowledged. Considering aesthetic value is a more 'fashionable' value and is more easily recognisable. Other values which do not need any intellectual preparation are the age value, use value and the newness value [1] [8].

Reigl (1903) [1] clearly states that wider classes of society will have to be won over by the cult of historical value before the masses will be won over by the cult of age. The age value is easily recognisable and hence the public will easily understand the credibility and value of such an object. The use value was also given more importance than the historic value of the monument in the 19th century. The newness value once more is a popular value and could be considered analogous to the aesthetic value was perceived in the 19th century. Monuments were assumed that they should appear new and crisp. At the end of the 20th century the concept of Heritage was widened further in its concept and not only tangible Heritage was considered as cultural Heritage but also intangible Heritage.

It is important to understand that values should always be attributed to cultural Heritage and they are not inherent. Cultural Heritage does not have any value until society in general attributes cultural value to it. As Cesare Brandi writes:

> "Conservation is the methodological moment of recognition of the art object, in its physical consistency and in its double polarity aesthetical and historical, with the aim to transmit it to the future" [11].

Hence before the methodological moment of recognition of an art object within the consciousness of society, the art object will not be attributed any cultural value that will influence the way an intervention will take place on that specific art object. That is the user will dictate how the intervention will take place (use value is upper hand in this case), and if an art object is attributed any cultural value, it will be the art object that then dictates the type of intervention (and here historic and aesthetic values are the first values which were considered in the latter half of the 20th century). As Lipe 1984 states:

> 'Value is learned about or discovered in Heritage by humans, and thus depends on the particular cultural, intellectual, historical and psychological frames of reference held by the particular groups involved.' [12]

This diversity of cultural Heritage impinged directly on the values which were to be considered when discussing conservation. Historic and aesthetic values were the recognised values in the first half of the 20th century [11]. The development of Heritage from monument to Cultural Heritage, which was then subdivided into Tangible and Intangible Heritage, directly influenced the development and the diversity of values to be considered when conserving Cultural Heritage. It was only until the second half of the 20th century when social and scientific values were

considered, in addition to the historic and aesthetic values, which were considered in the first half of the century. Of course, with the introduction of social values, anthropological issues came into play and hence issues of memory and identity became key players in the decision-making process for a conservation project [7] [13] [14].

In the Athens Charter 1931, historic value was clearly mentioned in the second main resolution of the seven main resolutions outlined by the document:

> 'Proposed Restoration projects are to be subjected to knowledgeable criticism to prevent mistakes which will cause loss of character and historical values to the structures' [3]

Hence in the Athens Charter, values are not given any particular importance except for the historic value and this is in line with the fact that in this period it was only the physical fabric of the architectural structure that was considered to have value and hence preserved.

The first time that historic and aesthetic values were formally considered was in the Venice Charter 1964. In fact, Article 9 states that:

> 'The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents' [4].

Once more this is in keeping with what society was valuing as the concern in this period included even the preservation of the context of the monuments – that is the urban factor.

9.4. Characteristics of Heritage Values

Heritage values have several characteristics that need to be taken into consideration. Values may be attributed, as well as an object may have multiple values which are also mutable. The controversy with values is that they are unmeasurable and many times in conflict. The characteristics of values are varied and are discussed below [11] [12] [14].

a. Values are attributed

Values are not inherent to an art object. Most values we consider require a knowledgeable individual who understands the object's importance for society, the culture in which they exist, and understand the history of the place. Values are always attributed by those who have an interest in a place. Most importantly an art object or place, one will not be considered and threated as Heritage before a value is attributed to it.

b. Multiplicity of Values

It must also be noted that the significance of a place is rarely, if ever at all, based on a single value. The values which are readily recognised are those values which professionals in the Heritage field consider as important. The main values identified hence are Heritage, aesthetic and scientific. Values from society are not

easily extracted as they are not always evident within the physical fabric to the untrained eye. In fact social values became important in the late 20th century when the concept of what is meant to be conserved included also urban areas and landscapes – elements which the general public can associate with more and do not need scientific knowledge to understand. As may be seen in the Tab. 9.1 below, in the 20th century the values that are attributed become wider and more abundant.

Art History	ICOMOS Australia	Economics	English Heritage
Alois Reigl	Burra Charter	Bruno Frey	
1902	1998	1997	1999
Age	Aesthetic	Monetary	Cultural
Historical	Historic	Option	Educational & academic
Commemorative	Scientific	Existence	Economic
Use	Social	Bequest	Resource
Newness	Spiritual	Prestige	Recreational
	Political	Educational	Aesthetic
	National		
	Cultural		

Table 9.1: Table outlining the multiplicity of value over the 20th century [14]

c. Values are mutable

Once a value is attributed to a place, it does not mean the value is there indefinitely. Values may change for various reasons. A change in the demographics of a place or the function of a place will impinge on its values.

Conservation, even if carried out with the correct ethics and moral approach, will cause some values to change or be lost. Some values may be enhanced or mitigated depending on the decisions made before initiating the conservation project. On the other hand, depending on the decisions made regarding the conservation intervention, some values may be lost forever especially if for example any additions to an architectural structure is removed without the understanding the true values of said structure. Conservation is and will always be an engine of change.

Of course, all values deserve protection but when establishing the significance of a place, stakeholders and authorities will favour certain values over others for various reasons – cultural, political, economic etc. The selected values will hence be prioritized whilst other values are ignored and will remain in the background and risk being lost.

d. Values are unmeasurable

As mentioned above a place is attributed with a multiplicity of values. This implies that some are highly promoted, others to a somewhat less degree whilst others are forgotten whether intentionally or unintentionally. Some school of thoughts believe that values should be objectively chosen and prioritised. Many scholars though argue that it is difficult to be objective with values as values are inherently intangible. The argument is that one cannot give a numerical value to

Heritage values and hence the prioritising of values will always be the result of subjective reasoning.

e. Values are in conflict

In any conservation project the decision as to which value should or is to be prioritised over another value is the norm. Even the most 'traditional values', aesthetic, and historic value, are in conflict many times. Any decision in conservation is never neutral or objective and the decisions will also effect values and the significance of the art object.

The process of decision making in conservation will always be influenced by the individuals in charge of this process and their area of speciality. That is the bias which will be taken towards the final intervention is crucial. Historians, politicians, economists, conservationists etc will all approach a project with a bias and hence attribute certain values to the art object depending on their area of expertise. Therefore, conservation is multi-disciplinary and needs experts from different fields.

Idyllically one would have universal principles that would always apply unilaterally to all conservation projects. This though is not possible as every Heritage site or object is unique and will have its own context that would need to be investigated individually. This is also reflected in the Charters of conservation like the Burra Charter and the Venice Charter where certain articles allow for the 'exceptional case' hence acknowledging the fact that one rule does not necessarily fit all situations. Of course, the theoretical framework within which the philosophy and ethics of conservation is only one and is well known – the way in which it is applied cannot be seen though as a rule that fits all situations.

9.5. Authenticity

In the 19th century, the authenticity of the monument was not a factor during a restoration intervention. In the middle of the 20th century, authenticity was believed relate directly to the materiality of the Heritage. In fact, in the preamble of the Venice Charter, it is stated that: 'It is our duty to hand them on in the full richness of their authenticity.' [4]

When carrying out an intervention on Heritage, the protection of its authenticity must adapt to the specific nature of the value/s of the Heritage in question. Hence as the definition of Heritage developed to encompass the concept of Cultural Heritage by the end of the 20th century, the definition of authenticity changed. Initially authenticity was defined by considering substantially material attributes: design, materials, workmanship and setting [10] [15].

The way the World Heritage Committee interprets the Outstanding Universal Value continuously influences the way authenticity is defined. As countries from diverse cultures, in particular Japan, ratified the World Heritage Convention, a concern was raised about the material-based definition for authenticity requirement to inscribe sites on a World Heritage List. The main understanding of authenticity in Eastern cultures is the concept of truthfulness and this is also influ-

enced by the fact that the Japanese language does not have a direct translation for authenticity [14] [15].

The inclusion of Japan in the World Heritage Convention implied that ideas and cultures would be intermingled. The Japanese and the all Eastern society had a quite different understanding of authenticity than that of the Western society. From a Western point of view, loss of fabric would in the first half of the 20th century automatically implied a loss of authenticity as the original materiality of the Heritage was lost [10].

The ratification of the World Heritage Convention by Japan in 1992 was the reason for important changes in the way authenticity was perceived and defined. The Japanese culture was concerned about the possible conflict between a materials-based definition of authenticity and the Japanese approach to conserving wooden structures in particular. This culminated in the setting up of the Nara Document in 1994. It placed emphasis on the credibility of traditional information sources as well as associative and intangible values. [15].

The Nara Document of Authenticity 1994 was reflected in the 2005 Operational Guidelines by revising a list of attributes for authenticity namely: form, substance, use, function, traditions, techniques, management systems, location, language, forms of intangible Heritage, spirit, feeling, and other factors. This also helped a shift towards greater recognition of intangible values as part of a property's authenticity [16].

Another change in the definition of authenticity came about when Cultural Landscapes became a category which needed protection [9]. At the end of the 20th century, Intangible Heritage and Cultural Landscapes become categories of Heritage in need of protection. Intangible Heritage is not causally linked with the material aspect of the Heritage. Considering that intangible Cultural Heritage is constantly re-created, the term 'authenticity', as was applied to tangible Cultural Heritage, is not relevant when identifying and safeguarding intangible Cultural Heritage.

When considering Cultural Landscapes, within the category of Heritage in need of protection, one must keep in mind that landscapes are continually changing and hence once more, if cultural landscapes were to be recognised as World Heritage Sites (which is linked to the concept of authenticity as seen later on in this chapter) their authenticity cannot be linked to the fact that they never undergo change and are original. The authenticity of Cultural Landscapes is assessed through the ability of 'their distinctive character and components' to express an Outstanding Universal Value.

9.5.1. **Authenticity and the Charters of Conservation**

As is stated in the preamble of the Venice Charter, "The demand to pass the test of being authentic can be understood as the requirement to be genuine" [4]. Hence in the second half of the 20th century the concept of authenticity was based on the concept of what is genuine and as stated above based on material originality. Once more in this period of the development of conservation was aimed at the conservation of not only the individual monument but also the urban context, yet

the concept of intangible Heritage is not yet considered and hence authenticity is still aimed at materiality.

On the other hand, the conservation of intangible Heritage was introduced in the end of the 20th century. This aspect together with the fact that in this period Japan ratified the World Heritage Convention, the development of the definition of authenticity is influenced by these two important developments in conservation. The first charter that focused on the issues of authenticity was the Nara Document of Authenticity held in Nara, Japan in 1994 [16].

The Nara Document of Authenticity, 1994 changed the way authenticity was perceived and dealt with the aspect "genuineness" highlighted in the Venice Charter. It took into consideration the diversity of cultures and the way authenticity was perceived differently by the different cultures. In article 13 of the Nara Document of Authenticity, the understanding of authenticity was aimed at more than only the material of cultural Heritage:

> "Article 13. Depending on the nature of the cultural Heritage, its cultural context, and its evolution through time, authenticity judgements may be linked to the worth of a great variety of sources of information. Aspects of the sources may include form and design, materials, and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors. The use of these sources permits elaboration of the specific artistic, historic, social, and scientific dimensions of the cultural Heritage being examined" [16].

At the end of the 20th century, globalization was in the forefront of society and this brought about the preoccupation of homogenization in many cultures. This was mentioned in the Declaration of San Antonio in 1996 and it was linked to the issue of cultural identity and the authenticity as it is stated in Article 4 of the Declaration:

> "Article 4. In a world that is increasingly subject to the forces of globalization and homogenization, and in a world in which the search for cultural identity is sometimes pursued through aggressive nationalism and the suppression of the cultures of minorities, the essential contribution made by the consideration of authenticity in conservation practice is to clarify and illuminate the collective memory of humanity" [17].

9.5.2. **Authenticity and the Operational Guidelines for the Implementation of the World Heritage Convention**

The Operational Guidelines for the World Heritage Convention have set up criteria to assess the Outstanding Universal Value for a cultural Heritage site.

> "To be considered of Outstanding Universal Value, a property needs to:
> - meet one or more of ten criteria
> - meet the conditions of integrity
> - if a cultural property, meet the conditions of authenticity, and
> - have an adequate system of protection and management to safeguard its future" [18].

Hence, besides other considerations, authenticity is one of the issues that influence the listing procedure of a property on the World Heritage List. First, authenticity, as is referred to in the above quote, will only relate to cultural properties:

> "Broadly, it requires an original, authentic or true cultural expression of the values of a property, in material or conceptual form, and cannot be represented by a copy or recreation" [18].

Nonetheless, the concept of authenticity developed over the years and evolved to include more than simply the material aspects of the property. In fact, in 1977 the Operational Guidelines in Article 9 stated that:

> "*Article 9.* In addition. the property should meet the test of authenticity in design, materials, workmanship and setting; authenticity does not limit consideration to original form and structure but includes all subsequent modifications and additions, over the course of time, which in themselves possess artistic or historical values [19]".

Hence in this period we see that the consideration for the layers of history is also considered to be part of the 'authentic' monument and not only the original fabric.

The definition of what was to be considered authentic did not change drastically in the following Operational Guidelines of 1980 but what did change was the consideration regarding reconstruction:

> "*Paragraph 18….*
> b) meet the test of authenticity in design; materials, workmanship or setting (the Committee stressed that reconstruction is only acceptable if it is carried out on the basis of complete and detailed documentation on the original and to no extent on conjecture)" [20].

The difference here is that in 1977 there is a recognition towards the importance of the development of the historic structure and the layers of history which are pertinent to be preserved, and in 1980, the acknowledgement of reconstruction is evident but it does identify that the reconstruction would have to be carried out following certain principles. Hence the definition of authenticity did not change from 1977 up until 2005.

In 2005, the definition of authenticity in the Operational Guidelines for the Implementation of the World Heritage Convention changed and evolved to encompass more aspects which could be considered authentic.

> "*Paragraph 82….*
> Depending on the type of cultural Heritage, and its cultural context, properties may be understood to meet the conditions of authenticity if their cultural value (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes including:
> - form and design
> - materials and substance
> - use and function
> - traditions, techniques, and management systems
> - location and setting
> - language, and other forms of intangible Heritage
> - spirit and feeling, and
> - other internal and external factors" [21].

9.5.3. **From Values to Authenticity to Significance**

The purpose of conservation is to protect the unique significance of Cultural Heritage. This implies that besides attributing values to Cultural Heritage we need to be able to identify and understand the true significance of a place. Hence it would be necessary to identify and protect the values that contribute to that cultural significance of the place hence being in a position to pass on the true meaning of the Heritage in its authentic form as is understood in the 21st century.

To aid the decision-making process it would be opportune to develop a Statement of Significance so as to be in a position to assess and understand the true values of the said Cultural Heritage and hence decide what type of intervention would protect and enhance the Cultural Heritage. The Statement of Significance helps ensure that the Heritage values are communicated in an effective and consistent manner. The Statement of Significance is divided into three main section [22] [23] [24].

The first section of the Statement of Significance will give a brief description about the history of the site and why is has attracted the attention of society. This will be written in a way that can be easily understood and communicates a noticeably clear message. The second section will consist of the identification of the key Heritage values assigned to the historic place. This is a particularly important part of the Statement of Significance as it will identify and aid in prioritising the different values which are attributed to the Cultural Heritage in question prior to the intervention [23].

The final section will include a list and description of the character defining elements from which the values mentioned in the second section of the Statement of Significance were attributed. If the Statement of Significance is available prior to the decisions as to how an intervention is to be carried out or to what use a cultural property is to be put, there is a better chance of preserving the said Heritage together with its most important values. Also, the changes and the losses of the inherent values of the cultural Heritage can be better controlled and managed as the Statement of Significance will let us all know what aspect of the Heritage is of high value and what is not. What could be sacrificed if need be without losing the significance of the said cultural property [23].

9.6. **Underground Built Heritage – the Maltese scenario.**

Underground Built Heritage is defined as any Cultural Heritage that was built with the intention to be partially or completely underground.

Typologies of UBH sites include natural and anthropic caves, underground burial/rites structures, mines and quarries, other man-made caves for exploitation and dwelling, underground infrastructures (cisterns, ancient drainage systems, tunnels, etc.), old buried structures, and settlements [25].

Underground Built Heritage (UBH) is a unique cultural resource, which might contribute to individual and collective identity, social cohesion, and inclusion, being laid at the heart of community's sense of place. Its long history extends back several thousands of years when cavities became shelters from extreme weather or wild animals [25]. Successively, they became cultural and religious places, spaces

for housing or mining activities, food production and storage, and natural resources' distribution.

Typologies of UBH sites are varied and could include natural and anthropic caves, underground burial/rites structures, mines and quarries, other man-made caves for exploitation and dwelling, underground infrastructures (cisterns, ancient drainage systems, tunnels, etc.), ancient buried structures and settlements.

In Malta, the conservation theory/philosophy is a very recent culture. This is not due to the fact that Malta is not rich in Cultural Heritage, but more a result of the history of the administration of the country. Malta has until recently has never had self-governance and hence the history of the island was not researched until the end of the 20th century. In face the first cultural heritage law came about at the beginning of the 21st century in 2002 – a century later than most European countries. Hence the heritage which is values most is the heritage that people encounter on a daily basis. Maltese society is hence only recently becoming aware of the value of UBH unless it was not a religious site. Maltese society has been in the past and even recently, though to a lesser extent, very passionate about their religious beliefs. In fact the UBH linked to religion, as will be seen below, has been the first UBH sites in Malta to be given importance.

Malta is rich in UBH and possesses underground Heritage dating as early as the Neolithic period up to the 20th century. Some of the UBH found in Malta are World Heritage Sites, like the Neolithic subterranean Hal-Saflieni Hypogeum and the catacombs scattered around the Island. The catacombs and the Hypogeum were built typically outside a town and were dug out of rock. Both structures are a labyrinth of spaces which have been studied and have been renovated to allow visitors to visit the sites.

Figure 9.1: Red ochre spiral decorations covered in algae before visitor management [30].

Maltese identity is very much linked to these typologies. This is because a high percentage of the UBH found in Malta is linked to religion and this is a big part of Maltese culture. The Hypogeum is believed to have been a sacred site for prayer and burial and the catacombs were sites for burial.

9.6.1. **Hal-Saflieni Hypogeum, Tarxien**

Figure 9.3: Red ochre spiral decorations cleaned from algae after visitor management [26]

The Hal-Saflieni Hypogeum in Tarxien, is a Neolithic subterranean structure dating to the Saflieni phase (3300 – 3000 BC). It is thought to be a sanctuary and necropolis which was discovered in 1902 during the construction of a cistern for a new housing development. The excavations on site were started a year later by Manuel Magri, a Jesuit priest, in 1903. During these excavations, goods appertaining to burials were found and it was estimated that remains of more than 7,000 individuals were found. The site was opened to the public in 1908 whilst excavations were still ongoing [26].

Figure 9.2: View of St Paul's Catacombs, Rabat, Malta [30]

For most of the 20th century when the site was open to visitors, there was no conservation management in place and hence no visitor control in so far as visitor numbers is concerns. Due to the lack of ventilation, lack of control of visitor numbers and damaged infrastructure running underneath the streets in the area around the Hypogeum, the red ochre decorations on the interior surfaces of the Hypogeum (see Fig 9.1 & Fig 9.2), were damaged due to the high levels of humidity [26].

This led to the setting up of a conservation project that envisaged the management of visitors as well as a proper environmental control system to be set up. The conservation project took place over 10 years, between 1990 and 2000, and implied the expropriation of more dwellings which were overlying the Hypogeum to create a proper visitor centre for the site. Since the year 2000, only 10 visitors are allowed for a maximum of 6 visits a day [26].

9.6.2. **St Paul's Catacombs, Rabat**

St Paul's Catacombs (Fig 9.3) are a complex of approximately 30 hypogea of interconnected Roman catacombs. They were in use till the 7th and possibly 8th century AD and cover an area of well over 2000 square meter. The catacombs of St Paul's in Rabat also control the number of visitors that enter the different catacomb complex at a given time. At St Paul's catacombs though the main reason is for the safety and comfort of visitors as the passages between the tombs are very narrow and in certain areas do not allow the passage of two individuals abreast of each other [27].

9.6.3. **Subterranean Valletta**

Other UBH sites in Malta are found in Valletta and is referred to as Subterranean Valletta. These UBH in Valletta consist of various structures. When Valletta was being constructed after the Great Siege in 1565, Grand Master La Vallette had several regulations set up. One such regulation was that the stone used to build the city was to be quarried from under the building site and this would in turn then be used as a water reservoir [28].

Another system in place was that Auberges would be linked by underground passages. These underground passages would lead either from one Auberge to the other or to the coast to allow the Knights to escape. The Knights of the Order of St John also ordered the design of a highly sophisticated drainage system of galleries (Fig. 9.4) under each road in Valletta [28].

Hence subterranean Valletta consists of old water cisterns, a labyrinth of underground tunnels as well as galleries of a drainage system. All these underground structures, or most of them have currently been used to house the infrastructure of Valletta in so far as electricity cables are concerned as well as pipes, etc…[28].

Figure 9.4: Tunnel of the drainage system underneath Valletta, Malta [28].

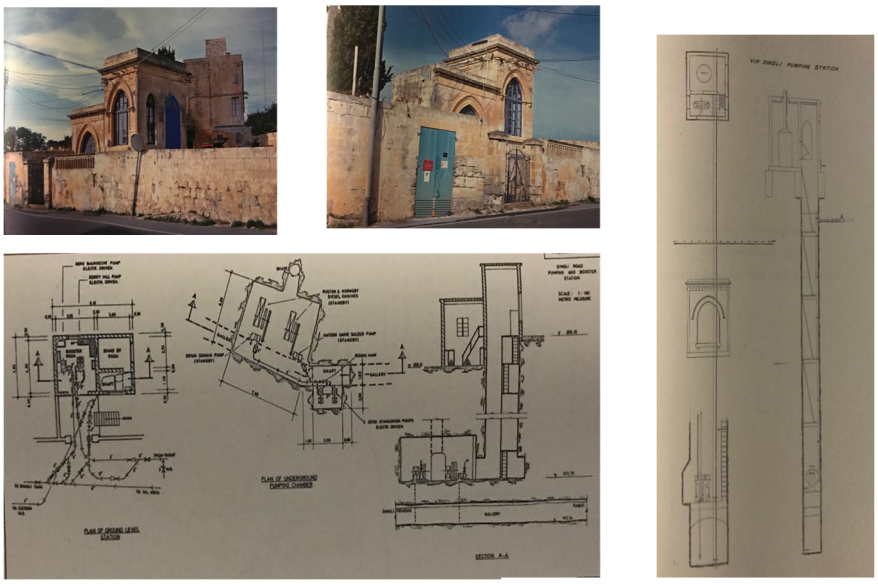

Figure 9.5: First pumping station built in 1885 in Dingli, Malta [29]

The tunnels from an important part of the structure of Valletta but has not been valorised by society in the past. In the recent years, though, society is more aware of the importance of these underground structures and the government is working on putting these tunnels to some use [28].

9.6.4. **Underground Water Pumping Stations**

Another typology of UBH, important for Maltese culture, is the underground water pumping stations in Malta. Since the period of the Knights of St John, Malta has suffered from water shortage. In fact, during the building of Valletta, palaces and Auberges were obliged to have a water reservoir underneath their basements to have a supply of water [29].

The first pumping station was built in 1885 in Dingli (Fig. 9.5) and the last pumping station was built in 1963 in Ta' Kandja (Fig. 9.6). All over the Maltese islands, there are 23 pumping stations, out of which 17 are deemed to be of an appropriate size to be given a reuse. All these structures are underground [29].

9.7. **Conclusion**

Conservation requires the understanding and the valorisation of Cultural Heritage, not only from individuals knowledgeable in the field, but also and more importantly from the society as a whole. Once this occurs conservation will ensue

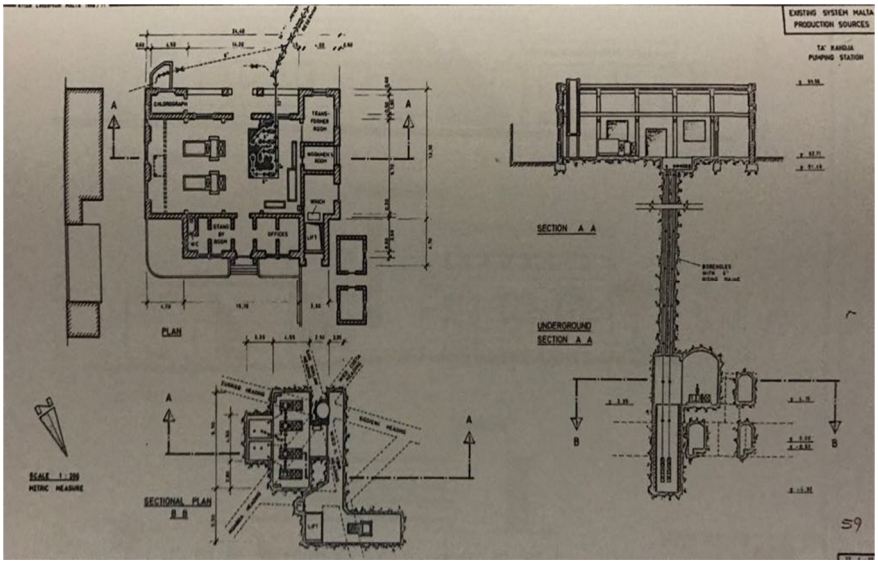

Figure 9.6: Last pumping station built in 1963 in Ta' Kandja, Malta [29]

and, as happened in the 20th century, the development of science and technology within the field of conservation will help develop conservation, especially in the way interventions take place. All this shows how dynamic conservation is and how continuity and change is the axiom for conservation.

In the case of UBH, the first stage of conservation is maybe more problematic as for it to become part of our consciousness, we must primarily know of its existence. Since it is not seen, this may prove more difficult than in the case of a palace that is beautiful and easily seen by all.

Another problematic matter with UBH is the environment, as often it is not conducive to their preservation. Here is where technology and science become imperative for their preservation and reuse. Also, the multi-disciplinary aspect of conservation comes to the forefront more than ever.

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CHAPTER 10

Valorisation of the Rural Heritage and Touristic Bias

Potential benefits to the local community

Ernesto Marcheggiani, Andrea Galli, Francesco Paci, Ilaria Fioretti, Marco de Seris

10.1. Introduction

The First U4V Training School in Naples is an opportunity for encouraging a reflection on the relationship between local communities and places. In other words, their surrounding landscape. In our vision, rural spaces represent the natural place for the tiniest and weakest local communities: a key target for the overall Cost Action. At the cutting edge of the debate on the transition towards a sustainable tradeoff between improved living standards for the householders and better experience quality of visitors, we wish to put the attention on the enhancement of the local heritage as a potential driver for matching local economy, growth, sustainability and resilience.

This chapter starts by setting the keywords of the current territorial debate in rural and marginal settings. What do we mean when we speak about landscape or rurality? What do rural heritage means and why has become a topic of sustainable local development? These are all the matters we tried getting closer to a not much than a baseline explanation recalling the trainees to the general scheme. We would further explain the historical evolution of sectoral policies and primary EU programmes of interest. In particular, we would focus on the conditions for framing the planning of local heritage at the very local scale and the linkages with the three most relevant policy: the European territorial policies, the Common Agricultural Policy and the Development and Regional Cohesion Policy and with the relative Operational Programs activated at the policy level (Leader, Rural Development Program, Inner Areas strategy, etc.).

These are fundamental matters for local community aiming at improving the sustainable development of local heritage, since to the accessibility to financial resources often depends on them. In this vision, transition management, generative welfare, accessible and sustainable tourism, technological innovation [1] are just examples of the items that could be seized but requires the development of initiatives at the local level.

At the cutting edge of this debate, the COST action CA18110 "Underground Built Heritage as a catalyser for Community Valorisation" is an opportunity to test rural revitalisation into real cases. To meet this challenge, we invited the city of Camerano, a local administration in central Italy, which is engaged in the revival of the underground heritage of caves that have marked the historical development of the local community for centuries. A peculiar case which is going to be implemented, among others, as one of the living labs foreseen for the Cost Action.

10.2. **Rurality, rural heritage, and landscapes**

Before stepping into the details of the case study, we wish to recall the readers to some terms of reference on rural development and planning.

The first set of keywords refers to the local context. The role of local communities to preserve their natural environment and the local cultural heritage with it is a well-established topic. In a relative sense, the "modern" terms of the debate (place, landscape, territory, lands, etc.) in many cultures not only have assonances with the aesthetic-perceptive aspects (*paysage*, *paesaggio*, etc.). They also get meanings intimately linked to the sense of local community (*land-scape*, *land-shaft*, *land-skab*, etc.), where the root "land" means not only place but also the people living in it. That was and still is the essence of the game between the local community and the places of daily life. This relationship is incredibly real for rural communities, whose survival and quality strongly depend by multifunctional eco-services provided by the surrounding environment. Among them, the local quality of Cultural Heritage offers a variety of possibility for tourism and other local value chains (local craftsmanship and art, farm products, etc.).

Another tricky word is "rural". How do we define a piece of land, or a community, "rural"? Many will find not to have a unique, general, and clear answer. According to the EU institutions, the success, and the bias, of the term rurality lies in its apparent clarity. Although rurality is immediately understood, evoking physical, social, and cultural images, on the other side, it is biased by the fact that the term is instinctively perceived as the counterparts to urban. Consequently, building an objective definition of rurality per se, with no references to urbanism, looks to the many as an impossible task [2].

In the end, rurality is a matter of density. Three central bodies set today's standards: the Organisation for the Economic Cohesion and Development (OECD), the Statistical office of the European Union (Eurostat), and the European Observation Network, Territorial Development and Cohesion (ESPON). All of them base their rurality definition on the population density. Eurostat, the official reference in Europe, for instance, uses a gradient from the high populated *Urban Areas* (with a population density greater than 500 inhabitants per km^2 and a total population of at least 50.000 inhabitants), to the *Intermediate Areas* (with less than 100 inhabitants per km^2), up to the less populated *Rural Areas*, all the regions with lower population density.

Rurality is an asset and a human heritage to be preserved. Following one of the major events marking the momentum in the current debate, the ICOMOS conference of 2019, we all agree on a rural heritage, which "encompasses a broad diversity

of places, practices and traditions". Moreover, being a place for "primary goods production, conservation and stewardship of natural and cultural heritage and habitats, and economic and livelihood wellbeing inclusive of rural heritage tourism" [3].

	TRADITIONAL RURALITY	INDUSTRIAL RURALITY	POST-INDUSTRIAL RURALITY
Key sectors	**Agriculture**	**Industry**	**Services**
Rural definition	Amount of cultivated lands versus other uses	Population density (e.g. Eurostat, OECD)	Territorial polymorphism (economy, society, landscape: structure and functions)
Rurality measures	Workforce employed in agriculture		New integrated methodologies?
Main economic issues tackled by the polices	Increasing GDP per capita Dualism city-countryside	Development of industries and tertiary sector within rural settings Agriculture industrialisation	Territorial (re)balancing Territorial integration and cohesion (national and international level)
CAP Goals*	Food safety (amount) Redistribution of incomes and social stability Boosting an EU construction process	Improving competitiveness Transfer of production factors (working power, business capacity, land, capital, etc.)	Food safety (quality) Commodities, common goods and services (environment, biodiversity, culture, identity) Valorisation of territorial polymorphism and public goods
Watch out for the forthcoming novelties of the EU's Farm to Fork strategy! Brought down into the sector by the Green Deal for the next future of the Union			

Table 10.1: Historical models of rurality (for central-Italy in particular)

Two main concepts stemmed from the idea of considering the rurality as an asset for the local communities. First, rural landscapes with their load of tangible and intangible heritages are vital items of the human being. Second, they are "living, continuing, dynamic, cultural, social, environmental, and economic systems that extend across the lands and waters of our planet" [3]. Rural landscapes are, therefore, adaptive and reflect the "human interaction with nature. As such, they are "critical repositories of traditional and indigenous knowledge, essential in an era of climate change" [3].

Of course, the rural heritage is rooted in the historical footprint of cultivated lands and rural and peri-urban settings. Analysing the load of functional and structural changes of these settings in the last decades, the transition towards new meanings emerges, making room to two key issues:

- due to the depth of territorial changes in agricultural and peri-urban open spaces, modern rurality has become a thorny issue

– new functions have emerged (e.g. environmental services, landscape, human wellbeing, and leisure) in addition to the traditional roles of non-urban spaces, namely feeding the planet and preserving the remaining biodiversity and nature.

That leads to a post-modernist vision of rural landscapes, the concept of "new rurality". In 2004, Hubert Gulinck well-framed the idea of modern rurality, making room for "expanded transdisciplinary interpretations of landscapes of the future." [4]. A genial intuition that a few years after lead Marcheggiani to acknowledge the lack of clarity in the different categories of values of our daily life places before integrating into well-balanced policies [5].

A core concept is that rural landscapes should never, in any way, be merely associated with agriculture or the cultivated lands. Although the practice of agriculture still plays a predominant role in rural areas (i.e. in terms of cultivated land, from a quantitative point of view). However, other aspects should be considered, such as the visual and ecological quality of the places and the quality of the economic, social, environmental and cultural relations, incorporating the different agricultural models with most of the other activities rooted within these areas.

10.2.1. **Agriculture and rurality**

Agriculture is not rurality. There is constant research of a steadiness between the planning efforts to maintaining the aesthetic and eco-systemic quality of rural spaces (let say, to preserve the genius loci), and the productive ones for the exploitation of lands, a trade-off to balance the two components of this paradigm. Consequently, rural, and agricultural policies are both pressed from society to integrate each other in the wake of emerging concepts, such as eco-services and multifunctionality.

10.2.2. **Valorisation of Rural Heritage and tourism**

What does tourism mean? The modernistic vision of the word "tourism" does not belong to the Latin culture. The Latin terms characterising the act of travelling: *tornare* (get back) and *peregrinus* (stranger), those who go to, few have in common with the modern term "touring". This latter comes from the pan-Germanic vision of late 19th century of a «flux generated by people toward a foreigner country (not less than 24 hours) which spend money earned from the original places» [6]. In other terms, the bulk of the relational network that results from a trip, although it does not give settling [7]. According United Nation (UN), World Trade Organisation (WTO), and OECD, tourism is a paradigm characterised by "moving, time and money" [8]. It can be defined as the "activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes" [9].

What implications for rural development and local tourism industry in rural areas? A first deduction, on which we should focus on, are situations such as small local events (fairs and village festivals). Are they tourism initiatives? If the flows of visitors generated by the initiative and the incomes (money) mainly come from the within of the local community, the answer is no. In the narrowest sense, this is not tourism by definition. We can speak of community networks not of tourism.

Speaking about the valorisation of this asset, we should not think about preserving the traditional local characters only, the conservation per se. As recalled by the EU [10], touristic exploitation should follow clear responsible principles. We should moreover consider the livingness and adaptiveness of rural landscapes, in a way that sustainability, resilience, beauty, biodiversity, and heritage are the qualities to be maintained and improved [11].

10.2.3. **Which Rural Heritage in the future?**

> "In these times of rapid changes and multiple challenges, promoting the recognition and conservation of rural heritage is fundamental for humanity and this planet" [3].

Some rural landscapes and communities are recognised as a world heritage (International Union for Conservation of Nature, IUCN, protected areas, category V) or are covered by other national and local institutions. But the individual components of a landscape are often underestimated and unrecognised, making them more vulnerable. It is essential to keep a close sight on the principles for sustainable and responsible tourism, as confirmed by European Union Communications on Sustainable Tourism [10]. Responsible tourism acknowledges the pivotal role played by local communities as the socially accountable key actor of the sustainable development of the places they live in [12].

Along with [13], we can affirm that "the landscape represents a key resource, embodying both anthropic and natural processes". Landscape management should be based on new planning strategies closely related to environmental, social, and economic sustainability [14]. The rising of people awareness on the loss of local identity and the deterioration of environmental quality have become unavoidable challenges for the designing of all kind of tourism products.

10.3. **Rural areas' implementing policies and programmes**

For us, one of the reasons to contribute to this U4V Training School was to provide an updated picture of governance transition towards more sustainable and liveable rural areas. Contemporary rurality has changed, generating a new rural paradigm.

The critical question is, what new factors are influencing rural policymaking? Moreover, what central policies are reflected in the operational aspects of communications, directives, programs, and funding instruments?

Focusing on Europe, the following paragraphs provide a picture of key items framing the sustainability of local communities in rural areas: the main policies and operational programmes (Leader programme and its recent evolution into the Community Led Local Development CLLD), and the urban-rural linkages.

10.3.1. **The OECD's vison on rural areas**

According to the OECD's work "A new rural development paradigm for the 21st Century", rural regions account for about 75% of lands, and almost a quarter of the population. Although the vicious circle of rural areas (out-migration, ageing, and lower educational, labour productivity and levels of public service), rurality is not synonymous with decline.

Rural areas offer a set of assets such as higher quality of life and environment, Natural Heritage, and amenities which, if professionally managed, can attract investment and visitors.

	OLD APPROACHES	NEW APPROACH
Objectives	Equalisation, farm income, farm competitiveness	Competitiveness of rural areas, valorisation of local assets, exploitation of unused resources
Key target sector	Agriculture	Various sectors of rural economies (ex. rural tourism, manufacturing, ICT industry, etc.)
Main tools	Subsidies	Investments
Key actors	National governments, farmers	All levels of government (supranational, national, regional, and local), various local stakeholders (public, private, NGOs)

Table 10.2: The New Rural Paradigm

10.3.2. **Factors influencing rural policymaking**

According to OECD, three factors influence the rural policymaking: an increased focus on amenities, pressures to reform agriculture policy and the decentralising trends in regional policy. In particular[1], the importance society agrees to natural and cultural amenities influences the way rural development policy is conceived across OECD countries [15].

10.3.3. **Rural regional policies implementation**

The OECD work recalls as a "new rural paradigm requires important changes in how policies are conceived and implemented to include a cross-cutting and multi-level governance approach" [15]. Designing rural development policy for different communities or territories requires the pooling of knowledge held by "a wide variety of public and private actors.

Traditional hierarchical administrative structures are likely to be inadequate to administer these policies effectively, and adjustments are thus needed along three key governance dimensions: horizontally at both the central and the local levels and vertically across levels of government" [15].

10.3.4. **The evolution of rural policy**

According to OCSE, several member countries are "increasingly seeking to develop a multi-sectoral, place-based approach that aims to identify and exploit the varied development potential of rural areas" [15].

Two fundamental principles are characterising the so-called "new rural paradigm": 1) a focus on places instead of sectors and 2) an emphasis on investments instead of subsidies [15].

Keynotes:

- Promoting integrated rural development poses numerous policy and governance challenges.

- It also requires a new focus on places rather than sectors and an emphasis on investments rather than subsidies.
- However declining, many rural regions have seized opportunities and built on their existing assets, such as location, natural and cultural amenities, and social capital. The success of such dynamic rural regions is evident in regional statistics.
- One of the key problems is how to ensure that the proper incentives are provided to make rural communities act in a way that is both dynamic and rewards initiative and experimentation, but that also promotes consistency in public policy across sectors and regions.

10.3.5. **From LEADER to CLLD**

The Leader is a European programme to engage local actors in rural areas in the development of their regions by forming Local Actions Groups (LAGs) and designing and implementing strategies. The Leader programme has been in place for almost 30 years since its start in 1991. According to the 2019's report of the European Parliament, in the current 2014-20 period, there are over 3,300 LAGs. Even though the relatively limited budget, the programme was recognised as a success thanks to its innovative character and results obtained in rural areas [16].

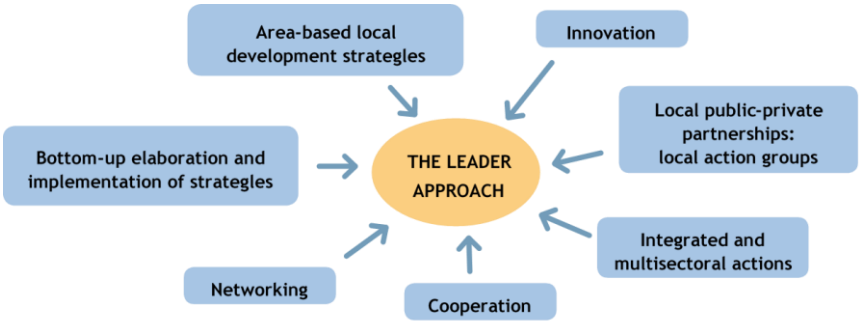

Figure 10.1: The 7 key figures of the Leader/CLLD approach

In the programming period 2014–2020, while part of Leader will keep being implementing as mono-funded rural programme financed by the European Agricultural Fund. The seven key features (Fig. 10.1) have been extended, under the broader term Community-Led Local Development (CLLD), to other EU's funds: from the European Regional Development to Social and Fisheries Funds. Since 2014 it has been possible for a single Local Development Strategy (LDS) to be supported by several EU Funds (known as multi-funded CLLD) [17]. Therefore, the main difference between CLLD and the Leader approach concerns, the more tightly integrated approach and the diversified financing model. This Union will keep strengthening this vision in the future programming period 2021-2027.

As reported, the European Parliament aims at the deployment of many funds in rural areas to increase opportunities, development activities, and to remove the limitations, unlocking potentials in all the areas failing to get funds.

The funding mechanism created by CLLD, allows the Leader Local Action Groups to deal with more complex challenges, such as cooperation between the rural, fisheries and urban areas, social cohesion and essential services for rural residents, assistance for the disabled and ICT [16].

With the ITI (Integrated Territorial Investment) initiatives, from the past programming period (2014–2020), the CLLD's multi-funds approach has also been extended to the urban dimension.

What are the strengthens of the integrated strategies? Here is a non-exhaustive list of the principal advantages:

- Holistic vision
- Governance
- Public-Private partnership
- Co-responsibility and ownership
- Potential for bottom-up
- Synergetic effects (between sectors, territories, etc.)
- Potential for scale-economies
- Strengthen of innovation

ITIs	**CLLD**
Flexible, top-down strategies, steered by the Public Sector	Bottom-up strategies, steered by Local Action Groups (LAGs)
Broad territorial scope (gen. "urban" areas)	Local territorial scope ("rural" – "urban" - "coastal" areas)
No limits as regards geographical coverage	Territories of 10 000 – 150 000 inhabitants (possible exceptions)
Implemented by intermediate bodies or Managing Authorities	Implemented by LAGs
Optional	Optional (but 5% minimum allocation for EAFRD!)

Table 10.3: Comparison between Integrated Territorial Investments (ITIs) and Community-Led Local Development (CLLD)
Courtesy of EU Commission DG AGRI

10.4. **The Caves of Camerano**

Thanks to a direct testimony from delegates of the local authority on the city, our contribution to the U4V Training School ends introducing the trainees to the underground complex of Camerano (Ancona) in Central Italy. The Camerano's caves well represent the new rural paradigm (Tab. 10.2): it aims at boosting local competitiveness, and at valorising the local asset and unused resources. At the same time, key economic sectors are targeted (e.g. rural tourism, manufacturing, local industry, etc.). Financial aspects are also being implemented involving the local public and private stakeholders to seek alternative sources such as subsidies and direct invest-

ments. No less the search for innovation, a pivotal character of the "new rural" society, is clearly expressed through the full availability of the main stakeholders to participate in the COST action CA18110 "Underground Built Heritage as a catalyser for Community Valorisation".

The underground complex of Camerano is a known local heritage and a landmark for the small town. The original complex could date back to the 11th-3rd century BC, only the date 1327 AC is well documented. The town's name itself could derive from "Camburàn" (cave, room) or "Cambre" (tunnel), testifying the close link between the underground heritage and the local populations. Along the centuries the cavities expanded, creating a network of connected built spaces, under a strict family-owned real estate regime. In the second half of the last century, owners left the caves in a state of disarray. It is only thanks to the determination and foresight of the local authority that it has begun to be recovered and enhanced as a potential economic lever for cultural tourism and an opportunity to preserve the local identity.

With the first success of more than 25.000 visitors yearly, the local public administration started a virtuous process of cultural and tourism enhancement. The self-initiative of local administrators led to a strategic outline to strengthen back and revive the attachment people was used to pay to its underground patrimony. Even though the current situation is characterised by a strong identity link between the local community and the caves, considerable uncertainty remains for the future, considering the recent economic downturn and the cultural turmoil for the further development, especially in the post-pandemic scenario.

One of the potentialities of this project is in terms of management and exploitation. Modern management protocols and innovative tools are critical issues for an effective valorisation of cultural heritage. Indeed, it is not enough to make a destination successfully. There are two main issues: a) a lack of experts with a broad vision of the different possibilities for enhancing the territory/landscape; b) the need to reconnect the places overcoming the marginalisation from which it suffers today.

The first issue is being investigated as part of the COST action CA18110, aiming at promoting balanced and sustainable approaches for the conservation of the underground heritage, unlocking its potential for regeneration policies.

The second issue is subject to a multidisciplinary working group set up with the participation of the Landscape Research Center (LRC/CIRP) at the Polytechnic University of Marche. Bearing in also mind the digital dimension of cultural heritage as an asset in the next decade and a way to preserve such a delicate heritage. The conservation of such a fragile underground heritage will be a key target. Through the partnership, the building capacity could rise for the entire community creating a more effective multifunctional network (administrations, undergrounds and archaeological sites, local SMEs and quality food, tourist districts, etc.). The hope is this contribute could inspire trainees and represent a reference for other similar settings, reflecting on what are the possibilities to be exploited and the limits to overcome.

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NOTES

[1] An important influence on the way rural development policy is conceived across OECD countries comes from the value that society (both rural and urban) is giving to natural and cultural amenities. Because over 75% of land in OECD countries is in rural areas, policies for rural places play an important role in land management and must integrate a range of environmental and economic development issues. Rural stewardship of a nation's natural resources is of concern to all given the potential for widespread harm that can occur through the failure to appropriately deal with natural systems related to land, water, air, and other associated natural resources. Many rural places are also custodians of some of the most important antiquities, historical sites, and other recreational amenities (such as ski and water resorts) important for rural economic development. Moving beyond a narrow focus on the multifunctionality of agriculture, policy makers increasingly emphasise the need to identify and valorise the wide range of resources of rural areas and to account for positive and negative externalities associated with different activities in rural areas. The stewardship of the multiple features of rural places has thus become a key pillar of place-based policies for rural development. Regional policy has thus begun a paradigm shift from a top-down, subsidy-based strategy to reduce regional disparities into a much broader family of policies designed to improve regional competitiveness", pp. 14. The New Rural Paradigm: Policies and Governance, OECD, 2006

CHAPTER 11

The Underground Cultural Landscape as an essential component of local identity

An implementation solution of the UNESCO Recommendation of Historic Urban Landscape

Laura Genovese

11.1. The Underground Cultural Landscape: a matter of definition

Some success stories in the field of Underground Built Heritage (UBH), such as the urban regeneration of Matera (Italy) and Göreme in Cappadocia (Turkey) have captured the attention of the world [1][2]. Every year new underground heritage-led regenerations are promoted and developed worldwide. Furthermore, there are numerous archaeological areas and monumental sites carved into the rock, in which not only stands the local identity, but are represented models of successful enhancement, having become a pillar of tourist economies, as the Mogao Caves (China) or Oya museum (Japan).

The newborn class of UBH embraces a variety of artefacts of archaeological, historic, artistic and architectural interest, each of them having historical and cultural uniqueness and being source of identity for local communities. However, this cultural resource is largely unexplored. Commonly, UBH becomes a constraint for underground development within the planning system, competing with new urban functions and the need of saving surface space for urban development [3].

This is part of a global condition, particularly accelerated in the last few decades, due to unprecedented dynamics of urbanization, the increasing demand for modernization and the real estate market pressure, and climate changes, leading to the deterioration and destruction of urban heritage [4]. Thus decision-makers take into account the underground space for its 'invisibility' and potential 'space availability' when surface limitations force to use it [3], by locating there new urban functions rather than recognizing it as a resource to be reuse by returning it to sociability.

Another critical issue is the mass tourism impact and the mirage of short-term economic interests driving local policies towards unsustainable solutions, as investing in the promotion of large famous sites in spite of the systemization with

the smaller, but equally significant ones, so as to create virtuous circuits and make cities unique and competitive in a global scenario.

Given these premises, underground sites' cultural routes - as experienced in the CNR interdepartmental project related to the Anthropic Subsoil of Southern Italy, coordinated by the CNR-Institute of Study on Mediterranean and still ongoing [1] [5] - or the integration of cultural assets above and below the ground - as experienced in the bilateral project between the CNR and the Chinese Academy of Cultural Heritage "Valorisation-Tourism-Participation: Developing alternative integrated solutions for less promoted historic sites (2016-2019)" [6] and, as implemented in the case of Naples [7] [8], are rarely proposed as a sustainable and alternative solutions to avoid the anthropic pressure.

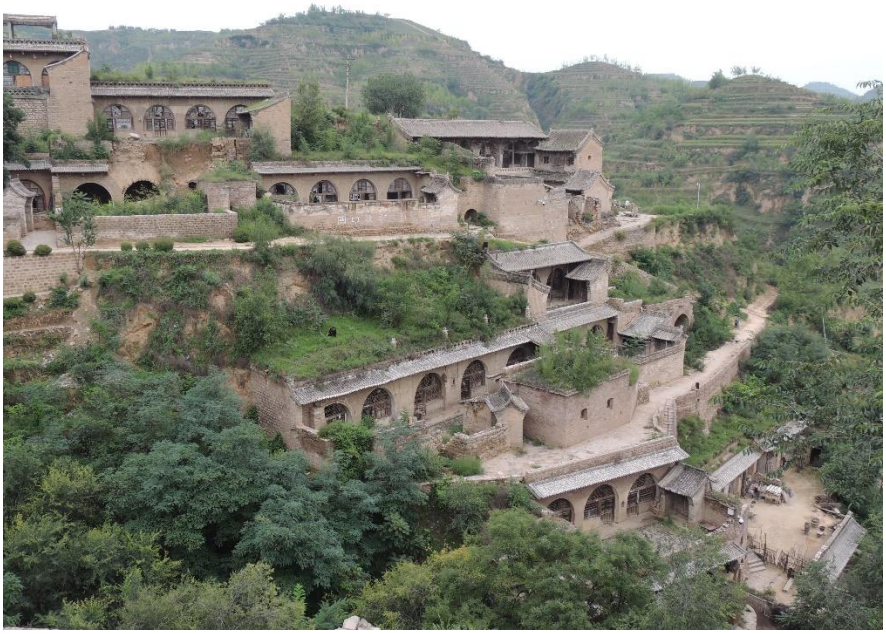

Figure 11.1: Lijiashan Village, in Shanxi Province, China 2017 [9] (by Fratini, F.). These dwelling caves, called yaodong, represent a very traditional way of living in China since long time, particularly in those provinces sited in the Loess plateau. The area has been the subject of a research still ongoing.

Nor do rural settlements suffer less. For many decades, residents have moved to big cities in search of work and, nowadays, only few villagers are still standing. In some cases, they tackled the challenge of not losing their vitality, by attracting tourism, and converting some traditional houses into affordable accommodation for travellers. Nonetheless, the sustainable development of this resource is still limited by several difficulties. Specifically, there is an underestimation of the rural villages' past and current values, evident in underground settlements, unique cultural landscapes full of character at the core of local identity and examples of living

heritage - as experienced in the context of a research project on Chinese underground rural villages, so-called *yaodong* [9] [10] [11] (Fig. 11.1).

Thus, both contexts would need a change in paradigm by experimenting innovative pathways for regeneration and culture-led development strategies that reuse and enhance built heritage - including UBH - and engage with local citizens to reinforce local culture and community's sense of pride and local identity, thus also determining the competitive edge over global travel destinations.

Figure 11.2: Sovana district, Tuscany Region (Italy) 2011 (by Genovese, L.) [12].
Rock necropolis system organised along the course of the Fiora river with the ancient road system that connected them to the ancient settlements (the area was the subject of the bilateral project between the CNR and the Chinese Academy of Cultural Heritage (2016-2019) "Valorisation-Tourism-Participation: Developing alternative integrated solutions for less promoted historic sites".

In this perspective, the context and the UBH typology considered from time to time are important factors to keep in mind when evaluating the actions to adopt and this element is not to be underestimated, having a conceptual and operational relevance. In fact, while the case of archaeological areas or isolated underground monumental contexts can be subject of intervention strategies already widely tested, although they can be improved [13], the case of urban districts or entire cities quarried in the rock is very different. These are land use patterns very common in central and southern Italy [1][5], as in a specific climatic zone in plateaux located between latitude 34° and 40° North, where the characteristics of the soil, over the centuries, have facilitated this type of "negative" construction activity. Such as the

Etruscan districts between Tuscany (Fig. 11.2) and Lazio region in Italy [12] [14] or the *Loess Plateau* underground settlements in China [9] [11].

The identification of the elements supporting the creation of a common approach to an heritage-led enhancement based on UBH needs the improvement of the definition of the class itself and the related re-use map [1] [9], so as to explore all the potential of these forms of heritage, whose variety and complexity have yet to be fully understood.

While part of the research is moving in this direction, also in the context of the COST Action CA18110, a possible research topic could be the concept of Underground Cultural Landscape (UCL), as a macro set of UBH varieties. UCL concept would represent a territorial continuum, comprising both the good and the complex of historical-cultural-social and economic values of the context in which it is inserted in a perspective of planning for conservation and sustainable reuse, as already experienced in a series of projects. In other words, UCL set could reflect the definition of historical landscape as promoted by the Recommendation on Historic Urban Landscape (HUL) [15], which represents the COST Action CA18110 reference tool.

11.2. **The UNESCO Recommendation of Historic Urban Landscape (HUL)**

Adopted by the General Conference of UNESCO at its 36th session on 10 November 2011, the Recommendation on the Historic Urban Landscape – HUL (36 C/Resolution 41) calls on Member States to integrate conservation and management of heritage in cities and settlements with policies and practices for sustainable urban development [16] [17]. This innovative standard-setting instrument embraces the heritage potential to make cities and settlements culturally vibrant, economically prosperous, socially inclusive, and environmentally sustainable [18].

The HUL Initiative was launched in 2005 under the World Heritage Cities Programme, "to raise awareness of the need to safeguard historic cities by including inherited values and cultural significance of their wider context into strategies of conservation and urban development. It had become apparent that protection and conservation of living historic cities by way of 'conservation areas' or otherwise geographically limited 'special districts' was no longer sufficient to cope with the increasing pressures exerted on them" [19].

As one may read in the Preamble of the 2011 Recommendation, it had a long genesis, as the result of a long-term debate, held in the context of "a corpus of UNESCO standard-setting documents, including conventions, recommendations and charters exist on the subject of the conservation of historic areas, all of which remain valid" [15].

The Recommendation is a "soft-law" to be implemented by UNESCO's individual Member State on voluntary base. The Recommendation does not replace existing doctrines or conservation approaches; rather it is additional tool providing us with a road map to integrate policies and practices of conservation of the built

environment into the wider international goals of urban development, whilst respecting the values of different cultural context [15].

It also suggests a Toolkit, which includes a range of interdisciplinary and innovative tools, organised into four different categories, each made of established approaches, practices, and instruments [20] [21]. Below is a list of the four categories:

- Community engagement tools
- Knowledge and planning tools
- Regulatory systems
- Financial tools.

It should be emphasised that the urban heritage management achievements, policies, and actions, classified in these four categories, must be adapted to local contexts, and simultaneously tackled, being interdependent. Given this flexibility, the HUL toolkit can be adapted to suit each local context - as rural settlements, or small hill towns or water towns, as experienced in the bilateral project between China and Italy for the implementation of the UNESCO Recommendation on the "Historic Urban Landscape – HUL" in small historic cities (2013-2020) (Fig. 11.3) - and applied as the case changes and evolves over time.

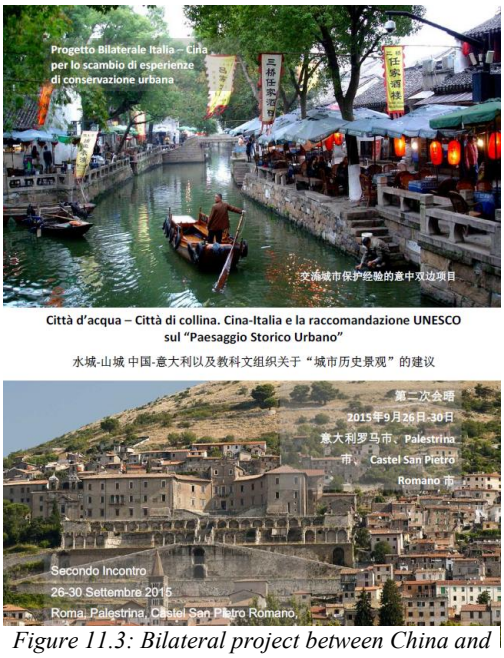

Figure 11.3: Bilateral project between China and Italy for the implementation of the UNESCO Recommendation on the "Historic Urban Landscape – HUL" in small historic cities (2013-2020) (https://hul-bric.cnr.it/)

That is why the HUL approach is based on a new concept of historic environment "as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting" [15].

> "This wider context includes notably the site's topography, geomorphology, hydrology and natural features, its built environment, both historic and contemporary, its infrastructures above and below ground, its open spaces and gardens, its land use patterns and spatial organization, perceptions and visual relationships, as well as all other elements of the urban structure. It also includes social and cultural practices and values, economic processes and the intangible dimensions of heritage as related to diversity and identity." [15]

This definition allows us to include the UBH or, possibly, the UCL class in a holistic approach to the territory, helping us to identify the complex elements that make a context distinctive and create its sense of place and identity. This approach could provide us with a knowledge base "to guide planning decisions and manage change, integrating urban conservation within an overall sustainable development" [20]. From this perspective, some other definitions in the Glossary in the Appendix to the Recommendation text [15] are relevant for the implementation of this approach in underground contexts. Below are some significant concepts underlined.

Historic urban area (from the ICOMOS Washington Charter): Historic urban areas, large and small, include cities, towns and historic centres or quarters, together with their natural and man-made environments. Beyond their role as historical documents, these areas embody the values of traditional urban cultures.

Urban Heritage (from European Union research report Nº 16 (2004), Sustainable development of Urban historical areas through and active Integration within Towns – SUIT) comprises three main categories:

- Monumental heritage of exceptional cultural value
- Non-exceptional heritage elements but present in a coherent way with a relative abundance
- Built environment

The *Built Environment* refers to human-made (versus natural) resources and infrastructure, designed to support human activity, such as buildings, roads, parks, and other amenities.

According to the HUL approach, these values should be taken as a point of departure in the overall management and development of the city [20].

11.3. Conclusions

Meanwhile the research is confronted with new varieties of UBH and its definitions searching for common approaches and tools for heritage led enhancement and reuse, a series of projects carried out in the context of underground settlements or territorial systems show the validity of the UNESCO Recommendation on HUL in these cases. In fact, the Recommendation already contains all the analysis and interpretation tools that allow us to extrapolate the complex of identity elements that makes a context distinctive and create its sense of place and identity, thus providing us with knowledge base to guide planning decisions and manage change, integrating urban conservation within an overall sustainable development.

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CHAPTER 12

Conservation principles and theories for Cultural Heritage in hazards zones

A case in the Earthquake area in Central Italy

Antonello Alici

12.1. Introduction

In the last decades, heritage studies have evolved rapidly and globally, and the awareness of a heritage at risk has widely spread around supported by key institutions as ICCROM, ICOMOS and ICOM[1]. After the U4V Training School in Naples, a new world-warning occurred as COVID-19, that calls for major changes and raises questions as how to become more resilient and how to protect our natural and cultural heritage.

Nevertheless, let introduce the matter: the so-called Western-oriented model in the heritage studies has been discussed and contested as not representative of other cultural contexts. Laurajane Smith provocatively writes: "…there is no such thing as heritage" [1], as it is the result of a "discursive construction (being) itself part of the cultural and social processes that are heritage" [1]. She states that "the 'authorised heritage discourse' … is a self-referential discourse … promoting a certain set of Western elite cultural values as being universally applicable" [1].

We should start from these questions to promote a new generation of studies, able to proceed from historical surveys to the most recent and alive experiences.

The present training school can represent an important opportunity for testing innovative approaches to protect and enhance a fragile type of cultural heritage as the Underground Built Heritage (UBH), to empower local communities and support planners and decision makers' choices. The complexity of the topic calls for a multidisciplinary approach as well as an innovative spirit of scientific cooperation.

Beyond rigid definitions of the term 'heritage', our main purpose is to raise the awareness of the value of the places, a long and delicate process based on scientific research that must be a shared process followed by an educational stage to be spread to its potential users. UBH should be evaluated in its layered context, with its intangible and tangible values that must be preserved.

'Why and for whose benefit should we enhance cultural heritage'? This is the main question behind the Faro Convention on the Value of Cultural Heritage for Society, issued by the Council of Europe in 2005 [2], and aimed at consolidating instruments for the protection of member states' architectural and archaeological

achievements. Through the concept of Heritage communities, the Convention empowers citizens and civil society to share the lead with governments and local authorities in the protection and transmission of cultural heritage. In this way, the citizens' participation becomes "an ethical obligation and a political necessity" [2] for democratic societies[2].

To the same direction goes the 'European Heritage Days', a joint initiative of the Council of Europe and the European Commission aimed at "…promoting diversity and dialogue through access to heritage to foster a sense of identity, collective memory and mutual understanding within and between communities" [3]. This action was aimed at "raising the awareness of European citizens to the richness and cultural diversity of Europe; creating a climate in which the appreciation of the rich mosaic of European cultures is stimulated; opposing to racism and xenophobia and encouraging greater tolerance in Europe and beyond the national borders; informing the public and the political authorities about the need to protect cultural heritage against new threats; inviting Europe to respond to the social, political and economic challenges it faces" [3].

This chapter follows the results of my own research and didactic experience in the field of heritage at risk due to natural and human induced causes, as earthquakes, floods, fires, wars, terrorism.

In cooperation with several European universities, I am leading the project 'Living with Earthquakes. A strategic plan for the earthquake prone regions', aimed at building a large-scale strategy for the prevention of future damages, in a sort of dialogue between humanities and sciences, from architecture and urban studies to history of art and architecture, restoration, earth sciences, seismic engineering, geotechnics, sociology and philosophy[3].

12.2. **Cultural Heritage: theory and practice**

I will try to fix here the main definitions at the basis of my research. The term "heritage" is very broad and ambiguous, it has had many definitions and it is even contested, as already mentioned in the introduction. A correct approach is to consider it referred to a set of attitudes and relationships with the past that require a process of knowledge that varies according to place and time [4].

According to Laurajane Smith, "heritage is a cultural process that engages with acts of remembering that work to create ways to understand and engage with the present, and the sites themselves are cultural tools that can facilitate … this process" [1]. Heritage (and Cultural Heritage) "is therefore ultimately a cultural practice, involved in the construction and regulation of a range of values and understandings" [1].

'Heritage' emerged in Europe within the context of nineteenth century modernity, as we will see in the following paragraph. It has evolved during that and the following century in connection with the growing awareness of the risks of losing identity and the memory of places. I will refer here to the theories of the British institutions, which I consider as pioneers of a correct approach to the conservation. The methodology to approach Cultural Heritage is based on the

'conservation' theories and principles inherited from the action of the Society for the Protection of Ancient Buildings (SPAB) founded by William Morris in 1877.

SPAB was conceived as a necessary association to act as a watchdog over the practice of heavy alterations of historic buildings. In 1877, Morris wrote a Manifesto for the new society that became a benchmark for 'conservation' practice as an alternative to 'restoration'[4]. Its conservation philosophy "is based on the protection of 'fabric' - the material from which a building is constructed. A building's fabric is the primary source from which knowledge and meaning can be drawn. Materials and construction methods embodied in building fabric illustrate changes in people's ideas, tastes, skills, and the relationship with their locality. Fabric also holds character and beauty; the surfaces, blemishes and undulations of old buildings speak of the passage of time and lives lived. Wear and tear add beautiful patination that new work can only acquire through the slow process of ageing" [5]. The focus on materiality and on the 'fabric' has evolved into a theory and a training process through 'Working Parties' involving the young generations.

The recently updated SPAB Approach – in full continuity with the philosophy of John Ruskin and William Morris – has a primary purpose of repair to retain the process of decay without damaging the character of the building, altering the features which give it historic or architectural importance or unnecessarily disturbing or destroying historic fabric [5]. So, 'care and maintenance' are the basic actions, supported by the 'understanding' history, design and construction, the evaluation of 'context and continuity' also to help to create a sense of community, the 'respect for age' preserving the patina, and the suggestion to operate 'essential work only'. SPAB promotes the philosophy of 'conservative repair' opposed to 'restoration', with a careful choice of 'materials', the last steps being related to some needed changes carefully done 'fitting new to old'. In continuity with the Arts and Crafts tradition, it is the education to 'craftsmanship and practical knowledge' and the capacity and sensibility for 'good new design to complement the old' [5].

I suggest to follow the 'Conservation Principles, Policies and Guidance for the sustainable management of the historic environment' issued by 'Historic England' (the Historic Buildings and Monuments Commission for England established by the National Heritage Act in 1983) to have a clear methodology for 'assessing heritage significance' as a preliminary stage for the 'management of change' [6]. This approach considers the 'tangible, intangible and natural heritage' as interrelated. The practice of recognizing, formally protecting and conserving heritage is based on the concepts of 'place' as "any part of the historic environment, of any scale, that has a distinctive identity perceived by people', and 'fabric' as 'the material substance of which places are formed, including geology, archaeological deposits, structures and buildings, and flora" [6].

We should consider the six principles of conservation as guidelines for our training process [6]:

Principle 1: The historic environment is a shared resource
Principle 2: Everyone should be able to participate in sustaining the historic environment
Principle 3: Understanding the significance of places is vital
Principle 4: Significant places should be managed to sustain their values

Principle 5: Decisions about change must be reasonable, transparent and consistent

Principle 6: Documenting and learning from the decisions is essential.

Understanding the 'place' and the 'fabric' and to 'assess their significance' (or 'value') demands the application of a systematic and consistent process, which is appropriate and proportionate in scope and depth to the decision to be made, or the purpose of the assessment. This is based on a deep investigation on its history, the form and condition of its constituent elements and materials, the technology of its construction, the history of its owners, the social context. According to 'Historic England', the value of a place can be "cultural, economic, political, social and also evidential, historical, aesthetic, communal" [6].

A 'statement of significance' of a place should be able to "distil the particular character of the place. It should explain the relative importance of the heritage values of the place …, how they relate to its physical fabric, the extent of any uncertainty about its values (particularly in relation to potential for hidden or buried elements), and to identify any tensions between potentially conflicting values. So far as possible, it should be agreed by all who have an interest in the place. The result should guide all decisions about material change to a significant place" [6].

The subsequent action is the 'conservation', intended as the process of 'managing change in ways that will best sustain its heritage values' [6]. Conservation includes the objective of sustaining heritage values: to preserve is only one aspect of what is needed to sustain heritage values, to sustain embraces both preservation and enhancement to the extent that the values of a place allow [6]. Considered change offers the potential to enhance and add value to places, as well as generating the need to protect their established heritage values.

Such a delicate process of understanding the limits of the changes in a significant place should be a shared responsibility of the scientific community and of the decision makers together with the citizens.

12.3. Conservation Theories

'Conservation' – according to John Pendlebury – "is inherently 'modern' for two reasons. First, it is a reaction to the threat caused by progressive modernity and the change (whether aesthetic or social) that this implies. Second, conservationists are people of the modern age. Their concept of history and cultural value and their methods of pursuing their goals are as intrinsically modern as those of the promoters of change … they have relied on ideas of selection and classification, eventually expressed in state-defined and controlled sites, and on principles of conservation which, though morally based, can be rationally applied by a skilled elite. Key figures, such as Ruskin, are bound into this framework of modernity" [7].

At this point, it is important to recall the main steps of the debate on the cultural heritage between France and Britain in the 19th century [8] [9]. As reminded by Pendlebury, the pioneering experience of the British culture is rooted into the contribution of John Ruskin with his theories exposed in several books, as The Seven Lamps of Architecture, The Stones of Venice and Mornings in Florence [10]

[11] [12]. Ruskin was reacting against the growing trend of the restoration of churches to their supposed original Gothic form, as an expression of the Gothic Revival. He affirmed that a historic building is the unique creation of an artist, so restoration and the removal of historic fabric has to be considered an act of destruction: "Restoration means the most total destruction which a building can suffer: a destruction out of which no remnants can be gathered" [13].

In France, Eugène Emmanuel Viollet-Le-Duc was at the opposite edge: "To restore a building is not to preserve it, to repair or to rebuild it; it is to reinstate it in a condition of completeness which may have never existed at any given time" [14]. According to him, restoration was a creative process, and the achievement of unity could justify both removal of original fabric and any subsequent alterations [8]. In England, George Gilbert Scott, highly active in the Gothic Revival, took a similar approach [8]. His proposal of restoration for Tewkesbury Abbey, following a series of similar works, was strongly opposed by William Morris, who – inspired by the theories of Ruskin - launched a campaign against such trend in the pages of "Atheneum" in March 1877 calling for the need of an association to act as a watchdog for the protection of heritage [8]. One year later, Morris succeeded in the foundation of the already mentioned Society for the Protection of Ancient Buildings, writing its Manifesto, that 'remains a concise and beautifully poetic expression of SPAB conservation principles':

> "… No doubt within the last fifty years a new interest, almost like another sense, has arisen in these ancient monuments of art; and they have become the subject of one of the most interesting of studies, and of an enthusiasm, religious, historical, artistic, which is one of the undoubted gains of our time; yet if we think that if the present treatment of them be continued, our descendants will find them useless for study and chilling to enthusiasm…We think that those last fifty years of knowledge and attention have done more for their destruction then all the foregoing centuries of revolution, violence and contempt … The civilised world of the nineteenth century has no style of its own amidst its wide knowledge of the style of other centuries … According to the new philosophy for the heritage, the word 'restoration' was replaced by 'protection', meaning the need for a daily care 'to stave off decay …, to prop a perilous wall or mend a leaky roof …" [15].

According to the Manifesto, protection of historic buildings must be based not on style but on a critical evaluation of the building, and historic buildings relied for their authenticity on the material fabric. SPAB played a central role in the spreading of a new ethical approach on the protection of cultural heritage and was the foundation stone for the future international charters.

In the first decades of 20th century, in fact, the need for a shared approach to the protection of the cultural heritage was expressed in international congresses of the architects and technicians of historic monuments, the first occurring in Athens in 1931 where 120 professionals attended from 23 countries. The 'Athens Charter' [16] advocates abandoning stylistic restoration and favoured conservation and maintenance of monuments, in the respect of the historical layers of all periods. In the post second World War, the evolution of the concept of heritage from the single monument to the historical context was conceived in Italy, first with the foundation of 'Italia Nostra' in 1955 [17] and in 1960 with the 'Gubbio Charter' [18] out of a

three-days conference. There, several municipalities with the support of an avant-garde of experts and scholars stated a clear code for the protection of all the layers of the historic town through an advanced model of 'Conservative Town Plan' [18]: an advanced process aimed at considering the value of even modest environmental buildings to protect the spirit of the place.

The international community was ready for the second International Congress of Architects and Technicians of Historic Monuments organized in Venice in 1964, a symbolic place representing the extreme fragility of the ancient towns [19]. First, the number of participants and the number of countries represented were much higher (600 professionals from 61 countries). Second, they expanded the perception of heritage from the single monument to the site signing 'The International Charter for the Conservation and Restoration of Monuments and Sites' (The Venice Charter), as follow:

> "The concept of an historic monument embraces not only the single architectural work but also the urban or rural setting in which is found the evidence of a particular civilisation, a significant development or an historic event. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time" (Article 1)[19].

To Venice Congress followed the foundation in 1965 of the International Council of Monuments and Sites (ICOMOS). Jukka Jokilehto has stressed the relevance of the charter and the key role of Italian experts, such as Guglielmo De Angelis d'Ossat, Cesare Brandi, Piero Gazzola, and Roberto Pane [20]. In addition, Jokilehto suggests how its principles have been "recognized as the basic policy guidelines for the assessment of cultural heritage sites on UNESCO World Heritage List". The UNESCO 1972 World Heritage Convention [21] "is based on the firm conviction that culture is a vital condition of the wellbeing of all human society. As a result, the heritage of humanity, being a cultural product, is fundamentally associated with the notion of universality, and thus of the universal value" [22].

The Convention represents a peak and at the same time a turning point in the debate and policies on the cultural heritage. The concept of 'outstanding value' for the listed monuments and sites establishes what Laurajane Smith considers the 'Authorized Heritage Discourse' that "in privileging the innate aesthetic and scientific value and physicality of heritage, masks the real cultural and political work that the heritage process does" [1].

The case study on the post-earthquake sites starts from this point, considering heritage a social and cultural practice to share with the local community and with the visitors.

12.4. **Value and Authenticity**

The 1970s experience a growing interest in the cultural landscapes beyond the experts and beyond the tangible heritage and beyond the Western oriented discourse for the action of Asian countries.

The understanding of authenticity plays a fundamental role in all scientific studies on cultural heritage, as well as in conservation and restoration planning. The word authentic comes from the Latin *authenticus*, 'original, particular'.

To be authentic is referred to the condition of an object or a monument in relation to its specific qualities. It needs to be recognized in its context, and the relevant values defined as a basis for treatment. Ethics of authenticity refers to the entire society and its patterns of behaviour.

We must consider that it is not possible to base judgement on values and authenticity within fixed criteria, as they may differ from culture to culture, and even within the same culture. The experience has proved that it is not the imposition of some ready-made philosophical system but a full understanding of the place and fabric that is most likely to produce a defensible solution. So, a deep investigation before action is needed. According to 'Historic England':

> "The authenticity of a historic building … depends crucially on its design and on the integrity of its fabric. The unnecessary replacement of historic fabric, no matter how carefully the work is carried out, will have an adverse effect ... and seriously reduce its value as a source of historical information" [23].

The question of authenticity was first raised in the Venice Charter, and then reconsidered for the Asian context by the Nara Document on Authenticity [24].

The document states:

> "All cultures and societies are rooted in the particular forms and means of tangible and intangible expression which constitutes their heritage, and these should be respected. … the respect due to all cultures requires that heritage properties must be considered and judged within the cultural contexts to which they belong" [24].

Authenticity is re-defined again by the Nara+20 document:

> "a culturally contingent quality associated with a heritage place, element, or object that is perceived to communicate credibly cultural value; is recognized as a meaningful expression of an evolving cultural tradition; and/or evokes among individuals the social and emotional resonances of group identity" [25].

After Nara, Asia has experienced a long season of studies and practice on the topic, producing principles and charters in a closer relation to its culture and sensibility[5]. They are based on the concepts of 'community', 'spirituality', 'intangibility' and 'authenticity'. The relevance of 'spirituality' is often opposed to the 'materiality' of the western approach. According to Ken Taylor:

> "In Asia, many cultures have a spiritual rather than material view in which objects and places are vehicles of great value for communicating deeper, spiritual meanings" [26]. "To conserve or to prolong the life of buildings, the Asian tradition of conservation leads to common practices of transformation: renewal, as opposed to the notion of material authenticity that keeps the notion of a material intervention and reversibility. Hence, conservation theory should be rewritten and rooted in the Asian tradition for future conservation practice in the Asia region, especially for the majority of perishable architectural heritage" [26].

The Nara Document introduced also the concepts of Cultural Diversity and Heritage Diversity:

> "The diversity of cultures and heritage … is an irreplaceable source of spiritual and intellectual richness for all humankind. The protection and enhancement of cultural and heritage diversity … should be actively promoted as an essential aspect of human development" [24].

This calls for respect for other cultures and all aspects of their belief systems as well as for legitimacy of the cultural values of all parties.

12.5. **Cultural Landscapes**

According to William Logan, 'heritage' today embraces "precincts, historic urban centres, whole towns and villages, cultural landscapes, and historic urban landscapes, associative values and intangible heritage – the talents embodied in people, such as artistic skills in dance, music and paintings, or skills in language, or craft and construction skills" [27].

The evolution of the concept of heritage from the single 'monument' to 'site' and 'place' reaches an important stage with the Washington Charter in 1987 opening to the evaluation of 'historic towns and urban areas':

> "All urban communities, whether they have developed gradually over time or have been created deliberately, are an expression of the diversity of societies throughout history" [28].

The theory of conservation of historic towns evolves into the concept of 'Historic Urban Landscape' (HUL), according to Jukka Jokilehto:

> "…the urban area understood as the result of a historic layering of cultural and natural values and attributes, extending beyond the notion of 'historic centre' or 'ensemble' to include the broader urban context and its geographical setting. The notion includes urban, rural and natural landscapes, i.e. an area to be considered in its totality as a coherent whole whose balance and specific nature depend on the fusion of the parts of which it is composed and which include human activities, buildings, the spatial organization and the surroundings" [29].

A complementary approach to heritage is offered by the notion of 'cultural landscape' introduced in 1992 as a new category by the World Heritage Committee. It refers to sites that are "…illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal" [30]. 'Cultural landscapes' can be of three types: 1) designed landscape (e.g. parks and gardens), 2) organically evolved (e.g. archaeological or living), and 3) associative cultural landscape (e.g. sacred site or mountain) [30].

> "A cultural landscape is a complex phenomenon with a tangible and intangible identity. The intangible component arises from ideas and interactions, which have an impact on the perceptions and shaping of a landscape, such as sacred beliefs closely linked to the landscape and the way it has been perceived over time. Cultural landscapes mirror the cultures which created them" [31].

According to Ken Taylor, 'cultural landscapes' are "potentially one 'of great interest to the conservation community', heralding an opportunity to rethink concepts of heritage … with their inseparable meanings and values—have become a dominant philosophical foundational element for the way we think and act in the heritage management process" [32].

This approach and philosophy meet the aims of the present Training School considering that UBH "represents an outstanding cultural landscape to preserve, re-

use and share, respectfully of the inherited values and traditions of different cultural contexts" [33].

12.5. A case study in the Earthquake regions in Central Italy

The principles and theories of conservation of the intangible and tangible heritage exposed in the present chapter are at the base of the research project on the Apennine areas in Central Italy affected by recurrent earthquakes. The partnership established with the University of Cambridge offers a direct link with the British philosophy of heritage conservation, from SPAB to English Heritage, supported by a proper survey of the places. The Italian approach to the historical towns based on the Gubbio Charter is a complementary issue for the summer school named *Living with Earthquakes. A strategic plan for the earthquake prone regions*, held in Amandola (Italy) from July 25th to August 1st 2018.

Figure 12.1: Amandola, Cadastral Map, 1884 (City Archive, Amandola)

An international conference "Living with Earthquakes. Towards a model for Amandola and the Marche Region", held at the Jesus College, University of Cambridge, on 24-25 October 2017, discussed a multidisciplinary methodology for recovering and preventing damages to the cultural heritage of the affected areas.

At the conference, the Università Politecnica delle Marche and the Department of Architecture of the University of Cambridge signed a Memorandum of Understanding, with the scope to promote summer schools in the area. The activity was framed in the wider goal for opening an innovative dialogue between Sciences (Seismic Engineering, Geotechnics, Construction, Material Sciences) and Humanities (Philosophy, Sociology, Architecture and Urban Studies, History of Art and Architecture, Geography, and Media and Communication) [34].

The key issue being whether such dangerous territories should still be inhabited or should the populations be moved in safer places, we had a clear answer for the evidence that those places preserve an immense value for their layered heritage, a value that is fully understood by local populations. We start from the communities

considering the understanding of the cultural heritage, tangible and intangible, a social practice.

The framework of our project is based on the understanding of the reasons for the continuous depopulation of the internal regions, which makes the heritage even more fragile. Since the 1950s, in fact, Central Italy communities' including Amandola and its neighbouring municipalities (Sarnano, Gualdo, Monte San Martino, Penna San Giovanni, Smerillo, Montefalcone Appennino, Comunanza and Montefortino) have been affected by depopulation decline.

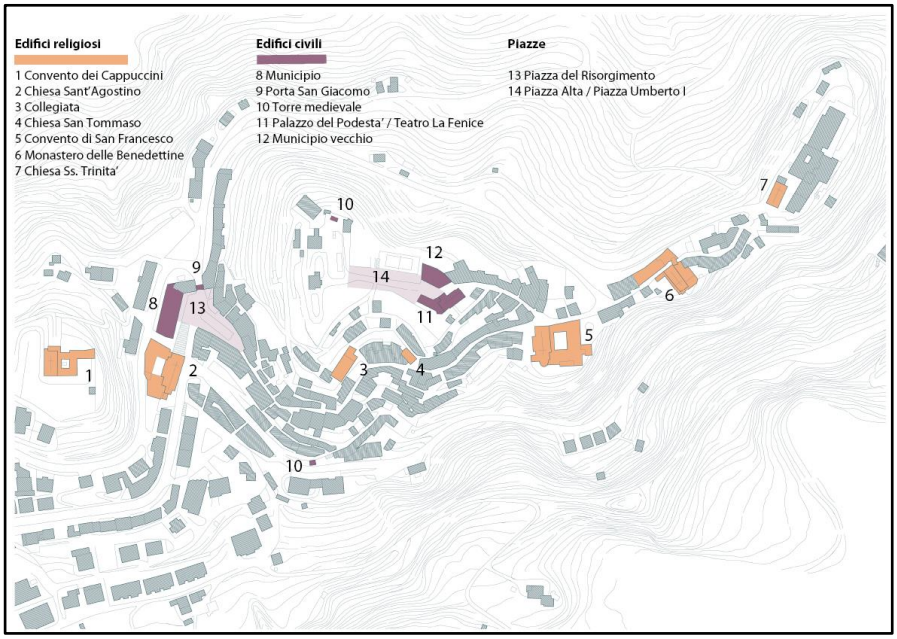

Figure 12.2: Amandola, Historic survey on the main sites

The increasingly poor care of the mountain and foothills areas and the poor maintenance of buildings and infrastructures amplified the effects of seismic movements and put at risk the conservation of a landscape, and an architectural and artistic heritage of undoubted value. Faced with a crater that affects four regions - Lazio, Abruzzo, Marche and Umbria - and 133 municipalities, the first urgent question that arose in the aftermath of the earthquake was where and how to rebuild. The starting point of a new research and intervention perspective is to consider the seismic nature of these areas as a constitutive, not extraordinary element, an identity element that has marked the history of the Apennine lands, their history of communities, of landscapes, of urban aggregates and monumental emergencies.

Inside that large crater, our study area is the province of Fermo, with its variety of small and medium-sized hill towns, which offer an interesting field of investigation and experimentation starting from the assessment of the degree of damage to the urban fabric and to the architectural and artistic heritage.

The earthquake, in its tragic nature, can be understood as a unique opportunity to rewrite the history of these places, starting from the citizens and the memory of

the communities, and from the archives, stones and works of art. The identity values of these places are deep; the bond of the populations with their land is equally deep and ancient.

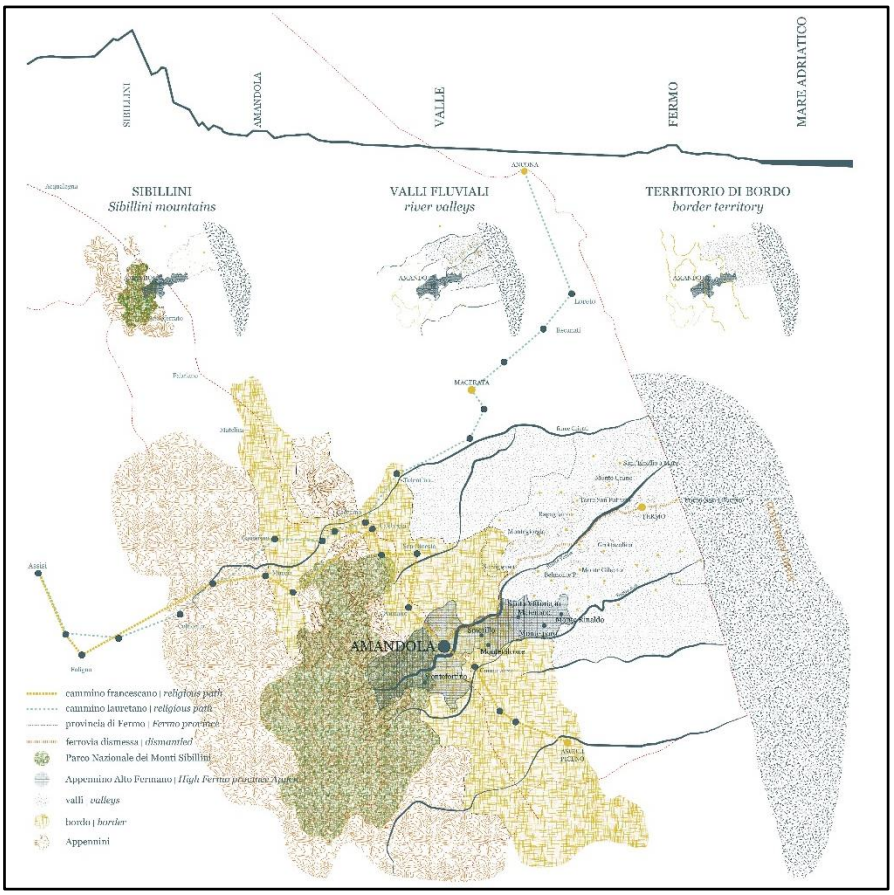

Figure 12.3: Amandola, Territorial survey

However, the future requires choices, and not everything can be rebuilt and revitalised. In this direction are oriented the recent studies of Augusto Ciuffetti [35], which published a book on the Apennines pointing out that "until the first concrete phenomena of depopulation, which are activated around mid-twentieth century, the Apennines maintains its centrality in the territorial balance of the Italian peninsula thanks to the pluri-activity, mobility, adaptability and inventiveness of its populations. Together with integration and hospitality, these are the terms around which the future of the inland areas of central Italy can be built" [35]. Ciuffetti's recent survey of the area gives a very relevant historical description based on the awareness that only from the rediscovery of the history of these inland and mountain territories we can have valid references for functional rebirth paths to many small communities.

According to Mina Di Marino [36], the reasons of the depopulation can be found in the intensive agriculture, which have changed the farming practices, making increasingly attractive small and medium size cities and metropolitan areas to workers seeking for labour force. "Thus, rural areas have been gone under increasing economic pressure, farm abandonment, internal and external migration and other mobility forms … More recently, on one hand, globalization, increasing demand of highly specialized labour force and improved telecommunications have affected the traditional patterns of the rural areas. On the other hand, the sectoral policies have been inadequate and ineffective in stimulating rural development and transformation of the rural economies" [36].

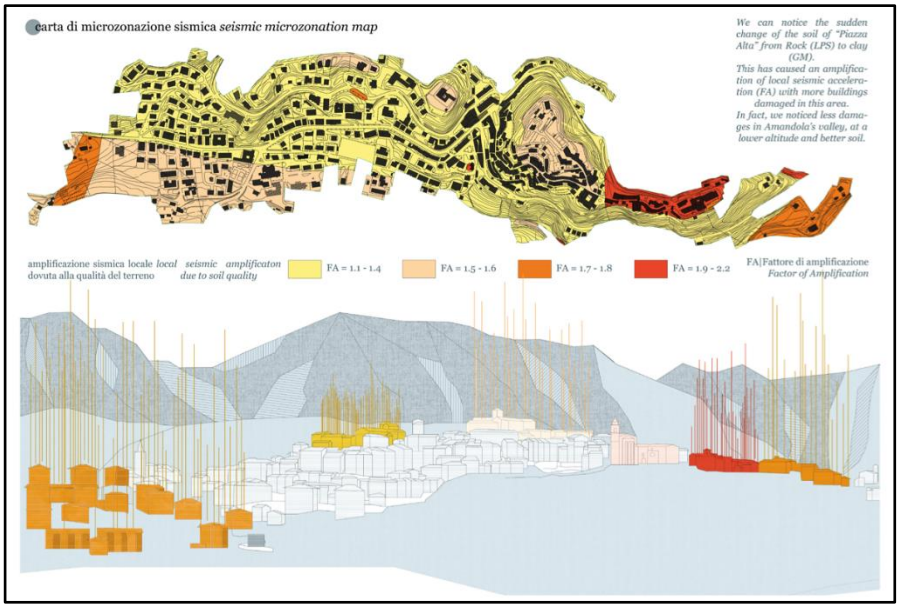

Figure 12.4: Amandola, Seismic macrozonation map and risk analysis

The chosen area, in the province of Fermo, is characterised by a landscape raising from the sea to hills and mountains, pointed by towns and villages on the top of the hills. Each place has a unique urban pattern woven into the forms of the territory and to the colours of the geology. As Nicholas Ray writes, "the history of the region illustrates an oscillation between occupation of the plains and the hills. In relatively settled Roman times, settlements were constructed on the plain, such as Falerio Picenus (Falerone) with its theatre still visible and in use and its grand amphitheatre, visible only in fragments. In times of insecurity, people took to the hills and the towns of Montefortino, Amandola, and many others were built. Then, in a more stable Renaissance period, new towns were again planned on the plain, such as Servigliano, but the hill towns were not abandoned. Because of the geological character of the region, however, the hill towns have suffered the most serious damage in a series of earthquakes and are becoming depopulated. Former convent buildings, used as schools, became dangerous and new lightweight school buildings

have been constructed on the plain below. Once the school has moved, it is difficult to re-establish a community" [37].

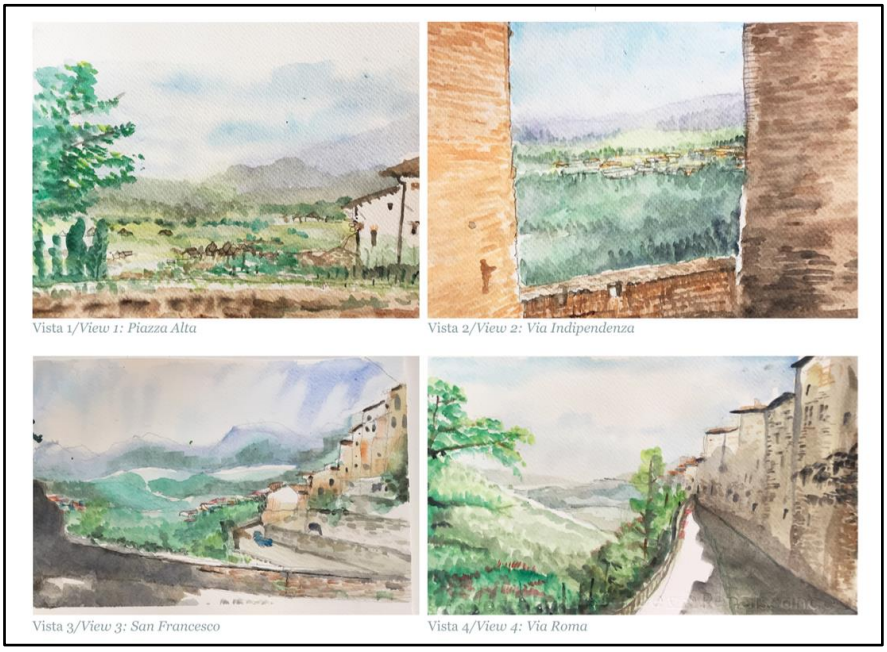

Figure 12.5: Amandola, sketches

The dialogue among different disciplines is well expressed by Nicholas Ray:

> "Architecture cannot solve these problems, but architects can mitigate their effect. Working with competent engineers, they can examine the behaviour of the building fabric and propose ways to repair it, which will make its performance more reliable. In those cases where buildings have ceased to serve their original purpose adequately, they can examine the potential for different uses. Questions inevitably arise as to how the form of the settlements and the appearance of individual buildings should be adapted: should architects attempt to maintain the historic fabric entirely faithfully and match new work to old, or should they ensure that new work be unapologetic and clearly of the twenty-first century?" [37].

In the summer of 2018 and 2019, we focused on four towns, Amandola and Montefortino on the mountain side, Falerone and Servigliano on the hill side closer to the coast[6]. The multidisciplinary approach played an important role, providing a connection between the evaluation of the damages and the understanding of the values of the places from different perspectives reaching a foundation for the resilience [38]. The different steps proposed are:

- Understanding the urban landscape
- Understanding the value of the tangible and intangible heritage
- Understanding seismic activity and how to mitigate its consequences
- Principles and problems in the conservation of historic fabric
- Use of archival material in preparing design appraisals and reports.

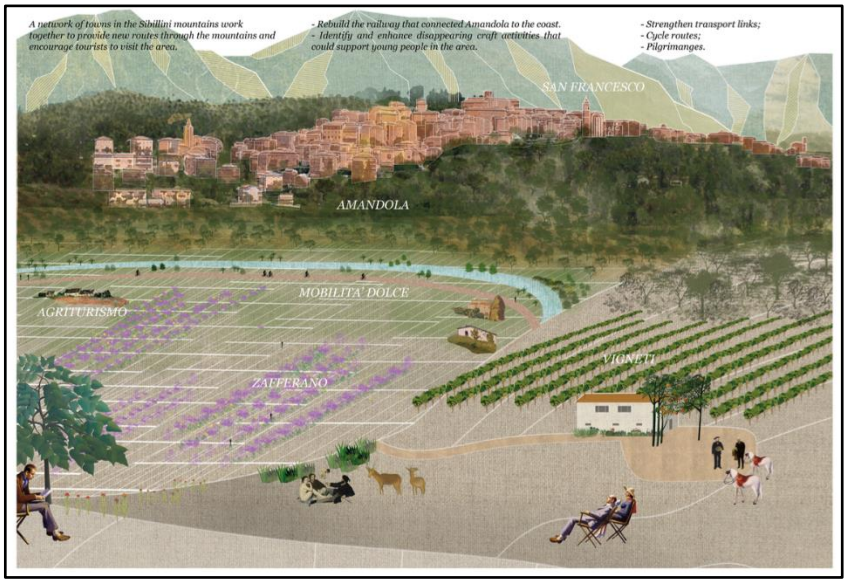

Figure 12.6: Amandola, proposals for territorial rehabilitation and prevention

Figure 12.7: Amandola, San Francesco monastery: virtual model

With an already tested formula of fieldwork supported by a few targeted lessons on methodologies, the participants, PhD candidates and Master students in the

various disciplines, coming from different countries in Europe and Asia, explored the territory and its wounds. They analysed archive papers, used manual and digital surveys, photos and films, and designed at different scales, from the territory to the single monumental palace and church.

Figure 12.8: Amandola, San Francesco monastery: main facade and section with the post-earthquake damages

The comparison between the hilly settlements of Falerone, Montefortino and Amandola proved to be particularly appropriate and stimulating, to educate to the understanding of the different forms of adaptation to the place and to the interpretation of the quality of the urban space in the sequence of streets and squares that mark the representative nodes of the community life. The meeting with local populations, particularly proved and disoriented due to the persistent stalemate, is a complementary and strategic action to fully understand their history and tangible and intangible values and, above all, encourage their participation in the choices for revitalization and reconstruction.

In this dialogue, collaboration with the chair on humanities at the University of Macerata, proved to be appropriate, as offered a qualified contribution to understanding the awareness of place and the relevance of the place dimension in the reconstruction of community structures.

The dialogue with the local population and the authorities was tested during the work with several meetings and interviews and offering a successful series of open lectures. The results, exposed in the main squares of Amandola and Servigliano in a crowded summer weekend for meeting the local inhabitants and the tourists, have provoked interesting discussions to serve as a base for further steps. The next step

of our programme is to apply the 'Faro Convention' in the area for establishing a Heritage Community and planning the reconstruction and prevention processes with the participation of the citizens and the local actors as architects and engineers and builders.

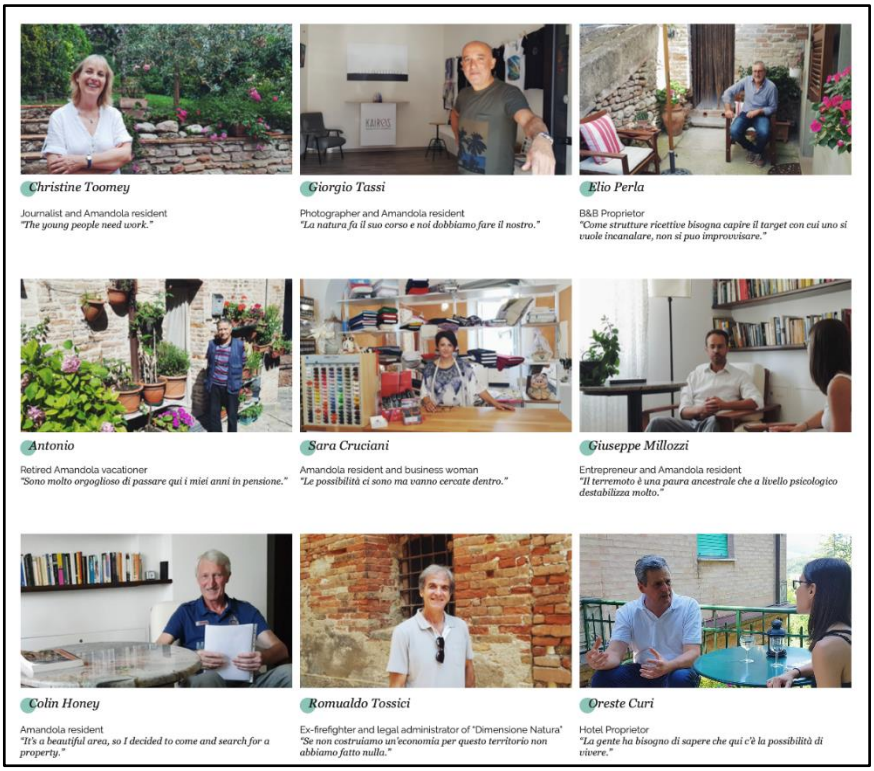

Figure 12.9: Amandola, towards a Heritage Community: interviews with local community and visitors

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NOTES

[1] ICOM (International Council of Museums, established in 1946) is the international organization of museums and museum professionals, which is committed to the conservation, continuation and communication to society of the world's natural and cultural heritage, present and future, tangible and intangible. www.icom.org. ICCROM (International Centre for the study of the preservation and restoration of cultural property, established in 1956) is an intergovernmental organization working in service to its Member States to promote the conservation of all forms of cultural heritage, in every region of the world. It operates in the spirit of the 2001 UNESCO Universal Declaration on Cultural Diversity, which states that "Respect for the diversity of cultures, tolerance, dialogue and cooperation, in a climate of mutual trust and understanding are among the best guarantees of international peace and security". www.iccrom.org. ICOMOS (International Council of Monuments and Sites, established in 1965) is a non-governmental organisation dedicated to the conservation of the world's monuments and sites. It is dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archeological heritage. It is a network of experts that benefits from the interdisciplinary exchange of its members, architects, archeologists, art historians, geographers, anthropologists, engineers, and town planners. www.icomos.org.

[2] "A *Heritage Community* consists of people who value specific aspects of cultural heritage which they wish, within the framework of public action, to sustain and transmit to future generations", Article 2b, Faro Convention.

[3] The research project and summer school *Living with Earthquakes. A strategic plan for earthquake prone regions* are promoted since 2017 by Università Politecnica delle Marche in collaboration with the University of Cambridge. See the present chapter at paragraph 6.

[4] The Manifesto of the Society for the Protection of Ancient Buildings was written by William Morris, Philip Webb and other founder members in 1877. Although produced in response to the conservation problems of the 19th century, the Manifesto extends protection to "all times and styles" and remains the basis for the Society's work. www.spab.org.uk

[5] The China Principles 1998; Shangai Charter 2002; Indonesia Charter 2003; Yamato Declaration 2007; Xi'An Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas 2005; Hoi An Protocols 2009.

[6] The two editions of the summer school 'Living with Earthquakes. A strategic plan for earthquake prone regions' were organized in Amandola (25 July–1 August 2018) and in Falerone, Servigliano and Montefortino (12–21 July 2019). See A. Alici (ed.), *Living with Earthquakes. A strategic plan for the earthquake prone regions*, Maggioli Editore, Milano, 2020.

CHAPTER 13

Developing Underground Heritage Business Models

Creative tourism as a strategy for the UBH promotion

Álvaro Dias

13.1. The Framework

This article crosses two themes: the development of business models and the creative tourism, with the objective of presenting a framework to increase the competitiveness of an underground heritage site competitiveness. A business model incorporates a plan for the successful operation of a business, detailing the core elements, such as, the value proposition, sources of revenue, target segments, products, and financing. Amit and Zott [1] define business model as the design of transactions conducted by an organization, represented by the content, structure and governance of all the organization activities and processes to create value through the exploration of business opportunities. This model can be combined with the NICE framework, a mnemonic referring to Novelty, Lock-in, Complementarities and Efficiency, considered as the four value-generating dimensions of a business model [2].

The main reasons to adopt this methodology are:

- Differentiation
- Offers a 'birds eye' perspective about the business structure
- Centred on the Value Proposition
- Allows thinking outside the box

Figure 13.1 shows a useful model named Business Model Canvas [3]. The central idea of this model is to allow a business to be fully viewed on a single page. An important aspect of this model is the visualization through a drawing, and not only by text. This means that by looking at the diagram, it is possible to quickly understand all the blocks and make comparisons and relationships between them.

The central dimension is the value proposition consisting on a statement about what customers get from buying your product. By other words, the value proposition is how companies differentiate themselves from competitors. Then, on the right side of the model, the decision-maker writes the activities need to reach the market and on the right side the resources, partnerships and organizational activities that support the value proposition. The lower part consists on budgeting.

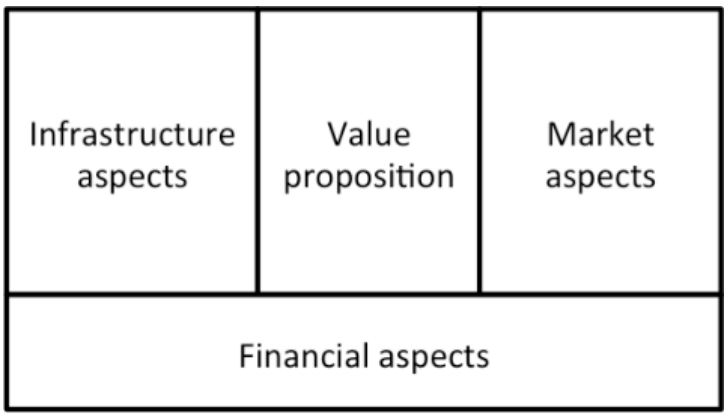

Figure 13.1: Simplified Business Model Canvas

The central dimension is the value proposition consisting on a statement about what customers get from buying your product. By other words, the value proposition is how companies differentiate themselves from competitors. Then, on the right side of the model, the decision-maker writes the activities need to reach the market and on the right side the resources, partnerships and organizational activities that support the value proposition. The lower part consists on budgeting.

Considering the definition of the value proposition, a UBH site touristic plan must think about the differentiation arguments. The development of the type of tourism, which we could define creative, is the result of an evolution in cultural tourism, with visitors seeking more participatory experiences in which they become active players [4]. However, since we live in a context where competitive parity is too common, the cultural heritage tends to become commoditized into experience modules in the form of museums, festivals, or city tours [5]. Similar tourist product portfolios will not easily distinguish one destination from another. As such, creativity is one path to differentiation, and has become one of the essential elements for the transformation of traditional cultural tourism into creative tourism.

Creative tourism can be defined as the travel directed toward an engaged and authentic experience, with participative learning in the arts, heritage, or special character of a place. It provides a connection with those who reside in a specific place and create a living culture [6]. As such, it allows visitors to develop their creative potential through active participation in learning experiences associated to

the place where they are undertaken [7]. The key assumptions of creative tourism are:

- Has to do with creativity, local culture, co-creation with local people
- Active consumption of places and active participation, authentic experiences
- Traditional cultural tourism is required to re-invent itself to fulfil the needs of tourists who are searching for a more meaningful experience.

On this vein, the experience is at the core of creative tourism, changing the concept of the product, since the idea of a service with clear 'boundaries' turned into something blurred where the distinction between production and consumption is faded [8]. Together with things, artefacts, and physical amenities, the creative experiences incorporate a closer connection with individuals through the creativity process and experience [9].

The service providers represent another important dimension, since creative tourism usually requires the integration of several actors, acting in networks of value [10]. Providers, companies and tourists are involved in co-creating the tourism experience [5] [11]. As such, the higher the cooperation between actors the higher the value-networks representing a basis for competitive advantage for small firms [12].

The advantages of the application include:

i. The diversification of the tourist offer, which allows reaching different segments
ii. Increasing the offer for the low season
iii. Increasing visitor satisfaction through the co-creation of experiences
iv. Creation of a shared vision through a common narrative
v. Preservation and enhancement of intangible heritage

On this vein, several approaches to increase the experience value added can be considered:

i. Creativity in its relationship with the cultural and human elements of a particular place
ii. Differentiated experience should rely on the cultural environment of that specific place
iii. Possibility of creating experiences through the co-creation of innovative products, through a heritage and creative artistic conjugation.

However, the development of creative tourism projects is not easy. On the one hand, it is necessary to obtain the cooperation of several local actors, some of them with conflicting goals [11]. On the other hand, this type of tourism requires the acquisition of skills (market orientation, communication, and marketing, among others) not always available in this set of actors and entrepreneurs [13]. A third difficulty is linked to the mind-set change. Stamboulis and Skayannis [14] posit that "(e)xperience has always existed in destinations. It was considered however as context rather than content. It was taken for granted - a by-product - rather than innovated (created and developed)" [14, p. 39].

13.2. Final considerations

The use of the Canvas model to structure a business model is very frequent. It is a simple tool, but one that supports decision making and above all reflects on how to create value for the client and avoid falling into the fallacy of homogenization of services and experiences provided by the site of heritage.

Creative tourism is a proposal to be considered in this reflection since it promotes the creativity of both the participant and the hosts. The development of the person through participation in activities that tend to be tailor-made allows increasing the level of satisfaction of visitors. At the same time, this co-creation of experiences works as a feedback mechanism, perceiving more precisely the needs to be satisfied.

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CHAPTER 14

Planning the invisible

The sustainable use of the underground spaces and places

Pietro Elisei

14.1. Introduction

The underground instinctively refers to the indefinite, the dark side of things and facts. It is the opposition to light that is life, certainty, evidence of forms, vital energy. Under the ground a domain of mystery opens up, because perception weakens, the light disappears or dwindles and everything fades, but precisely this absence of contours unlocks the field to the imagination. Underground can express what it is not conveyed in the light of the sun, where people conform, where we live *cum forma*, since the form itself emanates from the light. But underground is not only an escape from the mainstream of the visible, from what is accepted and permitted, but it is also shelter, a protection. Caves and hypogea are the first places of daily life, but also of the cult of the dead for primitive men and ancient cultures. In the fields of urban studies and city planning, underground construction and use is an important component to consider for the development for the economy of cities.

Underground buildings, in the contemporary city, can be of different typological categories:

- designed as a service infrastructure (e.g. parking, parks, malls…) built under a square, under train stations, a newly built building
- a space built in the past for other scopes and recovered in the present for new functions (productive or leisure)
- a space recognized as cultural heritage that becomes an occasion for economic development linked to tourist flows
- spaces built in the recent past and now abandoned (e.g. bunkers, train stations…),
- cultural heritages recovered and not accessible.

In short, the underground offers many possibilities to contemporary cities. Above all in discovering and enhancing it, as planners or as economic operators, we realize how much it is a set of places that, approached with due creativity, define a

set of resources that can feed sustainable and socially innovative development models. For several reasons, underground constructions have accompanied human history since its beginnings and continue to offer solutions and opportunities for the development of cities.

14.2. **Building & designing underground**

While water and transportation tunnels were a part of Greek and Roman cities, the first recorded city planning concept involving underground space use known to the authors is the concept developed by Leonardo da Vinci in 1488 [1]. Leonardo's scholars highlight his commitment to drawing up a plan for "His ideal city", geometrically organised with a system of underground channels that become an efficient sewerage system to solve the problem of house drains, but also canals navigable by boats intended for supplies, to solve the problem of surface traffic [2].

Leonardo's ideal city would have featured lower and upper areas – the lower being canals for trade and sewage removal and the upper being the living space for the elite with the goal that what is good looking has to be seen on the surface of the city [3].

The birth of modern urban planning is accompanied by significant investments in underground, and the cities to which to see are those that still have a global relevance in Europe, namely London and Paris. In 1843, thanks to the ingenious inventions for the underground excavations of the French engineer Marc Brunel, a pedestrian tunnel was inaugurated in London under the Thames [4].

A new era was opening for urban mobility, and in a few years (1863) the London Underground would be inaugurated. After London, several cities decided to build subways, as in New York, Chicago, Glasgow, Budapest, Paris. Not even half a century later there was talk of congestion and disorder in the use of the subsoil, and it is precisely a French urban planner, Eugène Hénard, who in the early 1900s begins to structure conceptually, and operationally. as it designs and creates various public works for the city of Paris, the use of the subsoil. Among other innovations he proposed, in his Études sur les transformations de Paris, multi-level crossroads, train tracks and metro lines and elevators [5] (Fig. 14.1).

From the second half of the 19th century the great European capitals try to solve the problems of congestion by developing underground infrastructure systems, many of the works of this period still have a critical importance for contemporary cities. The development of road furniture and private cars led to the need, towards the middle of the twentieth century, to build huge underground car parks. It is wort remembering that in 1941 the world's first underground parking structure was built under Union Square, in San Francisco [6]. This was possible thanks to a land lease under a public space awarded to a private corporation. Another urban planner in 1957, Vincent Ponte, is the one who initiated and d and planned the Montreal Underground City [7]. Ponte envisioned a new concept for that city, which he called "the multi-level, interconnected city".

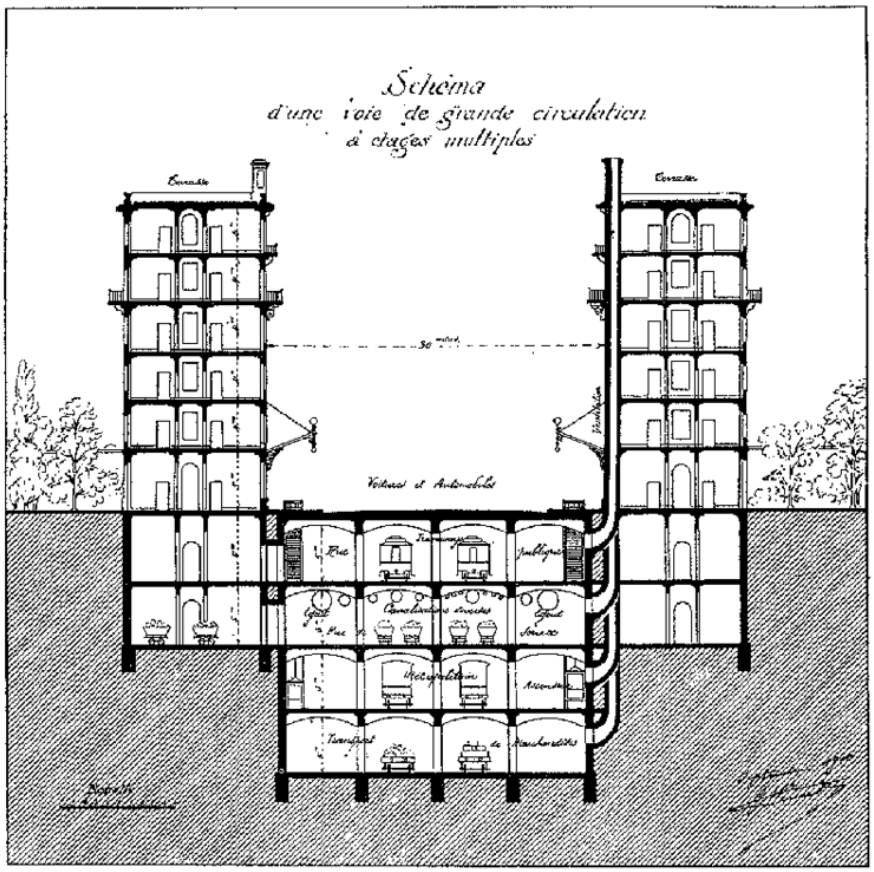

Figure 14.1: Eugène Hénard, sketches for multi-layered mobility infrastructures
Source: Alchetron [5]

The contemporaneous idea of working or living in the underground elicits a negative (emotional) reaction. Negative associations with underground space generally include:

- Darkness combined with humid, stale air, and no sunlight
- Among the most powerful associations (emotions) are those related to death and burial or fear of entrapment from structural collapse
- Other negative associations (fears) arise in relation to feeling lost or disoriented, as normal reference points such as the ground, sky, sun, and adjacent objects and spaces cannot be seen
- Also, with no direct view of the outdoors there may be a loss of connection with the natural world and no stimulation from the variety of changing weather conditions and sunlight.

The generally negative perception of the underground space has forced designers and researchers to attempt to overcome it, trying to make the subsurface spaces

more attractive [8]. Developing underground projects not only requires an effort of creativity in thinking about spaces and functions, but also entails considerable engineering preparation and knowledge of advanced technologies. Despite this degree of difficulty in dealing with underground spaces, there are truly projects worthy of being realised, but also replicated.

A contemporary project worth mentioning is, without a doubt, the *NY Lowline* [9]. It is a nature-based solution that wants to increase the green surfaces present in the city, with new green surfaces located below ground level. To that scope, *NY Lowline* develops a plan for using innovative solar technology to illuminate an historic trolley terminal on the Lower East Side of New York City (Fig. 14.2). The location is the one-acre former Williamsburg Bridge Trolley Terminal on the Lower East Side of Manhattan. The site was opened in 1908 for trolley passengers but has been unused since 1948 when trolley service was terminated. This hidden historic site is showing how to reclaim unused space for public good. It is worth underlying as this project is supported by a community action, in fact there is a CAB (Community Advisory Board) where members assist by disseminating information on *NY Lowline* related updates and events, as well as by attending quarterly meetings to provide feedback and community related updates.

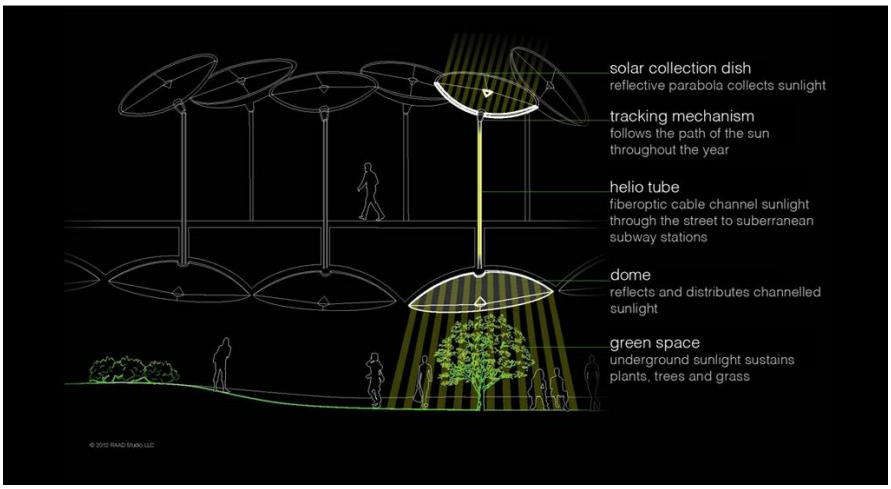

Figure 14.2: NY Lowline, parabolic collectors creating remote sky light [9]

Alongside creative solutions, which combine unconventional design themes, such as NBS and underground planning, it is worth thinking about the design of living. In fact, underground planning offers many intriguing solutions as regards the housing dimension (Fig. 14.3).

The advantages of this type of housing are above all in being safe and respecting the harshest weather phenomena [10]. They have the advantage of defining symbiotic relationships with the environment and the surrounding landscape (they save energy on summer cooling and winter heating cycles), they are more resistant and therefore have greater safety in the face of seismic phenomena. If well designed, they have no lighting or air circulation problems, they can also be built on land that

is not perfectly flat, indeed, as you can see in Fig. 14.3, often a steep land can be more advantageous for this type of house. Obviously, as with all other forms of houses, it must please those who want to live in it, because we are clearly not talking about a classic house, but about a different way of living and relating to nature and construction types. Finally, underground buildings do not need many exterior facades and finishes which help to control the budget of the buildings. Additionally, the energy consumption and repair for the surfaces can be much less in the long-term run. Sometimes the underground buildings can solve specific problems of the local environment. For instance, in Japan the underground houses are remarkable safe during the earthquakes [11].

Fig 8 - Ground floor

Fig 9 - Underground house with atrium

Fig 10 - Underground house with a free facade

Fig 11- House with two facades inexpensive

Fig 12- Combined House

Figure 14.3: Designing Housing Underground [10]

14.3. **Underground planning: Sustainability, Resilience, and Urban Planning "laws and codes"**

Starting from the previous example of underground housing constructions, we realize how these unconventional spaces open horizons of reflection in the fields of sustainability and resilience. Starting from the previous example of underground housing constructions, we realise how these unconventional spaces open horizons

of reflection in the fields of sustainability and resilience. However, since these spaces are unconventional, at the same time, they open many questions on how to integrate them, not only spatially, but also on how to manage them through planning tools, and finally contextualise them in the production logics that intervene on an urban scale. First, the relationship between conventional public and private spaces and underground ones must be weighed, and how the latter undermine some logic of land use management plans, which think about surface functions [12].

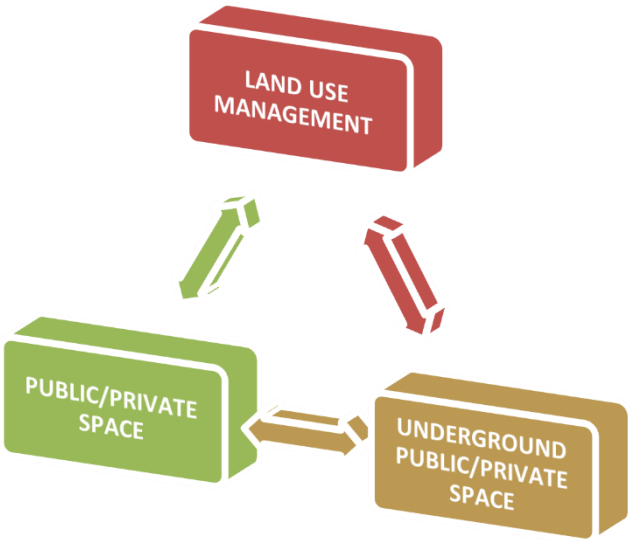

Figure 14.4: Relationship among underground, public/private space, and land use management

Another fundamental element is the planning of the transition spaces between surface and underground [13], here too we find ourselves in a hybrid area that requires particular attention in identifying functions and tools for the sustainable and effective management of these transition spaces. The underground space, whatever its use, must be integrated into the overall urban fabric in terms of visibility and accessibility.

While, generally, at the surface all the in-between building spaces are public and all open spaces are public by definition, in the sub-surface level the public space has to be purposely constructed.

Under both legal systems (Common law and Civil law) two legal principles prevail in terms of landownership:

1. *Superficies solo cedit:* Roman principle of law, implying that whoever owns the land does not owns what is placed above/below the soil
2. *Cuius est solum, eius est usque ad coelum et ad inferos*: Medieval principle of law, realising that whoever owns the soil, holds title all

the way up to the heavens and down to the depths of the earth. If applied to modern society, it would imply issues, in terms, for example, of air rights.

3. In Greek-Hellenistic law, however, it happened that the owner of a land ceded the right to build on the surface to another subject. The institution of the surface right was transposed by Justinian law, and later also by Italian law. Clearly, Hellenistic law did not know the *Superficies solo cedit* principle and, therefore, admitted that property could be divided into horizontal planes.

Additionally, if we focus on buildings, the Building codes are mostly not developed with specific underground space use in mind. This often leads to the application of generic rules that apply to buildings (basements), especially in case of fire and life safety.

Specific building codes, for instance, have been applied in:

- Australia, where many underground dwellings have been constructed for mining community
- Greece, where they prohibit building beneath a certain depth in account of the many archaeological artefacts contained beneath the surface.

And finally, the most important element concerning the decision-making processes for urban development must be considered: governance. The jurisdiction to which the underground development is subjected to is still an open question. At the subsurface level:

What is deemed to be part of the municipal jurisdiction, regional jurisdiction and national jurisdiction?

The exploitation of the subsurface requires planning and a decision-making framework to achieve the delicate balancing:

- Between exploitation and preservation
- Between the key four resources to consider in case of exploitation (water, space, geo-energy, geomaterials).

Other two critical questions must be considered:

- Who decides which "resource" is the dominant one?
- Which are the priorities for the involved communities?

Uncontrolled exploitation can lead to damages, as for North-East of the Netherlands where long-term extraction of natural gas has resulted in man induced earthquakes threatening whole communities [14].

Finally, is it sustainable to build underground?

It depends! Surely there are advantages from an environmental point of view, but doubts remain about other forms of sustainability. In particular, there are:

- Many uncertainties as to who has expertise on tools and standards (a classic governance problem that could slow down the design and construction process)

- Uncertainties about property rights, but also
- A grey area in relating the new functions with those that have been foreseen on the surface by the regulatory plans (the classic land use plans).

Obviously, they are not insurmountable obstacles, but they must be faced and regulated, or in the case of investment in the underground, the planning and implementation processes must be well thought out and organized together with the various actors who have, or who could have, regulatory jurisdiction. The resilience of these buildings also looks good, an old station can become a park (NY), an old bunker can become an underground garden for urban agriculture (London), ancient catacombs can generate new forms of business in neighbourhoods to be regenerated (Napoli). Certainly, with a creative attitude, these spaces can be reused by adapting, changing their original functions showing a remarkable ability to respond to tangible and intangible changes that occur on the urban scale.

14.4. **Final remarks**

Surely the infrastructures, buildings, houses, and all related services located underground will continue to accompany contemporary and future urban transformations and economies. Undoubtedly, there is a need to think of urban planning tools (regulatory and strategic) that regulate, or favour the development, of this component for the sustainable development of the city. In providing and designing such tools, some key principles must be kept in mind:

- Pedestrians, the downtown employees, students, the elderly & handicapped persons must be placed at the centre of the planning effort
- Maintenance of a good balance between the three key functions inside underground spaces, namely: commercial; transportation; and social, including indoor public spaces and street furniture
- Design of spaces guided by standards and regulations (safety measures, regulations of opening and closing hours, signage system to improve the spatial readability etc.)
- Good and clear management (who amongst the public & private stakeholders is responsible for what in the underground?).

The underground space can contribute to the City Resilience Framework through:

- Providing and enhancing protective natural and man-made assets that reduce the physical vulnerability of city systems (wetlands, sand dunes, sea walls, levees etc.)
- Ensuring continuity of critical services. The underground space can compensate the lack or the insufficient capacity of urban drainage systems in the city
- Providing reliable communication and mobility. Evident benefits of the use of subsurface spaces for these purposes (Mass rapid transport systems in many European capitals), and for communications.

Finally, to achieve a sustainable and optimal development of underground space:

- A spatial dialogue is required involving decision-makers, policymakers, urban planners, urban designers, architects, developers, engineers, and public stakeholders
- The development of the subsurface requires regulation and management during its implementation
- A comprehensive decision-making framework is required to achieve a balance between exploitation and preservation of the subsurface
- In case of exploitation, a further balance needs to be struck between the four subsurface resources.

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CHAPTER 15

Co-creation and inclusiveness of public spaces with UBH

Case Studies from UK and Greece

Tatiana Ruchinskaya

15.1. Introduction[1]

Cultural heritage is considered as an instrument of sustainable development [1], [2]. Multiple heritage resources are considered as resource for the socio-economic development of any region [3]. In particular, cultural heritage provides economic benefits in terms of regeneration, jobs, businesses and economic growth, and local benefits such as liveability and a safer environment. It also fosters social benefits such as local pride, increased community spirit, social capital, and social cohesion in communities, providing a framework for participation and encouraging integration [4]. Cultural heritage gives a sense of personal identity, improve personal experiences and make a connection with the community on emotional and intellectual levels. That is why a modern emphasis is moving towards sustainable valorisation of the heritage assets and this chapter provides the opinion that valorisation of public places with Underground Built Heritage (UBH) should focus on the need of the community and capitalise on the social functions of the place, with inclusiveness as a main function.

15.2. Social construction of public places with UBH

There is evidence of social construction of public places with heritage, referring to the active process of connecting communities and relating them to locations to make the locations meaningful for their lives [5]. Layers of meanings and values in historic cities, deposited over time by different communities under different contexts are embedded in public places with heritage [6]. Intangible knowledge pervades our lives such as personal connections, culturally driven relations and expectations and awareness of the history of cities [7]. Each community, through its collective memory and knowledge of the past, is responsible for identifying the best way to preserve its heritage assets. Rediscovering the intangible and tangible elements of the heritage builds community's sense of belonging and cultural identity [8]. The inclusion of historical values and meanings in regeneration schemes encourages a sustainable change [9].

In this framework, the inclusiveness of public places with heritage is expressed through its collective and individual appropriation [10]. It includes the direct participation of everyone in all the decision-making phases about public place. Involving all stakeholders in the development and implementation of the integrated strategy contributes to social inclusion, reflecting peoples' needs and reinforcing the sense of ownership. The local community becomes more aware of its own culture and of the new meanings given to places and landscapes. Locals become involved in government of the place, in design of policies affecting their lives and management of their environment.

Social inclusion contributes to participatory democracy of public places in their design, use and management[2]. It is defined "as the process of improving the terms of participation in society, particularly for people who are disadvantaged, through enhancing opportunities, access to resources, voice and respect for rights" [11]. It involves prioritising needs of a community and its groups and providing opportunities for all to participate as full members of society.

Social participation is defined as "social activities associated with social roles" (e.g. family, community) [12]. Public participation is one of the indicators of social participation [13]. It is defined as a "two-way communication and collaborative problem solving, with the goal of achieving better and more acceptable decisions" [14]. Community engagement is a dimension of public participation and "a process of inclusive participation which supports mutual respect of values, strategies, and actions to address issues affecting the well-being of the community" [15].

15.3. Key aspects of the co-creation process

The co-creation process, as an 'act of collective creativity', can be used as a tool for public places' valorisation [16]. It contributes to creating inclusive and successful public places with heritage, which encourages innovation, which are responsive, flexible, convenient, enjoyable, offer choices, and acknowledge diversity and difference [17]. All these features make the co-creation process a measure of social sustainability and contribute to sustainable change in the area [18].

Public spaces' co-creation is a way to increase opportunities for citizen engagement, involving a wider range of stakeholders, who have an influence on the decision-making process and produce new ideas capitalising on collective creativity [19]. It is a special type of collaboration, where people are working or acting jointly with others to create something that is not known in advance. "Co-creation is an act of collective creativity" [16]. It is a process of "an active flow of information and ideas between all sectors of society" [20].

Initially, the term co-creation was used as a form of economic innovation strategy. It was defined as part of a product development and business strategy as "the joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit their need [21]. Co-creation approach in the business environment aims to increase commercial competitiveness and consumption, but in the urban planning co-creation contributes to the social life of urban spaces and to urban justice.

It is notable that co-creation tasks are universal for any type of activities including urban planning. They include preparation, understanding of urban reality, generation of ideas, refinement of ideas, creation of new values, delivery, and monitoring [22].

Co-creation supports citizen inclusion in the method, process, and final product. It is a creative and proactive process providing contextual and unique solutions. It emphasises that it is a joint development, generation, production and creation of new proposals, based on specific, local and personal knowledge and skills [23]. It produces a user-driven innovation in public spaces and creates a new public value [24].

Co-creation is an inclusive and collaborative process, accessible to all and equally addressing different stakeholders [25]. It incorporates a variety of principles, methods and tools to encourage and support the participation and transforms stakeholders from 'passive audiences' to 'active players', where all participants have an influence on decision making process and produce new ideas capitalising on collective creativity at each stage of the co-creation from identification of the problem to implementation of results and managing outcomes [21]. Collective creativity is based on experiences of groups and individuals, and always begins with understanding user needs, in sharing initial ideas and in framing what are the expected outcomes of the work.

15.4. Case studies demonstrating how co-creation tool is used in the public places with UBH

15.4.1. *Case Study 1: Stabilisation of underground mine at Combe Down, Bath, UK (1999-2010)*

Two centuries of mining Bath limestone in Somerset (UK) left a huge underground void beneath the village of Combe Down, a major suburban area of Bath, populated with houses, schools, business premises, a major highway, and an associated network of roads. Since 1731, high quality stone was extracted from large deposits below Combe Down. In the mid-1800s mines were abandoned. In 1999, it was discovered that the roof and pillars of the old mines were collapsing. The threatened area was estimated to be 25.608 ha. It included over 600 houses and infrastructure. This area is part of the Bath Conservation Area and the World Heritage Site and has dozens of listed buildings.

The project task was to mitigate the potential risk of such collapse for citizens' life and property in a manner that also accommodated major environmental, heritage and social factors. The project was completed in 2010. The remarkable success of the project was largely due to the extensive partnerships and the involvement of the local community, which had an influence on all project decisions [26].

There were over 50 stakeholders, including the local community, Environment Agency, Natural England, English Heritage, Wessex Water and Local Planning Authority. In many cases, the interests of the one party were incompatible with the others. For example, English Heritage initially sought a stabilisation solution that left the mine galleries open. Natural England wanted to protect native Bats spe-

cies, which were living in mines and to have open galleries. However, this conflicted with the residents and insurers, who were looking for a complete infilling solution to secure houses.

The Combe Down Stone Mines Community Association was set up as a company to manage all stakeholders' expectations. The aims of the Community Association were:

- Successful stabilisation and removing risks
- Removal of mortgage and house/premises insurance restrictions due to a potential mine collapse
- Avoidance of contamination
- Protection of heritage, water outflow, bats, and other fauna.

Communication, dialogue and interactions with local community and stakeholders were ensured by group meetings, workshops, public art project and fundraising activities (local rugby club and local businesses). To give extensive information and to solicit views, the Community created a website and set up a Project Information Centre.

In the early stages of the project, there was the ambition to stabilise some areas of the mine with sand, to allow future generations to excavate and explore these areas. Community-based decision was to use a low-density foamed concrete. It reduced the materials quantities and so the number of vehicle deliveries to the site, which reduced impacts on the local neighbourhood. The Environment Agency regarded the infilling material as safe and residents' perception issues, associated with waste, potential contamination risks or liabilities, were avoided. Special conditions imposed by the Association of British Insurers or the mortgage industry were removed from the properties.

As a result, the local area returned to its original condition and Grade II listed buildings have been protected from future collapse. A tunnel was constructed to transfer bats to nearby mines that were not beneath houses. Stabilisation of the mine has not compromised the integrity of the local drinking water source nor adversely affected the surrounding water table–interests.

15.4.2. ***Case Study 2: Philippi Park. Kavala. Greece***

Philippi Park is an ongoing project at the stage of refining ideas. It is carried out by non-profit organisation. Its aim is to regenerate cultural and natural landscape of Philippi-Amphipolis area in the prefectures of Kavala, Drama and Serres, to strengthen economic activities and improve social inclusion of the area. The project capitalises on the existing natural resources of the area and its cultural assets. It has four directions, which include culture, community, tourism, and agro-environment.

The area has a potential to become a popular tourist destination in Greece, with the UNESCO World Heritage archaeological site of Philippi. The site is well known for its Roman theatre and the archaeological sites. In the village of Lydia, Apostle Paul baptized the first Christians of Europe. The area has numerous caves and ancient tomb of 4 century BC in Amphipolis. The area is also known as the

place of the famous Battle of Philippi, between the forces of Mark Antony and Octavian and the leaders of Julius Caesar's assassination, Brutus and Cassius in 42 BC.

Different community groups are living in this area including Greeks, Pontians, Muslim minorities and Bulgarians. Few communities are associated with the settlements (e.g. Amegdaleonas – Pontian settlement) and villages, which are competing with each other.

To understand urban reality and generate some ideas, a variety of community activities were conducted. It included Philippi theatre Festival, bicycle marathon Brevit 2018, educational workshops for farmers, games for the children, excursions, a marathon following the root of St Paul 2018, mapping activities of ancient Egnatia, and educational programs on history of Philippi.

15.4.3. *The particularities of using universal co-creation process in public places with UBH, drawn from the case studies*

Case studies demonstrated that co-creation in public spaces with UBH has its mission to focus on the needs of the community and empower the public to act on their own interests, providing it with educational, participatory, and research opportunities. During the case studies, a few particularities in "what was co-created" and "how it was co-created" were revealed. A distinction was made between co-created value (Case Study 1) and co-created knowledge (Case Study 2). In the Case Study 1, values of different stakeholders in the beginning of the project were not aligned with the values of the community economic survival. Thus, the knowledge on UBH was co-created first, in order to find risks and propose different options of stabilisation, before co-creating the final value (type of stabilisation). This knowledge helped to provide the framework to develop a program, which directly addresses needs of all stakeholders including a non-specialist community.

Furthermore, for residents, the site history contributed to a sense of belonging of a community and become an essential component of the local identity. The knowledge about UBH was collected at the beginning of the co-creation process, by understanding contexts, increasing participation, and creating a collaborative network of decision makers, professionals, activists and communities [27]. Heritage connections and storytelling of community history, in Case Study 2, were effective ways to increase community engagement, participation and involvement of small community groups.

It was discovered that professionals (including historians, conservationists, archaeologists, etc.) did not always serve as organizers but they were supporters who provided information to other forms of knowledge [28]. It was a process of 'decentralising' the authority of academics and professionals, by engaging groups beyond the professional community, as a means of incorporating the public into the project [29].

Sharing power with the community to plan, execute, analyse, interpret and present research required to recruit and train the public to participate in gathering input, providing support for local agendas, and assistance in community engagement

events [30]. At the same time, there was a need to engage professional stakeholders because some work could not be done by lower-level or hired "outreach" people [31].

In both case studies, community dialogue was conducted through the agent (Local Authority, Community Association, or non-profit organization) and proved to be successful to manage expectations of all stakeholders.

15.4.4. *Inclusion in case studies' co-creation processes*

In Both case studies show that the inclusive opportunities were facilitated by employing co-creation practices. The inclusiveness in both projects was implemented through collective creativity on each stage of co-creation from the identification of the problem (Case Study 2) to the implementation of results (Case Study 1). Both projects provided people with equal opportunities to be engaged in the decision-making, where everyone could be creative and contribute.

Collective creativity was based on experiences of groups and individuals, and co-creation process was open, responsive, and flexible for sharing, deciding, developing, and doing things. Furthermore, supporting tools and methodologies were shared among stakeholders for information and ideas, encouraging mutual development of knowledge and skills. Integration of all available resources made co-creation process adaptable. Flexibility of co-creation process was achieved by integrating different stakeholders' knowledge and understanding that, what was created, could be changed. Creative processes and decision-making were transparent, so that power was shared between stakeholders. Participants trusted each other, felt confident about the aims, issues, and process development, and saw the evidence that their views had been considered. In the Case Study 1, the co-creation process included collaborative feedback and sharing risks.

The diversity of stakeholders provided different perspectives on UBH. Combination of engagement modes made co-creation processes more inclusive and accessible. Inclusive strategies for engaging hard-to-reach stakeholders (e.g. local minorities, migrants in Case Study 2) were introduced, with individuals and groups involved in the process through workshops, festivals, sport events, user generated contents, digital forms of data collection, prototyping, or other activities to get them engaged around the urban problem.

15.4.5. *Challenges of case studies' co-creation processes*

Case studies showed that co-creation had a significant challenge in terms of activities, time, space, and costs required to engage stakeholder groups successfully, and to create accessible representations for participation and engagement. Interactivity, connectivity, and transparency of decision-making processes were sometimes a challenge, because they required processing complex information and large amounts of data to make them accessible to all stakeholders. Often, a large space was required to display co-creation results.

At times, it was difficult to involve a diverse group of people with different expectations regarding pace, style of work and timelines. In particular, it was hard to involve young people (Case Study 1) and people from local minorities (Case Study 2) and in small groups it was difficult to have a complete representation of

all stakeholder's interests. Developing innovative ways to engage hard-to-reach stakeholders were costly in terms of time and funds.

The difference between experts and public, between scholarly knowledge and informal knowledge also created some boundaries between stakeholders. Workshops were dominated by articulate and confident individuals.

Experienced facilitators with management, communication skills and the knowledge of collaboration and community building practices were required. Financial management of a project was another challenge because financial sustainability and self-funding was considered (Case Study 2).

15.5. Contribution of digital tools to overcome some challenges of co-creation

In the process of co-creation of public spaces with UBH, ICT can be a useful tool to overcome some challenges of the co-creation process and facilitate its inclusiveness. In particular, digital tools are able to provide logistics to the co-creation process and can have specific designs for different stages of co-creation. They can facilitate a cost and time effective data collection, understanding, deciphering, and analysing urban issues.

Digital tools can also encourage communication through social networks. They can assist in including a larger number of people and targeting 'hard to reach groups' to develop a common vision. They can offer a most convenient time and place for people to participate and provide different forms of participation. They can also facilitate spreading of new skills and knowledge, enhancing collaboration between projects and initiatives, making decision-making processes more transparent and improving the evaluation of results of co-creation.

Digital tools can connect people, places, and local history. They can provide opportunities where people can appreciate different landmarks, access official and social contents, while they are physically located at sites. At the same time, they can support access to public places and create information without physically visiting sites. Digital tools can produce digital communities, where tools are used strategically to engage audiences with physical heritage by providing interactive cultural experiences [32]. They can create additional layers of local history and encourage identification and promotion of intangible heritage values.

15.6. Conclusions

Valorisation of the public places with heritage should focus on a need of the local community and capitalise on the social functions and heritage values of the public places. Inclusiveness of the public places is considered as one of the main social functions of the public places with UBH. It is expressed through a collective and individual appropriation of the public places. Inclusive opportunities in the public places with heritage can be facilitated by employing co-creation practices. Co-creation process aims to create new public values and contributes to more in-

clusive decision-making processes, bringing new voices and issues into the public arena, and building a stronger sense of community ownership in the public place.

Case studies from UK and Greece were used to explore particularities of co-creation in public places with UBH, by analysing 'what was co-created' and 'how it was co-created'.

Co-creation in public places with UBH had its mission to focus on the needs of the community and empower the public to act on their own interests, providing it with educational, participatory and research opportunities. A distinction was made between co-created value and co-created knowledge. As such the knowledge about UBH had to be co-created before the final value when the needs of different stakeholders in the beginning of the project are not aligned with the needs of community economic survival. The knowledge about UBH helped to provide the framework to develop a program that directly addressed the need of non-specialist community. Heritage connection and storytelling of community history, in Case Study 2 from Greece, were effective ways to increase community engagement and participation.

Sharing power with community to plan, execute, analyse, interpret, and present research required to recruit and train the public to participate in gathering input. At the same time, there was a need to engage professionals because some work could not be done by lower-level or hired "outreach" people. The community dialogue was conducted through local agents and proved to be successful to manage expectations of all stakeholders.

Case studies shown that the inclusive opportunities were facilitated by employing co-creation practices through collective creativity on each stage of co-creation from identification of problems to implementation of results. The inclusive co-creation process encompassed collaboration, empowerment, interactivity, connectivity, equality, accessibility, efficiency, convenience, and flexibility. Co-creation was a significant challenge in terms of activities, time, space, and costs required to engage stakeholder groups and to create accessible representations for participation and engagement. It is proposed that digital tools are useful to overcome some challenges of co-creation, connecting people, places, and local history

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NOTES

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CHAPTER 16

Informal Planning Approaches in Activating Underground Built Heritage

Carlos Smaniotto Costa

16.1. Introduction

Urban development, landscape and nature protection, and heritage preservation are issues of immediate concern to us all - and for all these issues the question of sustainability is crucial. Sectoral planning models are largely ineffective for an integrative purpose. Studies across multiple disciplines put in evidence that a broad consensus around the immediate benefits and the potential of interdisciplinarity can help to inform and justify decision-making. Although the disciplines have different objectives and use different methodologies, which can generate different meanings [1], they cross-fertilise each other. A better understanding of the dialogic processes of interaction with or within them may be more sustainable, if we consider that innovation is increasingly being made at the intersection of disciplines.

In landscape architecture and urban design, crossing the disciplinary boarders and scales is paramount when research interests are spatial transformation of urban spaces - in particular of ecological systems and open public spaces; places spotting nature in cities and where the public life takes place. Both disciplines face a greater challenge when heritage issues are introduced - producing a unique situation, as in many cases Underground Build Heritage (UBH) is not yet a valued asset. In the nexus of landscape, urban fabric, and heritage, scientists must cross disciplines and integrate understanding of complex processes to further advance knowledge. This is especially true for UBH activation, in the sense of managing its transformation from a hidden/forgotten place to a valued asset, as it raises the challenge how to design and drive the transition. Such transformation requires in turn a reflection on suitable approaches to initiate and establish a stable take-off process, one that is simple, effective, flexible, and open to accommodate correctional changes. Simple identification of key challenges in historic sites conservation and landscape elements in urban settlements safeguard is not enough: In the search for solutions, there is an increasing call for encouraging community engagement.

Tackling such goal makes the call to understand heritage, society, ecosystems, and landscapes in a holistic way, and to develop inventive interdisciplinary ap-

proaches, along with enlarging networks of sites and people. There are already recognised key approaches in place which have such characteristics and are additionally able to generate innovative outcomes. I refer to informal approaches, such as citizen science (which widely makes the use of local knowledge) [2] and co-creation (which actively engages the community in generating value) [3]. More than being buzzwords, these approaches have proved to be effective in placemaking [4], and placemaking is what one seeks when it comes to activating UBH. Making a place means transforming a space into a meaningful place by capitalising the local assets and the community - and this is the aim of this contribution, to address informal approaches that can be put in place to establish a take-off process and aid a sustainable development, also by considering digital advancements and culture change. Indeed, the top challenge to achieve sustainable goals is the management of changes, and informal planning approaches are useful to guide this transition.

16.2. **The tripod: citizen science + co-creation = placemaking**

Place is used in this chapter to mean the physical and social space, and considering UBH, a place also incorporates a heritage asset. In this conception, place (as a cultural asset) is defined as an intersection of multilayer networks, incorporating multiple channels and categories of connectivity (physical, human, social, formal, informal, etc.). A cultural heritage asset is a public realm only to the extent that it offers a high density of acquaintanceship, exposure to diverse cultural experiences and enables appropriation. Associated to public realm is the social value, the amalgamation of the physical place with and in which people's interaction take place. This also encompass the different meanings people attaches to place. This makes the call to address a number of issues that are of central concern to the maintenance and activation of public goods, along with concern with the relationship between the production and appropriation of place. This implies heeding the call to innovatively and creatively generate experiences and knowledge. With this in mind, I use a math equation to illustrate this thought - adding the active engagement of the local community with local knowledge results in better places. Since the factors and levels of interaction are amenable to change, the results are the strongest evidence that such local involvement may be regarded as enhancing public realm benefits.

In a nutshell, citizen science is when the concerned community is involved in research; it is when the public participation is a relevant part of the scientific research. It is a way of sharing insights and experiences, enriching the results, and with significant benefits to society, policy-making, and (academic) research areas. Citizen science become one of the fundamental pillars of the political and scientific agenda of the EU Research programme Horizon 2020 [5], due to the potential benefits for European researchers and competitiveness. Citizen science is therefore related to local knowledge and practice, as it is a community that creates, develops, holds, or preserves the knowledge. Local knowledge and familiarity with the space/territory are critical factors in the effective and comprehensive understanding of the needs of the groups affected by spatial/heritage development. Lay locals un-

derstand the real needs of their communities and suggest local and realistic approaches. They usually know the major stakeholders and have experience in understanding the interests of people of different backgrounds [2].

Co-creation, according to scholars [3] [4] [5] [6] [7], made the jump from business to public spaces and placemaking, as it incorporates the active engagement of the concerned stakeholders as co-creators of their own living environment. It is a way of generating and accumulating experimental knowledge. In spatial development, according to [3], co-creation is a specific type of collaboration where people come together to work with planners to jointly create solutions and or develop new ideas. It is an act of collective creativity. Co-creation process also involves the sharing of power with community as there is no single owner of the co-created outcome. Many different methods and tools for involving the community and for co-creation processes already exist, such as community mapping or living labs, the last largely operationalized within the COST Action 18110 - Underground4value.

The association of citizen science and co-creation initiatives to spatial issues seems to result in placemaking. Almost immediately upon *Projects of Public Spaces*' (PPS) [8] coining of the term, placemaking was a general term for participatory processes linked to a spatial attribute. As a bottom-up and community building approach, placemaking is also related to living labs, which has been heralded as the pathway to citizen engagement and to solve local issues [9]. Placemaking is gaining ground in recent years also because it builds on a growing concern about the quality of the urban fabric, and of public spaces. As advocated by PPS [8], placemaking is a collaborative process towards reshaping and reinventing the public realm, based on the interaction of people in and with a resource (i.e. space, asset, UBH, etc.) [10]. has already taught us that interaction with others may inspire greater appreciation of the place, and of other people and their culture. Being a process of creating places, where the physical, social, and mental dimensions become relevant [10], placemaking is interesting for activating UBH; it helps with 'tactical urbanism' [11] to initiate small scale community-led transformations. At this point, it might be useful to clarify that, "transformation" is not only related to changes in the physical space, but also to those related to the "soft" factors as attaching value and content, creating sense of identity and belonging, etc.

In the light of the above, placemaking, as an open-ended lab that allows different stakeholders to design, test and learn from interactions [6] and socio-technical innovation [12], opens possibilities for unforeseen or unknown outcomes which in turn spin off new knowledge and new ideas that start the process all over again. In this loop, the key factor is the stakeholder, whose role is growing significantly with the democratization of spatial development [13] and with the advancement of the digitization era [14]. The level of stakeholder engagement may range from minimal to extensive, often as a function of objectives pursued, timeframe, and available budget. At the lowest level, stakeholders participate as key informants, sharing perspectives, insights, and concerns. For placemaking, the use of local knowledge should not be restricted to the extraction of information or just applied because it is binding. Due to strong local coalitions and leaderships, local knowledge can also be a relevant part of the "making transition". Returning to the loop, it has also to be noted that first of all the engagement of stakeholders and establishing partnerships

make any process co-creative. Second, stakeholders can affect or be affected by co-creation, thus engagement initiatives are critical to success. All of this raises some questions around who to engage in the process, how to bring onboard the right people, how to convince people to participate and how to "discover" supportive drivers. Stakeholders engagement and the levels of involvement are an extremely important issue and should be dealt from the very beginning. To address this issue is however not an objective of this reflection. To this end [15] provide an interesting overview on the evolution of co-creation.

There is however another issue that must be considered when we search for informal planning approaches in activating UBH. It concerns the statutory or legal framework in which planning takes place, and the tools applied (i.e. land use plan, development plan, environmental impact assessment, etc.). Spatial and urban planning are a lengthy and settled process and, in this context, legislation has a pivotal role in determining the rationality and ground rules of administrative and governance practices [13]. In the analysis of formal and informal planning tools [16], he notes that the statutory design strategy should go hand in hand with an informal planning support, one that is more flexible, more people oriented (instead of aim-oriented), backed by negotiation and, in particular, tackling wicked issues in order to unlock hidden values, resources and potentials. The author thus clarifies the relation between informal and formal approaches, informal planning, or non-statutory plans, provides support and helps to find extraordinary solutions. They are often developed to encourage a certain direction for development or growth in a particular area or issue. More importantly, linking it with citizen science, co-creation and living labs would facilitate the delivery of more responsive places.

To be successful, the established institutional framework, standards and regulations are undoubtedly to be followed, even if they impose constraints upon innovative approaches, but from my experience they also open up possibilities to transform ideas generated through informal approaches into a binding outcome. The potential of informal approaches to be transformed into reality depends on their capacity to be translated into statutory planning tools. For the objectives of this chapter, we will focus our analysis on the benefits of both formal and informal planning. The formal is important for providing guidance, i.e. policies and strategies, planning briefs und planning documents. However, it has a long-term outlook and this, in the flip side, can turn planning to be unresponsive to the constantly changing societal demands.

Moreover, statutory planning is on the one side resource and time consuming, but in the other side, it becomes legally binding, having therefore more chances to be put in place. Overall, the complementarities between formal and informal approaches reinforce the idea that creativity becomes innovation if it is transformed into reality.

16.3. Places and Experience - the Projects Cyberparks and C3Places

This section presents findings from mixed-method research projects which explored use of public spaces and social connections. Understanding a place as a socio-spatial resource in an urban environment, is deeply connected to the experiences

and processes of appropriation, i.e. the way people make use of it and the interactions they do. A particular feature of this people-space relationship is that a place is a destiny, it is a spot to stay and to stroll, and where memory and representation are attached to [17], it is where social negotiation and tensions take place and one is simultaneously observer and observed, actor and spectator [18]. Since it is in the core of a community, it is overly sensitive both socially and politically and its success or failure depends on its capacity to be a place for all and catalyse changes. Its key social features make it also an ideal issue to be used as a means of empowering citizens, enabling them to get involved with the production of their environment. This involvement contributes to the creation of a territorial awareness, generating a reflection on the city and its social role [19]. The social values and conviviality situated in public spaces buttresses the Projects Cyberparks and C3Places, both devoted to benefit from the technology advancements and their increasing ubiquitousness in public space.

CyberParks (Fostering knowledge about the relationship between Information and Communication Technologies and Public Spaces)[20] was a pioneering project, as it increased the understanding on the effects of digital advances and interactive interfaces in public spaces, in particular the proliferation of broadband wireless Internet. Cyberparks coined the term cyberpark, "as a new type of urban landscape where nature and digital technology blend together to generate hybrid experiences and enhance the quality of life" [14]. The attributes of a cyberpark are defined by being readily accessible to the public through ubiquitous technologies used in sociable and sharable ways, where the virtual is made visible or augments the physical. Several publications present research findings and case materials (on testing and applying different methods and tools) that illustrate the benefits of the technologically enhanced public space, and the opportunities these developments, of mobile technology in particular, open for socio-spatial research.

One aspect is interesting in the context of UBH: Technology makes hybridity possible. The "hybrid" space - resulting from the amalgamation of physical and virtual spaces, enable fluid interactions which are constructed, deconstructed, and reconstructed anew [21], opening different und unlimited ways of appropriation and collaboration. As table 16.1 shows, there are already different technologies incorporated into the physical and social layers of a place. However, it is the benefit from technology that is crucial to induce users to transform an activity into a hybrid one. This means the penetration of technology into places must bring an added value (i.e. new outdoor experiences, new possibilities of use, new types of spaces), but it must be used very intelligently.

In this sense imagining public space through the lens of a third dimension opens the possibility of renegotiating the appropriation of spaces. The central challenge however remains how to make use of digital technologies to transform our cities into interactive landscapes, rather than just high-tech. In this spirit, the addition of technology to a place must make sense; it must bring an added value. And considering our subject here, informal approaches, ICT could encourage civic involvement

and the development of better social environments, supporting sustainability, responsibility and sharing knowledge about nature, people, and the city. This is even a prospect to provide a new stage for skills development. Media and communication technologies play a pivotal role in this process.

User technologically mediated activity

Cyberspace		Open Urban Space (OUS)
Cyberspace use	Hybrid space activities	Provision
Gaming / playing	Location-based play, playable city	Play devices, urban games that are using (at least partly) the real space – tasks linked to special places or elements
Meeting and communication	Meet in space, not necessarily synchronous	Post office infrastructure/benches (read only within a perimeter)
Creating, artistic expression	Virtual graffiti, online sound and music Interaction with the user Co-creation of place	ICT functions embedded in furniture, trees, lamp posts, touch screen painting displays (upload-able and local chalking), post office infrastructure as part of Internet of Things (IoT)
Learning and information	Gaining new knowledge, raising awareness, raising responsibility Helping to recognize the place, to orient, to read its functions Learning about the environment you are in at the moment and its history	Audiovisual displays - multifunctional elements, part of paving, walls, buildings... focusing the user's attention on particular elements Artistic interventions
Legibility - orientation	Navigation of both space and information	Way-marking, physical and conceptual structuring, GPS, etc.
Exercise, health, mental restoration	Group activity, individual activity	IoT, exercise infrastructure Support with measurement opportunities, competition possibilities, (bio-) monitoring for individual to be attracted to do exercise
Buying, acquire material goods, sharing Commercial opportunities	Delivery points, commons	IoT supporting pop up markets, local trade, yard sales – in space we may provide suitable locations – urban design guidelines?

Table 16.1: User technology and the mediated activity.
Source: CyberParks Archive, 2019

In summary, Cyberparks classified the benefits of technology in three different areas: a) for analysing a place; b) for enhancing people's experience in place; and c) for community engagement about place. The first aspect was an important issue in the project, as digital can enrich research and planning practice. The ability to enhance communication with (potential) users enabling creative interactions is a relevant aspect of digital technology. Three different digital tools were developed and widely tested in different cases[1].

In the project C3Places (Using ICT for co-creation of inclusive public places) [7] as the title suggests co-creation processes of public spaces are in the core of the activities. Living labs were organised in the four cases (Ghent, Lisbon, Milan, and Vilnius) to get insights, identify, and address the needs of different people on public spaces. The labs are created to generate intensive links between places and people due to its potential to inspire progressive placemaking. In Lisbon, labs were implemented to identify and address the spatial needs of adolescents and young adults (aged between 13 and 17) and develop valuable perspectives and insights into how public social space should function to be more sensitive to young people. Teenagers

are not considered in urban planning, being left out of decisions about the environment created around them, whist their needs should be in the heart of urban planning [22]. This was the motivation to venture into this study.

A major challenge is the incommensurate pace between research and its reflection in the use of spaces and city transformation. They move at different scales and at different velocities, making difficult to motivate teenagers to reflect about spaces they will hardly use as teenagers. Also, in this project a wide range of outcomes (reports, publications, and presentations) are available in the website. These resources are designed to inform city councils, practitioners, and the scientific community, as well as to support organizations fighting for more inclusive management and production of urban spaces. The results of the living labs are being currently analysed and will deliver evidences for pushing policy changes towards more inclusive public spaces.

16.4. **Building bridges - between experiences and UBHs**

Both above-described projects evidence that exploring the relationship between people and places through means of collaborative approaches and making use of the technology advancements finds fertile ground for advancing knowledge and policy design. However, at the same time the rapid developments in digital technology are already affecting the way people communicate and interact, work, and learn and increasingly how they spend free time and enjoy culture, history, and social life. As above-mentioned, a space is transformed into a place, when people attach social values to it, as meanings, representations and attributes; and the place acts as a resource - the ground for social interactions, to encounter the other and interact with the environment.

These features and functionalities are also accessible for UBH, provided such asset is open and available - enabling the attachment of values. In this context, placemaking referring to the act of the making of a 'place', as advocated by both projects, has the potential to re-engineer processes and enrich the experiences. Reimagining UBH, is undoubtedly an initiative to overhaul common goods and an effort to support cultural development along with social, economic, and environmental goals. The projects teach us the most essential lesson: to modulate community interests and needs in the face of something larger, more important, and lasting. Yet, the process of placemaking cannot be incidental, but planned and well implemented; this calls for devoting resources to enable experimentation. Placemaking, and co-creation towards transition require a certain willingness to experiment, and living labs are, as experimental approach, able to address societal challenges and facilitate co-creation in everyday urban settings [9].

Therefore, living labs open up additional options in developing more community-based and locally-rooted solutions, against a linear policy design (and research) which has shown inadequate to tackle societal challenges. living labs are well suited to work in non-linear urban innovation ecosystems with multi-stakeholder participation and diverse knowledge practices as acknowledges [14]. The author brings

into focus the value of living labs as an approach or set of methods (an umbrella) that can be a powerful device for facilitating changes happening in a co-creative way. Thus, labs combining technical-scientific knowhow and local knowledge are an instrument to change mindsets, processes, and material solutions. This line of thought reflects the call to give more consideration to local power and a stronger interaction with government agencies, while also addressing structural constraints to the use of local knowledge across scales [23].

From the discourses above, for activating a community-based UBH valorisation, the elicited major trends and experiences are:

- The process needs a strong organisational framework for collaborative approaches and implementation of co-created results
- The framework must facilitate experimentation about possible solutions, living lab tools help discover gaps and pose powerful questions
- Building awareness and encouraging community engagement and support, can be the first step
- Measure and inform success, while also leveraging experiences in citizen science, tools, and collaborative research practices, should lead and assist others to participate and adapt to the changed circumstances in the community/UBH.

These are not sequential steps or procedures. It is not the case that there is a first stepping out from the business as usual (i.e. in safeguarding cultural assets) and then slipping into a ‘wonderful world’ of co-creation. Rather, these steps happen simultaneously. Adopting a community's centred agenda, is also faced with different ‘unknowns’, especially when facing rigid, strict or inflexible frameworks and procedures. Initiatives to overhaul common goods through collaborative processes pose the questions of a) how to establish and maintain continuity from the strategic level, down to the site-specific level of planning, and b) how to organise issues as governance, leadership and power sharing.

A collaborative approach on the flip side can improve the decision making. There is increasing evidence that considering different points of view contributes to reach a consensual decision, besides finding extraordinary solutions. This also means that such approaches require a certain willingness to experiment, to welcome the unforeseen or even unrealized outcomes, which as discussed above can start the creative loop. Sure, the wide range of potentially related issues makes the stepping out process more complex, however there is a "natural" connection between envisioning a way to get out of the box and the actions that should follow.

The good point is that cities (and city governments) must respond to policy challenges on the ground, and this is the level people (and communities) are most interested, as it has direct impact on their immediate environment. We should have always in mind that collaborative work is largely voluntary and depends on several factors, among them the interests of local actors, the articulation of spatial development goals at various levels, to name few. This implies heeding the call to generate the above-mentioned framework in an innovative and creative way, as it provides a

sense of how the collaborative process is oriented, and the foundation upon which decisions can be taken and executed.

Linked to the above, considering UBH assets, is the question on how to link cultural clues and values with development (activating) goals, which in turn must be linked to strategy and extended into appropriate actions. These clues and values are:

- Built assets
- Natural surroundings (the most sensitive value) - considering them also under effects of climate change, and how they can contribute to mitigation
- Landscape, scenery, and scenic amenities, including the topography and biodiversity
- Heritage values, including historic significance
- Identity, symbolic meaning, and beliefs attached to them
- Aesthetic and visual symbolic richness
- Permeability and accessibility (pedestrian, bikers, barrier-free)
- Legibility and distinctive sense of place
- Market (ability to attract investments, persuade money givers), and
- Potential partnerships and local coalitions, such as grass-roots activism.

The list is not intended to be exhaustive and only includes some of the most common values, but it testifies the diversity of these values, and the opportunities they open. In a nutshell, the value of the UBH lies in its cultural significance, which is a combination of historical, symbolic, aesthetic, and social values. In activating a UBH, the challenge is to find the balance between contemporary needs and opportunities for a (re)use and the call to protect and promote the heritage asset. Equally important, however, is the establishment of a positive decision-making environment in which a consensus can gradually flourish. According to [24], typical outcomes from a collaborative approach (citizen science, co-creation, placemaking) are:

- Vision for the future of the UBH asset
- Agreed objectives and goals, often along with a schedule for their achievement
- Ideas for the organisation framework
- Establishment of local partnerships, coalitions, and leadership.

The creation of a shared vision and goals along with the local coalitions are the best premises to achieve a dynamic catalyst of actions for the resolution of complex problems and to manage the transition.

16.5. The power of action - Concluding words

Collaborative action can take many forms, but they all touch upon some of the most fundamental aspect of sustainability and resilience: the active involvement of the concerned communities. Given the prominence of participatory processes, the community's capacity, and ability to act is fundamental to the effect of making changes happen. However, this capacity and ability can be only improved if there

are opportunities for the community to get involved, this reinforces the call for sharing competencies and responsibilities to explore opportunities in an adaptive process of learning-by-doing.

While planning, be it spatial, urban or cultural heritage, in the sense of coordinating several interests, is often considered a government's task, though the call for informal planning approaches underlines that stakeholders, planners, decision makers and representatives of different interest groups, should strive more towards co-creation, and interlink such effort to different partners (public, civil society and private) in order to make the effort truly sustainable. The action should therefore be placed at the intersection of networks (physical, social, cultural, formal, informal) aimed at developing a common future.

Findings from the above-mentioned research disclosed two essential aspects. First, it is the relevance and significance of the subject, be it a place or a cultural asset, both being in the core of the community can become the engine to promote the leverage effect for making better and more people-oriented environments. Secondly, inclusion in the social life is the community's foundation. Only when the universal access to public goods is guaranteed, people feel committed to their environment [12]. For activating an UBH, this means we should seize the full potential of an asset to inspire progressive placemaking and push for policy changes. The Project *GreenKeys* [25] identified three most important elements to deal with addressing changes - these are related to creating an strategy for greenspace development, but these are the same for UBH: the first is the asset itself, its surrounding and the management; secondly is the identification of the driving forces (social, economic, environmental, political, managerial, etc.), along with strategies and policies that affect the asset; thirdly, the people who create, use and enliven it. These three elements are inseparable, each one having a direct impact on the others.

Overall, experience and evidence reinforce the idea that activating UBH is a well-paid investment, which requires, however, a permanent care, as any other public good. Ensuring this permanent care is a fight that must be won every day. This is particularly true in times of the Covid-19 overbreak. The global event and its impacts have changed common, everyday life, which has led to unexpected major consequences. The impact of the global pandemic on public goods put into perspective the strategies and measures for responding to the outbreak. This is anything but common. Underground4value's findings may provide a basis for empirical approaches to design more sustainable policies towards co-creation of better ecosystem for community engagement linked to cultural heritage, and to improve people's experiences.

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CHAPTER 17

Heritage Conservation and Community Empowerment

Tools for Living Labs

Giuseppe Pace

17.1. Introduction

In the last decades, heritage management has been evolving from an object-based towards an all-inclusive landscape-based approach, characterised by a greater consideration of the social and economic function of heritage in a perspective of sustainable development [1]. Framework for landscape-level decisions, whether urban, rural or ru-urban, this approach should support heritage conservation in a more integrative and trans-disciplinary way, to counter the tendency of dealing with heritage in disciplinary silos [2]. By initially including only 'historic areas', as defined in the 1976 UNESCO *Recommendation concerning Safeguarding and Contemporary Role of Historic Areas* [3], the landscape-based approach found its main evolution in the 2011 UNESCO *Recommendation on the Historic Urban Landscape* (HUL). The Recommendation goes beyond the notion of "historic centre" or "ensemble" to include the broader urban context and its geographical setting as widely presented by Genovese in Chapter 11 [4].

With the official scope to settle "a balanced and sustainable relationship between urban and natural environment, between the needs of present and future generations and the legacy from the past" [5], HUL offers guidance to support the integration of heritage conservation and management with policies and practices for sustainable development at national and local level. It settles a flexible and general conceptual framework, based on a range of traditional and innovative tools, such as civic engagement tools, knowledge and planning tools, regulatory systems, and financial tools, to adapt to different local contexts and built heritage [5] [6] (Fig.17.1). Not detailed and integrated in one scheme, these tools portray a sort of "soft-law" package that countries can implement and adapt to their specific contexts on a voluntary basis [5].

HUL advances as a learning-by-doing process, with feedbacks from countries on the critical steps to implement it, such as comprehensive surveys and mapping, participatory planning and stakeholder consultations, vulnerability assessments, appro-

priate partnerships and local management frameworks, and mechanisms for the coordination of the various activities between different actors [5]. Nonetheless, in terms of sustainability these tools, addressed to different target groups, have not the same priority level. Especially the civic engagement tools have priority, because the implementation of regulatory systems, as well as participatory planning tools, assessments measuring the community development or innovative financial tools could be unnecessary without engaged communities.

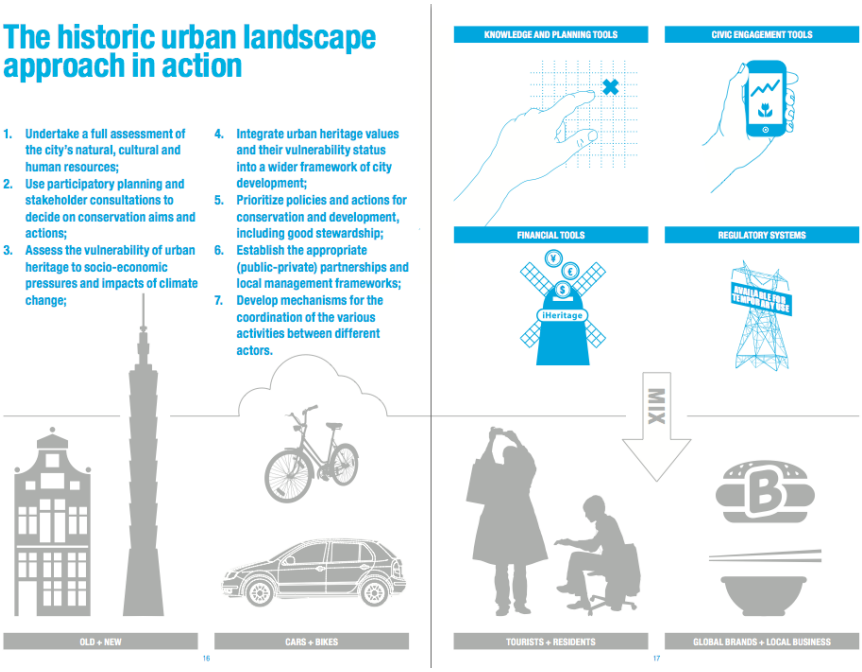

Figure 17.1: The historic urban landscape approach in action [7]

Evidently, the implementation of this landscape-based approach is not an easy task for neither national and local governments nor UNESCO [1] [8], and calls for "academic and university institutions and other centres of research to develop scientific research on aspects of the historic urban landscape approach and cooperate at the local, national, regional and international level" [6, p. 6]. In 2014, this appeal is also emphasised by ICOMOS, which in the *Florence Declaration on Heritage and Landscape as Human Values* exhorted organisations, authorities and specialists to link heritage conservation and sustainable local socio-economic development and ensure that heritage conservation contributes to sustainable development objectives [9].

Resulting studies focused on the general HUL vision and specific topics, by introducing new economic approaches, or developing the necessary assessment tools [1] [10] [11] [12] [13]. However, few of them touched the core of HUL challenge, that is, moving the focus from built heritage to people and their human environment, integrating local and global sustainability, and establishing a relationship between

expert-led and community-led approaches (Fig. 17.2). Without facing these challenges, the effectiveness of the participatory approach would be greatly weakened, as well as its integration in the local governance dynamics [6].

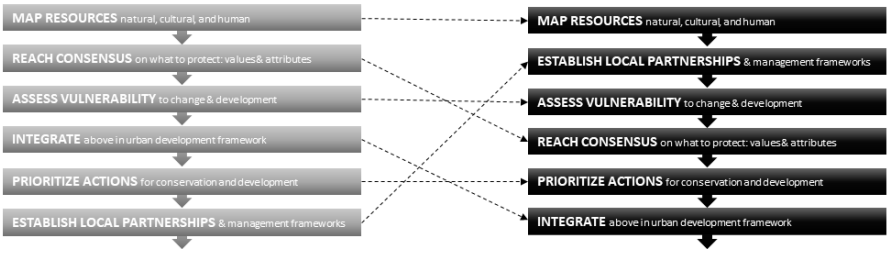

Figure 17.2: Critical steps of HUL: expert-led vs community-led
Source: Expert-led taken from [1]

With the scope of placing communities-led initiatives at the centre of HUL approach, this chapter introduces concepts, methodologies, and tools in a multi-disciplinary way, to provide sound theoretical references, for building a coherent operational framework in the field of civic engagement tools, and experimenting HUL tools in real community-led initiatives. It is only a first effort for assisting planners, decision-makers, promoters, and local development facilitators to move from theory to practice, also through a living lab approach. Only through real-life experiments, we consider possible to develop local capacity for transforming the Underground Built Heritage (UBH) into "a powerful economic, social and environmental catalyst for regeneration, sustainable development, economic growth and improvement of people's well-being and living environments" [14].

By using HUL as starting point, this chapter leads the reader to examine the potential connections between heritage and sustainability, and to initiate cutting-edge approaches for empowering communities and helping them to collaborate in an integrated heritage-led development. Particularly, this chapter defines an initial taxonomy for the civic engagement operational tools, by outlining stakeholders and community (who), their empowerment process (what), and the sustainability challenge (why). Finally, it introduces an innovative approach based on the development of living labs (how), for supporting local communities and integrating UBH values and their vulnerability status into a wider framework of local development.

Finally, this chapter, as the underground4value COST Action, is still in evolution. We do not pretend, therefore, to be all-inclusive: formal definitions, although essentials, connote different things to different people, particularly in a realm in which many professions and academic disciplines converge and compete, and in which language tends to be imprecise.

17.2. **From heritage conservation to sustainability transitions**

HUL is a product of and addressed to the so-called *global heritage community*, "a professional community dedicated to the values associated with a cosmopolitan approach to heritage conservation" [15]. Its operational principles - "able to ensure urban conservation models that respect the values, traditions and environments of

different cultural contexts, as well as to help redefine urban heritage as the centre of the spatial development process" [6] – are based on that global community's interest to both reassess "practices adopted over the past half-century in the field of conservation" [6], and affirm the heritage embedded as "living history incorporating social processes of both continuity and change" [15]. Therefore, HUL's tools, as introduced in Fig. 17.1 [7], converge to urban (in a broad sense) heritage conservation, supporting full assessment of the city's natural, cultural, and human resources, and specifically signalling the vulnerability of urban heritage to socio-economic pressures and impacts of climate change. They integrate urban heritage values and their vulnerability status into a wider framework of city development. However, instead of facing new *integrated development* perspectives, as preliminary suggested by Jokilehto [3], HUL approach still focuses on *integrated conservation* and places urban heritage at the centre of the spatial development process, with "urban conservation" models ensured by respecting values, traditions, and environments of different cultural contexts [6]. It does not replace existing doctrines or conservation approaches, but calls for integrating them in a new generation of public policies for managing the built environment. Without formally entering in contrast with existing national regulations and planning arrangements, it opens the door to intercultural and interdisciplinary dialogues, promoting a transition towards sustainability [5].

In this last perspective, tools like participatory planning and stakeholder consultations, more than supporting decisions on conservation aims and actions, could become primary elements for changing communities' behaviours and values, by encouraging dialogue and engaging stakeholders across society "to determine where we need to go and how we are going to get there" [16]. In other words, heritage could change the cultural approach on how planning and managing our common future.

According Bianchini, these tools should stimulate and facilitate local communities' empowerment and connect natural, social, cultural, political and economic environments, gauging impacts across different spheres of life, and grasping the importance not only of 'hard' but also of 'soft' infrastructures" [17].

These processes bring us to another HUL's keyword, the sustainability concept, used to reinforce the heritage conservation's role in the development context. In particular, urban heritage conservation is perceived as a primary approach for the sustainable development, by leading to poverty reduction through economic growth, tourism and job creation [18]. HUL mentions the sustainability as follow:

> "…the active protection of urban heritage and its sustainable management is a condition *sine qua non* of development" [6, p.1].
>
> "…the heritage conservation is a strategy to achieve a balance between urban growth and quality of life on a sustainable basis" [6, p.3].
>
> HUL "…provides the basis for a comprehensive and integrated approach for the identification, assessment, conservation and management of historic urban landscapes within an overall sustainable development framework" [6, p.3].
>
> HUL "… is rooted in a balanced and sustainable relationship between the urban and natural environment, between the needs of present and future generations and the legacy from the past" [6, p.4].

Nonetheless, by leaving heritage conservation as the focal point, HUL misses to explain how its operational tools can contribute to the creation of more sustainable societies [5]. It does not appear to be enough to recommend prioritising good stewardship, establishing the appropriate (public-private) partnerships and local management frameworks, and developing mechanisms for the coordination of the various activities between different actors. The transition towards sustainability implies complex and uncertain processes, mainly depending on experimentation, learning, and sharing ideas, not guaranteed by the heritage conservation alone [5]. In its holistic approach, HUL does not stress this uncertainty, which demands for further changes in interdependent societal systems and across multiple scales – from the supply chains to the behaviours and values of communities and individual citizens – and goes far beyond the integration of urban heritage conservation strategies within the larger goals of the overall sustainable development [5].

In addition, a too sketchily description of the operational tools can give birth to mistaken interpretations of the overall process from the one side, but can also give opportunities for a wider and dynamic trans-disciplinary participation in their definition and implementation. In the underground4value project[1], we clearly opted for the second and opened to a general reflection on the challenges addressed and their dynamic character. Factors as global economic process, new information technology, climatic and environmental changes have relevant impacts on human settlements, their communities and heritage sites. The adaptation to these challenges should be specific and dynamic, depending on cultural diversity on values and approaches, heritage perceptions of inhabitants and stakeholders, social and economic changes, availability of innovations, or even on sudden disasters and armed conflicts [5]. HUL fosters the communities' awareness that built heritage cannot be protected "without reinforcing pride in the locality and mutual responsibilities" [17], as well as that heritage management cannot be sustainable without addressing "how people mix and connect, their motivations, and whether they own where they live and change their lifestyle appropriately" [17].

Nonetheless, by recognising to cultural heritage, and specifically to the built heritage, the role of catalyser for sustainability and local community development, we make an implicit change of focal point, moving it from the heritage sites to the people and their human environment. This change demands to move from an object-centred to a people-centred approach, capable to stimulate interaction and cross-fertilisation among the *global heritage community*, the other disciplines, and the local communities [15]. This approach goes beyond the ones based on context-driven design strategies addressed to improve the quality of urban design. These lasts ignore community needs of people and do not involve community in decision-making.

17.3. **Civic engagement explained**

The tools dedicated to support this change of focal point are the so-called civic engagement tools. For them, HUL proposes the following definition:

> "Civic engagement tools should involve a diverse cross-section of stakeholders and empower them to identify key values in their urban areas, develop visions that reflect their

> diversity, set goals, and agree on actions to safeguard their heritage and promote sustainable development. These tools, which constitute an integral part of urban governance dynamics, should facilitate intercultural dialogue by learning from communities about their histories, traditions, values, needs, and aspirations and by facilitating the mediation and negotiation between conflicting interests and groups" [6, p. 6].

According HUL, the tools have to perform two essential tasks. First, to facilitate the dialogue with the communities and to learn about their "values, needs, and aspirations". Second, to support "the mediation and negotiation between conflicting interests and groups". These tasks involve experts, decision-makers, communities, and groups, defined as "a diverse cross-section of stakeholders", which should be empowered to make their voices listened. In the section III on policies, HUL specifies a taxonomy of the stakeholders involved and their responsibilities, classifying them as follows [6, p. 5]:

a. *Member States*, which integrate urban heritage conservation strategies into national development policies and agendas according to the historic urban landscape approach
b. *Local authorities*, which should prepare urban development plans considering the area's values, including landscape and other heritage values, and their associated features
c. *Public and private stakeholders*, which should cooperate *inter alia* through partnerships to ensure the successful application of the historic urban landscape approach
d. *International organisations dealing with sustainable development processes*, which should integrate the historic urban landscape approach into their strategies, plans and operations
e. *National and international non-governmental organisations*, which should participate in developing and disseminating tools and best practices for the implementation of the historic urban landscape approach.

However, this classification is not enough specific for supporting civic engagement tools. It offers a traditional model of the State with the main responsibility for heritage conservation, supported by the *global heritage community*, in form of non-governmental organisations. Being a *soft law*, HUL lets undefined public and private stakeholders to empower, and considers them significant once they cooperate through partnerships. In addition, it does not mention from what communities we should learn about their histories, traditions, values, needs, and aspirations, and gives an unclear indication for an intercultural dialogue.

To make the tools operational, experimenting them in real-life cases and moving towards an inclusive landscape-based approach focused on people, there is a need for a taxonomy, which unambiguously defines for HUL the meaning of 'community', empowerment, and partnership.

17.3.1. **Defining communities**

The first challenge comes from the term 'community', which belongs to the current glossary and the lexicon of several scientific disciplines, such as anthropology,

sociology, philosophy, geography, and political science. Although the term's variety in meanings makes it conceptually unclear, 'community' represents an important interpretative bridge between sociology and the other social sciences [19]. To use HUL tools in a proper way, we should consider community in two different meanings: one referred to social relationships and the other to territorial organisations.

The first meaning, *a specific type of social relationships at the basis of collectivities that contain the individual in his totality*, comes from classic sociology and mainly from Ferdinand Tönnies, which introduced the dichotomy *Gemeinschaft/Gesellschaft*, that is, community/society [19].

Gemeinschaft refers to groupings based on a feeling of togetherness, comprised of personal social ties and in-person interactions, defined by traditional social rules and driven by emotions and sentiments (*Wesenwille*) and by a sense of moral obligation to others, common to rural, peasant, and small-scale homogenous societies [20]. *Gemeinschaft* may be exemplified by a family, household, neighbourhood, or a small village. On the other side, *Gesellschaft* indicates groups that are sustained by an instrumental goal, characterised by *Kürwille* (rational will) and impersonal and indirect human relations, built on efficiency or other economic and political considerations, typified by modern, cosmopolitan societies with their government bureaucracies and large industrial organisations, such as the State, a public body, or a joint-stock company [20]. Tönnies defines community and society as part of a unique scheme, based on the contraposition between real and ideal, organic and mechanic life [19].

Further developments of this meaning brought to the light three keywords, such as identity, reciprocity, and trust, which characterise the modern perspective of social relationships, where individuals, members of the society, find their way of being collective, placing them inside specific groups and giving continuity to their social being [19].

The second meaning, *a type of collectivity the members of which share a common territorial area as their base of operations for daily activities*, as defined by contemporary sociologist Talcott Parsons [21, p.60], is used as synonymous of 'local community'. According Bagnasco, the term serves to indicate a society organised in space, linking the abstractions of sociology to the spatial dimension [19]. In addition, the local seems the proper dimension for the previously mentioned social phenomena of identity, reciprocity, and trust. Therefore, this second meaning, integrated by the social relationships, could well describe the existence of more or less structured social interactions centred in a specific territorial area.

However, as previously pointed out, community is not separate from society, and every local community is programmatically a *local society*, within which to observe also relations of a community type [19, p. 37]. A typical mistake is to pretend of always locating these relationships in local communities, which could exist or not, or being present at lower territorial level (household or neighbourhood), or even mixed to corporate relations. In a modern society, stakeholders, members of a local community, can also be members of external networks (economic, political,

and cultural), with significant interactions and conditioning potential [19]. In addition, new communication technologies have contributed to develop *virtual communities* and to reinforce trends to territorial fragmentation of community ties.

Despite this proliferation of communities, in developing our civic engagement tools, we must always remember that *community* has been a word used by utopians, philosophers, and politicians, born in modern times to contrast the utilitarian approach. Therefore, the tools must support alternative developments also where the community is unexpressed, by catalysing its emergence or re-emergence, and empowering it.

Finally, a possible community definition could be as follow: *a collectivity of members sharing common territorial areas, identities and values, which actively and freely participate to the construction of specific accomplishments within the framework of public action.*

17.3.2. **Empowering communities**

To make sense of the civic engagement tools addressed to empower "cross-section of stakeholders", possibly aggregated in a community, we should know something more about the *empowerment* concept. Used in different fields (e.g. community psychology, health education and health promotion, liberatory adult education, community organising, rural and community development, and social work), its meaning seems vague, unclear, and diversely communicated, from the extreme broad (i.e., power to the people) to the specific (i.e., improving the assertive skills of young people with disadvantaged backgrounds). Clearly, that depends on the empowerment characteristic to manifest itself in a different way according to the context in which is placed, the people involved, and the disciplines that consider it [22].

Mainly rooted in community psychology, empowerment is a social action process by which "individuals, organisations and communities gain mastery over their lives in the context of changing their social and political environment to improve equity and quality of life" [23]. Based on the assumption that community cultural assets can be strengthened through dialogue and action, the concept is action-oriented, focused on the removal of formal or informal barriers, and on transforming power relations among communities, institutions, and government [24]. Therefore, empowerment hinges on two basic concepts: *power*, which constitutes its etymological root, and *participation*, which underlines its practical aspect [22, 109].

17.3.2.1 Power

Power is not a simple concept and usually, in social science field too, identifies the capacity of influence and control that we can have over others, and which refers to concepts of strength and prevarication (*power over*). However, referred to the community empowerment, power has not that negative meaning but represents a resource for those who own it and for those around them. It is not static and exclusive, but can be changeable, fluid, in the making, conquerable by everybody. Even if not always formalised, power is a fundamental element of the community action [25]. According Weber, it implies a relational context among people and resources. Relations can change, so the power, its sharing and usage for the common resources [26]. The type of power connected to empowerment is positive, characterised by

collaboration, sharing, and mutuality, and could be defined as *power-with* [27], integrative power [27], or relational power [28].

Helpful to understand how the power is exercised is the model proposed by Lukes [29], which defines three dimensions (three faces) of power: decision-making power, non-decision-making power, and ideological power. The first one refers to the real and concrete decision-making in the society or in the grouping taken into consideration. It is the public face of the power, focusing on policy preferences revealed through political action. It should answer to how decisions are taken and conflicts solved [22]. In case of *power-with*, decisions are necessarily shared, able to comprise and adjust different groups' needs and opinions.

The second dimension, the non-decision-making power, refers to what aspects or options are presented to the final decision-makers. The way final agenda's topics are chosen could exclude some groups from presenting their needs. On the contrary, the *power-with* should be inclusive of every group, individual, organisation inside the community. Therefore, mapping groups, also minoritarians, is a *conditio sine qua non* to agree on the priorities.

Finally, the third dimension, called ideological power, refers to how people needs and preferences are shapes. Ideological power could "prevent people, to whatever degree, from having grievances by shaping their perceptions, cognitions, and preferences in such a way that they accept their role in the existing order of things" [29, p. 24]. A *power-with* should support individuals to develop cognitive capacity, self-interest, and perception of the context within people live. Although widely criticised for a certain weakness in its concrete usage, Lukes' model proposes keywords as co-decision, groups' mapping, and capacity building, to ensure that each individual or group could develop competencies and affect the choices that concern them [22].

Nonetheless, Lukes' model does not separate the different types of power related to our societies, and does not relate them to the local context. In that respect, the conceptual map of the domains of social practice, as defined by Friedmann, can be useful to understand power and conflicts in territorial communities [30].

As Fig. 17.3 shows, Friedmann considers four overlapping domains, "inscribed within a bounded territory or *life space"* [30, p.29], such as state, civil society, corporate economy, and political community. For each of these domains, an autonomous core of institutions governing its respective sphere can be schematised – the executive and judicial for the State, the household for the civil society, the corporation for the economy, and the political organisation for the political community [30]. To each of them is associated a distinctive power– state power, social power, economic power, and political power – which can be used "according to the resources that actors in the domain can mobilise" [30].

As mentioned above, Friedmann's map is located in the *life space*, "a physical space over which both the political community and the State claim sovereign power" [30]. Life spaces exist at different territorial scales – nation, region, province, district, and city – with boundaries that mark the extent of different powers. However, life space is penetrated and overlapped by "economic space, whose reach is global" [30]. This overlapping creates conflict areas between the two spaces, with

the territorially bounded communities seeking to protect their interests, such as environmental resources, quality of life, and social cohesion [30].

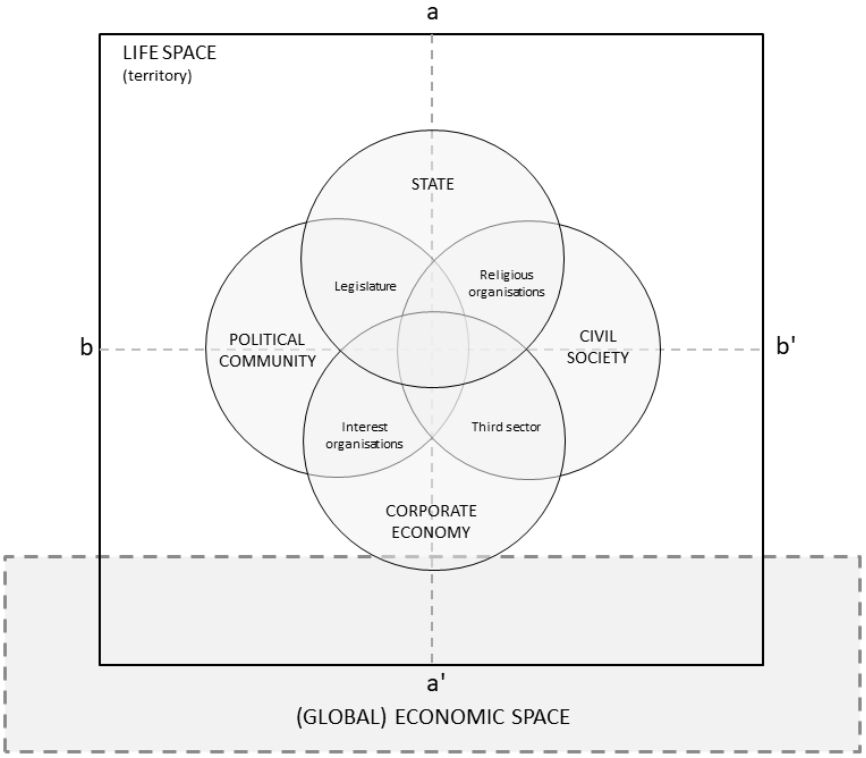

Figure 17.3: The four domains of social practice [30]

Structured by market relations and defined by the location of productive activities and the intersecting flows of capital, commodities, labour, and information, *economic space* is articulated through global centres of capital accumulation and control [31]. A weakness of civil society and political community can bring to accumulate power along the vertical axis a-a', "linking state with corporate economy" [30] (Fig. 17.3). This trend produces a virtual exclusion from economic and political power, which in extreme cases takes the form of a dictatorship, and undermines collective social action.

To neutralise local communities' virtual exclusion from economic and political power, Friedmann suggests an alternative development, which:

> "…involves a process of social and political empowerment whose objective is to rebalance the structure of power in society by making state action more accountable, strengthening the powers of civil society in the management of its own affairs, and making corporate business more socially responsible" [30, p. 31].

Although its long-term aim is to transform the whole society at national and international level, Friedmann approaches the question from the perspective of households, composed of natural persons, "moral human beings who, from birth,

stand in dynamic interaction with others" [30, p. 32]. Households dispose over three kind of power: social, political, and psychological [30]. Social power implies the access to sources of household production (e.g., information, knowledge, skills, participation in social organisations, and financial resources). Political power implies the access "to the process by which decisions, particularly those that affect their own future, are made" [30, p. 33]. Finally, psychological power is the individual sense of potency, demonstrated in self-confident behaviours and result of successful action in the social and political domains [30].

If for Friedmann the starting point is represented by the household, "a residential group of persons who live under the same roof and eat out of the same pot" [30, p. 32], the reflection can be extended to local communities, characterised by identity, reciprocity, and trust, as previously defined, where people behave productively and pro-actively, by articulating market and nonmarket relations from the one side, and struggling over the allocation of local resources to particular ends, and over particular rights, such as property claims on the other side [30].

17.3.2.2 Participation

Several disciplines addressed the concept of participation, especially political sciences, sociology, psychology, and social sciences, with different meanings and distinctive terminologies. Defined as public or citizen participation, political participation, stakeholder engagement, and participative decision-making, participation can be defined as an individual/community commitment and responsibility within an action, aimed at achieving a collectively determined goal [32]. Definitely, participation is a community-based process to share decisions, in which stakeholders actively participate in the institutions, programmes and environments that affect them [33].

However, the correlation between participation and community must be considered on two separate levels. Firstly, on a subjective level there is not sense of community (SoC) without involvement in the collective action. Sharing of an identity and common purposes presuppose a certain degree of social presence, an *active citizenship*. The community cannot be grieved or imposed, and the participation cannot be passive [22, p. 113]. Secondly, on an objective level, the community, being a social system, has to respect the rules governing representation processes, public decisions and, more generally, the targeted interaction of institutions, networks, regulations, rules and political uses contributing to the territorial governance [22]. This level focuses on the participation forms defined by conditions, constraints and resources of each context. If active citizenship is mainly related to psychological processes of participation, the second is strictly related to collective decisions. Therefore, although both levels are relevant for HUL civic engagement tools, we introduce very briefly the subjective level to then deepen our description to the objective one, and to the participation forms.

According Cicognani [34], there are four types of subjective participation. The first, *de facto participation*, is the basic form of participation (*be part of*), not chosen

by the person but related to her/his belonging to a group (i.e., gender, origin, religion, and profession). The second, *spontaneous participation*, is bottom-up, where the person searches for membership to satisfy her/his individual needs (i.e., friendship, affiliation, social support, etc…). The third, *voluntary participation*, also bottom-up, represents the transition from individual to collective goals. The person joining an association or a group shares its mission and values. The fourth, *activated participation*, or participation top-down, implies the creation of *ad hoc* groups answering to contingent needs of communities or contexts where people live (i.e., citizens' committees, focus groups, 'district contracts', etc…). This last demands for facilitators, which must strategically define how to activate a participation's need in the community, how to engage the most potentially effective persons, how to go ahead, and how to facilitate shared decisions [22].

Looking at the objective levels of participation, a good starting point is the well-know and provocative "Ladder of Citizen Participation", a model developed by Sherry Arnstein, which conceives public (citizen) participation in terms of eight rungs of a ladder, ranging from least to most public influence [35].

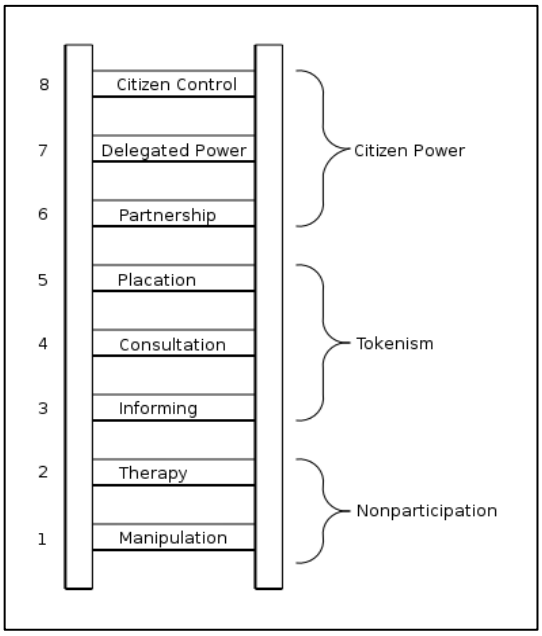

Figure 17.4: Arnstein's Ladder of Citizen Participation [35]

As schematised in Fig. 17.4, the bottom-level rungs (non-participation and tokenism) represent little to no citizen power in the participation process, whereas the higher rungs (degrees of citizen power) have higher levels of citizen participation.

The first rung of non-participation, *manipulation*, can be easily interrelated to the *ideological power*, with citizens involved when decisions are already taken. Its "real objective is not to enable people to participate in planning or conducting programs, but to enable powerholders to 'educate' or 'cure' the participants" [35]. Manipulation is almost typical of what has been rhetorically perpetrated in the name of heritage conservation, based on 'grassroots participation'. Going up the ladder, there are three rungs, defined of *tokenism*, that allow the citizens to hear (information), be heard (consultation), and advice (placation), but not to take part to the decisions. Under these conditions, citizens "lack the power to ensure that their views will be heeded by the powerful", and there is "no assurance of changing the

status quo" [35]. At this level, we can find the place-making of the urban design, whereas citizens are informed about the design (information), or interviewed (consultation) on their needs and values, or they can even express their appreciation about results (advice).

Finally, further up the ladder there are the three rungs of citizen power, that is, partnership, delegate power, and citizen power, with increasing weight of the participation process in the decision-making [35].

Partnership is the first level of real, effective participation, with power "redistributed through negotiation between citizens and powerholders", which agree to share planning and decision-making responsibilities [35]. According Arnstein, partnership works effectively "when there is an organized power-base in the community to which the citizen leaders are accountable; when the citizens group has the financial resources to pay its leaders reasonable honoraria for their time-consuming efforts; and when the group has the resources to hire (and fire) its own technicians, lawyers, and community organisers" [35]. Negotiations between citizens and public officials can also result in citizens achieving dominant decision-making authority over a particular plan or program (*delegate power*). The last level of the ladder, *citizen control*, is a degree of power that "guarantees that participants or residents can govern a program or an institution, be in full charge of policy and managerial aspects, and be able to negotiate the conditions under which *outsiders* may change them" [35]. The Arnstein's ladder is one of the most widely referenced and influential models in the field of democratic public participation, with the merit to point out not only the existence of several level of participations, but also that situations commonly perceived as participation are rather "false participation" [22].

17.3.2.3 Partnership

Arnstein's vocation was improving the relationship between local governments and local community groups, with citizen participation as "the basis (for) creative, coordinated partnership between city governments and residents of Model Neighbourhoods" [36, p. 1]. If the last two rungs, of full citizens' empowerment, expect stakeholders as initiators and undertakers of activities, plans and programmes, partnership represents the real balance between local governments and organized citizen groups. Arnstein believed that citizens' empowerment was necessary to make partnership work, because:

> "A partnership in which one partner is ill-informed or lacks the knowledge to negotiate with the other partners is likely to contain within it the seeds of its own dissolution. The weaker partner will see nothing to be gained from remaining in the partnership if it lacks the capacity and, for all practical purposes, the opportunity to contribute to and participate in partnership decisions" [36, p. 18].

As described in Fig. 17.5, our elaboration of Arnstein's Ladder, we can have five different degrees of stakeholder participation, from the pure information to citizens up to empowering them. The diagram does not consider only the intensity of citizens' power, but also passive/active citizenship, and the increasing of responsibilities, interdependences, risks, gains, community-based activities, and horizontal accountability. Therefore, not necessarily the highest stakeholder participation level

is the most sustainable, especially in absence of adequate competencies. We can define partnership as a process of multi-stakeholder engagement to develop programmes and decision-making, which promotes broad collective commitment and ownership of quality programmes [37]. Edwards et Al. [38] distinguished between the principle of *partnership working* and *partnerships as organisations*. The former is a "governmental strategy which seeks to encourage integration, consultation and the sharing of responsibility in the process of governance" [38, p. 2]. It implies a close collaboration among public authorities, economic and social partners, and bodies representing civil society at national, regional, and local levels, throughout the whole action/programme/plan cycle. The latter is a specific organisational form. Commitments to follow the partnership principle by public bodies does not necessarily means to develop partnerships as organisations [38, p. 3], as well as does not necessarily require empowering communities (Fig. 17.5)

Informing	Consulting	Cooperating	Partnering	Empowering
Providing stakeholders with adequate information to enable them to understand and share decisions	Obtaining feedback from stakeholders to make decisions and take action, reducing conflicts	Involving individual stakeholders in decision-making processes and development of activities	Collaborating with stakeholders collectively to ensure that decisions and activities are appropriate	Decision-making and activities initiated and undertaken by stakeholders collectively

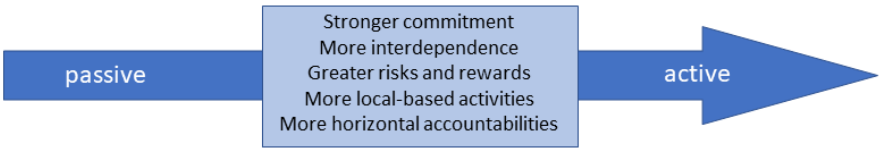

Figure 17.5: Degrees of stakeholder participation

HUL does specific reference to partnerships to ensure its successful application [6, p. 5], although it creates some confusion by mentioning cooperative (and not collaborative) actions. In fact, in the cooperation principle stakeholders participate in decision-making by exchanging information or resources and supporting one another in a relationship dependent on individual rather than collective efforts [39]. On the contrary, partnership involves diverse stakeholders collaborating as a group to achieve a common goal while sharing "mutual responsibility for their joint endeavour" [39]. Therefore, partners collaborate in decision-making processes and have the ownership of outcomes. Partnership is a dynamic and complementary relationship between diverse actors, in which they achieve value-added by working together rather than alone, enhance democratic governance, and ensure that public sector decisions are relevant and effective.

At EU level, the partnership approach is captured by the Community-Led Local Development (CLLD), defined as "a tool for involving citizens at local level in developing responses to the social, environmental and economic challenges we face today" [40]. Borrowed from the LEADER approach, CLLD was adopted across the

board of the EU Structural and Investment Funds in the 2010's. According the proposal of Common Provisions Regulation [41], in the next 2021-2028 member states must ensure that CLLD is:

a. focused on subregional areas
b. led by local action groups composed of representatives of public and private local socio-economic interests, in which no single interest group controls the decision-making
c. carried out through integrated strategies
d. supportive of networking, innovative features in the local context and, where appropriate, cooperation with other territorial actors [41, Art. 25].

CLLD is strictly dependent on the establishment of local action groups, which "…should be made up of representatives of local public and private socio-economic interests, such as entrepreneurs and their associations, local authorities, neighbourhood or rural associations, groups of citizens (such as minorities, senior citizens, women/men, youth, entrepreneurs, etc.), community and voluntary organisations, etc. At least 50 % of the votes in selection decisions should be cast by partners which are not public authorities and no single interest group should have more than 49 % of the votes" [42]. The reader can easily recognise the effort to apply a real partnership approach, as a way in which communities can attain their rights through collaborative decision-making.

As expressed by Arnstein, partnership does not imply transferring responsibilities from government or limiting its power, but it aims at enhancing and consolidating the legitimacy of public authorities. However, several partnership processes have been characterised by technocratic and scientific rationales, as opposed to the one rooted in stakeholder participation, or by a variable community involvement, with the local community being more commonly engaged in the initial identification of needs than in project implementation or feedback and monitoring. In some countries, partnership is deeply rooted in cultural and institutional behaviours through community development, as in Scandinavian countries, where such behaviours rely on traditions of civic participation. In other countries, partnership carried along a development pattern of citizenship and civic society initiatives, *économie solidaire*, third sector movement, and social entrepreneurship. Clearly, there is no '*one size fits all*' to the partnership approach and more consideration needs to be given to the process by which partnerships evolve and adapt through their lifecycles [43] [44].

17.3.2.4 Governance mechanisms

The participation can be reinforced by the occurrence of conditions such as SoC (the perception of being part of a community), tolerance of diversity and pluralism, common perception of needs and solutions, individual and collective self-efficacy, common and familiar community spaces, forms of tangible assistance, and continuity of collective work [22]. However, close to the local context's factors, an effective participation demands for a change of the so-called "governance dynamics" [6], especially at governmental level, in order to engage individuals and groups on specific local collective interests, as for the case of heritage conservation and management, and in which HUL tools should be integrated. We can define governance as:

> "…a heterogeneous set of methodologies and practices able to create multi-level models of collective decision-making based on interaction and flexibility" [46].

For developing partnerships, for example, the governance dynamics should include empowered local people in urban/rural areas and involve them in the planning process through 'bottom-up' approaches. EU Cohesion Policy has increasingly placed emphasis on this challenge, by enabling local people to take greater control over their own lives [45]. Based on the three keywords, local participation, capacity, and voice, EU programmes have given more and more voice to the local dimension, embedding the local perspective in the EU policy-making and promoting local ownership of actions and measures. EU initiated a cultural transition, by helping community-based partners to design and implement local development strategies, based on identified needs, and find the sources of finance for these. This transition shifts from hierarchical models, based on the principle of authority of the State, to interactive models, involving several actors situated at different levels, such as international, national, and local (*multi-level*). According to Hooghe and Marks [47], there are two types of *multilevel governance*. A first, labelled as Type I, "… conceives of dispersion of authority to a limited number of non-overlapping jurisdictions at a limited number of levels. Jurisdictions in this system of governance tend to bundle authority in quite large packages; they are usually non-overlapping, and are relatively stable" [47]. A second distinctive model, described as Type II governance, "…pictures a complex, fluid, patchwork of innumerable, overlapping jurisdictions. These jurisdictions are likely to have extremely fungible competencies, which can be merged into functionally specific jurisdictions; they are often overlapping; and they tend to be lean and flexible—they come and go as demands for governance change" [47]. Reviewing the *governance* proposed by HUL, different levels of government (national/federal, regional, and local), supported by sectoral experts, are responsible of the definition, elaboration, implementation and assessment of conservation policies, in a linear process that can be classified as Type I *governance*. Local partnerships are positioned at the end of the process, as graphically described in Fig. 17.2, once the design process has been almost completed, with mechanisms far from the ones imagined in the partnership participation. To make civic engagement tools useful and ensure a sustainable future to the heritage conservation, the HUL *governance* model should evolve to a *multilevel Type II*, based on circular and pluralistic schemes, open to unexpected stakeholders [46].

At local level, *governance* can be configured as an adaptation of planning and technical principles to the local political reality and the community's needs. Bargaining, consensus building, and consolidation of all factors necessary for sharing decision-making are finalised to achieve the same objective: to develop a local democratic environment.

One reflection could be advanced: perhaps, more than a function of theorisation and definition of models and processes, local governance dynamics can contribute through niches of experimentation to legitimise values, such as interaction, flexibility, adaptability, pragmatism, negotiation, partnership, effectiveness, and proximity, which could become a new grammar of *participation*.

17.4. **Transition processes for sustainable heritage**

This challenge calls for transitions to sustainability, in order to take into account new global phenomena such as climate change, the natural resources' exhaustion, financial crises, demographic dynamics, migrations, sanitary crisis, and mobility needs, and at the same time to face short-term or local place-based issues, such as environmental resources, quality of life, and social cohesion [48]. As previously pointed out, the current overlapping between life space and economic space demands "serious changes in the way humans do business with each other and with the earth, in the face of a fractured, inequal world" [48, p.2], and to link long-term and short-term priorities, place-based and global approaches, traditional institutional actors and local communities' interests.

The so-called transition studies, referred to transitions in societal systems based on long-term and multilevel processes, develop approaches for a "radical transformation towards a sustainable society, as a response to a number of persistent problems confronting contemporary modern societies" [49]. Addressed to global environmental problems, these approaches deal with co-evolutionary processes, based on "profound changes in dominant practices, policies and thinking" [50], and "multi-dimensional interactions between industry, technology, markets, policy, culture, and civil society" [51].

Although strongly focused on technology, with a too much technocratic and mechanical orientation and little concern for society, exclusions, power, and participation, they help us to schematise an analytical framework based on non-linear processes and sensitive to the interaction of multiple dimensions, which can provide effective resources in the field of HUL civic engagement [51].

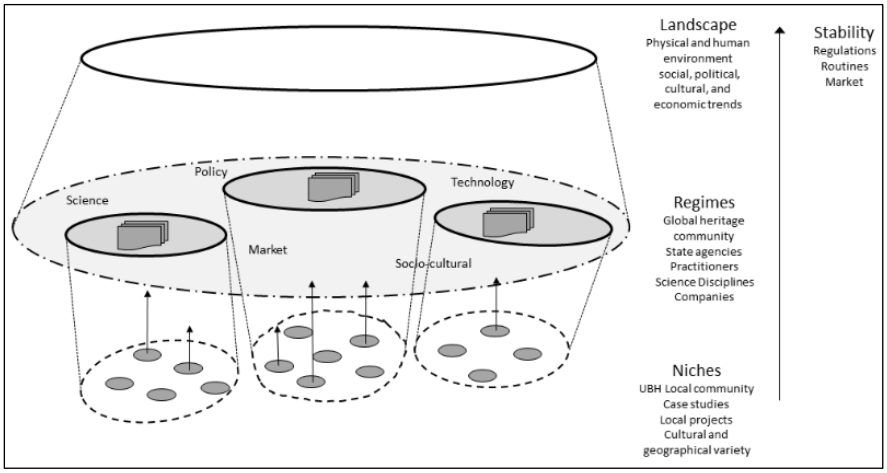

Figure 17.6: Community-led Heritage Valorisation in Multilevel Perspective, adapted from [51]

According Geels and Kemp, transition processes can be outlined as "result from the interplay of multiple developments at three analytical levels: niches (the locus for radical innovations), socio-technical regimes (the locus of established practices

and associated rules), and an exogenous socio-technical landscape" [51, p. 52]. These levels are characterised by increasing stability, from the niche to the landscape, which is the domain of long-term processes and realities. The regime level includes factors such as knowledge, investments, policies, institutions, skills and cultural values, and is characterised by a state of dynamic stability, where innovation takes place but in incremental and path dependent way. Transitions occur when changes or crises in the wider environmental, cultural, political and economic context (landscape level) create windows of opportunity for developing and diffusing innovations (niche level), which emerge and alter the dominant system (regime level).

In Fig. 17.6, the multilevel perspective model is translated for a community-led heritage management. Heritage-led initiatives are the *niches*, as such protected spaces supported by research groups, and animated by local communities, visionary stakeholders, and citizens, with adequate resources or subsidised. The literature on niche-innovation distinguishes three social processes, such as articulation of expectations or visions, building of social networks with enrolment of more stakeholders, and multi-dimensional learning processes [51]. The niches could be successful or unsuccessful stories, in any case they have a learning potential, in both 'hard' terms, considering the physical interventions and the needs of UBH conservation, and in 'soft' terms, considering matters of city planning and policymaking, societal involvement, business models, and financing. As *niches*, we can consider the U4V case-studies, whose living labs can allow local and global heritage communities to develop, nurture, experiment, and learn in real-life circumstances, without immediate or direct pressure from the regime [50]. The niches can gain momentum once the vision become precise and accepted, transition processes more stable, and networks bigger and legitimated by powerful stakeholders [51].

As Geels suggests [52], "a socio-technical regime is made up of alignments between regimes that refer to specific populations (e.g., policy-makers, academics, industries, civil society, users/consumers)". Therefore, we may distinguish different regimes, such as technological, policy, science, socio-cultural, and financial regimes. Each of these regimes has different rules, languages, and values, and their alignment can happen only in incremental way. The *global heritage community* could be considered a regime, with "shared beliefs, norms, standardised ways of doing things, heuristics, and rules of thumb", that is, "intangible rules on which actors draw in concrete actions" [51]. In the initial paragraphs, we proposed an interpretation of why and how HUL was promoted, that is, as a result of tensions coming from the so-called *landscape*. This last is the wider context of long-lasting structures and large-scale socio-economic, demographic, political and international trends, which influences dynamics of both niches and regimes. According Rip and Kemp, the *socio-technical landscape* is "something around us that we can travel through" and "something that we are part of, that sustains us" [53, p. 334], practically the *ecological landscape*, which includes physical aspects (cities, infrastructure, nature), political ideologies, societal values, beliefs, media, and macro-economic trends. Global megatrends or crises, such as the current covid-19 pandemics, can generate pressure on the socio-economic and cultural systems for conceiving alternative solutions, by encouraging collective creativity and activating circular processes of *governance*. Transitions are never produced by linear causality, but by

processes on multiple dimensions and at different levels, which link up and reinforce each other, through a circular causality [50].

Considering societies as complex adaptative systems, they integrate these transitions from individuals, communities, and *niches* to the whole system across scales [54]. To undertake a multi-level approach, therefore, we need to clarify at which spatial scale is necessary linking society and ecosystem.

This spatial heterogeneity reflects heterogeneity at territorial level and among people, culture, and institutions" [54, p. 109]. Macroscopic patterns emerge from interactions at much lower scale of organisation, the niche, but then feedback to influence the dynamics at those microscopic scales [55]. If locations matter, transitions require specific place-based and participatory approaches, to determine locally what is a sustainable place for the communities involved, the one where "the improvement of environmental conditions *stricto sensu* … will lead to improved living conditions", and where "technical devices and ecological processes … will lead to new lifestyles" [54, p. 110].

That means to carefully consider innovative heritage-led actions, especially the technological ones, often favoured to the detriment of more holistic approaches. To foster real sustainability, there is a need for contrasts, to meet and adapt to the different aspiration among the inhabitants, to focus more on the social process of decision-making and to consider that sustainability is an inclusive notion, which integrates environmental, social, cultural, and economic aspects of the concerned societies. There is a need for planning and managing these transitions.

17.5. **Planning and experts' role**

This chapter does not only spell out the role of the professional worker as enabler or facilitator of empowering processes, as well as catalysers of social priorities in face of the public interest for UBH conservation. Much has been written about power, participation, community decision-making, and the transitions processes, and very little about *how to think* about the planning issue. As introduced by Smaniotto Costa in Chapter 16 [56], the reader who would enhance the planning aspects must concern himself with the understanding of and organisation for both the rational undertaking and for the interpersonal, intergroup, and interorganisational process. Planning calls for strategic and deliberative practices to encourage and carry out practical and timely participatory processes. With the scope to develop community-led development, we explore alternative trajectories to statutory planning, which civic engagement tools could stimulate and support in an adaptive, forward-looking manner. With the scope to promote behavioural changes towards sustainability, we present a short vocabulary of approaches for stakeholder engagement and partnership, with the recognition that more than analysis and report writing, the planning process needs concepts, theories, and approaches to practice [57].

Whether at international, national, regional, local, or neighbourhood level, planning represents a constant shuttling between the holistic and the modest, from the comprehensive to the segmented, between systematic, logical, empirical activity and a decision-making that is in the broadest sense political.

Since 60s', *community organisation* and *interest groups* have been identified as the two main alternatives to statutory planning. Both have underplayed criteria and rational, raising more questions about power structure than about policy parameters [57]. In the 90s', *public participation* generated a new planning paradigm [58] [59], with many attempts to introduce people voice in the planning process and the result to often generate rhetoric and ineffective activities, in absence of local resources and community empowerment. Now, we can say that participation does not guarantee development and sustainability, nor does it automatically lead to either community empowerment or local development [5]. Moreover, it could incur significant costs due to extra administration, resolution of different or competing stakeholders' interest, or failure to develop sustainable projects. However, participation is a responsible exercise of citizenship, where people learn to defend one position and listen to another, to decide together, to divide the work to be done, to set objectives, and to discover new horizons.

In participatory interactions, emphasis is not on what architects, planners, or experts know, but on how they distribute their knowledge, not on their ability to solve problems but on opening up debate about them, not on public trust in their expertise but on individual trust in their integrity, not on consent to their plans but on consent to their mediating debate [60]. An evident dualism characterises planner's mandate, which public participation leaves halfway between the need "to press professionally ... for substantive goals" and "to bring about a participatory process" [61, p.100]. However, reaching *substantive goals* takes more time than planning and more than communicative action, even if the quality of the planning process partly determines the quality of the planning product.

Therefore, while planners attempt in empowering communities, by encouraging concern on the part of some people with the deliberative phases of the whole process, they must associate rationality and strategic thinking to the planning process. This is crucial to understand experts, architects, planners, enablers, facilitators and local stakeholders' roles in the whole process, who has the power to formulate the final project, and who the power to implement it [61]. These problems related to roles, power, parameters, forms of co-optation, activism and resistance within the community create practical ambiguities for both observers and participants. In his famous *Planning in the Face of Power*, Forester questions how to connect, in a deliberative and participatory practice, civic engagement and communities to the main planning metaphors, research process, and construction of meaning [61]. The first is based on the 'solution space', that is, the conceptual space where to find possible solutions. In the case of community participation is difficult to define their sentiments *a-priori*, and difficult to assess each solution without using judgment and interpretation, that is, the application of a general rule to a specific case. Once the planner/facilitator/expert applies her/his interpretation, the process is not research anymore, but creation of a new meaning, and loses its formal power [61, p. 202]. The expert, thanks to her/his practice, "knows how to research, play, amaze, and sometimes bring out a solution" [61]. On the contrary, an alternative approach

would be to develop participatory practices, as a collective construction of meaning, that leads to experimentation as well as to political, cultural, and ecological change.

Planners, as well as the *global heritage community*, should not contribute to define "What?", which is defined by the community, but support the "Why?" and "How?" questions, through a *strategic thinking* process [62]. Says Mintzberg that "strategic thinking … is about synthesis. It involves intuition and creativity" [62] and, differently by strategic planning, is a daily mindset. Experts and planners should guarantee analyses, not the vision. Their real task is to widen the understanding of issues rather than to discover the right solution. As in Fig. 17.6, strategic thinking should help people seeing ahead, behind, above, below, besides, beyond, and through [63].

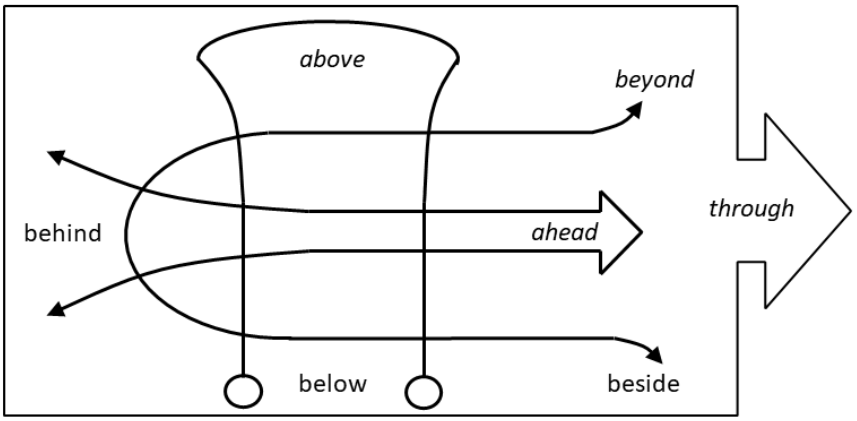

Figure 17.7: Strategic thinking as "seeing" [63]

Paraphrasing Mintzberg, we can imagine experts/planners/facilitators as catalysts who support strategy making by aiding and encouraging communities and stakeholders to think strategically. Empowering a community becomes part of a collective process of construction of meanings, visions, answers, and solutions.

Finally, the planner's profile takes shape and, at this point, we can better understand the applicability of Forester's deliberative and participatory practices, as "…inquiring and learning together in the face of difference and conflict, telling compelling stories and arguing together in negotiations, coming to see issues, relationships, and options in new ways, thus arguing *and* acting together" [64]. His description tells us of experimentation in practice, similar to the *niches* developed in the context of sustainability transitions, whose tools are defined and structured in the following paragraphs.

17.6. **Shaping civic engagement tools**

The previous paragraphs told us what the civic engagement tools should provide. Local communities should be empowered and organised in partnerships with place-based approaches, in order to share strategical thinking and experimenting

sustainability transitions, in processes that go far beyond the simple conservation, restoration, and physical rehabilitation or repurposing of a site. These processes are characterised by complexity, uncertainty and circularity, depending on experimentation, learning, and sharing ideas among previously undefined stakeholders.

As previously argued, most of the planning schemes place civic engagement in an enigmatic realm where participation is false or doomed to failure. Although an opportunity for cities and regions to perpetrate social innovation, the planners' toolkit is replenished by other disciplines' tools, without enriching planning science with studies of the role that planning plays in real-life situation. Such studies would support the integration of HUL civic engagement tools with the planning tools.

The reader should have now all the background for choosing the operational tools and adapting them to the specific project, community, or institutional context. However, in underground4value case-studies we experienced the application of some of them. In this Handbook, Smaniotto Costa introduced the Place Management tools [56], the only planning reference, on which no clear consensus has yet been developed. This chapter introduces other two participatory approaches, such as Strategic Stakeholders Dialogue (SSD), an integrated methodology of strategy formulation and implementation, typical of corporate management field, and Transition Management (TM), based on transition research, which draws a governance approach by involving participatory processes of visioning and experimenting. This tools' description brings us to reflect on how they could be integrated in a single empirical approach, such as the proposed Strategic Transition Practice (STP), based on local communities' experiments and empowerment, and a multi-level strategic dialogue (e.g. Living Labs) [5].

17.6.1. *Strategic Stakeholder Dialogue (SSD)*

Under the name of Strategic Stakeholder Dialogue (SSD) [65] [66] or Strategic Dialogue [67] are grouped a number of different approaches and models coming from corporate and business management, aiming at developing structured, interactive, and proactive processes, for facilitating a strategic communication between corporate companies with individual stakeholder groups, such as government, NGOs, science and other societal groups on the corporate social responsibility (CSR). It has the main scope of bridging two information gaps, such as the expectancy gap and the perception gap. The first is about knowing the "actual, diverse, and often conflicting expectancies of their different stakeholders" [65]. It means, in our case, that project facilitators are not preliminary aware of what stakeholders are really interested in. The second is about the stakeholders' perception of the organisation's behaviour and performance, such as project and public body behaviours in our case. Stakeholders are not always up-to-date with the extent to which the project, plan, or initiative meets their demands, or could potentially do. The dialogue is an open, two-way communication processes where conflicting interests and concerns are addressed [68, p. 51], enabling parties "to take away mutual distrust and misunderstanding, paving the way for discussions about chances and solutions" [65].

By shifting relations from confrontation and competition towards consultation and partnering, SSD develops mechanisms of collaboration in analysis, visioning, and planning with and among stakeholders. By stimulating partners to learn from each other in order to take collective action in a 'process-oriented' form, it also strengthens relationships [65]. In that way, the process builds not only temporary consensus and partnership on goals, strategies, and policies, but also long-term relationships based on mutual trust. Thanks to that, the dialogue combines different opinions, arguments, and preferences, as well as supports a mutual influencing from all parties, in a process where the initial 'trust me' and 'show me' are replaced by the call for 'involve me', 'join me' or 'engage me' (Fig. 17.8). To achieve this goal, however, the dialogue needs *voluntary participation* and engagement of the stakeholders.

Figure17.8: Dialogue and open dialogue

Main SSD potential objectives are:

– Achieving better solutions for complex problems by incorporating input from a wide variety of stakeholders, by seeking to incorporate new technologies, and by integrating different insights and generating new insights

- Bringing together the most important stakeholders and building mutual trust, preventing information asymmetry, sharing responsibilities, and creating commitment
- Creating effective win-win situations, by putting people first during the searching, selecting and the implementation of policy options.

The SSD methodology is a generic iterative process applicable to a multitude of situations and strategic issues [67]. However, it must be specified for each project, community, and context, according the principles identified in Tab. 17.1.

Table 17.1: SSD operational principles, adapted from [65]

Principle	***Activities***
Partnership	Working together and engaging in partnerships; creating networks; solving conflicts; working towards common goals; creating interesting options for all parties; sharing responsibilities
Effectiveness	Goal-oriented, driving to workable solutions & pro-active strategies in a systematic fashion
Flexibility	Ability to adapt own opinion, the process and/or (preliminary) results to new conditions and insights. Room for 'trial and error', tolerance towards each other
Inclusiveness	Involving a broad and diverse group of stakeholders with different values, points of view, expertise and expectations; involving 'winners' as well as (potential) 'losers'
Legitimacy	Transparent and honest dialogue process, guided by collective agreements ensuring all parties view the results as being legitimate
Learning	Reflective capabilities; new insights actually lead to new principles and new ways of thinking; mutual information transfer to prevent knowledge gaps on important subjects
Ownership	High level of involvedness, all parties involved self-identify in the dialogue and feel responsible for the implementation of the results
Participation	Stimulating active, informed and committed participation of everybody involved, on a voluntary basis without exerting pressure
Fairness	Equality, impartiality, without prejudice; striving for equal participation of all involved parties, combating power differences, power abuse and power manipulation
Accountability	Responsibility for the living up to agreements about dialogue process and results; complying with ethical and relational duties; making dialogue outcomes transparent to all of those involved, other not-participating stakeholders, and society in general
Transparency	Openness about points of view, opinions, assumptions and expectations; about relevant business interests; deliver to all relevant parties all relevant information
Voices, not votes	All parties involved have the opportunity to voice their opinion and all points of view are viewed as being legitimate. Opinions do not lose legitimacy when a majority is in favour something else. There is: 'separation of the problem from the people' and 'focus on the interests and not on positions'

To find a balance between collective values and the pragmatic approach of solving strategic problems, and enhance the capacity for interactive learning, transforming new knowledge into coordinated action, Van den Berg and Pietersma define an iterative operational model, structured in eight steps, as follow [67]:

- *Searchlight*: setting the process of strategy formulation and implementation, and defining shared ambitions and scopes

- *Outside-in* (scenarios): mapping potential strategic positions from the possibile future environment
- *Inside-out* (analysis): exploring strategic options based on partnering resorses and competencies
- *Options:* translating analytical information to insights and then generating dstrategic options
- *Choice*: estimating risks and feasibility of the various options and choosing the strategy
- *Operationalisation*: making an implementation plan, setting the implementation process in detail
- *Execution*: implementing plans, policies, and actions for change
- *Monitoring*: assessing ongoing developments at the community level, as well as the organisational performance in realtion to the strategy and goals.

This approach stresses on the dialogue, but allows a certain freedom to use other management models for analysis, design, implementation, and monitoring. Its success depends on the way in which the process is organize and results communicated to all parties [67]. In particular, critical factors are: mapping and selecting stakeholders and their roles, organising enthusiasm and buy-is for the project, assessing the quality of stakeholders input with regard to both analysis and visions, communicating with non-participants about and during the process, and finally ensuring that agreed procedures are observed by all involved stakeholders.

SSD has been seen as a reasonable tool for creating sustainable strategies, and adequate to deal with complex issues in which partnership and shared responsibility are important conditions for solving the problem. However, the SSD is about tangible issues and responsibilities, in which parties look for shared, suitable and realistic solutions that are translated into proactive and sustainable policy [65]. It is not focused on *governance* but more on relational management, therefore it demands for stakeholders firmly grounded in the reality, not necessary for collective, visionary, or not-empowered actors. In addition, the partnering, by producing internal trust, could evolve in a closed club of the most important stakeholders, which not easily welcomes external or small stakeholders, considered as free-riders. This approach is appropriate when there is at stake a specific realistic issue, a limited number of public and private stakeholders, or an existing empowered community. It is not able to put into discussion the current society's organisational patterns, behaviours and beliefs, that is, the actual 'socio-technical system' [5], and does not manage processes of co-evolution, involving alternative changes in needs, wants and of the institutions that coordinate choices. For these, different types of *governance* are needed: more open, oriented towards learning and innovation, with adaptive capacities to deal with surprises [69], such as the described multilevel governance Type II.

17.5.2. ***Transition Management (TM)***

An answer comes from the second tool, the Transition Management (TM) (Fig. 17.9). Based on complexity theory and governance studies, TM is a 'goal-oriented'

approach for shaping transitions, promoting participatory processes of visioning, and experimenting them in transition paths.

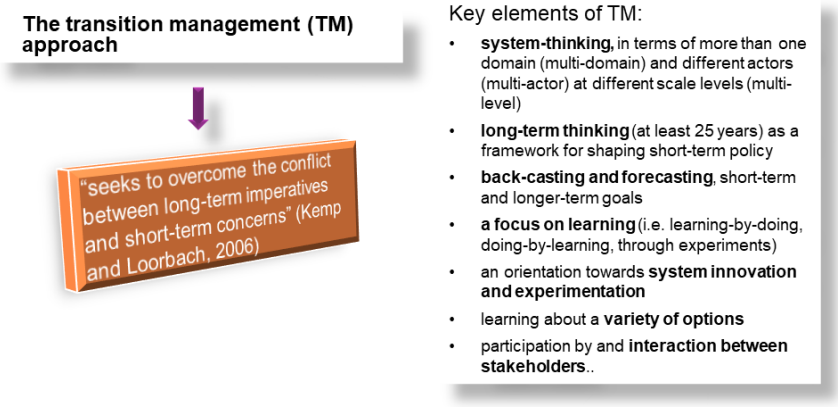

Figure 17.9: Transition Management approach [70]

With the main scope to "overcome the conflict between long-term imperatives and short-term concerns" [70], usual in sustainability policies, TM builds on co-evolutionary socio-technical systems, as previously presented, and is used for 'managing' transitions to sustainable energy, mobility, agriculture and the sustainable use and management of natural resources [5]. In particular, TM conceptual focal point is on the micro level, that is, on a confined transition arena that is expected to provide a protected breeding ground for new ideas and policy option. This focal point promoted its applicability to local initiatives, such as nature-based solutions (NBS) ones [71], and becomes the backbone of many living labs [5]. In addition, its reflexive process, on learning and change, stimulates bottom-up initiatives and a multi-level *governance* Type II, defined also as *mosaic governance* [71], whereas state actors can "rely upon non-state actors in the formulation and implementation of public policy" [72].

TM is concerned with positive goals, collectively chosen by the community or *niche,* following a process of problem structuring. However, what characterises TM is to have, together the content goals, also process goals, such as learning, maintaining variety, and institutional change, which are used as means for change. This means that, also in case of failure whereas the SSD does not survive, the process generates positive outcomes. That makes TM a dynamic process of social learning and network building, whose evaluation and adaptation, in terms of strategies, involved actors, and progress, brings flexibility without losing a long-term focus. Strategic are, therefore, bottom-up local initiatives for moving different levels of government to the dialogue, and to foster self-organisation through new types of interaction and cycles of learning and action.

Thanks to that, communities can explore alternative social trajectories in an adaptive, forward-looking manner, combining the capacity to adapt to change with

the capacity to shape change [73]. TM relies on the interaction between processes at three levels [70]:

- *Strategic*: processes of vision development, strategic discussions, long-term goal formulation, etc…
- *Tactical*: processes of agenda-building, negotiating, networking, coalition building, etc…
- *Operational*: processes of experimenting, project building, implementation, etc…

At each level, specific types of actors participate, specific instruments are used, and different competencies are needed. That brings to different clusters of activity and outputs at each level, which co-evolve throughout processes of alignment in a combination of network-governance and process management. We can identify four different clusters of activities [70]:

- *Strategic activities*, which deal primarily with the "culture" of a societal system as a whole (e.g., the so-called Strategic Transition Arena, problem structuring and vision development)
- *Tactical activities*, which are interest driven and relate to the dominant structures (regime) of a societal system (e.g., agenda-building, transition-paths)
- *Operational activities*, such as experiments and actions with a short-term horizon often carried out in the context of innovation projects and programs
- *Reflexive activities*, which are related to monitoring, assessments and evaluation of ongoing policies, and ongoing societal change.

Being concerned with the co-evolution of technology and society in a broader sense, TM creates various cycles of feedback among different regimes, usually poorly connected, opening space for innovation more long-term oriented. As affirmed by Kemp, Loorbach, and Rotmans [74], partial solutions are forgone for options offering a greater suite of benefits.

By promoting local community experiments, TM helps generating new insights regarding the experiment and its direct context, but also regarding the long-term goals and visions. From a co-evolutionary perspective, that activates a continuous reflexive learning cycle between experiments and innovations (learning-by-doing). The acquired knowledge, then, empowers the community, which develops long-term strategic visions and goals (doing-by-learning) and becomes pioneer and lighthouse for the external landscape. In terms of governance, being stemmed from a public Dutch initiative, it is not surprising that TM is not disruptive and, by relying of reflexivity, aims at a re-institutionalisation of the processes. It attributes the role of facilitator and mediator to the public bodies, in a heterarchical, centralised, and collaborative structuring form, oriented to produce controlled structural change [75, p. 109]. The changes that happen are based on self-confrontation and learning, such as the modification of structural links, and on the self-understanding of stakeholders in terms of identity, strategic capacities, individual and collective interests, and their preferred strategies and tactics [75, p. 110].

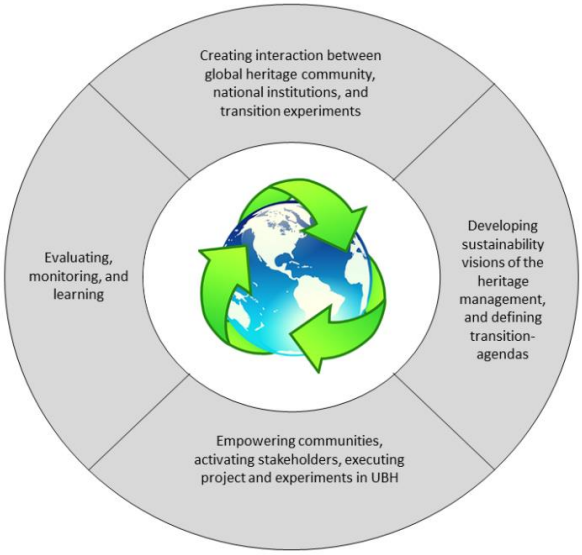

Figure 17.10: Activity clusters in transition management, adapted from [70]

TM activities can be illustrated only in general terms, and need to be adapted and individualised for every specific context or problem, "because they are largely dependent on the nature of the transition problem at hand and, because of the interactive nature of transition management, on the actors involved" [70]. In terms of UBH valorisation, a good exercise is starting to define the TM application potential benefits, such as:

- Exploring radical options, that fundamentally diverge from the status quo, which could be based on technology or social innovation
- Linking concrete local actions and broad societal challenges, such as the sustainable development goals, as well as HUL objectives
- Orientating towards feasibility in the short-term, for assisting community development, and balancing with long-term goals
- Acknowledging the central role of social learning for achieving a transition towards sustainability, and promote a reflexive attitude among the stakeholders
- Perceiving the communication and mobilisation of people as an integral ingredient of the process, by developing storytelling approaches and giving visibility to local success stories.

Being a dynamic and iterative process, TM promotes a continuous re-assessment of the formulated goals and policies to move closer to those goals. By systematically evaluating formulated goals, experiments and policy approaches can be adapted, which leads to a new round of learning-by-doing. The cyclical and iterative TM activity clusters for heritage goals are portrayed in Fig. 17.10.

This flexibility makes TM able to adapt to different social, economic and cultural regeneration contests, characterised by different underground space, local services

demand, touristic potential, legal frameworks, and stakeholders. In addition, by facilitating community participation and local capacity building, in forms of *transition arenas* or *living labs*, TM promotes transformative social innovations, that is, processes of changing social relations, involving challenging, altering or replacing the dominant institutions in a specific context [70].

17.5.3. *Towards a Strategic Transition Practice (STP)*

One of the main critics to the TM is related to its aim to re-institutionalise processes, mainly focused on technology, by necessarily attributing the role of facilitator to the public bodies, as well as to take into account the global networks. In this way, it neglects inequalities and questions of power, at the basis of community empowerment, such as who decides the kind of transition to pursue, or who wins and who loses with different transition paths, with a clear risk that public sector manipulates communities in doing what the public is not able to do at large scale. In addition, TM finds limits, as well as opportunities, to intervene in complex systems of culture (ways of thinking), practice (ways of doing, routines, habits) and structure (government, organisation) [76, p. 162]. Finally, TM puts in the same experiment technology supply and demand, which also could create distortions and mistrust.

In order to drive 'practice-oriented' local challenges in heritage management and overcome these weaknesses, the approach known as *Social Practice* [76] could be helpful. According Giddens, human activity and the social structures that shape it are recursively related, and, therefore, it is through practices that the "constitution of agents and structures are not two independent given sets of phenomena, a dualism, but represent a duality" [77, p. 25]. In substance, if we move our approach to practices, we do not any more focus of the individual, but on modes of social relation and on mutual actions. Going back to HUL engagement tools, this means that if we approach the tools from the social practice perspective, we could connect human activity (the agent) and social structure (rules and meanings), the informal behaviours to the rules, and then develop practice-oriented policies. This integrative approach, which tentatively we could name Strategic Transition Practices $(STP)^2$, would promote local communities' empowerment and action, based on shared social conventions, which not necessarily flow in a multi-level strategic dialogue. A practice of transition is not cause-and-effect, as for the TM goal-oriented process, but practice-oriented built on emergent ideas and projects that may undergo metamorphosis over time and change meaning, as in the case of Forester's planning construction of meaning. Each different practice is an outcome of complex and *emergent* processes "over which no single actor has control" [76, p. 144]. That clearly change the actual and potential role of public policies in the process, which become part of the patterns, systems and social arrangements they hope to govern. Citing Shove et al., "they do not intervene from the outside, nor do their action have effect in isolation" [76, p. 145]. Now, our framework is better defined, with the public deeply inside the process, as part of the living lab, at the same level of the other stakeholders, not facilitating the process any more. In this way, it is possible to imagine STP, with experiments in protected places, such as living labs, promoting any

local community's positive change, and building capacity in the involved regions, among public bodies, communities, private companies, practitioners, academics and any other stakeholder. This change is historically specific within a landscape of possibilities that is, in any case, always in transition [76]. To the question how can STP be transferable to external landscapes, we should consider that this practice-oriented approach draw attention to historical, cultural, and social specificities of the communities, which reflect distinctive accumulation of meaning, materiality and competences [76].

Adapting the methodological steps of SSD and TM, we can configure an integrative approach, the STP, based on the following elements:

- *Experiment-based*: experiments built on agile development and rapid prototyping of ideas, concepts, products, services, and processes in a highly decentralised and user-centric manner
- *Radical steps*: actions structured in a succession of short but radical steps, involving sequences of *trail-and-error* learning, in a long-term perspective
- *Social innovations:* activities promoting innovations that are social in their ends and means
- *Practice-oriented:* no single actor's action, but a process of practices in which the single individual participates
- *Community-oriented:* information, analysis and expertise oriented to support the community to a collective construction of meaning. Leading role assigned to the community
- *Co-design thinking*: going further, by actively engaging all stakeholders on an equal footing in all phases of development, encouraging creativity in problem solving and social innovation.
- *Collective learning*: through the focus on collective learning at the community scale, local action' freedom to more radical testing and searching, to establish a more lasting way forward for other communities to follow.

Through its use in living labs, this only sketched STP approach could support a relevant step forward to define new elements of practice, and provide a significant knowledge base for a sustainable use of the UBH. In particular, by empowering local communities, recognising, and respecting their cultural heritage, while supporting the co-development of adaptative, innovative, and traditional practices, it could favour a better governance of multi-functional landscapes and contributing to their resilience and adaptability.

17.6.4. *Living Lab phases for a case-study*

The living lab can be defined as "protected spaces for developing and experimenting new practices, and promoting external landscapes (i.e., local communities independent from vested interests and the lock-ins created by lobbying and regulatory capture)" [16]. It is a key component of the COST action CA18110 activities, being the backbone of its case-studies approach. Establishing and implementing living labs would support the regeneration of a sense of community, reinforce local identity, revitalise space and places, and enhance quality of life. However, their

success depends on several factors, external and internal to the action, such as the process followed, the facilitator capacity and independence, and the practices generated.

Based on the STP approach, it is possible to define a first tentative of operational model of UBH Living Lab in four phases. The first question is about who can initiate a STP process. Being *practice-oriented* and *community-oriented*, no excessive significance is attribute to who starts the process – public, private, or collective organisation – being an informal network within which a group process unfolds, often in an unplanned and unforeseen way. In terms of group dynamics, a group is much more than the sum of the individuals. In general, it takes a few iterations before a stable, diverse and representative constellation has been formed. A second question is about who is going to facilitate the process, which should be managed by an intermediate institution, without vested interests and strong ties with one or more of the main stakeholders, acting as a 'broker' [78] to avoid 'lock-ins', composed by a team of experienced people with a variety of complementary skills and backgrounds, able to guide in a flexible, but determined way, the process.

In the first phase, the *preparatory phase*, archaeologists, planners, and all other invited experts produce a knowledge base of the heritage site, including historical, ecological, regulatory, and legal frameworks, as well as social and economic analysis, as well as recovering local tradition, habits, and storytelling.

Facilitators map the stakeholders, both public and private, searching for community leaders, visionary, and the so-called frontrunners (pioneers, niche players), in order to define a preliminary potential partnership, and identify groups to empower with a TM approach (Fig. 17.11).

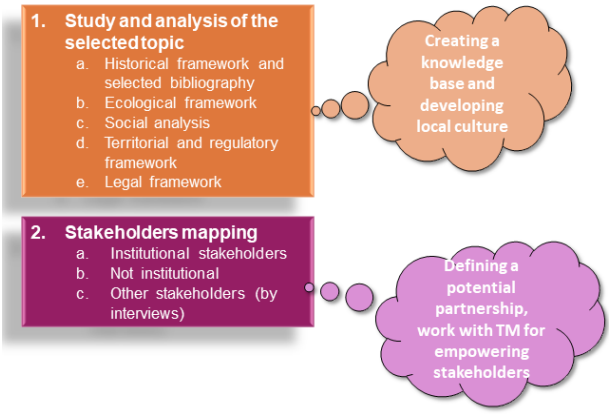

Figure 17.11: STP for UBH living labs: preparatory phase

The second phase, the *start-up phase*, deals with the living lab establishment and organisation, managed by the initiator and supported by a facilitator/moderator. In this phase, initial general goals are defined, the approach structured, and the rules of participation agreed. In particular, rules must help to create a protected environment (the *niche*), relatively safe and free, without any power hierarchy, able to guarantee transparency, develop trust and reciprocity, and stimulate the development of creative, innovative ideas. The knowledge base is made available and stakeholders

supported in their empowerment process and leaders selected. An Agenda is defined and relationships established with (parts of) the global heritage community, public bodies, and non-participating organisations (Fig. 17.12).

Figure 17.12: STP for UBH living labs: start-up phase

The third phase is the *operational phase*, where the knowledge is deepened and becomes interactive, new technologies for UBH conservation and monitoring experimented and applied, and Business and Management Models for public/private built heritage developed. In this phase, the goal is developing strategies for UBH valorisation, through processes of co-creation, co-development, or co-design, as well as define options based on data, technology, and sustainability, as well as developing a collective construction of meaning for the solution. This phase is strongly iterative and is directly connected to the subsequent phase (Fig. 17.13).

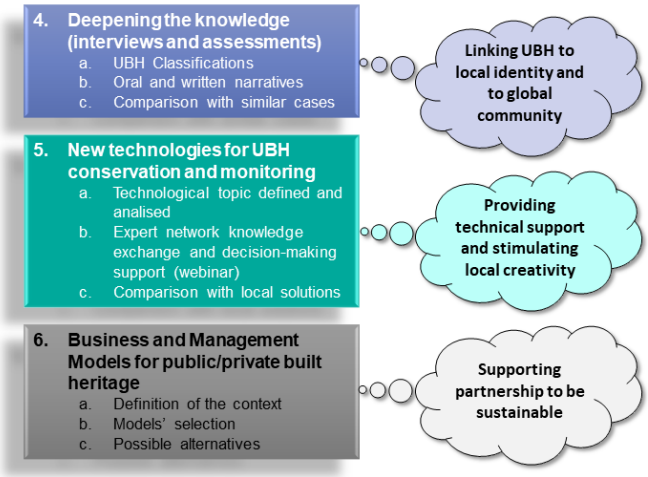

Figure 17.13: STP for UBH living labs: operational phase

Finally, the fourth phase is the *reflexive* one, with assessment and storytelling. This process activates a continuous reflexive learning cycle between experiments and innovations (learning-by-doing). The acquired knowledge, then, empowers the pioneering community, which is stimulated to develop long-term strategic visions and goals (doing-by-learning), as well as helps HUL approach improvement and

global heritage community transition. Finally, the storytelling aims at supporting a development of community sense of belonging and providing a positive attitude towards partnership (Fig. 17.14).

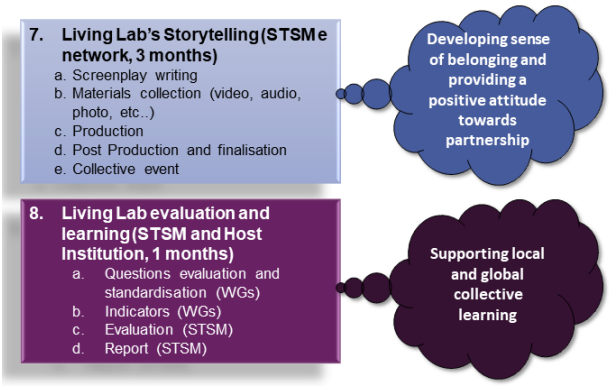

Figure 17.14: STP for UBH living labs: reflexive phase

It is hardly possible to specify the concrete results or impact of a process. In the short-term, indirect or intangible effects could be important as the direct effects, such as a new dialogue, a renewed trust, a shared perspective among participants. If well managed, the process could generate positive and self-sustaining 'natural' interdependencies, a place of identity and attractiveness, and activate a favourable environment from both social and economic point of view.

17.7. Some final remarks

This chapter has introduced both conceptual and operational contents, in order to develop specific tools for supporting communities in heritage valorisation from the one side, and to support capacity building both at theoretical and practical level, open the way for stimulating the development of new skills in the field of planning and decision-making, on the other side. Central in any civic engagement process is the role of facilitator/mediator, who really makes the living lab a protected space where dialogue is possible, try-and-error acceptable, and community can feel empowered.

In terms of approaches, we moved from 'process-oriented' (SSD), to 'goal-oriented' (TM), to finally 'practice-oriented' (STP) approach, in order to be closer to the cultural attitude at the basis of local communities. We started from the understanding that communities recognise heritage values in terms of culture and identity production, but often miss a clear cultural and technical background for releasing its potential and contributing to sustainable development. However, we are aware that, especially in the cultural heritage sector, changing the top-down approach is a challenge, which requires a fundamental shift in the development path and implies a social innovation, that is, new practices and behaviours that enable the society to meet its needs in a more sustainable way. We are also aware that the interaction

between local and expert knowledge in the field of community heritage is a prerequisite for implementing the UNESCO approach. That means designing a new role for the global heritage community, which could bring them to a real interactive participation in the construction of new meanings for abandoned and neglected UBHs, through cultural enhancement and targeted, concerted community strategies. We are even more aware that the main challenge for these alternative approaches is to guarantee the involvement of community members in formal decision-making processes. Only by succeeding to handle these questions in different contexts, we can open the way to new forms of collaboration among key actors (from science, policy, market/business and society), and to a more favourable environment for culture, talent, entrepreneurship, creativity and innovation. To face these general and seemingly unsurmountable challenges, we need, in addition to theories and methodologies, strong principles and adaptable tools, guiding us in this process of social practice, and translating it in experience, from both academic and professional point of view.

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NOTES

[1] See http://www.underground4value.eu

[2] Previously, in the CA18110 proposal and in the first period of activities, the tentative name was "Strategic Transition Management" (STM), which misses a clear separation from Transition Management (TM)

PART 2

CASE STUDIES

CHAPTER 18

Place for the dead, place for the living
Transformations and heritagisation of the Fontanelle Cemetery in Naples

Elisa Bellato

18.1. Introduction

The Fontanelle Cemetery is one of the case studies chosen in the context of the COST Action 18110 "Underground Built Heritage as catalyser for Community Valorisation". The Action started from the Institute for Studies on the Mediterranean of the National Research Council of Italy (CNR-ISMed), which launched a series of initiatives to foster a process of site valorisation. The aim is to redevelop the Fontanelle Cemetery as a heritage site that would represent also an economic and social resource for the territory.

The Action is still ongoing, but it is interesting to notice how the conversion into heritage site is happening smoothly, renewing the value of the place in a contemporary and widened form. Thus, new practises, postures and meanings add up to or replace the rituals and logics of the past. For instance, the guided visits are introduced beside the devotional practises and the human remains-related economy makes way for an economy connected to touristic flows.

Moreover, the dynamics in place show the importance of public-private forms of collaboration and the necessity to identify local spokespersons familiar with the context. Indeed, Rione Sanità is among the city districts with the most difficult social balance, where public institutional representatives are barely acknowledged [1]. Also, given the significant role played by the local church, we can say that – in this specific case – the forms of participation show an interesting continuity between religious and civic values. In this sense, the case of the Fontanelle Cemetery documents in an exemplary fashion the variety of objectives, practises and actors involved in contemporary heritagization processes.

The specificity of the site stands out, with its history of several reuses over the centuries but also an essential contemporary identity as place of worship combined with a recent tourist vocation. At the same time, dynamics of adaptation, re-semantisation and common heritagisation claims can be recognised and are useful to analyse even in a comparative perspective.

I would like, finally, to thank Andrea Murzi for his work of translation in English of this paper.

18.2. **Gifts and relations among the living and the dead**

The Fontanelle Cemetery of Naples is a monumental ossuary (over 3000 sqm) obtained from the inside of a former tuff cave in the northern part of Naples' historic centre. Its history is also interesting because it documents a practice that is an anthropological universal: the care for human remains. Every social group carries out cultural interventions over the dead bodies by avoiding their abandonment and taking care of them through manipulations and rituals of different nature [2]. Rather than finally well-defined conducts, it is about habits and behaviours that change depending on places and times – especially reflecting the living's needs.

Figure 18.1: Fontanelle main nave. The original tuff quarry structure is clearly visible.

Indeed, today's Fontanelle Cemetery is the result of the transformation of the relationship between the local social context and its dead people. Throughout the centuries, the means available and the kind of attention devoted to the remains have changed. During the first phase, starting from the 17th century, the accumulation of bones and skulls was a matter of urgency; in times of epidemics and precariousness, the priority was the storage and isolation of corpses, seen as something infectious[1]. However, at the end of the 19th century, attempts were made to save the mass grave from neglect. Thus, the remains of the corpses – for centuries thrown in tuff tunnels – were now buried under the current cemetery's floor, and steps were taken to conduct an aesthetical and selective reorganisation of some of their preserved parts: skulls, tibias and homers. Since then, the organised arrangement of the bones – which here and there borders on geometric precision – exhibits an order that appears as a reaction to the previous chaos. Now, the need to adapt to the contemporary sensibility asks once again for a reorganisation of the cemetery, this time by following the trend towards heritagisation, that is to say the recovery, safeguard and valorisation of the place's past especially for touristic purposes. The site begins to be understood from a museum perspective. Scientific management needs prevail with

a view to shed light on the historical and cultural evidence meaning and respecting the conservation of materials (including human remains) that are now considered as historical "finds".

Figure 18.2: Capuzzelle (skulls) isolated inside boxes as a form of respect and thanksgiving for the grace received.

The Fontanelle Cemetery also documents another aspect studied by anthropologists, namely how the dead maintain relations with the community of the living [2]. This form of *post mortem* social life has quite complex religious, but also economic and therefore political implications. The most popular concerns the cult of the *anime pezzentelle*, miserable souls without anyone praying to help them leaving Purgatory (place of penance) to reach Paradise [3]. That is a popular devotion form, which translates the request for solidarity from the living to the dead into the care for these nameless souls' mortal remains: in the absence of whatever institution or family or friend circle, one turns to the dead.

The choice of and the care for a specific skull, selected among the thousands present in the Fontanelle Cemetery, affectionately called *capuzzella*, and the corresponding soul to pray for, activate a relationship of mutual exchange. Thus, the believer asks for a 'grace'. In this sense, such a cult tells a lot about the social reality where it developed. For instance, there is no coincidence that we are dealing with a mainly (if not exclusively) feminine practice[2]. Women are more in need of solace,

willing to find it also in their own beliefs, as described at the end of the 19th century by Matilde Serao when this cult was spreading. In her description of a destitute Neapolitan woman: "Actually, from the profound misery of her real life she got no other solace than that in the illusions of her fantasy: and no other shelter than God" [5].

Figure 18.3: The customs of caring for and decorating human remains continue today

The *capuzzelle*, regarded as able to grant clemency, are fully-fledged relics, but of a particular kind: "private" relics, one could say, meaning outside the official channel controlled by the Church. As relics, they are in some way instruments of power, therefore some skulls have been locked up in small shrines not only to celebrate them, but also to avoid that other people seize them. It is interesting to observe how this resource is managed directly by devotees, without intermediaries. Indeed, such form of autonomy appears to be a distinguishing feature of this underground space's stories as well as an unavoidable aspect to achieve a deep understanding and plan the future.

The "spirit of place" has ancient roots. Naturally, it is in constant renewal, but its specificities are still grounded, and its tradition is still significant. For example, in the context of the Fontanelle Cemetery, "private" and "public" are blended categories in some way. Thus, part of the district (Rione Sanità) life takes place in liminal spaces of undefined pertinence: between the familiar and the wider social sphere, between demarcation and sharing. In such a reality, physical proximity easily enhances the perception of the place as part of one's own past. Habits of real or

family-related acquaintances make for strong bonds, that is why regulations and limits turn out to be hard to understand or unacceptable. It is important to outline this scenario because it helps understanding events that made the cemetery's history, such as the closure by order of the Church – and in particular Cardinal Corrado Ursi – in 1969 and the criticism against the popular cult practices that took place in the cemetery[3]. Likewise, it is easy to understand the pacific occupation of the cemetery that was organised by the locals and their associations in May 2010 to obtain the reopening [6], finally achieved in 2012. The same goes for the endurance of the free entrance policy.

Figure 18.4: The orderly arrangement of skulls, homers, and femurs on the initiative of Father Gaetano Barbati in the late 19th century

Nowadays, the same dynamics of close relationship between the cemetery and the "community" [7][4] of faithful assume a different meaning in line with the priority given to participatory governance of cultural heritage [8]. That cemetery's double identity, place of worship and cultural heritage, shaped throughout the latest decades, is determining the renewal of these ties and the neighbourhood ('*Rione'*) involvement.

18.3. New uses and meanings

Today, the Fontanelle Cemetery is still a sepulchre but, at the same time, is acknowledged for its overall cultural value. The interest is not only reserved to the ossuary, but also to the stories it tells, and this has brought about some changes. For instance, one of the consequences of the filter imposed by a historicised eye is that

the bonds between the living and the dead have become mediated. With the increase in visitors, the intensity of the direct involvement with the dead has progressively decreased. If in the past, in some way, a relationship between the Neapolitans and some sort of ancestors existed, this kind of bond has gone lost with the many visitors coming from abroad.

Figure 18.5: The transfer of historical human remains to the Fontanelle Cemetery has continued also in the 20th century

The role of the Fontanelle Cemetery is changing at different levels. It is opening up to a wider public, which is not only local and that sees beyond what the loyal Neapolitan devotees see. Moreover, talking about religious tourism is not correct because, as we have seen, the features of the site and its history do not make it an accredited destination in this sector. Still, the tourists visiting the cemetery represent a key element: sure enough, it is a site of cultural interest, and it belongs to the so-called dark tourism [9][5] and, more to the point, to the "Thana-tourism" subcategory. Thus, in an era where tourism cannibalises the histories of places by re-somaticising them in a collective leisure key, part of the visitors arriving to via Fontanelle – in one of the historic districts of Naples – do not expect to find a cemetery but rather a macabre theme park with even a non-artificial scenography, hence particularly impactful. To this kind of target audience, the centre of interest is a generic idea of death devoid of any dramatic implications and reworked in caricatural terms fit for amusement.

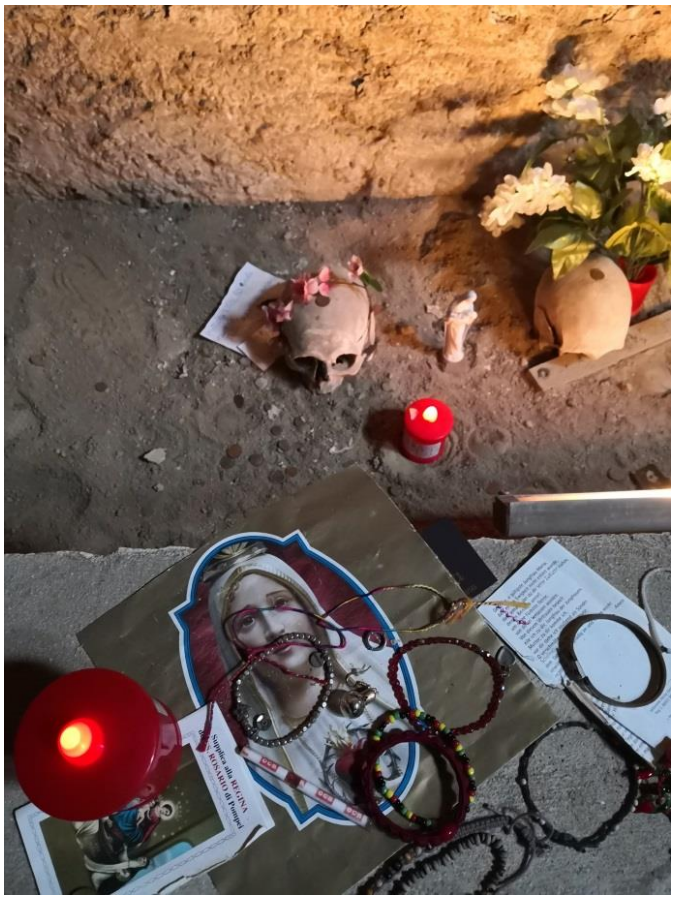

Figure 18.6: Small votive offerings that confirm the cult of the Purgatory souls' persistence.

In this sense, the bodies of the dead are still in communication with the living, but the methods and the content are in transformation. Most importantly, the terms of the relationship are expanding; they are projected in what is referred to as "global ecumene" [9][6], in a dimension that is ever more detached from precise geographical and cultural references. Blending and confronting meanings that are strictly connected with the original context and external influences is exactly one of the specific aspects of the heritagisation process. The awareness as well as the management of such an enlargement of the borders are going to make a difference when it comes to the undergoing project's result, not only to adapt the reception to new types of visitors but, above all, to predict its impact on the local reality so as to protect fragile spheres of cultural intimacy. In this regard, given the many associations and initiatives arisen over the years, there seem to be the conditions[7] to make the reinterpretation of the Fontanelle Cemetery in a touristic key happen through a look, which is also native – meaning that the point of view of the local protagonists is taken into

account. On this matter, the Catacombs of San Gaudioso, in the same district, represent a virtuous example. Their rediscovery as a touristic site has happened thanks to a representation that is both "cold", namely developed by institutional actors and external professional expertise, and "hot", by involving representatives of the community [7]. The latter also brought about important implications in terms of identification and sense of belonging[8].

At present, the owner of the Fontanelle Cemetery is the Municipality of Naples, which shares interests with the Church (through the parish), tied to the site by an ancient connexion [9], despite not playing any organisational role now. Both the institutions are well disposed towards a rationalised co-management of the site, as important place of cultural and spiritual value. It is significant that, in 2012, Fontanelle's parish priest has drawn attention to the necessity of "avoiding degenerations both in the cult and the utilisation of the cultural property" [12]. It is also interesting to note how the Church puts on the same level the prevention of traditional "episodes of superstition or folkloristic and commercial interpretations" [12] and the current mystifications and banalisations of history caused by inadequate guided visits.

Therefore, the heritagisation of the site is seen as a solution to achieve common goals by various entities and institutions involved: the catholic Church by means of the local parish, the city administration (owner), and civil society – represented in particular (but not only) by inhabitants of the district. The concept of cultural heritage, with the implicit actions and symbolisms, proves to be appropriate for the times and the expectations of wellbeing and sustainable development [14][10]. The 2016 Memorandum of Understanding between the Municipality of Naples and the Parish of Santa Maria del Carmine confirms it, and reveals a conversion, in eclectic terms, of the meaning given to the cemetery, which becomes a location for events of various kind within the limit of being "in harmony with the cultural and social identity of the place"[11]. Precisely, the Memorandum of Understanding aims to "relaunch and valorise the historic, artistic and cultural worth; rediscover its cultural and spiritual function; recover the full and qualified fruition by the city public; facilitate its inclusion in a large-scale circuit".

The project related to such agreement has not been implemented yet, and essential aspects are still to be defined: how to secure the site, the definition of a visit itinerary that safeguards the cultural finds and the visitors, both tourists and worshipers, the valorisation as an economic resource. There is still much to solve but the current scenario testifies the potential of heritagisation as a process for the social and economic redevelopment of a territory. Furthermore, this is another example of how heritage has progressively gone beyond the traditional borders of "cultural" to be mixed up with the many fields of the social and political spheres, becoming a catalyst for diverse expectations based on different contexts [14].

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NOTES

[1] This was the case for the victims of the plague epidemic in 1656 and the cholera epidemic in 1837; the number of bodies ranges from 250.000 to 300.000 [4].

[2] The documentary "In Purgatorio" (2009) by Giovanni Cioni provides useful information on the topic. For example, it shows that adult men's knowledge of the Fontanelle Cemetery dates back to childhood experiences, namely when they used to visit it with their grandmothers. Indeed, mothers and grandmothers – especially those who experienced war – addressed the souls of Purgatory to obtain help. Requests to the *capuzzelle* include finding a job, avoiding military service, getting married, healing, winning the lottery, getting pregnant.

[3] The instances to modernize the Church, expressed by the Second Vatican Council (1962-1965), were in sharp contrast with the many traditional ritual practices imbued with more superstition than religious content.

[4] The concept of "community" is used to conventionally describe the reference group of the site at issue. Still, trying to refer to a completely homogeneous social aggregation is clearly deceiving. Therefore, talking about "expectations of community" – including diverse and discordant positions – would be more appropriate [8].

[5] Malcolm Foley and John Lennon coined the definition in the 1990s [9].

[6] The anthropologist Ulf Hannerz coined the concept.to define the contemporary global dimension in which geographical and cultural borders get lost [10].
[7] "The district is a true laboratory of heritagisation from the bottom up" [11].
[8] The district experienced a sense of pride for a site that is appreciated and able to attract visitors coming from afar.
[9] In the past, the access to the Cemetery was inside the sacristy of the Church of Maria Santissima del Carmine.
[10] Cultural heritage is a group of resources inherited from the past, which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage has a role in the construction of a peaceful and democratic society, and in the processes of sustainable development and the promotion of cultural diversity [11].
[11] The Memorandum of Understanding was signed on 1 June 2016 by the Mayor Luigi De Magistris, on behalf of the Municipality of Naples, and Reverend Priest Giuseppe Rinaldi, on behalf of the Parish. To date, though, such agreement has not been put into effect yet.

CHAPTER 19

Naples

A Living Lab for the Management of the Fontanelle Cemetery

Juan Valle Robles

19.1. Naples urban background

> *Paragraph number 125*: "We will support the leveraging of cultural heritage for sustainable urban development and recognize its role in stimulating participation and responsibility. We will promote innovative and sustainable use of architectural monuments and sites, with the intention of value creation, through respectful restoration and adaptation. We will engage indigenous peoples and local communities in the promotion and dissemination of knowledge of tangible and intangible cultural heritage and protection of traditional expressions and languages, including through the use of new technologies and techniques." [1]

The First Underground4value Training School has been conducted on 10-15 February 2020 in the Castel dell'Ovo, Naples, an impressive architectural location for discussing and learning about heritage valorisation. This Training School is an important achievement for the COST Action CA18110 Underground Built Heritage as catalyser for Community Valorisation. The City of Naples was a perfect location to host the school with its 30 trainees and 26 trainers coming from 15 countries (Europe and Turkey). This chapter analyses different challenges in urban planning for the city of Naples, especially how to link urban topics with heritage valorisation concepts.

Urban data	
Population Great Naples (2014)	4,500,000
Metropolitan City of Naples (2020)	3,034,410
Naples conurbation (% of total Campania population)	77.56 %
Urban population growth (annual %)	0.23

Table 19.1. Naples' urban data [2]

Naples is the capital of the Campania Region, the centre of the Metropolitan City of Naples, and one of the largest urban areas in Italy. According to the Istituto Nazionale di Statistica (ISTAT) [2], the Greater Naples has about 4,500,000 inhabitants in 2019, which represents 77.56% of total Campania Region population. The urban density is 224.4 inhabitants per square meter (Fig.19.1).

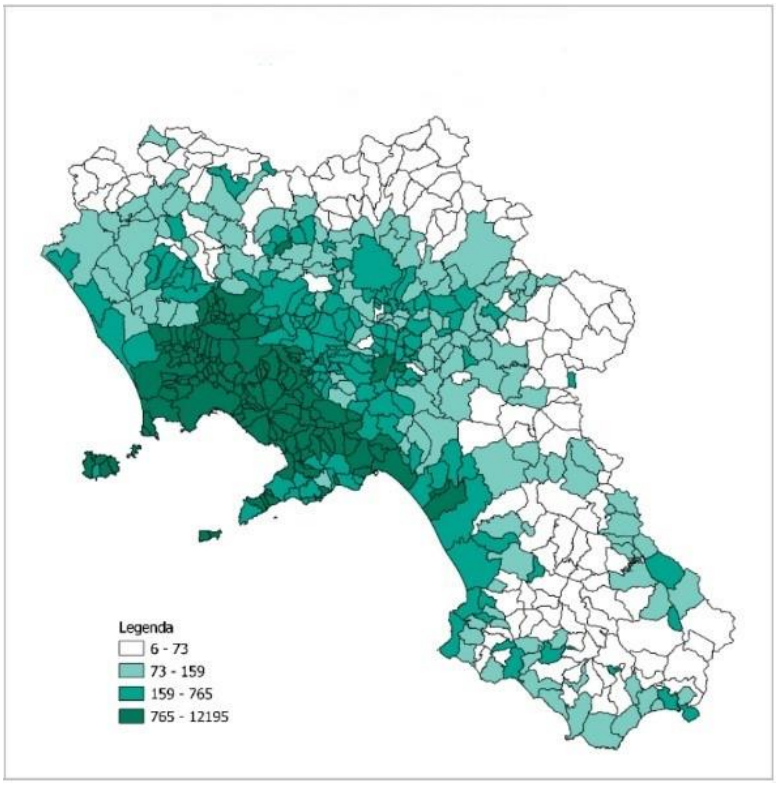

Figure 19.1: Campania region urban density, population/km² [4]

Like many other metropolises, Naples is still trying to grapple with managing their urbanization growth and territory transformation. The Great Naples's high population and urban phenomenon also has some risk and vulnerabilities in terms of land use or climate change. According to the Istituto Nazionale di Statistica (ISTAT) the Great Naples has the following urban data (Tab. 19.1).

Urban planning policy approach is beneficial when long term solutions are sought, that does not necessarily short-term economic benefits but serve the society well on a longer-term perspective. The challenge is to have regulations on a level where there is development (social, environmental, and economic sustainability) towards the overall optimised solutions without hindering new innovative solutions. This chapter investigates outcomes for improving some urban topics in the city of Naples and enabling a more sustainability on urban planning environment.

It is without doubt then that urban planning must use a holistic approach and that Naples current urban form is due to centuries of history by the stakeholders involved in it (public or private). Urban planning and buildings codes are unique tools to design and project an urban city model for future scenarios of urban population growth, environment (climate and natural disasters) and economy. Urban city forms and spatial structures have impacts on strategic SDGs targets (Box 19.1) such

BOX 19.1. Sustainable Development Goals (SDGs) targets (Goals 11 and 13) disaster risk sensitive

Goal 11. *Make cities and human settlements inclusive, safe, resilient, and sustainable*

Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, and children, persons with disabilities and older persons.

Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage.

Target 11.4.1: Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship).

Goal 13. *Take urgent action to combat climate change and its impacts*

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Target 13.2: Integrate climate change measures into national policies, strategies, and planning.

as urban land use, land value, density and compactness, urban economy, environmental and social segregation. Cities are the most complex realities built by humans. Urban planners and policy makers must work together with tools, namely: master plans, guidelines of land use and land value, transport, and connectivity (urban transport infrastructure), and bioclimatic buildings codes. The complexity of a city gives the push to always make good decisions. Climate, spatial and urban indicators need to be constantly monitored to verify that the city is evolving in the spatial and climate direction aligned with national and local objectives.

Nevertheless, Naples is one of the most beautiful and charming cities of the world, and since 1995 its historic centre was included in the UNESCO World Heritage List, with the following motivation:

> "Criterion (iv): Naples is one of the most ancient cities in Europe, whose contemporary urban fabric preserves the elements of its long and eventful history. The rectangular grid layout of the ancient Greek foundation of Neapolis is still discernible and has indeed continued to provide the basic form for the present-day urban fabric of the Historic Centre of Naples, one of the foremost Mediterranean port cities. From the Middle Ages to the 18th century, Naples was a focal point in terms of art and architecture, expressed in its ancient forts, the royal ensembles such as the Royal Palace of 1600, and the palaces and churches sponsored by the noble families" [3] UNESCO.

The delimitation of the historic centre refers to the one approved by the 1972 Naples General Master [5] (D.M. n. 1829 del 31/3/72). The following, and current 2004 Naples General Master Plan (Piano Regolatore Generale) [6] expands historic centre delimitation outside the UNESCO perimeter, including the 19th century neighbourhoods. According to the National Urban Planning Law, all urban interventions must be approved by the responsible *Soprintendenza*, a regional or local office of the Ministry for Cultural Heritage and Activities. This national level is often seen, also by local bodies, as a limitation and barrier to the local development,

a sort of centralised power to decide about history and conservation, becoming a means of separation between local and national level.

19.2. **Urban Tourism. Naples urban policy**[1]

> *Paragraph number 60*: "We commit ourselves to sustaining and supporting urban economies to transition progressively to higher productivity through high-value-added sectors, by promoting diversification, technological upgrading, research and innovation, including the creation of quality, decent and productive jobs, including through the promotion of cultural and creative industries, sustainable tourism, performing arts and heritage conservation activities, among others." [1]

The City of Naples is familiar with tourism for evidence-base reasons, the richest art history, and the underground value, among other urban and heritage values. The impact of tourism is mostly economic, intricately linked to others urban issues as a land use, land value, transport planning, infrastructure (water, waste, and sanitation) and demographic developments.

Before COVID-19[2], global tourism had grown significantly in recent decades, culminating in an estimated 1.5 billion visitants in 2019 [3]. Tourism is not a new phenomenon and plays a key role in regional (Campania) and in the city (Naples) economic activity, as a catalyser for job creation, and as a source of revenue and domestic value added. According to the ISTAT, the City of Naples had 13,161,395 tourist arrivals of nights in 2017 [2].

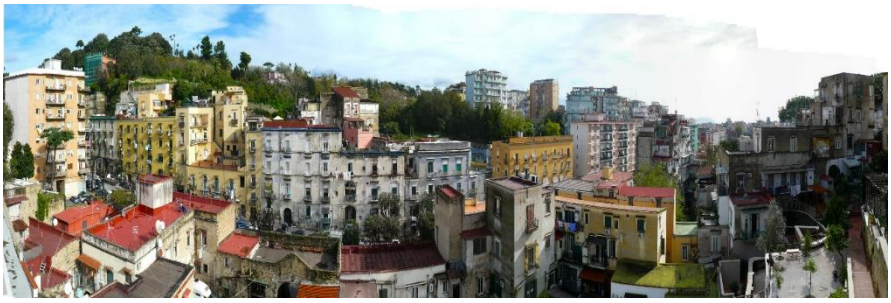

Figure 19.2: The "Rione Sanità"

The tourism has been a key trend as a development and transition from urban renovation to urban regeneration of historical city of Naples. The City of Naples has some territorial vulnerabilities: we could say that Naples, as many other cities, can often be divided in neighbourhoods. In this divided city, specific groups are concentrated in distinct neighbourhoods, facing limitations to access opportunities, amenities, and services. The Rione Sanità is one of them, a city inside the City of Naples. The socio-economic, cultural, and environmental characteristics of the Rione Sanità provide high evidence on the existing spatial inequalities and segregation in Naples. It shows multiple dimensions of inequality, including low job opportunities, income levels, cultural-education background, and access to jobs by public transport (Fig. 19.2). Rione Sanità is an extraordinary and vibrant urban fabric in which cultural and natural heritage (caves and underground places) are not

only an irreplaceable source of identity and inspiration for the local community, but also a key driving force for a sustainable development (socio-economic, cultural and environmental).

Tourism has the potential to contribute, directly or indirectly, to all the Sustainable Development Goals (Goal 8, 11, 12, 13 and 14) [7] [8][3]. Tourism can provide direct jobs to the community, such as tour guides or in the hospitality industry (hotels, cafés, and restaurants). Indirect employment is generated through other industries such as agriculture, food production, creative industries (art, music performance, crafts) and retail (souvenirs).

Figure 19.3: Rione Sanità infrastructure context

Infrastructure and planning in a long term is one of the key pillars for an urban development or re-development districts. Infrastructure development such as transport (public transport), public spaces, schools (education infrastructure), and retails areas have the potential to benefit the local community and can significantly improve economic development by allowing more trade and better flow of goods and services.

The local government, the Naples Municipality, has a historical territorial challenge with the Rione Sanità. It is critical for all stakeholders, the local community, and governments at the regional level and local, to explore and understand the multidimensional implications of the trend divided city. The mobility and connectivity of local community and tourist is affected by developments of transport policies and access to infrastructure and broader territorial planning environment. Regional and local policy makers and key stakeholders, cultural, commercial, retail, tourism, and NGOs/Foundations sector, should design and plan for redeveloping or retrofitting district by investing in infrastructure to support those with mobility and connectivity

(Fig. 19.3). Regional (Campania Region) and local government (Naples Municipality) have control over a wide range of policy instruments that are crucial to fight territorial inequalities in the city of Naples. Land use planning must include a long-term perspective to incorporate territorial inequalities impacts. Resilient infrastructure investment incentives can be strengthened to be more aligned with land use policy objectives.

Local development policies inherently involve multiple stakeholders (Naples Municipality, local community, NGOs, civil society, etc.) at all levels of local government and are defined by a long-term time horizon. No single policy or governance mechanism offers the perfect response to any, let alone, Rione Sanità' challenges. The creation of a formal urban group with all the stakeholders involve, should provide guidance and innovative urban solutions on how to define conditions (socio-economic, cultural, and environmental) for re-development Rione Sanità urban district.

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NOTES

[1] According to the OECD, urban policy is defined as a coordinated set of policy decision to plan, finance, develop, run and sustain cities of all sizes, through a collaborative process in shared responsibility within and across all levels of government, and grounded in multi-stakeholder engagement of all relevant urban actors, including civil society and the private sector.

[2] Coronavirus disease 2019 (COVID-19) is an infectious disease caused by coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China, and has resulted in an ongoing pandemic.

[3] The 2030 Agenda for Sustainable Development (SDGs) (United Nations, 2015). Goal 8 – Decent work and economic growth. Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all; Goal 11 – Sustainable cities and communities. Make cities and human settlements inclusive, safe, resilient, and sustainable; Goal 12 – Responsible consumption and production. Ensure sustainable consumption and production patterns; Goal 13 – Climate action. Take urgent action to combat climate change and its impacts and Goal 14 – Life below water. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

CHAPTER 20

Case Study: Göreme in Cappadocia, Turkey

Müge Akkar Ercan

> "Cappadocia (pronounced/kap-ă-doh-shă/; also Capadocia; Turkish Kapadokya, from Greek: Καππαδοκία). The widespread belief is that Cappadocia's name was originated from Katpatuka, land of the beautiful horses, in Hittite language." [22]

20.1. Introduction

Cappadocia is located in Turkey on the rugged plateau of the Taurus Mountains. It is a unique 'natural heritage' setting and a miraculous nature wonder in the world. As a region of plains and mountains in Central Anatolia, the boundaries of Cappadocia reach to Kızılırmak ('Red River') in the north, to Tuz Gölü (Salt Lake) in the west, to the Taurus Mountains in the south.

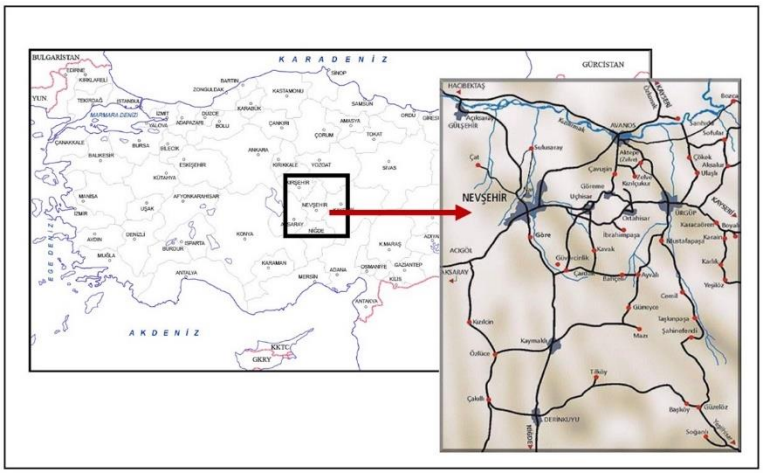

Figure 20.1: The location of Cappadocia (Akkar Ercan, 2020)

The boundaries of this large region have continuously changed throughout history. In modern Turkey, Cappadocia covers the provinces of Nevşehir, Kırşehir, Niğde, Aksaray and Kayseri. Nevşehir, Ürgüp, Ortahisar, Derinkuyu and Göreme are at the centre of this region, as show in Figure 20.1.

This special landscape was initially formed by the volcanic eruptions of Mount Erciyes, Mount Hasan and Mount Güllü around 10-2 million years ago [4]. The lava of these volcanoes formed a layer of 'tuff' (i.e., soft porous volcanic rock) on the plateaus, lakes and rivers with varied hardness and thickness of 100 and 150 meters. Erosions, wind, rains and other natural conditions have shaped the landscape of Cappadocia, featured by the dramatic expansion of these soft volcanic rocks, slowly and steadily. The today visible rock formations include rock towers and cones known as 'fairy chimneys', valleys and caves (Figure 20.2).

Figure 20.2: The special landscape of Cappadocia (Akkar Ercan, 2019)

Various types of fairy chimneys exist in Cappadocia: those with caps, cones, and mushroom like forms pillar and pointed rocks [4]. Other geomorphological characteristics of the area are the sweeping curves of the valleys, formed by rainwater. Some of the valleys, such as Güldere Valley in Çavuşin, Meskendir Valley in Göreme, Kızılçukur Valley in Ortahisar and Pancarlık Valley, have the array of colour due to the difference in heat of lava layers [4].

Underground built heritage (UBH) is a prominent characteristic of this region. There are rock-cut settlements, individual buildings such as churches, and underground cities hollowed out of soft tuff from different historic times that are located in cities and countryside. Hosting trade colonies throughout history and founding commercial and social bridges between countries, Cappadocia was also one of the important junctions of the Silk Road. The most visited attractions include the sprawling underground cities of Derinkuyu and Kaymaklı, and Göreme National Park. Other important places to visit include Zelve Valley, Paşabağ, and Avanos with its pottery and carpets, rock fortresses of Uçhisar and Ortahisar, Ürgüp, Ihlara Valley, Soğanlı, Sinasos and Hacıbektaş. In Avanos, where the main economic activity is pottery, local artisans use a craft dating back to the Hittite period, the red clay of Kızılırmak.

Ürgüp (Assiena) is one of the most important towns in Cappadocia. Beside culture and heritage tourism activities, hot balloon trip over ferry chimneys and valleys,

trekking, walking, horse riding, motorbike and mountain biking, ATV riding are other tourism activities. The region is famous for winemaking and grape growing. Caves have always been used to store foods, such as the harvested grapes, squash them to make wine, grape juice or grape molasses. There also exist underground storages for different purposes.

20.2. UBH History background

Cappadocia is a large region with a very long history of UBH. The origins of the region can be traced back to the prehistoric periods -the Palaeolithic, the Neolithic and Chalcolithic ages- when craters and volcanic rocks dominated the landscape. For hundreds of years, Cappadocia became the home of many civilisations, societies and communities, which built dwellings, settlements and underground cities by digging into this soft, but firm tuff (Fig. 20.3).

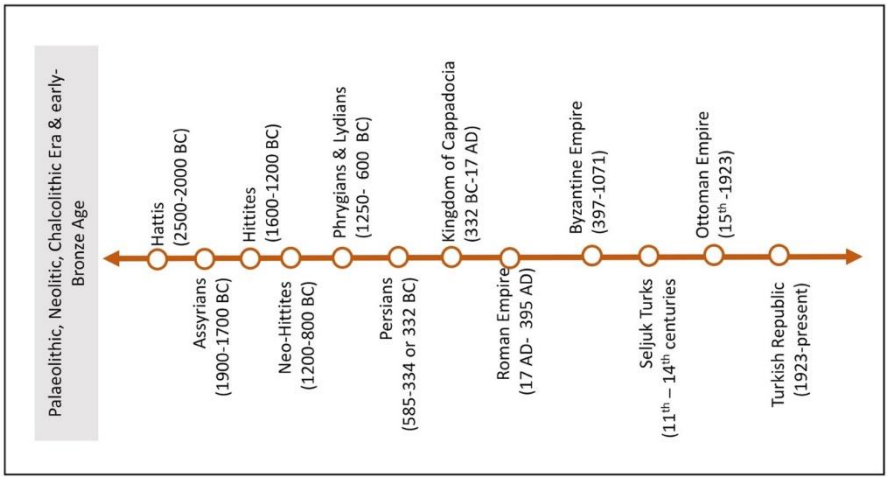

Figure 20.3: History of Civilization on a Timeline (Akkar Ercan, 2020; Gülyaz & Ölmez, 2002; Khey Pard, 2018)

The very first inhabitants of this region were the Hattis, who lived between 2500-2000 BC. Later, the Assyrians between 1900-1700 BC, the Hittites between 1600-1200 BC, the Neo-Hittites between 1200-800/700 BC and Phrygians and Lydians, settled in the region between 1250-600 BC. Soon after, Persians expelled Lydians in the sixth century BC (585 BC), and ruled the region until 334 BC or 332 BC when Alexander the Great defeated the Persians and encountered great resistance in Cappadocia. The Kingdom of Cappadocia ruled the region between 400 BC and 17 AD. In that period, many urban centres and settlements, and trade and military routes were built in Cappadocia.

In 17 AD, Cappadocia became a province of the Roman Empire. From the first century to the fourth century, this region with its capital Caesarea (now called 'Kayseri') was ruled by the Roman Empire. After the division of the Empire in 395 AD, Cappadocia remained within the boundaries of the Eastern Roman Empire that later

became the Byzantine Empire, and ruled the region between the fourth and eleventh centuries.

From the first century onwards, Cappadocia population was converted to Christianity. By the end of the second century, Caesarea and Melitene (now, 'Malatya') became two important centres for their Christian communities. From the early third century onwards, Cappadocia turned out to be a major religious centre where annual 'synods' were held. The Roman persecutions of Christians gave rise to the concept of 'martyrdom' that played an important role in the development of Christianity. The very first Christian communities and those who were persecuted for their religious beliefs elsewhere sought refuge in Cappadocia. Early Christians killed by the Romans in Cappadocia (eg., Hyacinthus, Cyrillus and Marcurius, Eustratius, Auxentius, the nuns Chreste and Calliste, and the Forty Martyrs of Sebasteia) became widely figured in theology and Byzantine art [21]. There was a very active monastic life endured in the Cappadocia region throughout this period. In the fourth century, the three Cappadocian theologians (i.e. the 'Cappadocian Fathers' -Basilius the Great (329-379 AD), Gregory of Nyssa and Gregory of Nazianzos) made important contributions for the development of Orthodox monasticism in their writings, and inspired many religious colonies [21].

Cappadocia, being located on the eastern side of the Byzantine Empire, was open to attacks. In the fifth century, strong fortifications were built to stop these foreign raids. The Sasanians (Persians) and the Arabs first attacked the region. From the seventh century to the tenth century, the Christian dominance of the region changed along with the invasions first from Turkmenistan and Mongolia. The Byzantine Empire lost Cappadocia permanently in 1071 at the battle of Manzikert. From the eleventh century to the late-thirteenth century, the Seljuk Turks dominantly governed this region. After 400 years of rule, the region was included within the boundaries of the Ottoman Empire in the fifteenth century until the foundation of the Turkish Republic in 1923.

In Cappadocia, during the periods of instability, man-made caves and tunnels were built or expanded from existing structures for use as refuges. However, it is proven difficult to predict precise dates for their construction. There are numerous rock-hewn dwellings, churches, monasteries, and hermit cells along the hillsides and rock faces of the valleys in Cappadocia. The settlement system in this region is connected with each other by a complex pattern of passages, steps, and tunnels. The rock-hewn settlements contain living quarters, production, storage, workspaces, and worship places.

Besides, due to the frequent foreign raids, underground cities were built to act as short-term shelters in times of danger. These subterranean cities, built as multi-storied settlements, were composed of a large number of spaces connected to each other just like a labyrinth and surrounding the ventilation shafts [3]. Nearly every house in the area had a secret entrance to the underground city. Local people dug out rooms that were hard to pass, and they built traps to increase security. In time, they dug further into the rock and opened more rooms and corridors resulting in underground cities [4]. In these underground cities, there are hundreds of dwelling rooms, storage areas, stables, churches, wineries, millstones, and even graves. These rooms were connected to each other with low, narrow and long tunnels and

galleries to restrict the movements of enemies [3]. Shafts for ventilations and communication run between the floors and huge stone doors blocked off the tunnels in time of danger. Most of the stone doors were carved in situ [4].

In Cappadocia, it is estimated that there are approximately 200 separate underground cities [4]. Archaeological excavations have been made in eight underground cities. The biggest underground city that is open to the public in this region is in Derinkuyu, while other underground cities are located in Kaymaklı, Özkonak, Mazı, Özlüce, Tatlarin, Kurugöl and Gökçetoprak (Figure 4). Additionally, Soğanlı and Ihlara Valleys contain the settlement and religious centre systems that served ideal places for the seclusion and worship of monks and a hideaway and defence area for people during the invasion years [3].

Figure 20.4: Life in Derinkuyu underground city depicted (left) and the real scenes from the underground city (Sen Bil Diye.com; Kaya, 2016; Kapadokya by Travel Atelier)

It is unknown when the first underground settlements were first built. Evidence of prehistoric life were found in these settlements [4]. The earliest record of the underground cities is to be found in Xenophon's 'Anabasis', which claims that there existed Hellene communities in the cities of Kaymaklı and Derinkuyu at the end of the fourth century BC [4]. There is also evidence that the development of underground cities owes much to the Hittites. Rock imprints and inscribed monuments on the rocks from the Hittite empire and the late Hittite period, the presence of underground passages, known as 'Potern' in Hittite towns, and the superior building techniques are the evidence of Hittite involvement. Secret tunnels found in Hittite cities were generally used to ambush attackers and for defence [4]. Similarly, between the fifth and tenth centuries, underground cities were used for defence and religious purposes [4]. The very first Christians who escaped from the persecution of the Roman Empire came to this region in the second century and built underground cities. As they had to live under the ground for a long duration without going out, they developed storage rooms, ventilation chimneys, wine production places, worship places, water wells, toilets and meeting rooms. The Arab-Sassanid raids in the seventh century also forced Christian communities to use these underground cities as refugees [4].

Besides caves and settlements constructed by carved-out rocks, other prominent UBH components of the region include rock-hewn churches and monasteries that

were built between the fourth and the thirteenth centuries and traditional houses that were constructed on hillsides in the nineteenth century. The Cappadocian Rock is the only construction material of the region. This very soft material is easy to shape just after it is dug out from the quarry, while it hardens and turns into a strong construction material after contacting with air [4]. Due to the quality of this rock, the stonework has been well developed in Cappadocia, and it has even turned into an art and craftwork marking the architecture tradition of the region. It is possible to notice that, in buildings, upper parts of the doors built with arches are decorated with stylized ivy or rosette motifs.

The Cappadocian buildings can be classified under rock-hewn buildings, stone masonry buildings and mixed buildings [3]. The mixed buildings are constructed by using a mixture of both hewn and stone masonry techniques. This type of buildings are also built by hewing the part of the houses leaning on the rock used for a pantry, storage, or stable [3]. Wood is used for courtyard gates and the houses' doors. The areas between floors are decorated in up to three rows of rosettes, fans, stars, pelmet, weather vanes, and stylised plant patterns. Windows are grouped in twos and threes and stylised plant patterns are used as decorative borders. Two types of windows are used: two panes opening separately or guillotine style. In houses, there are numerous living rooms, a kitchen, cellar, storage room, an oven (called 'tandır'), and wine vat. Niches found in the guest rooms are decorated with paintings of vases full of flowers under silk, tasseled curtains, scenes from nature or women filing, or carrying water vessels. These scenes are painted on plaster.

The most interesting examples of local architecture belong to the late nineteenth and the early twentieth centuries can be seen in Ürgüp, Uçhisar, Göreme, Güzelöz, and Güzelyurt. With individual working, living, storage, production and worship spaces, traditional Cappadocian settlements that are carved into rocks and caves are one of the rarest settlements in the world. The historic buildings make use of the sloping land; and other than the underground hewn rock units, they are generally two stories as of the ground level. They include many terraces at different levels for different purposes and activities [3]. Dovecotes carved into rocks are other architectural specificities of Cappadocia. They can be often seen in Uçhisar, Göreme, Ürgüp, Çavuşin and Soğanlı. Since the Silk Road passed through this region, there are several Seljuk caravansaries located five to ten kilometres to the underground cities and representing Cappadocian architecture. They were used for hosting a group of traders, pilgrims or other travellers and military purposes.

20.3. **Göreme**

Göreme is a small town in Cappadocia with a population of approximately 2,000. Being located between three small well-known towns, Uçhisar, Ortahisar and Ürgüp, it is one of the closest towns to Nevşehir (Fig. 20.1). Göreme was constructed on a moon-like landscape of giant rock cones (Fig. 20.5). The natural landscape was formed by the out-spills and ash of three volcanoes that were later hardened and became tuff. This rock has eroded for over millions of years to form natural cones and columns, which are dominant on the landscape of the town. The settle-

ment structure of Göreme constitutes historic cave dwellings and a significant concentration of Byzantine monastic settlements. The inhabitants carved and hollowed these rocks for centuries to build cave-dwellings, places for worship, storage spaces for foods, and stables for domestic animals.

Figure 20.5: Göreme's urbanscape around the fairy chimneys and rock-cut houses (Akkar Ercan, March 2019 (right); November 2019 (left))

20.3.1. ***History***

In the earlier time, Göreme was named as Korama, Matiana, Maccan or Machan, and Avcılar. The very first comers settled down in Göreme during the Hittite era between 1600 and 1200 BC. For many centuries, this settlement became a central location for rival empires, such as the Hurri-Mitanni, Hittite Empire, Middle Assyrian Empire, Neo Assyrian Empire, Persian Achaemenid Empire and the Greek Seleucid Empire. This led natives to dig and tunnel into the rocks to hide away and escape from the political and military turmoil.

From the first century onwards, during Roman times, Christianity became the primary religion in Cappadocia. By the end of the second century, a large Christian community had formed in Cappadocia due to the close proximity of two bishoprics in Caesarea and Melitene. In the fourth century, Cappadocia became known as the land of three saints: The Great Saint Basil (Bishop of Caesarea), his brother Saint Gregory of Nyssa, and Saint George of Nazianus. These three saints created a new unity in Christian thought, and many of Saint Basil's thoughts and actions are still important today. Saint Basil founded a small, secluded settlement far away from towns. He is important since he introduced worship within the community, and he was not at all bigoted. The same model was introduced in Soğanlı, Ihlara and Açıksaray. In the fourth century, when Caesarea was a flourishing religious centre, the rocky landscape of Göreme became a religious education centre [4] (Akyazı and Ölmez, 2002). Adopting the teaching of Saint Basil, Christians began to lead a monastic life in the carved-out settlement of Göreme where the open-air museum is located now. Daily worship used to be carried out under the supervision of a preacher. Similar to the Christian communities in Egypt and Syria, these groups were not privileged groups separated from the community.

After the twelfth century, Turks and Muslims have become populated in this town. Today, the population is dominated by Turk Muslims, living together with

other groups from different national, ethnic and religious origins in peace and harmony. Before the 1950s, Göreme was a farming village flourished on the ruins of an earlier Byzantine settlement. In 1950, the Turkish government turned a part of the valley into Göreme Open-air Museum. Since then, the governments have continued to restore the natural, archaeological and historic heritage. In 1985, Göreme Open-Air Museum and the National Park and Rock Sites became a UNESCO World Heritage Site (WHS). Afterwards, both the open-air museum and Göreme National Park have become the main tourism destinations.

20.3.2. *Göreme Open Air Museum and National Park and Rock Sites of Cappadocia*

Göreme National Park and Rock Sites occupy an area of a nearly 100-kilometre square. The park constitutes a rocky, water and wind-eroded landscape with a network of ancient, interconnecting underground settlements. There are a large number of rock-cut churches and dwellings (Fig. 20.6). The national park status of this site was annulled in 2019, just after the establishment of the Management Directorate of Cappadocia Heritage Site. Besides, there are several historical, cultural and natural heritage, which are used and conserved side-by-side and Göreme is a living open-air museum. In the valleys of Cappadocia, it is anticipated that there are:

- more than 300 cave churches and monasteries built between the ninth and thirteenth centuries (Wikipedia, Göreme);
- 794 or more listed monuments and/or sites within the region belonging to the period from the first to the eleventh centuries [21].

In Göreme, it is estimated that there are 45 ecclesiastical structures [6], [7], [8], [9], including 38 churches, 1 chapel and the monastic complexes of Aynalı Church and Kızlar Monastery. Although attempts to inventory the rock-hewn monuments and/or sites were made by scholars such as Levidis (1899) [11], Rott (1908) [12]; Ramsay and Bell (1909) [13], de Jerphanion (1925-42) [6], Thierry (1963, 1983, 1984) [7], Ötüken (1981) [8], and Kalas (2005, 2004) [14], no thorough study has been conducted so far to develop a full inventory of the region. Nonetheless, it is well known that the hewn-out churches in Göreme and its surroundings are special:

> "The architect, while hewing easily the volcanic-structured rock, could design the architectural plan desired, but the masters had to be very careful. There was almost no compensation for a mistake that would be made, because the column or dome broken during hewing could not be repaired. The single nave and barrel-vaulted plan type widespread in these buildings was the most suitable architectural style for the religious types living in the region and for the monks who withdrew into solitude. These types of buildings were also used as tombs. The transverse rectangular plan type was of Mesopotamian origin. These types of buildings in Göreme were probably built for specific foreign groups who settled at the region. Despite the fact that the two-nave building type was only observed in the St. Eustathios Church at Göreme, it was an architectural plan made at lot at the Soğanlı and Ihlara churches. Although… altars, as the most important ceremonial furnishing of churches, have not lasted until the present-day, it is known that they were found at all of the churches in Cappadocia." [3, p. 66, italics added]

It is estimated that there are around four hundred sanctuaries spread into the entire region, while the most important of these are the Tokalı Church, Elmalı Church, St. Barbara Chapel and the Karanlık Church within the Göreme Open-Air Museum [3].

Figure 20.6: Göreme open-air museum (Akkar Ercan, March 2019)

20.3.3. ***Current situation***

From the 1990s onwards, tourism has become the primary sector in the economy of Göreme and Cappadocia. The conservation efforts of the region have gone hand in hand with its local economic and spatial development. Similar to many towns in Cappadocia, Göreme has transformed rapidly with the emergence of cave hotels, boutique hotels, and pensions exhibiting traditional lifestyle, a variety of winery, restaurants, pottery and ceramic workshops, and souvenir shops. Local tourism development has continuously generated new businesses and activities. Besides heritage visits, nowadays, horse and ATV rides on a two-or four-hour trail ride, trekking tours in many fascinating valleys and mountains, and balloon ride to experience the dramatic landscape of Cappadocia from the sky are some of these popular tourism activities. Tourism has also led to the development of the entertainment industry (e.g., Turkish nights and pottery kebab tours for tourists), the gastronomy and wine culture, the art and cultural festivals and sport events such as Capadox and Cappadocia Ultra Trail.

The picturesque village life is another characteristic of Göreme and its surroundings. Villagers and farmers on the small volcanic areas still carry out their usual daily agriculture and husbandry activities within the Göreme National Park, in spite of the strict rules of the Turkish conservation legislation that have made it more and more challenging to continue. Göreme comprises many valleys, as well as vineyards, agricultural lands, hotels, a commercial centre with several restaurants serving local and international foods, souvenir shops. The living population in Göreme has been lessening due to the increasing pressure of tourism, which increases the rents and house prices. Therefore, many native residents have had to move to other settlements close to Göreme, while they have been commuting to Göreme for work. At night, Göreme in general becomes a place for hosting national and international guests.

20.4. Main stakeholders of regeneration and conservation of UBH

There are several actors involved in the conservation and regeneration of UBH in Cappadocia. The state agencies include international agencies, i.e., UNESCO and ICOMOS, and the national government institutions; i.e., the Ministry of Culture and Tourism, the Ministry of Environment and Urbanism, the Regional Conservation Board of Cultural and Natural Assets, Ministry of Forestry and Environment. At the regional and local level, Ahiler Regional Development Agency (RDA), Nevşehir provincial authority, Nevşehir Greater Municipality, Göreme Municipality, the provincial directorate of the ministries (environment and urbanization, tourism and culture, forestry and environment), the Nevşehir Museum Directorate (managing also Göreme Open-air Museum), Nevşehir Restoration and Conservation Lab, and the Management Directorate of Cappadocia Heritage Site that was founded in 2018 to be responsible for conducting the planning and management of heritage site.

The private sector constitutes another important group of stakeholders. There is a range of hotel types from big hotels with large capital investment capacity, boutique hotels, and cave hotels to small pension owners. There are travel agencies working collaboratively with the hotels, and engaging in several tourism activities such as tourist transfers from the airports to hotels, organisations of balloon, horse, mountain bike rides, ATV and jeep safaris, trekking, hiking tours along the valleys, and organising visits to important UBH sites, hammams and special Turkish nights. Some travel agencies are actively involved in the organisation of cultural and sport festivals, such as Cappadox and Cappadocia Ultra Trail. They also collaborate some international guests to contribute to the cultural landscape of the region with their public art. Andrew Rogers, an Australian artist, for example, produced his public art near the old Göreme settlement, called Karaya, in collaboration of such local tourism agencies. Small boutique and cave hotel owners also have restaurants serving the guests from the hotels and outside. The landowners mostly engage husbandry and agriculture, and those who engage tourism sector and make investments on land are other important local stakeholders.

There are two universities in Cappadocia. One is Kapadokya University and the other is Nevşehir Hacı Bektaş Veli University. Some prominent civil society organisations of the region related to UBH conservation and regeneration include the local committee of the Association of Turkish Travel Agencies (TÜRSAB), Infrastructure Service Association of Cappadocia Tourism Region (KAP-HIB), Cappadocia Touristic Hoteliers and Operators Association (KAP-TID), the local Chamber of Tourist Guides, Göreme Tourism Development Cooperative and Cooperative of Local Women Entrepreneurs. Cooperative of Local Women Entrepreneurs have several restaurants in different towns in Cappadocia, such as Uçhisar, Ürgüp, Avanos and Mustafapaşa, being run and served by local women and serving only local home-made foods.

20.5. Problems and barriers to development

Since the announcement of the region as UNESCO WHS, a steadily increasing number of both international and domestic cultural tourists have visited Göreme and

its vicinity. Over the last thirty years, however, developments surrounding the increase in cultural tourism to the area have led to a problematic relationship between sustainable heritage conservation, and the interests of tourism sector and the local community in the area.

First, this special natural heritage landscape and aboveground and under-ground settlements are under the risk of rapid decay and disappearance due to human and non-human reasons. On the one hand, a continuous degradation is produced by natural agents on rock formations due to erosion, rock falls, freeze-thaw cycles, flooding, etc. [16]. On the other hand, decay is resulted from the increased impact of human factors such as the construction of hotels, roads, car parks, balloon take-off sites. Polimeni [16] claim that non-archaeological sediment discharge, lowering of ancient tunnels, construction of masonry walls, gates and lighting systems for the ever-increasing number of tourists, the drainage of sewers to quickly solve the problems of local urban services due to their low sensitivity and knowledge of the local community cause the UBH decay and damage.

Second, the heritage conservation has a very complicated administrative and legal structure in Turkey. The legal and institutional organisation of urban conservation and regeneration over the last century has created a very complicated, patchy and chaotic governance system, generating conflicts between the legislations, agencies and jurisdictions of agencies [17]. The authorities and responsibilities of the state agencies at the central, regional and local levels overlap, and create difficulties of planning and managing the heritage conservation. This ultimately leads to significant obstacles against protecting heritage in Cappadocia.

Third, despite the increasing powers, the local authorities are still weak in terms of their institutional capacity [17]. The lack of experts with sufficient technical knowledge and experts is a prominent problem in many small municipalities. This, in turn, causes difficulties of developing sustainable regeneration policies within the jurisdictions of municipalities and preparing urban plans for heritage sites [17].

Another challenge in the conservation sites is limited financial resources of local authorities. The physical, natural, historical, cultural UBH resources are not well documented and archived in a systematic way. A continuous damage of UBH due to natural reasons (such as rockfalls, erosions) makes difficult –especially within the settlements - to establish a full inventorying of the settlements and to identify the dates the different construction phases of a historic settlement that developed over a long period of years [21]. To establish a comprehensive and integrated documentation system with scientific, systematic and multidimensional approaches in Cappadocia is a requirement for sustainable conservation of UBH. This necessitates not only a vision, but also financial resources to support research, documentation and innovation activities. The lack of financial resources is also a significant problem against the development of a comprehensive and integrated approach for conserving and regenerating these heritage spaces, and providing sustainable urbanism and tourism development policies and strategies; and the commissioning some ser-

vices to private expert companies, such as restoration of historic buildings, developing a comprehensive design strategy to develop sustainable urbanism and tourism in Göreme.

Likewise, a participatory planning and an inclusive decision-making approach are not very practical and pragmatic for local authorities while managing their heritage spaces. In general, they would like to attain successful outcomes for themselves in the possible shortest way. Participatory processes that are continuously operated in the conservation and regeneration process require new experts, financial resources and offices. This idea is not very familiar for the local authorities, private entrepreneurs and communities either.

The dynamic economic relations, activities and entrepreneurships in the region (especially in the tourism sector) create new development demands and desires. Mass tourism is the prominent threat of the region against its sustainable development and sustainable UBH conservation. The endeavours of the central and local governments to address these demands and desires with fast and fixed solutions generate new difficulties and challenges for conserving heritage spaces. Additionally, demands from tourists and tourism agencies to organize balloon rides, ATV and jeep safaris, lead to the serious damage on the natural, cultural and historical heritage of Göreme and Cappadocia. Similarly, the constant development demands of some hotels and residential sites, their illegal extensions to their premises and unplanned tourism investments create new threats towards conserving the valleys, fairy chimneys, other UBH components and the existing fertile agricultural and husbandry lands. The existing caves and ferry chimneys are not used carefully or sufficiently cared. As the precautions for their conservation, security and safety are not timely and sometimes they collapse due to human and/or non-human factors.

One of the reasons for the loss of UBH is the lack of financial resources of the local authorities and property owners. The multiple owners of historical buildings, high sale prices of heritage spaces put up by property owners to gain high revenues and high restoration and renewal costs of historic properties are other important barriers against the sustainable conservation and regeneration of UBH. As the majority of local residents cannot afford the restoration and maintenance costs of their houses, they tend to sell their houses to investors at the highest possible prices. This causes not only continuously rising sale prices of heritage spaces, but also the gentrification of heritage spaces by tourism investors and non-local people. In this way, the old communities and their networks disappear in time, or continue to flourish somewhere else. As the newcomers or gentrifiers have financial capacity to invest on, restore and maintain the existing UBH, there are much more well restored, cared and maintained heritage spaces some parts of Göreme than others. However, there are still a lot of heritage spaces that need to be restored, rehabilitated and re-functioned in order to turn this small town into a sustainable heritage space.

The commodification and commercialisation of UBH generate an undervaluation of the existing UBH assets and values, as well as some given scarce natural resources such as water, endemic plants and animals, old customs and traditions. Some cultural heritage values (such as local cuisine) are mostly modified according

to the taste and expectations of tourists. In every restaurants, one can find similar types of foods, while new international restaurants have been opened (such as Chinese or Indian foods served in the new restaurants) which spoil the local identity of Göreme. Some community members do not have still sufficient sensitivity to their UBH and associated heritage values. The heritage and natural resources and values are perceived in general as things being taken for granted. Water as a scare resource is used extensively. No recycling strategy has been developed yet. Precious heritage lands are turned into balloon take-off sites, ATV driving routes, and horse-riding sites at the expense of damaging the unique natural and ecological landscape and spoiling beautiful UBH scenery. There needs a continuous education or learning experience to attain a sensitivity and awareness towards UBH, to remind the uniqueness of the existing heritage values and help the community to re-discover their existing past values.

20.6. Conclusions

Cappadocia is an economically and socially very lively region. The private sector-investments have intended to attract more tourists, thereby increasing economic benefits to the region, while the possible adverse outcomes of this mass tourism have not been considered sufficiently. UBH in Göreme and Cappadocia are under the threat of several human and nonhuman factors, such as erosions, rockfalls, mass tourism, hotel developments leading to gentrification of the site, ATVs, balloon and trekking activities damaging continuously the natural landscape, commercialisation and commodification of heritage, which endangered the sustainability of communities, heritage values and potentials, ecosystem and cultures. These complex problems require the development of comprehensive, sustainable and integrated heritage conservation and tourism management plans and programs, accompanied by integrated and long-run development plans. It is critical to raise awareness about UBH, tangible and intangible heritage values among local communities and to develop new entrepreneurial, educational and human capacity development activities to complement the conservation endeavours. Local communities have the potentials to start bottom-up initiatives, with the support of local and regional government agencies, universities, private enterprises, and voluntary groups. However, it is still very critical to examine Göreme, its UBH as a resource and value, as well as its potentials, problems and obstacles. More specifically, there is a rising need to systematically examine:

- how far the present heritage conservation and tourism management plans at the regional, city and community levels are comprehensive, sustainable and integrated;
- how far local development and conservation plans provide and pursue short-, medium- and long-term sustainable development goals in relation with the governance organisation, financial resources, legal and administrative backgrounds, limitations and potentials;
- how far they ensure both top-down and bottom-up organisation (i.e., collaboration, co-operation, co-creation);

- how far the community awareness about UBH (tangible and intangible values among local community and other stakeholders) complement the government's conservation endeavours;
- how far the high potential of local community to start bottom-up initiatives with the support of local and regional government agencies, universities, private entrepreneurs and voluntary groups is attained in this locality, and how this can be improved through social and informational technologies:
- what are the multiple values of locality based on heritage, traditions, daily life experiences; and
- how these can be protected in a sustainable fashion through heritage-led and community-led regeneration projects.

Such extensive and comprehensive studies should be initiated to reveal the levels of conservation and regeneration of UBH in Göreme and its surroundings, and to identify the steps forward towards a more sustainable conservation and regeneration.

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CHAPTER 21

Göreme: The Case-study Storytelling

Daniela De Gregorio

21.1. Introduction

According to the COST Action CA18110, a short-term scientific mission (STSM) must contribute to the achievement of the following objectives:

1. Investigating, from an organizational and management perspective, the experience of preservation and promotion of the UBH of Göreme (Turkey) and its social, economic, and environmental impacts.
2. Interacting with different local stakeholders to disseminate innovative thinking, encourage the adoption of collaborative approaches based on civic engagement tools, experiment their use in a living lab approach and support analyses on potential integration of these tools in traditional urban governance dynamics.
3. Pioneering socially and environmentally innovative solutions, by stimulating, developing, and supporting processes of local community co-evolution and co-creation.

The role of the STSM beneficiary has been to facilitate dialogue among stakeholders, to promote a learning process of communities' histories, traditions, values, needs and aspirations, and finally to mediate between groups with conflicting interests.

21.2. Cultural and Economic landscape context

Göreme and, more generally, Cappadocia region are in a moonlike landscape of giant rock cones, housing historic cave dwell (fairy chimneys) and Byzantine churches. The traditional residential architecture of the Cappadocia Region is the product of the local building culture and tradition, interactions within different cultural layers in the historical process of those experiencing the cultural practices, the cultural expressions of the building masters and environmental factors. The Cappadocia houses can be divided into three main groups typologically connected to the processing techniques of the tufa rocks [1]:

1. Rock Hewn Buildings
2. Stone Masonry Buildings
3. Mixed Houses.

Göreme is situated in the middle of a triangle formed by the three towns of Nevşehir, Ürgüp and Avanos, and lies at the meeting point of four valleys. In 1985, the Göreme Open-Air Museum received the UNESCO World Heritage Site (WHS) status, and, at the same time, a wider area became the Göreme National Park. To protect the different aspects of the Park, it was established a central Zone 1, strictly protected, which includes the main historical elements of the area. A Zone 2, then, design a buffer area around the previous one, where all agricultural activities are allowed and regulated[1]. Since then, a steadily increasing number of cultural tourists, both international and domestic, have visited the area. Only in January-November 2019, Cappadocia has welcomed a record 3.7 million tourists[2].

Figure 21.1: Göreme National Park landscape

This constant tourism growth has been accompanied by a concentration of tourist flows to specific areas, causing crowding and problems of carrying capacity and environmental sustainability, accompanied by environmental issues, such as increasing waste generation, water problems, and air pollution [2].

Due to the increasing tourism, a significant number of traditional houses became tourist facilities with the result of altering the urban tissue. In particular, since 1970s, many of the traditional buildings in protected sites were abandoned because rock falls danger. When the region became popular, these building were the frst to be renovated and transformed into tourist facilities. Uncontrolled, these settlements' transformations could have a negative impact on the authenticity of the area [3].

Reports on the state of conservation, submitted to the World Heritage Centre in 2006 and 2014, reveal the past and current challenges of preservation. In the 2006 report, "pressure by new tourism investments, development pressure, natural disasters, and visitor/tourism pressure" were considered important risks and threats to the site [4]. In the 2014 report, impacts on the authenticity of the heritage place are emphasised as "changes in traditional ways of life and knowledge system" and "identity, social cohesion, changes in local population and community" [5].

Figure 21.2: Ceramic shop

On the other hand, the rise of tourism generated new businesses and activities, such as pottery and ceramics shops in Avanos, cave hotels and troglodyte-like life style, horse riding on a two- or four-hour trail ride and traversing the many fascinating valleys and mountains, or travelling on a balloon to experience the dramatic landscape of Cappadocia from the sky. Tourism has also triggered development in the entertainment industry (e.g. Turkish nights, and pottery kebab tours for tourists), as well as gastronomy and wine culture. In the same time tourism has fostered job creation, but most of these are seasonal, part-time, low skilled, and low-paying [6].

Currently, despite the protection of the underground cities, cave churches and unique lunar landscape, there is a concern about the local cultural and rural heritage values to be re-discovered and protected, in order to balance the site conservation with local community needs, and a new way of living with the traditional lifestyles and customs. It is necessary to favour the conditions so that key heritage attractions

in the area, tourism interests and the local community could be better managed and balanced.

21.3. Methodological approach (the workplan)

During the preliminary stage of the study visit, the following action plan was established:

1. Realizing deep interviews to most representative stakeholders to collect data and information for objectives 1 and 3
2. Making on field analysis to collect manly data and information for objectives 1 and 3
3. Designing and Organising the Second Living Lab Stakeholder Meeting to contribute to the achievements of objective 2.

21.3.1. *Interviews to stakeholders*

In the first part of the STMS, structured interviews were conducted with some key actors identified by a stakeholder analysis. These activities were structure in the following three stages.

1. *Stakeholder identification*

In the preliminary phase, a desk analysis was made in order to analyse key actors in the political, social and economic Göreme context, according to the COST STMS commitments.

The stakeholders' structure in Göreme can be represented in a schematic classification, which identifies the main categories of actors (e.g. institutional bodies, social and cultural organisation, and business companies).

Among institutional stakeholders, a first group was at international level:

- International Centre for the Study of the Preservation and Restoration of Cultural Properties (ICCROM)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)

A second group, at national level, includes the *National Park Department of the Ministry of Forestry and Environment* that is responsible for the site.

Furthermore, a third group, at regional level, includes:

- *Nevşehir Directorate of Cultural and Natural Heritage Preservation Board* that is responsible for keeping the register of monuments and sites, including carrying out all tasks related to the legal protection of monuments and listed buildings and the approval to carry out any restoration-related works. It also evaluates regional and conservation area plans prepared by the responsible national and/or local (i.e. municipal) authorities.
- *Ahiler Development Agency (AHIKA*), which is the Regional Development Agency in charge of accelerating regional and local development in the TR71 NUTS 2 Region.

Finally, at local level it has been identified the following institutional stakeholders:

- Nevşehir Municipality

- Göreme Municipality
- Uçhisar Municipality
- Ürgüp Municipality
- Avanos Municipality

The social and cultural stakeholders consist, on the other hand, of a wide range of public and private entities, such as:

- Nevşehir Museum
- Cappadocia University
- Middle East Technical University in Ankara
- Nevşehir University
- NGO's

Among business organisations, there are private subjects promoting requalification interventions on private or public areas (building companies, professional technicians, trade associations and hotel associations), such as the *Göreme Tourism Development Cooperative*. Local people cover an important role since private citizens own many caves and land parcels.

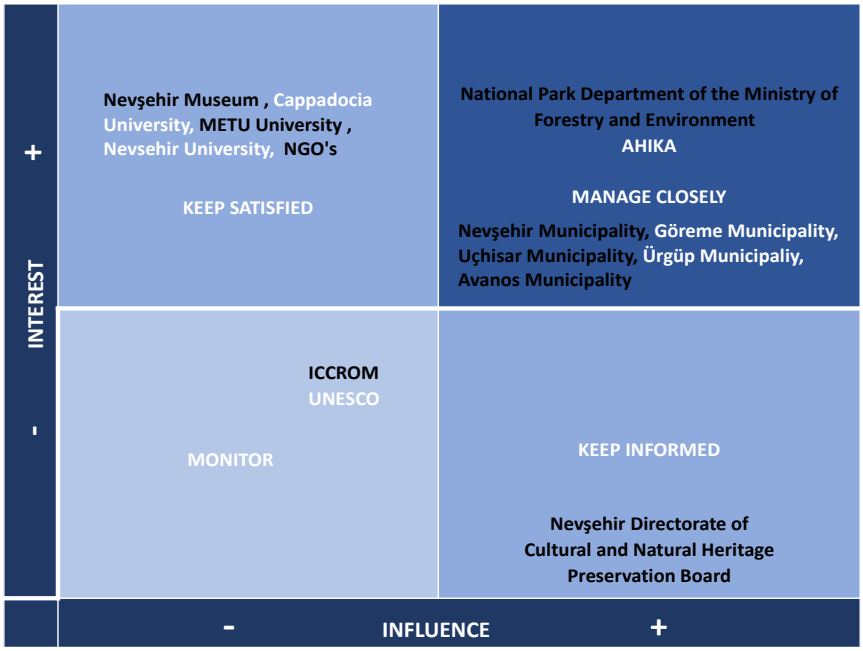

Figure 21.3: Stakeholder mapping

2. *Stakeholder mapping and analyses*

The second stage of the strategy process includes the assessment and analysis of stakeholders to prioritise them in relation to the necessity for their engagement. As a result, a Stakeholder Analysis Matrix was elaborated. It gives indications and suggestions about main stakeholders' interests and roles in relation to the project, how

to prioritise them according to their importance and the best engagement activities typologies (Keep satisfied; Engage closely and Influence actively; Keep informed; Consult with)[3].

BOX 21.1: The Questionnaire

Interviewed person: ……. Organization: …… Role in the organization: ……. Area of expertise: …….

Interview protocol

1. Can you briefly narrate the history of management of Göreme Open-Air Museum and the Göreme National Park after and before the inclusion of UNESCO World Heritage Site (WHS) list?
2. Can you provide information about the management of the Göreme Open-Air Museum and the Göreme National Park and the organization of activities within your institution? Which are the main financial (e.g. sources of revenues), material (e.g. IT systems) and human capital (e.g. competences) resources?
3. Who is responsible for the monitoring activities of Göreme "fairy chimneys"? What technologies are used? Currently, are there further technological needs to fulfil?
4. What kind of tools do you use for supporting site development and decision-making (e.g. GIS, heritage/social and environmental impact/vulnerability assessment, technical reports, statistics, policy assessment)?
5. Which are the main strategies for the re-use, valorisation and promotion hitherto planning
6. adopted for Göreme "fairy chimneys"? Which are the main trade-offs between conservation and valorisation?
7. Do you have data on economic impacts deriving from the re-use and valorisation of Göreme "fairy chimneys" and of tourism activities (e.g. new businesses, entrepreneurship, new jobs, etc.)? Which are future expectations?
8. Do you have data on the social and cultural impacts deriving from the re-use and valorisation of Göreme "fairy chimneys"? Which are future expectations?
9. Do you monitor the environmental impacts deriving from Göreme "fairy chimneys"? What are your future expectations?
10. What is your commitment (and of other stakeholders) for developing a sustainable tourism approach in Göreme "fairy chimneys"?
11. Which are the current challenges? Are there any obstacles and bottlenecks (in terms of regulations, funds, technologies, competences, cultural factors, relational factors, environmental factors, economic factors, missing human resources, etc.) to the further/successful re-use and valorisation of Göreme "fairy chimneys"?
12. Which role has the community engagement in the planning/development activities of Göreme "fairy chimneys"?
13. Which is the attitude towards collaboration of your organization? Which are the bottlenecks and constraints to collaboration among multiple stakeholders, including local people?
14. According to you, which are the relevant stakeholders that should be engaged in plans and projects for the protection and re-use/valorisation of the UBH of Göreme "fairy chimneys"?
15. In your point of view, what is the role and action that should be done by the stakeholders (such as decision-makers, tourism businesses, non-governmental organizations, educational institutes, and local people) in the region to maintain a sustainable tourism approach in the region.
16. According to your opinion what are the fundamental problems of tourism development in Cappadocia?
17. According to your opinion what are the impacts of tourism development in Cappadocia on natural attractions, on cultural resources, on historical resources? What are your suggestions?

3. *The interviews*

The interviews were based on a questionnaire composed by a set of 17 questions (Box 1).

It was aimed at collecting data, information, perception and awareness of the main stakeholders:

- towards the universal cultural heritage values and assets of the Göreme area
- about the tourism activities' impacts on the environment, and on the tangible and intangible heritage values
- on how to reduce the adverse impact on the environment
- on strategy for the valorisation and preservation of the area, and finally
- about management models applied for public/private main cultural sites.

Due to time limit, it has been released five deep interviews with representatives of the following Institution:

- Nevşehir Cultural & Tourism Directorate, Ministry of Culture and Tourism
- Nevşehir Museum
- Nevşehir Directorate of Cultural and Natural Heritage Preservation Board
- Environment and Urbanism Directorate, Ministry of Forestry and Environment
- AHİKA

Furthermore, Dr Murat Gülyaz, former Nevşehir Museum Director, was interviewed, and other key stakeholders were invited to join the Second Living Lab meeting.

Figure 21.4: Interview with Murat Gülyaz, former Nevşehir Museum Director

For each meeting, the questionnaire was adapted according to the role and to the background of each stakeholder interviewed.

The findings were reported under three headings in line with the survey questions.

I. Problems associated with mass tourism

- Göreme archaeological site is living a process of mass tourism, as the result of increasing attraction of the Göreme by people with higher incomes that are leading to local population migration and displacement.
- Tourism activities bear a positive and negative impact potential on the social, economic, and physical environment. A respondent says: *Local people complain about mass tourism, but they earn money*".
- Tourism activities are carried out without principles of eco-tourism and far from the concept of sustainable tourism. A respondent says: *The local community must understand the historical, social, and cultural values that they are losing*.
- Many new buildings such as Boutique hotels diverge from the authentic pattern of the region. More and more we are witnessing an unauthorised use of fairy chimneys and caves for tourism, and the use of fertile agricultural lands for construction and housing. A respondent says: *Tourism in Göreme is growing so quickly that the Turkish Government is unable to monitor it, so when it notices it is too late*.
- Tourism causes degeneration and loss of local cultural values because of over-commercialisation and the sale of the caves to foreign investors.

II. *Problem associated with procedures and protocols for assessing and preserving the state of the UBH conservation*
- Lack of environmental awareness and interest in sustainable protection measures.
- Absence of adequate security for the protection of historical attractions at the destination.
- Fairy chimneys' geological preservation is difficult; they are subjected to natural physical and geological deterioration. No technique now can stop this natural phenomenon. A respondent says: *Fairy chimneys are alive, so sometimes we must accept that they will "disappear".*
- The geological structures where the churches were carved are a type of glassy tufa rock, which can be easily worked with its soft and porous texture and which is weak against external effects.

III. *Stakeholders' role in the valorisation and preservation of the tangible and intangible heritage*
- What can slowdown gentrification process in Göreme is a better management of tourist flows and visitors and closer cooperation among main stakeholders. A respondent says: *People from Göreme are exceptionally talented but no cooperative.*
- It is necessary for the survival of Göreme cultural, social, and historical identity to implement ad hoc policies to avoid this phenomenon.
- Education and training courses should be developed, and encouraged the participation of receptive structures staff.

- More integration among central and local governments, tourism businesses, touristic guides, educational institutes, non-governmental organisations, residents to promote sustainable tourism in Cappadocia.
- Need of coordination among the stakeholders in a collaborative way to solve current problems associated with tourism.
- There is the lack of a master plan for sustainable tourism to establish protection and balanced utilisation of natural and cultural resources and it is the first action to do. A respondent says: *There are many areas to be exploited beyond Göreme, but since the UNESCO site is called Göreme open air Museum, everyone wants to stay in Göreme. Perhaps it would be enough to change the name of the park to prevent all tourists from crowding into Göreme.*

21.3.2. ***On-the-Field Analysis***

During the STSM, audio/video materials were collected to create later a Storytelling of the experience. This material testifies not only to the uniqueness and beauty of the place but also to the harmful presence of man and the passage of time. Göreme is an amazing town, and despite massive urbanization and wild tourism, it has not lost its charm and its ability to enchant.

Figure 21.5: Vandalism in the ancient churches

The streets and houses unravel amid the tufa monoliths characteristic of this area, and many have been converted into hotels or luxury homes: they are the so-called "cave hotels", crowded with tourists. That gives to the urban landscape a strange

connotation, since neon signs literally sprouting from the mountain in a very unnatural mood.

Even in low season periods, the magic of the visit is conditioned, unfortunately, by the presence of too many tourists more interested in shooting selfie to "immortalise" themselves in these scenarios, instead of enjoying the beauty of the landscapes.

Many fairy chimneys are closed because they are not safe for visitors, many churches and fairy chimneys have been vandalised. The presence of elements socially and culturally “strangers” to the region, such as Asian restaurants, or ATV tours, squad tours, even camel rides, can destroy the identity of the places.

Figure 21.6: ATV motorcycle inside Göreme open air Museum

The colourful valleys full of monoliths were much richer in vegetation until few years ago, but the explosion of popularity of quad bike tours, which pass everywhere without rules and established routes, has made the terrain increasingly dusty and desert. Unfortunately, the tourism offered in Göreme is essentially tailored to the European tourist, and in a country where a good meal in a restaurant costs about 10 euros, a hot air balloon ride costs between 125 - 210 euros, and a quad bike ride about 28 euros.

21.3.3. ***Living Lab Second Meeting***

The second part of the STMS was focused on the design and organisation of the Second Living Lab Stakeholder Meeting, together with Prof. Muge Akkar Ercan and the AHIKA team[4]. After two preliminary meetings, it was planned to organise

one full day meeting. This decision was taken to meet the needs of participants who are always busy and full of business meetings.

The scope and the goal of this meeting was to encourage as much as possible spreading and generating of ideas about preservation and the valorisation of the "Göreme archaeological site" and then to favour and support the creation of consensus and engagement among the stakeholders.

After a presentation about aims and goals of the COST Action CA18110 and the Living Lab, which offered a whole picture to the participants, the meeting was organised into two sessions.

The first session applied the brainstorming methodology, in order to let participants able to think more freely and suggest as many spontaneous new ideas as possible; the second one applied an approach for formulating problems, selecting one focal problem, developing a Problem tree and, then, focusing on the main idea/suggestion/project.

Figure 21.7: Living Lab Second Meeting Participants

The meeting was conducted by the team composed by me, Pelin Aytekin Aslaner, Sacid Yıldız, Mustafa Aydoğan (Ahiler Development Agency), Muge Akkar Ercan (Ankara Middle East Technical University). More than 15 stakeholders joined the meeting. They were representatives of governmental, university, tourism, cultural and business institutions. The meeting aimed at taking the first steps of implementation of stakeholder dialogue, by applying the brainstorming, considering the main constraints and barriers, and raising awareness among local entrepreneurs,

universities, companies, institution on the issue of preservation and valorisation of the Göreme archaeological site.

Each session was based on specific questions, and after each discussion the STMS team collected, mapped, and prioritised all ideas/suggestions. Some of questions of the first session were the followings:

– Why Göreme is unique? What is its most important value? Please consider tangible and intangible values. Try to describe it/them by using the five senses.

Stakeholders identified the uniqueness of Göreme for tangible and intangible values. The village is not only characterised by pigeon houses, water tunnels, churches, graveyards, wineries etc.., but even by intangible values, such as the cuisine, the silence, the attractive and charming area, with unique sunrise and sunset and its mystic atmosphere.

– Please identify weaknesses and threats of Göreme. Please consider tangible and intangible values. Try to describe it/them by using the five senses.

They identified main threats/weaknesses in the Chinese food (different, not familiar smell), streetlights (Göreme looks like a nightclub, which destroys the spiritual, authentic landscape / atmosphere), and fragility of caves. Periodical maintenance is an important issue since erosion is a natural characteristic of the region.

– Which is /are the main problem/s to preserve the UBH in the valley and to support the development of the area?

Stakeholders agreed on the critical issues, as follows:

- Lack of awareness about the history, heritage values of local people, especially new generation.
- A masterplan is necessary to manage in better way the tourism flows and the destination management strategy. It is necessary to balance the desire for more money by local owners with the need to preserve the values and the identity of the area. Göreme is becoming a location for the so-called Instagram tourist (distracted people looking only for selfish in exotic places).
- Need of preservation and regeneration of local cultural life, which is being lost due to the increasing presence of foreign investors buying the “caves” from the locals to turn them into luxury and boutique hotels.
- Impacts of tourism development limited natural resources: the presence of more than 300 Hotel in Göreme caused a big water problem and recycling strategy is still missing.

From the first session, it emerged some general issues: the lack of cooperation at regional and national level, as well as the lack of education addressed to cultural heritage preservation of the local authorities, entrepreneurs, and even the local people. These are the main barriers to the promotion of a sustainable development in the area, and to not compromise identity, cultural and historical values.

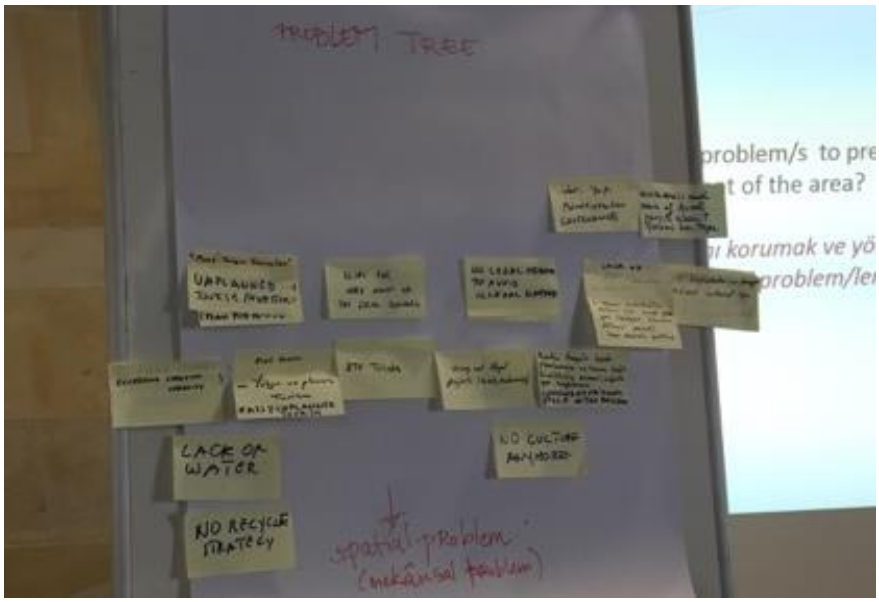

Figure 21.8: The Problem Tree Approach

After the Brainstorming session, the meeting continued with the construction of the *Problem tree* identified by the stakeholders[4], followed by a discussion to define and identify possible areas of intervention for a project on the valorisation and preservation of the historical and cultural identity of Göreme.

Figure 21.9: A typical Karaya landscape

Stakeholders mainly agreed that, while tourism contribute to socio-economic development and cultural exchange of the area, it has, at the same time, the potential for degrading natural resources, social structures, and cultural heritage.

As consequence, they identified a small area to valorise within Eco tourism sector that could represent a pilot project for a new attitude and new strategy for tourism in the Cappadocia Area. This area, where villagers lived before moving to Göreme, is called Karaya. It is a very suggestive, unexplored, and not valued area yet, with a volcanic water source with sulphur coming out of the ground that, according to a legend, has miraculous virtues to help women get pregnant.

Karaya is like Göreme, since has cones, cliffs, spears, and chimneys that protrude up into the sky. Walking around Karaya valley one can also find ancient caves Roman cisterns that were used for wine production, the famous Cappadocian pigeons' houses, and Andrew Rogers' impressive Land Art Park[5].

Figure 21.10: Karaya: Land art Park (Pinterest Photo) and Roman cistern

After the meeting, a delegation of the participants went to visit and explore the area to start thinking about development, valorisation, and reuse ideas.

21.4. Conclusion and Future development directions[6]

After the STMS period, the activities has been have moved forward to finalise the wide stakeholder participation in the previous stage. Ahiler Development Agency and METU, in collaboration with ISMed-CNR, planned and organised a Third Living Lab Stakeholder Meeting. Before the meeting, the Author organised a training session about Business Canvas methodology to allow AHIKA staff to run the Meeting. On January 30, 2020 the 3rd Göreme LL Stakeholder Meeting was held at the headquarters of the Ahiler Development Agency in Nevşehir, with the participation of 15 stakeholders - architects, academics, businessmen, public official, from private sector and public institutions, including Ahiler Development Agency and METU. That half-day meeting started with the COST action introduction to the newcomers, and proceeded with explaining the system of the previous meeting, and the process of choosing Karaya as project area and conveying the Karaya field research.

Values of Karaya such as its location, land structure, quarry, wineries, spring water, etc, were shown on photos and video. On the photos, it was clear both natural and manmade destruction of the area.

The second part of the meeting continued with the question: *What sorts of project can be implemented in Karaya Region?*

All stakeholders expressed their opinion with the post-it system. Stakeholders discussed about preliminary preparations like surface research, history research, layout plan, reclamation, and, as a result of these discussion, project ideas were creating a hiking/trekking route in the valley and combining it with the museum in Avanos and Andrew Rogers' Land Art Park, Ethnographic Museum (performing local culture, serving local products etc.). General idea was that the Project needed to be sustainable and contribute to the regional economy. After a comprehensive discussion, "Agro Tourism/Ethnographic Museum in Karaya Region" was decided as the project to promote. At the end, the meeting continued with an in-depth discussion of the idea, supported by a Business Model Canvas.

In order to make more concrete and sustainable the realisation of proposal arisen in the Living Lab meetings, CNR ISMed in partnership with Ahiler Development Agency and METU applied to the H2020 call: Innovative approaches to urban and regional development through cultural tourism, and submitted the proposal VIRtual Technologies fot toUrism Sustainability in European Rural Areas – VIRTUS ERA 4.0 .

The VIRTUS ERA 4.0 project aims at elaborating a technology-based cross-border collaborative model able to support sustainable cultural tourism as a driver for the development of a common and shared European identity among rural areas (for Turkey, it has been identified Karaya's area). Starting from a community-based cultural tourism perspective and through a process of stakeholder engagement, the project aims at identifying, validating, testing, and sharing innovative multilevel and replicable strategies (e.g. multi-level governance arrangements, investment and financial schemes, business models, experience-based services), boosting collaborative and user-based innovation, and stimulating local rural communities to develop multi-functional, cost-effective and technology-based solutions for cultural heritage valorisation. The participation in the Horizon 2020 European programme meets with the logic of trying to intercept economic solutions that can make the Karaya project feasible. Unfortunately, Covid-19 currently imposes a stop to this activity.

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NOTES

[1] For a complete state of art analysis https://worldheritageoutlook.iucn.org/node/1109

[2] Turkish Culture and Tourism Ministry

[3] Boston stakeholder matrix. https://gcs.civilservice.gov.uk/wp- con tent/uploads/2016/04/Stakeholder-Toolkit-210316.pdf

[4] The concept of Living Labs was probably used in an urban planning context for the first time by Prof. William "Bill" Mitchell of MIT (W. Mitchell 2010), who defined them as "idea of a city or a building as a laboratory where designers have hypothesis about what people are willing to do and how they react". Living Labs are therefore a collaboration of public-private partnerships in which: - Stakeholders (companies, universities and training centers, public and private bodies, end users) .create together new products, services, businesses and technologies.

In November 2006 the European Union recognized the importance of user involvement in innovative processes and encouraged the creation of a Living Lab network. European Network of Living Labs (ENoLL). http://www.openlivinglabs.eu/

[5] https://www.andrewrogers.org/land-art/turkey/

[6] Pelin Aytekin Aslaner contributed to this section

CHAPTER 22

Murcia case study
Valorising the mining heritage of La Unión

Susana Martinez-Rodriguez

22.1. La Unión as a case study in CA18110

Why is La Unión a case study for COST Action CA18110 "Underground Built Heritage as catalyser for Community Valorisation"? The Action, funded to establish and implement an expert network, promotes balanced and sustainable approaches to preserve underground built heritage (hereinafter UBH) and, at the same time, to realize the potential of the underground space in urban and rural areas for regeneration policies. Pace [1] has provided an excellent explanation of all the intellectual process, from the first proposal to the current time. I joined the Undergroud4value family in 2016, after receiving an invitation to participate in the workshop "Underground Cultural Heritage as a driver for Regeneration. Strengthening local and regional participation in European programs". The workshop was sponsored by Unioncamere Campania and the Enterprise Europe Network, and the CNR team organized the seminar (Naples, 8-9 November 2016) with four sessions and a final round table discussion. The seminar focussed on the intellectual challenges faced and on reinforcing the network to give new impetus to the CNR team for developing new proposals in EU funding programmes, such as Horizon 2020, INTERREG Europe, and COST. The CNR team had already made two attempts that unfortunately did not come to fruition but did provide fundamental inputs for the new proposals. Their expertise and leadership have been essential in guiding this research project.

Of the rich underground heritage of the Region of Murcia, we selected several proposals related to UBH for evaluation. The winning case study for CA18110 was the municipality of La Unión. The case offered a great example of abandoned caves, historical mining heritage, and the valorisation and transformation of a vast underground mine into a modern mining park [2]. Another element that links the underground space to its cultural heritage are the characteristic flamenco blues songs. The miners who arrived to work at La Unión in the second half of 19th century were from Andalucía, and they brought with them their traditions and folklore.

22.2. **The case study**

La Unión (The Union in English) is a municipality in the south-east of Spain with 20,000 inhabitants and covering a small territory of 24.6 km^2 (Fig. 22.1). The Region of Murcia has based its current economic development on a lively and dynamic export sector linked to the agri-food industry. However, despite its privileged geostrategic location in the Mediterranean arc, the lack of water, and insufficient infrastructure (incorporation to the main transport corridors – road, rail, and airport) has limited its development. The latter has also significantly hindered the development of its tourism potential. La Unión 's productive structure supplies services and produces auxiliary industries. Because of its proximity to the second largest city of the region, Cartagena, the municipality also serves as a dormitory town. In recent decades, La Unión has developed as a tourist destination around a unique flamenco festival associated with miners' songs. Extensive economic, demographic, and social data can be found on the official webpage *Portal estadístico de la Región de Murcia* [3].

Figure 22.1: Map of La Unión (source: Google Earth, 2020)

The geological enclave of La Unión is in a mountain chain that stretches 26 km from the city of Cartagena and passes through the municipality of La Unión. The mineral resources of this mountain were the reason the Carthaginians settled there (3rd century BC), and why the Romans occupied it later. The Roman city of Cartago Nova was the most prosperous area of Roman Hispania. Today, the recovery of the cultural heritage of the city of Cartagena has accelerated local development. Thanks to the extraordinarily rich heritage of the area, cultural tourism is generating many

jobs in both customer service – to attend to visitors – and the recovery and exhibition of a cultural heritage that has, in many cases, been hidden for centuries [4].

Mining in Classical Antiquity ended when the Romans left the area in the 1st century, due to their technological limitations when it came to exploiting the mineral resources. Apart from marginal activity by the locals, the mines were not brought into operation again until the 19th century. The new production responded to the growing needs of contemporary industrialisation [5]. La Unión 's mineral resources are varied. Ores of lead, silver, iron, manganese, zinc, sulphur, copper, alum, etc. have been extracted from its subsoil. Between 1860 and 1900, mines in the area produced 24% of Spain's lead, situating it among the world's leading producers [6]. During the 19th century, mines were operated through small concessions, which conditioned both how they were run and their business organization. Small privately-owned mines were speculative in nature and would make the predominant form of extraction indirect, through leases [6].

Mining was crucial for the development of new population centres in the Sierra de Cartagena-La Unión. In fact, La Unión emerged as a municipality with its own identity in 1868, becoming an independent territorial unit from the city of Cartagena, after complaining that they were subject to too many taxes. The population came mainly from the neighbouring provinces, particularly from Almería (the eastern province of Andalucía). The model of small privately held mines, while negative in economic terms, had a positive impact on demographic development.

From the final decades of the 19th century until the First World War, the economic pull of mining undoubtedly had carry-over effects across the entire region. In the 1920s, a new economic cycle of crisis began [5]. After the Spanish Civil War and two decades of widespread crisis, the rebirth of lead-mining areas was undoubtedly due to the development of froth flotation, which processed ores from the old mines that operated from the 1840s to the 1970s. The process generated economic profits and production outcomes, even if output levels never reached those achieved at the end of the 19th century [7]. In the 1940s, a new phase of mining began to blossom. The dependency on underground mining ended as this new technique could take advantage of the huge amounts of slag and old froth flotation tailing lagoons that abounded in the area.

The rise of lead and zinc prices in the international market because of World War II was crucial to encourage investment and to make the mines in the area of Murcia profitable again. Among the companies operating in La Unión the most relevant was Peñarroya. Its market share on a national level increased until 1987 when it accounted for 40 per cent of lead production and 10 per cent of zinc [7]. During the decades of 1940 to 1960, the modernization of mining activities brought more wealth to the area. This exponential growth in open-pit mining was matched by the capacity of the factory in the local area of Portmán to generate waste, which made it incompatible with other economic activities. It was also the prelude to the greatest ecological disaster of the 20th century in Spain [8]. During the second half of the 20th century, the bay was used as a massive landfill dumping site by private mining companies. When the mine definitively closed in 1991, hundreds of miners' families had already migrated. Others remain and tried to make a living outside mining

in industrial services. Alas, the ecological disaster is a constant and negative reminder of the area's mining past.

The end of mining activities in the Sierra de Cartagena-La Unión and Murcia region marked the beginning of a major economic downturn. The initiative to recover the important industrial mining legacy was the basis for the creation of a tourism project to supplement the traditional sun and beach tourism found in the coastal area. Along with the mining park, another great example of the heritage is the International Festival of "Cante de la Minas" (Flamenco Songs of the Mines) that has been held in the town since 1961. In 2011, one of the festival venues was established inside the rehabilitated mine in the mining park.

Flamenco was declared by UNESCO "Intangible Cultural Heritage of Humanity" in 2010. It is an art form born in Andalucía as a result of a fusion of cultures that coexisted there for centuries. The mineworkers sang songs to express their feelings [9], and the Andalusian miners created flamenco blues songs, influenced by the harsh conditions of the mine. In a nutshell, the underground, the hard work, the feeling of being away from their home gave birth to a new kind of flamenco song, typical of the Sierra de Cartagena-La Unión, called '*cante de las minas*'. This flamenco music was born from the people, not for show but to express their feelings and moods [9]. Later, other public spaces dedicated to flamenco appeared. The *cafés cantantes* (cafes and bars with live flamenco music) also appeared in La Unión, featuring flamenco singers, dancers, and guitar players. These venues drew flamenco out from the privacy of people's homes and made it public entertainment [9]. In the first half of the 20th century, singing cafes and flamenco became part of the Spanish culture [9].

22.3. **Underground Built Heritage**

According to Varriale [10], the concept of UBH collects all historical artefacts caved underground, and which can be considered today as significant elements of local cultural heritage. It includes a wide range of artificial caves, or natural caves adapted for human uses. This definition certainly reflects the UBH of La Unión because the subject of the valorisation is an underground artefact, particularly, the mine. The mining heritage of La Unión is visible today in several activities promoted and conducted by the municipality: an annual and international music Flamenco festival, a mining park, as well as a couple of conventional museums in the town centre.

The mining park is an example of the re-interpretation of the historical functions of the work carried out in the underground mines in the last half of 19th century [10]. The main aim of the park is to educate visitors on the life and work of the miners in an underground mine of the 19th century. Technology, machines, and other atmospheric elements (such as mannequins dressed as miners and the sounds of the mining work) do their best to evoke the suffering and hardship endured by the miners. This historical site was inaugurated on 9 July 2010. The visit takes ap-

proximately two hours, with a guided tour. The starting point is the Park's Interpretation Centre, where visitors are invited to watch an informative video about the history of La Unión, and which contextualises its place in Spain. After that, visitors get into a shuttle – a mining train – which takes them to the top of the mountain. The 10-minute trip up the mountain gives visitors a glimpse of the fascinating heritage and magnificent landscape before they reach the main attraction: the visit to the heart of the *Agrupa Vicenta* Mine, with galleries covering an area of 4,000 m^2. The elements that mining has bequeathed to the municipality are extensive, although many are in a highly degraded state. Much of the mining work continued underground until the middle of the 20th century, piercing the deposits with wells, galleries, tunnels, chambers, and pillars [11]. All these elements provide a singular natural view with the relics of an industrial past that have not been looked after.

From the legal point of view, the whole area is protected as Property of Cultural Interest in the Historic Site category, due to its extraordinary value. The guided tour ends with another trip to the interpretation centre in the shuttle. The last stop before leaving is the gift shop where visitors can buy souvenirs. To this vibrant industrial heritage, bequeathed by the work and effort of the miners, it is essential to add the intangible, but immensely valuable, cultural heritage: the flamenco songs that emerged from the harsh working conditions of the miners and which have been remembered annually ever since with the celebration of the International Festival of *Cante de las Mina*. Although the connection between the park and the festival is very real, and historically documented, it has lost meaning for the community.

22.4. **Actions of CA18110 in La Unión**

The Action is a structured expert network for sharing research experience, best practices, and ideas on UBH. One of the key points of CA18110 is the development of living labs, that is, innovative actions experimented and implemented in real communities. The role of the experts and researchers is to provide advice and knowledge, although the action and any decisions should be led by the local community. This approach will act as a catalyst for interaction with local communities, dissemination of innovative thinking and will support them in the exploration of alternative social trajectories [1].

The actions performed in La Unión were the establishment of a living lab (2 sessions), and meetings with local agents and citizens (Table 22.1). For logistical reasons, there was no scientific mission here, as the selected candidate resigned at the last minute to take up a new professional position and it was not feasible to repeat the selection process. The work of dissemination and appearances in local media and on social networks can also be considered a secondary outcome. Dissemination among the scientific community was also performed (Table 22.2) [12] [13]. The living lab sessions explored the possibilities of the emerging uses of the underground wealth of La Unión, its enhancement, and any effective lines of action for the involvement of public society. In the knowledge process for the UBH of La Unión, the dominant narrative was that of the Municipality. The municipal council

has promoted the flamenco festival since the outset. The festival is a success story: it the longest-running festival in Spain, active since 1961, and is renowned internationally. However, the impact of the festival in the town is limited on several levels. Even though the organizer works on the project constantly throughout the year, its economic contribution to the local economy is limited to days of the event itself.

Steps	Details
1. Interviews with most representative stakeholders	- CARM (Patrimony Service of the Regional Government) - CEEIM (Business Angels, Observatory of Rural Development) - Fundación del Cante de la Mina - Asociación de Vecinos de La Unión. - Polytechnical University of Cartagena - University of Murcia - Chair of Tourism of University of Murcia - Europe Direct- Europe Direct Contact Centre in Murcia
2. Interviews with anonymous citizens	- Patrimony Service of the Regional Government. - Observatory of Rural Development - Polytechnical University of Cartagena - University of Murcia - Chair of Tourism of University of Murcia - Europe Direct- Europe Direct Contact Centre in Murcia - Mayor of La Unión - Cultural Councillor of La Unión - INEQA SL, Environmental consultant
3. Interviews with experts and liberal professionals	- Journalists - Environmental consultants
4. First Living Lab session at the University of Murcia	- Observatory of Rural Development - University of Murcia - Chair of Tourism of University of Murcia - Europe Direct- Information Centre of Europe, Region of Murcia - INEQA, SL (environmental consulting) - Historical Patrimony Section - Regional Government Region of Murcia - Action Chair CA18110
5. Second Living Lab session at the University of Murcia	- Observatory of Rural Development - Neighbours Association of Portman-La Unión - Polytechnical University of Cartagena - University of Murcia - Chair of Tourism of University of Murcia - Action Chair CA18110
6. Field visit	- Chair and Vice-chair CA18110
7. Deep interviews with members of the Municipality	- Mayor - Technician of Tourism - Culture Councillor - Rural development technician

Table 22.1: Milestones of the case study La Unión

The mining spirit is a vague memory of identity. The mine closed in 1991, so many families migrated at that time, looking for other work. Therefore, although the connection between flamenco blues and mines is a fact, there is a lack of emotional attachment, even though there are still some old mine workers in the town.

The mining park is also run by a private company with no strong connections to the local community. For most of the citizens, the mine has no direct connection to their way of life. At best it is identified with hardship and the past. It is certainly not a memory embraced with affection. If anything, it is a constant warning for the locals who, daily, see the environmental catastrophe that resulted from mining in the second half of the last century. The mines and the mountains should be re-identified as an element of leisure and joy. And joy has been a word absent in the collective imagination of the miners and their life.

Action	Promoter	Detail
Media Radio	Susana Martinez-Rodriguez	- Onda Regional. Viva la Radio (23.04.2019) - Onda Regional. Murcya Conexión Europa (23.07.2019)
Media Newpapers	Susana Martinez-Rodriguez	- La Verdad. Especial Ciencia ABABOL: "Explorar la Unión bajo tierra" (07.12.2020)
Institutional Websites	Susana Martinez-Rodriguez	- Bulletin of Applied Economics Department- University of Murcia. Permanent link: https://www.um.es/web/econ-aplicada/contenido/divulgacion/boletines - Front page - University of Murcia "La UMU participa en un proyecto europeo para revalorizar el patrimonio subterráneo" (28.08.2019) - Office of Scientific Communication - University of Murcia. Permanent link: https://www.um.es/web/ucc/-/la-umu-participa-en-un-proyecto-europeo-para-revalorizar-el-patrimonio-subterraneo?inheritRedirect=true
Academic conferences	Susana Martinez-Rodriguez	- PhD Annual Workshop - Doctorado en Economía Interuniversitario (27-28.05.2019), UNED-Madrid (National Distance Education University). "CA18110 – Underground Built Heritage as Catalyser for Community Valorization", IV Annual Permanent link at UNED-tv: https://canal.uned.es/video/5cecdd12a3eeb01a418b4567 - II Seminario de la Red Española de Historia del Trabajo: Fuentes y métodos en el estudio histórico de los salarios y otras formas de remuneración del trabajo (14- 15.06.2019), Universidad de Murcia - Murcia. "CA18110 Underground Built Heritage as Catalyser for Community Valorisation"

Table 22.2: Dissemination actions

This impressionistic view of the area and its history ignores the side of the local community, which has been ignored by the institutions. Undoubtedly, and acting in good will, the city council has managed the mine and its legacy as if it were a tangible asset. The mine itself is considered a property of cultural interest, meaning that it is part of the national heritage, but this protection is not associated with any funding. And the public institutions feeling the burden of the maintenance looked for a private firm to manage the infrastructure. Alas, in addition to a physical good, the mine is also an immaterial good, and by itself is losing value to the eyes of the local community, excluded in the steps of the decision-making processes.

22.5. **Future steps: Storytelling**

Several scholars have conducted a SWOT analysis to show a comprehensive study of tourism in La Unión – in fact, in the Handbook Chapter "A plan for the valorisation of the Mining Park in La Unión" there is also another SWOT. Among then I would like to emphasize the contribution of Morales [14] and some of his proposals linked with the role of the local community in incentivizing the dynamic of the economy. The author emphasises the priority of promoting greater public awareness about UBH, building a narrative with which they can identify. In this sense, storytelling can play a fundamental role, and I hope to work on it in the next steps of the project.

Incorporating storytelling into the La Unión case study means looking for stories that connect with local people so that they embrace their UBH. For example, an element with a clear connection with the inhabitants of La Unión is the origin of the name of the town, which literally came from the union of the townsfolk intent on becoming independent from Cartagena and creating their own identity as a population nucleus. Even today, the rivalry with the neighbouring city exists, and the name La Unión reinforces the town's own identity. Ironically, one of the elements of the town's coat of arms is the mine, and a cave excavated below the mountain. Those elements were representative at that time (the last few decades of the 19th century) and reflected the life of most of the population. As time has gone on, their identity has been diluted with economic and social changes.

Storytelling aims to create an affective connection with the narrated fact because both the storyteller and the audience create a shared experience in the act of narration. The narrative to be generated must foster a bond with the local community and generate knowledge in the moment. The target knowledge must be about the sustainable value of the mine, as a positive element of identity. Landscape, entertainment, nature, sustainability, but also history, roots, identity, cultural heritage, and legacy are values we should highlight.

As a first step to creating effective storytelling, I have requested the collaboration of Dr. Miguel Angel Perez de Perceval, also a member of the Action. Dr. Perez de Perceval has kindly provided several photographs for this chapter, which we will use to start creating a narrative with historical elements to connect with the emotions and the soul of the local community (see next paragraph) [15] [16].

22.6. **A photographic appendix**

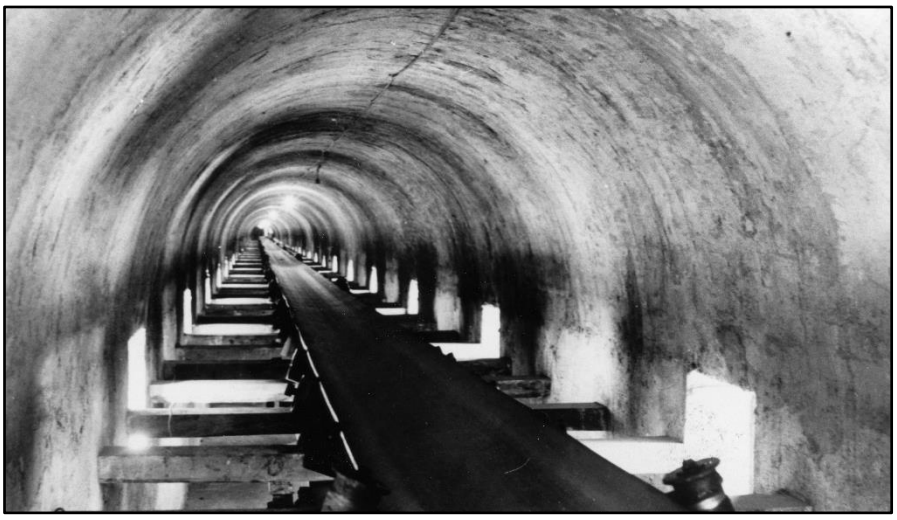

Figure 22.2: Inside the mine (around 1950: Mineras Celdrán Company).
Photographic Archive of the Research Project PGC2018-097817-B-C31 "Historia social de la minería española contemporánea"

Figure 22.3: La Union (around 1900).
Photographic Archive of the Research Project PGC2018-097817-B-C31, "Historia social de la minería española contemporánea"

Figure 22.4: Workers inside the mine (around 1950: Mineras Celdrán Company).
Photographic Archive of the Research Project PGC2018-097817-B-C31, "Historia social de la minería española contemporánea"

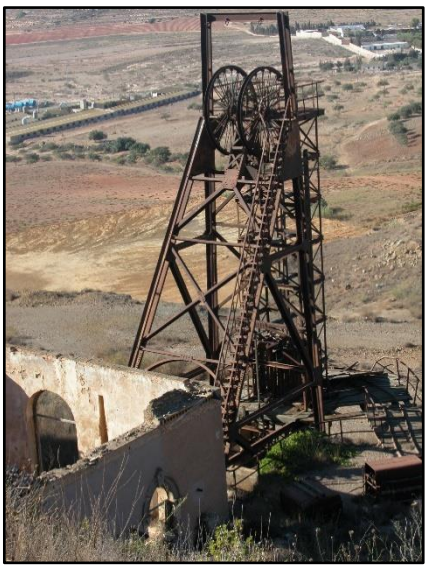

Figure 22.5: Industrial Heritage (1).
Photographic Personal Archive: Miguel Ángel Pérez de Perceval.

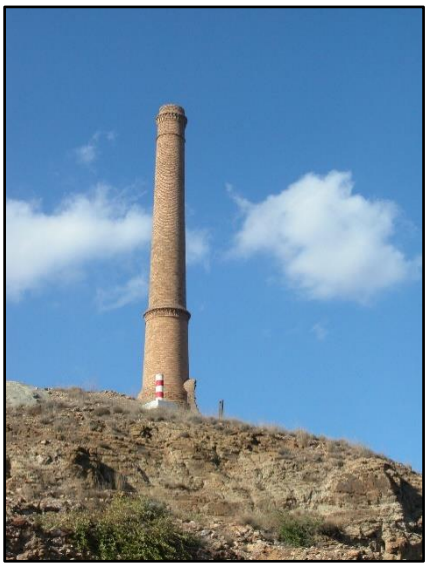

Figure 22.6: Industrial Heritage (2).
Photographic Personal Archive: Miguel Ángel Pérez de Perceval.

Figure 22.7: Landscape.
Photographic Personal Archive: Miguel Ángel Pérez de Perceval

Figure 22.8: Inside the mine Agrupa Vicenta (1).
Photographic Personal Archive: Miguel Ángel Pérez de Perceval

Figure 22.9: Inside the mine Agrupa Vicenta (2).
Photographic Personal Archive: Miguel Ángel Pérez de Perceval

Figure 22.10: Inside the mine Agrupa Vicenta (3).
Photographic Personal Archive: Miguel Ángel Pérez de Perceval

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[16] Photographic Personal Archive: Miguel Ángel Pérez de Perceval.

CHAPTER 23

Green Karst Region
Between Natural Caves and the Alpine Wall Military Fortifications

Luisa Errichiello

23.1. Introduction[1]

The STSM's goal was to assist the COST Action through an in-depth understanding of the UBH re-use and heritage-led regeneration processes undertaken in the Green Karst Region (Slovenia). The focus of the analysis was identified with the support of the host institution (the Regional Development Agency) and consisted of two different kinds of UBH: the natural caves, and the Alpine Wall military fortifications built by the Italian Army between the I and II World War and spread throughout the region. Each of these UBHs differs in their state of valorisation, number of visitors and management type. The field research provided the ground for an in depth understanding of the UBH preservation and promotion experiences in Postojna Caves and Križna Caves, looking at strategic, organisation and management issues, mainly about sustainable tourism [1] [2].

The field research would also aim at identifying expected or undertaken environmental, social, and economic impacts produced by those valorisation processes, and especially local communities and public institutions' roles. As for military remnants, the STSM goal was a better comprehension of the current challenges put by the re-use and valorisation of these UBH and the identification of potential paths of development.

Through a bottom-up process based on the involvement of the Regional Development Agency (RDA) and a dialogue with local actors, the planning and implementation of re-use and valorisation strategies of these remains were selected as suitable terrain to sustain the goals of the Cost Action through the experimentation of a Living lab approach [3] [4] and a process of incremental involvement of stakeholders, including the local community. In this respect, the STSM also aimed at opening a networking trajectory, fostering partnerships with local management frameworks, as well as stimulating interaction and partnerships among different local stakeholders, both public and private, encouraging the co-development of innovative solutions and supporting processes of local community co-evolution and co-creation [5].

The chapter is structured as follows. In paragraph 2 it provides an overview of the context of analysis, the Green Karst Region. Paragraph 3 describes the methodology. Paragraph 4 reports on the key findings about the process of conservation, re-use, and valorisation of the different sites under investigation. It also reports the results of a multi-stakeholder meeting that was locally taken during the STSM as first implementation step of a Living Lab approach that the COST action aimed at sustaining for collaborative decision-making and innovation development. The last section provides conclusions and includes future valorisation opportunities.

23.2. **The context: Green Karst Region**

"Green Karst" is the recent name used to repackage and promote Primorsko-Notranjska region, a Slovenian region between the Alps and the Adriatic Sea. Karst landscapes feature caves, underground streams, and sinkholes on the surface. Where erosion has worn away the land above ground, steep rocky cliffs become visible.

"Green" is evocative of the unique natural resources of the Region, although Slovenia is also famous in the world for its culture, customs, charming villages, and local products. Karst is a scarcely habited region. Statistics provided by the Regional Development Agency (2019) report a population of around 52,000 people in 2018. As for their level of education, 80.69% of the active population have completed secondary school or achieved a higher degree. Of the overall population, about 14700 are employees and most of them work in the service sector. In this respect it is worth highlighting that, after Slovenia's independence, the economic structure of the country dramatically changed: the previously dominant secondary sector (including manufacturing, mining and construction) fell down to one-third (29.5%) and now only 33% of employees work in the primary sector (agriculture, hunting, forestry and fishing) [6].

Since the region is rather small also at Slovenian scale, there are two secondary schools (gymnasium, carpentry, economy, forestry, nursing, toolmaking) in the Green Karst region and three higher education programs (engineering, forestry and hunting, business secretary). Therefore, there are no education programs on tourism and urban planning, being both accessible either on the coast or in Ljubljana.

As for tourism development, the Green Karst destination has joined the general trend of increasing tourism travel of Slovenia, which belongs to the EU countries that has witnessed the greatest increase in tourism arrivals and overnight stays [6]. In detail, tourist flows have been in a steep rise for the past 5 years in the region. Number of visitors and overnights stays have grown 305% between 2015 and 2019. Moreover, although a steady increase of new arrivals and overnight stays was expected in the next few years, the Coronavirus pandemic has dramatically disrupted initial forecasts. As for composition, the majority of visitors are foreign guests (92%), while Slovenian travellers represent 8% of all the visitors in the area. The area also experiences a development of new tourist offers. From 2015 to 2019, 1,000 new beds have enriched the accommodation services of the destination, registering an increase of 150% (RDA, 2019).

The RDA Green Karst was the host institution during the STSM. Established in 2000 as a private company, it acts as a non-profit organization and functions as the regional development agency in the Primorsko-Notranjska region. Its shareholders include six municipalities (Pivka, Postojna, Cerknica, Loška Dolina, Bloke and Logatec) and five other local, regional, and national support and development institutions.

23.3. Methods

The research has an explorative nature and was carried on adopting a case study approach [7]. Data, mainly of qualitative nature, has been gathered through:

1. in-depth semi-structured interviews with local stakeholders
2. field inspections of different sites of UBH of the Green Karst Region
3. documentary analysis
4. non-participant observation during a formal meeting involving local stakeholders.

Formal interviews have been conducted with specific stakeholders involved, directly and indirectly, in the planning, development and management of the UBH sector in the Green Karst Region. A general interview protocol was developed to investigate: the state of conservation and valorisation of each UBH; the governance model and the organization of key activities (e.g. monitoring, marketing) and involved resources (i.e. financial, technical, human); trade-offs in terms of conservation and valorisation; economic, social and environmental impacts; relationships with relevant stakeholders (e.g. public institutions and the local community). In the first stage, stakeholders were identified through a snowball mapping method [8], starting from the information initially provided by the RDA. The list of questions was adapted before each interview based on the specific role of the stakeholder within the governance of each UBH.

Although the interviews were limited to few key stakeholders due to time limit, the snowball mapping was extended to each of them to identify new stakeholder categories and create a more comprehensive stakeholder map that would be valuable for future investigation[2]. Specifically, interviews involved:

- two employees at the host institution
- a representative of the Park of military history that manages the Caverns on Primož (hill above Pivka town)
- a representative of the Tourist Information Centre of Ilirska Bistrica town
- a representative of a local association that manages tourist visits to the roofless cave of Unška Koliševska and remains of military tunnels
- the leader of the association that manages Križne Cave.

Field visits to inspect and study the UBH scheduled by the host institution covered:

1. Križne Cave
2. Postojna Cave

3. (Military) caverns on Primož Hill
4. Military caverns on Milanja
5. Roofless cave of Unška Koliševska and remains of military caverns partially accessible today (Postojna).

Documentary analysis included among others: a) frameworks and regulatory documents about the conservation and monitoring of UBH under-investigation; b) reports and documents about the activities of some key organizations; c) data about the historical, economic, social and cultural context of the region, including tourism-related statistics and promotional material.

Figure 23.1: Interview to Bostjan Kurent, manager at the Park of Military History

During the STSM, a formal meeting focused on the potential trajectories for the re-use and valorisation of remains of the Alpine Wall fortifications was organised by the host institution and held at the Park of Military History (in Pivka). Several local stakeholders participated to it, achieving strategic decisions on the above issue, and setting up an action plan for next year.

Qualitative data were analysed through relying on thematic analysis and were applied to document material and interview transcripts [10]. Data were examined closely to identity relevant themes, common topics, and patterns. Although preconceived themes guided the elaboration of the interview protocol, deduction was combined with an inductive approach, to remain opened to new themes emerging from data.

23.4. **Findings**

23.4.1. ***The conservation and valorisation of Postonja and Križne caves***

Postojna Cave and Križne Caves are part of the 21 Slovenian "show caves", that is, caves that have been developed for visits by the public, usually with payment of

a fee [11]. For all cave systems, the process of valorisation can be considered in an advanced stage and the search for the right balance between conservation and tourist exploitation is at the centre of the debate.

The Postojna Cave system is the second-longest (24,340 m long;115 m deep) known cave in Slovenia [12]. Part of Postonja Cave Park it is controlled and managed by the private company 'Postojnska Jama'[3]. The organisation received a concession from the State (owner of the cave) for managing tours and events in the cave. Indeed, the cave is managed by a public limited company, which is owned by Postojnska Jama (74,9%) and Postojna Municipality (25,1 %). However, a small amount of revenues is also assigned by the State to the municipality of Pivka, since the underground river Pivka created Postojna Cave.

Postojna cave management was expected to be a "best practice" in term of governance and management. Indeed, it is undeniable that the private management of that celebrate cave was successful in the re-establishment of a declining profitability and was able to attract an increasing number of tourists every year mainly through an effective marketing strategy. Today, Postonja cave is the main tourist attraction of Slovenia. Indeed, the number of visitors increased over years to almost 780,000 visitors in 2017. Up to 2018, the Postojna Cave System was visited by a total of more than 38 million visitors. However, from various interviews to local stakeholders, it early emerged that the governance model is not virtuous at all from the perspective of other key actors, notably the local community. Indeed, the cave basically works as a self-sustaining economic system within the region and the cave management has been showing an almost exclusive interest in increasing profits, with scant commitment in sustaining the economic growth of the area and no interest in a sustainable tourism development through community engagement and collaboration with local stakeholders.

Figure 23.2: Gothic Column (left) and Diamond (right)

The revitalisation of the area is also prevented by the current ownership of the company, which controlled most complementary tourism services in the surroundings, including the parking lot, hotel Jama and a number of restaurants and tourism

businesses in the Park and Postojna town. To monitor the impact of tourism on the cave environment and to respond with appropriate (sustainable) measures, the cave is the subject of intensive climatic and speleo-biologic monitoring [13].

Although the "Slovenian Cave Protection Act" aims at regulating the utilization of caves for tourism to ensure a balance between preservation and tourism exploitation, numerous traces of its use as a show cave have remained in the cave. The consequences of the cave's daily use are also evident and continue to accumulate, reducing the value of the cave as a natural phenomenon [14]. The huge number of tourists visiting Postojna Cave combined with low effectiveness of monitoring activities from State representatives and inappropriate assessments of the impact of tourism exploitation constitute urgencies that should be addressed for sustainable cave use and future management plans since also its value as a tourist attraction could be affected in the long-term.

A quite different situation for the tourist can be found in Križna cave. The cave is particularly attractive for its underground lakes and coloured water pools and really offers an authentic experience to the visitors. The cave also shows some remains, such as bear bones, and it is second in the world in terms of variety of sub-

Figure 23.3: A tour inside Križna cave with the Dr. Gašper Modic (manager of the Association of Križna Jama Lovers) and Dr. Dejan Iskra (RDA, host institution)

terranean biodiversity. It is currently managed by the Association of Križna Jama Lovers, an NGO established in 1998, which currently counts 39 members, some acting as volunteers, others as workers. Compared to Postojna cave, its intensive development as an attraction cave began relatively late in 1950s, and the annual

number of visitors (an average of 4600 per year) is significantly lower that the number of Postojna cave's visitors (over 500,000 a year). In this respect, the distance of the cave from main traffic and tourism routes is the main reason for the still relatively low numbers of visitors.

The scant strategic importance attributed by the municipality of Cerknica to the cave have turned to limited financial, technical, and political support provided for dealing with issues, such as tourist accessibility, cave protection, and its valorisation for tourism purposes. The association constantly strives for a balance between heritage preservation and valorisation in the pursuit of sustainable tourism development and is highly committed to increase local awareness about natural resources importance and underground eco-system vulnerability. Therefore, the current management can be considered as a virtuous model of sustainable management since it is very attentive to the vulnerability of the cave and its cleaning and protection [15].

As a result, since the number of tourists is close to the limit that the natural environment can allow without damage, they would diversify activities, possibly by adding other caves to redirect visitors there and take other measures to protect the natural environment and cultural heritage of the cave. In this respect, one of the main challenges is professional cave guides' training and availability as an answer to the concern within the caving community about poor guiding practices in caves, which include lack of policy about caves and caving, cave conservation principles demonstrated and taught to participants and inadequate risk management and tour planning. As representative of the local community, the Association is also devoted to the education of the public and presentation of different issues, which are common in the karst area to schools, other institutions and to individuals. According to the Association's leader, the level of knowledge and concern about environmental issues is still low among local people. Working with schools through educational programs is crucial to boost cultural changes in future generations and raise the level of awareness about the impact of human activities on the natural ecosystems and the value of karst phenomena like caves.

23.4.2. *The conservation, re-use, and valorisation of military remnants of the Alpine Wall fortifications*

In five of the six municipalities of the Primorsko-Notranjska region there are remains of the so-called Alpine wall, the eastern remains of the "Vallo Alpino" – an Italian system of fortifications along the 1.851 km of Italy's northern frontier. It was built in the years leading up to World War II as a defensive line facing France, Switzerland, Austria, and Yugoslavia. It was defended by an Italian special troops and was built with the scope of defending Italy from a potential Nazi invasion. All these tunnels are currently under the ownership of the State of Slovenia and strategic decisions about them depend on the Ministry of Defence.

However, almost all of them are today in a state of abandon since huge investments would be required to restore and preserve them from further deterioration and acts of vandalism already reported in the past.

During the STSM the caverns on Primož hill (above Pivka town), Milanja (above Ilirska Bistrica) and Unška koliševka were visited. By interviewing main actors involved or interested in the process of re-use and valorisation of the Alpine

Wall ruins, it was possible to shed light on the main challenges, risks and opportunities of undertaking it. A vast underground artillery fort at Primož was the command post of a group of forts around Pivka.

Today, the whole system is part of the public-owned Park of Military History - a local institution which obtained the status of a museum - and in recent years has started revitalisation of the underground complex. The museum received an authorization from the Ministry of Defence for the conservation of the fort and the management of tour visits. Quite recently, Alpine wall fortifications at Primož have been made partially accessible, reopened, integrated into the local tourist offer, and turned into tourist interest for visiting the Fort.

Figure 23.4: Outside the Fort at Primož hill (Park of Military History)

The museum offers a valuable insight into the rich Slovenian military-historical heritage and the collection of tanks, cannons and aircraft is complemented by several exhibitions. Nowadays, the former barracks headquarter building is serving a similar function again, with office spaces, a multimedia room, a museum shop, and a canteen that offers an army-like ambient and the food to match. Since its foundation, the museum has been developing to become the largest museum complex in Slovenia and over time new additions and new content have contributed to making it one of the largest and most visited museums in Slovenia. Regular museum offer was upgraded with interactive experiential packages built on outdoor adventure.

Figure 23.5: Inside the Fort at Primož hill (Park of Military History)

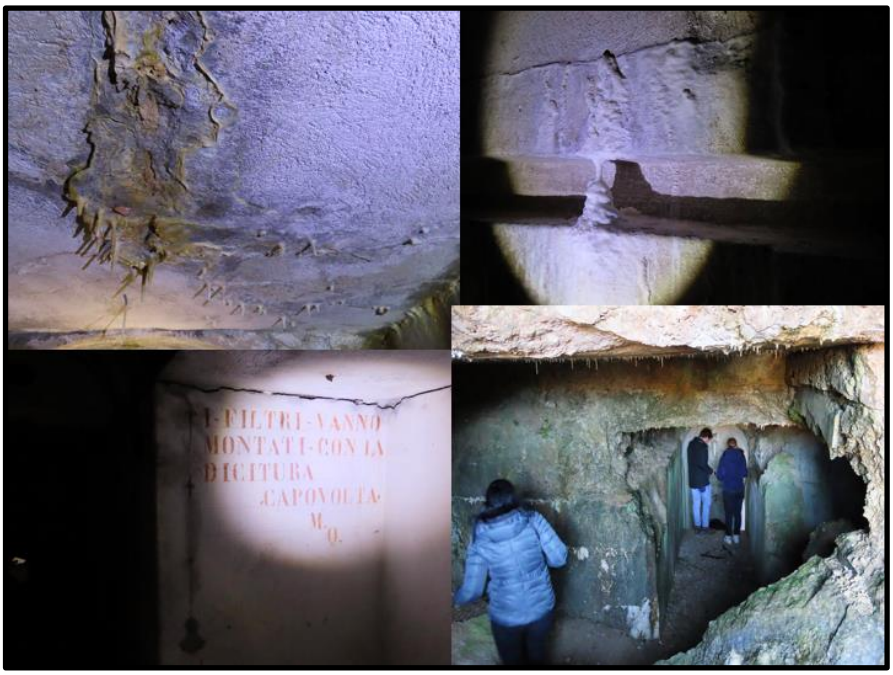

Figure 23.6: Inside the tunnels in Milanja (above Ilirska Bistrica)

The footpath leading on the Primož Hill along the museum complex was redevel-

oped through an EU-funded project. By attracting an increasing number of tourists, the Park has been able to sustain the rise of new tourism-related economic activities in Pivka Basin and Pivka river valley, notably accommodation and restaurant services. Though functioning as a tourism information centre in the town of Pivka, it also showed commitment to sustaining eco-tourism in the area, by enhancing the surrounding forests and meadows, promoting hiking, horse-riding, biking and experiencing natural resources and local products offered by tourist farms. Finally, in the last years, it also played a key role to increase the level of awareness of the local community, which initially was against the European funds' investment of the Park project. The visit to the Fort is part of a four-hour hiking circular trail organized by the Park connecting it to the museum and two villages. The underground artillery Primož hill Fort reveals still-preserved battle positions, weapons storage areas and living areas. It was opened to the public in 2017, after basic activities of cleaning, verification of structural stability and access security. In 2018, the overall number of visitors increased from 360 to 627, with a demand peak registered when the Park organised four-hour hiking circular trails. People can walk along the trail also on their own and they find both big and small information boards about the natural, cultural, and historical sights of the Pivka Basin. However, if they want to explore the interior of the Fort a booking for a guided tour is still required.

Figure 23.7: The landscape around the caverns on Milanja (above Ilirska Bistrica)

The situation is quite different for the other two kind of tunnels, i.e. the tunnels in Milanja (above Ilirska Bistrica) and the remains of military tunnels that lead to the roofless cave of Unška koliševka (in Planina, a fraction of Postojna). Today,

these tunnels, also owned by the Ministry of Defence, lay in a state of abandonment, and are exposed to acts of vandalism and natural ruin.
Both are only partially accessible, also in relation to the level of water that makes

Figure 23.8: Inside the remains of military tunnels that lead to the roofless cave of Unška koliševka. Together with Dunja Mahne (RDA, host institution)

some parts completely flooded. Currently, anyone could explore their interiors freely and autonomously, on their own responsibility for the risks deriving from the lack of any monitoring activities (e.g. about structural stability) and security measures. Information about the tunnels in Milanja are provided upon request by the Tourist Information Centre of Ilirska Bistrica, although no printed promotional material exists, and no guided tours are currently organized in the tunnels for potentially attracted tourists.

The municipality of Ilirska Bistrica pointed at the main challenges for the re-use and valorisation of the tunnels, such as: the scant accessibility of the area; stay transit of tourists (two nights on average) in the area; the rural nature of the area and the prevalent naturalistic forms of tourism based on hiking, biking and walking excursions. Indeed, military heritage attracts only a specific group of people and its increasing interest among a larger audience is challenged; local people are scarcely aware of the historic and military heritage values of the area, also because a low level of knowledge about history and stories related to these constructions.

Figure 23.9: The view on the roofless cave of Unška koliševka

With regard to the second group of tunnels, in addition to self-guided visits, there are also guided tours organized by the association Društvo Dolomtne lutke, currently made of 15 volunteers who have been active for some years in research activities, conservation and promotion of natural resources, cultural heritage and sustainable tourism in the area of Notranjske. Volunteers are experiences in different fields, such as hunting, chanting, tourism (e.g. cave guiding) and education.

The association is still in an early stage of development and networking through partnership with local but also international stakeholders. Currently, the association leader, Matej Kržič is authorized to work as a guide in the tunnel and provides people of all the necessary equipment (e.g. boots and helmets with lights) and insurance covering potential accidents. A primary goal of the association is to grow awareness in the audience, including local community, about the value of the region's natural and cultural resources and the importance to develop tourism-related activities by preserving environment and the value of the above resources. The association intensively works with schools and is committed to research and activities, involving direct dialogue with locals with the aim to collect, preserve and spread about cultural heritage, including military heritage. The leader also emphasised how the process of re-use and valorisation of the and remnants of military tunnels puts additional challenge compared to the other kind of cavities, since the combination of natural and human-made heritage require a more complex path, e.g. in terms of authorizations.

23.4.3. ***The first Living Lab meeting***

On November 28th, the Regional Development Agency organised the first Living Lab meeting, which took place nearby the park of Military History in Pivka. At the meeting participated twelve people from different organizations, including the Regional Development Agency, the municipality of Pivka, representatives of the Park of Military History, two local associations, the former director of Notranjska regional park and the director of a local TIC, sharing their ideas and taking decisions about the process of re-use and valorisation of the remnants of the Alpine wall fortifications.

Figure 23.10: The first Living Lab meeting at the Park of Military History (Pivka)

The meeting focused on both urgent issues to address and long-term planning for the future years' development. During the meeting, each stakeholder presented the situation and the main challenges for the re-use and valorisation of the bunker

remnants visited during the previous days respectively in the localities of Primož in Pivka, Milanja and Unška koliševka. During the presentations and following round table, several concerns and constraints were identified, along with potential opportunities and solutions of re-use and valorisation. Finally, an action plan specifying next steps to realise was jointly defined. A primary issue is the ownership of all the military bunkers and tunnels that, at today, belong to the Slovenian State and are under the responsibility of the Ministry of Defence.

Therefore, any plan of re-use and revitalisation would require interacting with this stakeholder and sign an agreement/authorization act. Other concerns include the following:

- at national level, there is still scarce attention for the protection of both natural and cultural heritage
- the external and internal physical accessibility to some remains of military underground structures is impeded because of natural phenomena (e.g. flooding), geographical position and structural features
- some military structures have been damaged by state organisations' negligence during the maintenance
- currently, there is little knowledge about the history of these underground military structures by locals who show scant/no interest in starting any plan of cleaning or revitalization of these structures as well as to make investments
- there is little interest from private initiatives to develop products regarding this kind of heritage
- there is a lack of staff specialised in this kind of heritage among those working in the Institute for Protection of Cultural Heritage.

During the meeting, some opportunities for re-use and valorisation of this UBH were also identified, notably:

- the inclusion of remains of military fortifications of the Alpine Wall within the tourist offers of the Park of Military History can be a good starting point to think about a broader and integrated strategy including also other underground structured spread across the Green Karst Region
- a project proposal in Horizon 2020 focused on the re-use and valorisation of UBH can be a relevant opportunity to finance the implementation of a structured plan for these underground military structures. One possibility of valorisation could be the digitalization of the UBH, which could be used as a part of Virtual Reality (VR) and Augmented Reality (AR) applications for visitors' experience
- complementary smaller kind of military remnants beyond large bunkers and tunnels could be considered for building exploration tourism packages that include the visit in small groups also of water reservoirs, barracks, roads, observation posts, etc.;
- an opportunity to acquire knowledge about military structures would be to get documentation or research publications from the Italian State Archive, in Rome

- it would be important to consider that only after that someone interested in starting the re-use and investing in these UBH to make profits it would make sense start procedures to include these UBH in the list of cultural heritage so that the Institute for protection of cultural heritage could start to take care, protect or manage the UBH
- as for potential re-use, beyond accommodation options, these UBH could be used for farming or local production (e.g. of cheese) combined to degustation activities
- the management of these renovated structures would necessarily require a person, or institution of private company interested. Otherwise, the process would remain at the level of preparing the paperwork/documentation and carrying on research activities regarding the history and localization of these military structures
- foreign investors could be interested in investments in the re-use and valorisation of these structures.

Finally, as for future steps, all participants agreed to:

- create a map of all underground military heritage, through their geographical localization (for example using the LIDAR technology)
- create a cadastre or register for all the identified underground military heritage
- use data and knowledge got through steps 1) and 2) prepare documents to use for starting a conversation with State representatives as owners of these structures in order to agree about the legalization of the activities of re-use and valorisation of military remains
- focus on the area of Green Karst as a pilot research and include locals and local institutions in carrying on all the previous activities to get best results.

23.5. **Conclusions**

The STSM demonstrated to be a key instrument within the COST Action CA18110 Underground Built Heritage (UBH) to assist the process of Community Valorisation through the UBH re-use and heritage-led regeneration process undergone in the Green Karst Region. This process necessarily required an assessment made by the researcher of the case study under investigation to identify bottlenecks, challenges and opportunities for re-use and valorisation.

The mission was also the occasion to boost a process of cultural change and encourage local actors to recognise the value of collaboration and adopting innovative methodologies, notably the Living Lab, to involve multiple stakeholders and the local community in processes of culture-led revitalization and development. In next year, research in collaboration with the host institution and local stakeholders could contribute to: 1) acquiring a more in-depth knowledge about the decision-making processes enacted by these actors through relying on a longitudinal case study approach; 2) supporting the implementation of the Living Lab methodology based on participative processes of idea generation and innovation development e.g. helping local actors to optimise the use of new tools based on principles of transition

management and strategic stakeholder dialogue; 3) participating in joint research projects to fund Living Lab activities.

In this respect, it is worth reporting that ISMed-CNR, in partnership with the Regional Development of the Green Karst region and the Anton Melik Geographical Institute of Slovenia, applied to the H2020 call "Topic Transformations 04-2019-2020": Innovative approaches to urban and regional development through cultural tourism. The partnership submitted the proposal "VIRtual Technologies for toUrism Sustainability in European Rural Areas – VIRTUS ERA 4.0" aimed at elaborating a technology-based cross-border collaborative model (e.g. also through VR and AR applications) able to support sustainable cultural tourism as a driver for the development of a common and shared European identity among rural areas.

In detail, starting from a community-based cultural tourism perspective and through a process of stakeholder engagement, the project goal is to identify, validate, test and share innovative multilevel and replicable strategies, including multilevel governance arrangements, investment and financial schemes, business models, experience-based services, along with boosting collaborative and user-based innovation, stimulating local rural communities to develop multi-functional, cost-effective and technology- based solutions for cultural heritage valorisation.

For Slovenia, the selected pilot area is the Green Karst Region and includes the remains of the Alpine wall fortifications. With specific regard to the military remnants, the project offers unique valorisation opportunities by exploiting the potential of virtual technologies, notably augmented, mixed, and virtual reality. In this respect, it is worth highlighting that many cultural heritage objects are not easily accessible and are in remote areas of the region. In addition, the existing remains contain fortification walls, caverns and the outside casemates and bunkers, while the aboveground structures were mostly destroyed. This means that AR, VR and mixed reality applications would allow to virtualize the caverns in a good preservation state and video-map life and activities, which took place there in the early 1930s. AR offers unique opportunity to virtualize and experience not only the historical remains, but also equipment ranged and stored in the fortifications, weapons places and the everyday life objects the solders used at that time.

The project should provide funding opportunities for the preparatory work, which comprises of research and cadastre preparation, a base for the subsequent development of technology-mediated experiences. As a result, these activities will allow to obtain both the content and legislative foundations to work on the creation and dissemination of the virtual experiences regarding the underground heritage. In terms of expected impacts, the Regional Development Agency underlined the opportunity for the locals to acquire deeper knowledge about the underground military heritage spread throughout the area and the identification of potential business opportunities for sustainable tourism. At the same time, the new technology-based services and experiences will be a strong pull factor for visitors from foreign and domestic markets and will be a generator of promotional campaigns, strengthening the competitive position of the area as a cultural and historical destination.

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NOTES

[1] The chapter resumes the results of the Short Term Scientific Mission (STSM) carried out by the author between 16th and 29th November 2019 in the Green Karst Region (Slovenia), coherently to the goals stated by the COST Action 18110 - Underground Built Heritage as catalyser for Community Valorisation. Author's information: Luisa Errichiello, Via Guglielmo Sanfelice, n. 8, Naples, Italy. Email: luisa.errichiello@ismed.cnr.it

[2] See [9], in this Handbook.

[3] For more information, visite the website of Postoja Cave Park at: https://www.postojnska-jama.eu/en/

PART 3

RESEARCH GROUPS

CHAPTER 24

Creative Tourism

Connecting Fontanelle Cemetery to a larger touristic route

Pamela Bartar, Gresa Calliku, Sara Morena, Francesco Paci, Mia Trentin

24.1. Introduction

During the second week of February (10th-15th), the COST Action CA18110 Underground Built Heritage as a catalyser for Community Valorisation (Underground4value) organised the first Training School in Naples. The school presented a multidisciplinary and innovative approach for the study, monitoring and promotion of the UBH. The focus was to provide the participants with innovative tools and enable them to interact with local communities, planners and decision-makers to promote and integrate the UBH in its broader socio-cultural panorama. In this perspective, UBH can act as a fostering element in the local economy in a resilient perspective.

To reach this aim, the one-week school activities included multidisciplinary presentations by international experts and group workshops. Thanks to that, participants could work on real case studies, goal-oriented, to develop solutions in line with the project objective.

The school's afternoon sessions were very fruitful. As a group, we worked well from the very beginning, exchanging ideas and approaches, naturally sharing our expertise and perspective. The result of our work was presented in a final poster, awarded for the Best Methodological Approach.

The present paper aims to describe in-depth and extensively our approach and the process that led us to formulate our final proposals[1]. During the workshop, we could benefit from the guidance and support of Juan Valle Robles, our tutor. Juan was selected for an STSM at Fontanelle Cemetery, and his experience has been beneficial for our work.

Our research group 1 benefited from interdisciplinary contributions provided by its components' different backgrounds.

Pamela Bartar (AT) has a background in Communication Science (MA), Cultural Management and Feminist Studies (MAS); her current focus of (practice-led) research interest lies on science communication, participatory and collaborative approaches such as citizen science as well as on art and knowledge transfer. Pamela is a team member of the Centre for Social Innovation (ZSI Gmbh) in Vienna.

Moreover, she is a university lecturer at the University of Applied Arts and the University of Vienna (2011-2016) also taking the chance to get involved in the yearly summer programme of the "Kinder Universität".

Gresa Calliku (TR) has a background of Architecture (BArch). She studied at Middle East Technical University and Ecole Nationale Supérieure d'Architecture Paris-Belleville. Her research principally focuses on housing-led urban regeneration regarding the 11th goal of the UNs Agenda for Sustainable Development. The Underground4value training was following her research on housing-led regeneration in UBH sites like Cappadocia (Turkey).

Sara Morena (IT) is an engineer graduated in Building Engineering-Architecture at the University of Salerno. In 2018, she got a European PhD in 'Risk and Sustainability in Civil Engineering Civil, Environmental and Building Engineering Systems' and subsequently a Research Fellowship for the Macro sector 08/E where she also carried out some teaching activities. Her research is mainly focused on investigating the historical knowledge of CH and in the identification of methodologies for its conservation, valorisation and dissemination. Her approach benefits from both traditional methodologies and the implementation of newly available technologies for CH protection and dissemination.

Francesco Paci (IT) is a freelance engineer and photographer, he deals with the history of architecture, urban planning, the study of the city, territory and landscape. His research focuses on the study, description and mapping of the territory and its economic and socio-cultural activities to develop social and environmentally sustainable strategies. He collaborates with the Università Politecnica delle Marche.

Mia Trentin (CY) has a background in Archaeology (BA) Cultural Heritage Studies (MA) and Medieval History (PhD), Mia's research interest focuses on epigraphic written sources - mainly graffiti. She is developing digital tools for graffiti documentation, visualisation and interpretation in an organic CH context. Her research aims to investigate socio-cultural exchanges through written sources in the Eastern Mediterranean.

The case-study assigned to our group concerned the Fontanelle cemetery, an underground site with a long and peculiar history shaped by its origin, use and function as well as from its location, Rione Sanità. This area is a popular neighbourhood of Naples with original characteristics and challenges that we tried to learn, understand and approach. Our task was to develop a strategy to connect the site to a larger touristic route through the implementation of Creative Tourism approaches.

Our work started considering the concept of Creative Tourism as a critical element, to focus then on our case study. We collect information about the Fontanelle cemetery, its origin and history, its use and function and expand our research to its broader landscape. We considered the characteristics of Rione Sanità from different points of view: physical, logistic, socio-economic, cultural etc. To have a better picture of the whole context, we also arranged a site visit to see and experience by ourselves the place. All these activities helped us to identify the area's strength and weakness which have been the starting point of our discussion. We exchanged ideas and suggested solutions to overcome the limits and fulfil the task though a multi-layered and holistic approach. We agreed on the essential aspects

and activities which, in our opinion, should be taken to insert the site in a larger touristic route where the community plays a key role. The Rione Sanità's local community has been considered at the same time as the caretaker and the beneficiary of the project.

This contribution will follow our working process. The first part presents the physical and historical characteristics of the site and its landscape focusing, then, on the strength and weakness of the Fontanelle Cemetery as a cultural site to be inserted in a larger touristic route. The second part is devoted to our suggestions, structured in order to address every lack identified during the site analysis taking advantages from the strength of the site.

24.2. **Context description and challenges**

The city of Naples is one of the largest urban areas of Italy, with a high urban density, facing the challenges of managing the urban growth, territory transformation within the current threats of climate change and mass tourism (see Valle Robles J. in this issue).

The city centre was listed by UNESCO in 1995 in its World Heritage List, recognising the international relevance of its natural, historical and cultural heritage.

The urban structure is the result of the city's long-lasting history, with the Greek road system on which Romans and Medieval elements were inserted, until the Modern extension of the area towards west and east, up to the hills surrounding the coast. The geology of the area is characterised by the yellow tuff and pyroclastic soils as a result of the volcanic activities. Over the centuries, this type of subsoil has favoured extraction activities for the creation of functional structures (aqueducts, cisterns, places of worship...) and for obtaining construction material [1] [2]. The result is a dense network of underground spaces and tunnels that run throughout the subsoil of Naples and which, although invisible, constitute one of the characteristic elements of the city's tangible and intangible heritage [3]. As an integral part of the urban structure, these spaces have been the object of study and protection mainly from two points of view. The first aspect concerns the protection and safety of the cavities and areas above in order to contain and prevent damage caused by the subsidence of the land [2] [4]. The second one is about the enhancement of these areas, many of which are still in operation, for tourism or cultural purposes.

The Sanità district is also rich in these underground spaces, mainly devoted to funerary functions as the area develops outside the walls of the Greek and Roman period. Here are located the catacombs of San Gennaro, San Gaudenzio, San Severo within other Greek, Roman and Modern sepulchral complexes such as the Fontanelle Cemetery. They represent the lively and deep-rooted expressions of the local population towards the cult of their deads, which weave together Christian and popular traditions and believes in an original local way. This is the case of the Fontanelle Cemetery, situated on the border between Sanità and Vergini districts. The site originated around the 16th century as a tuff cave, becoming a burial site to host the numerous victims of the mid-17th-century plague, and consequently of the many epidemics of the following centuries.

Moreover, around the 19th century, coeval sources report that the cemetery was also used as an ossuary for many city churches. In 1872, thanks to the initiative of father Gaetano Barbanti, the site was reordered. All the human remains were collected and arranged following the trend of the period, with an original disposition. Skulls and long bones (tibias and femurs) were grouped and distributed along the walls and altars (Fig. 24.1).

Figure 24.1: Interior of the Fontanelle Cemetery

In the second half of '800, the ossuary was entrusted to the canon Gaetano Barbati who took care of the reorganization of the bones, the same that is visible today. The cemetery gained popularity as it became the scene where to practice the cult of the anime pezzentelle: the adoption and care of a certain skull of an abandoned soul (locally called capuzzella) in exchange for protection. This spontaneous cult had provoked the closing of the cemetery in 1969 by the Ecclesiastical Court who wanted to stop such a folk superstition contradictory to the Catholic doctrine of the Second Vatican Council.

The rest of the remains were buried under the present floor of the cemetery. Following this reorganization, the site began to be the object of popular worship, transforming the cemetery into a place where religion and folklore intertwine. The Fontanelle Cemetery represents, from this point of view, an original and unique site of cultural identity not only for the Sanità district but for the entire city of Naples.

The care and cult for the 'Capuzzielle' (the skulls) are the expression of the local community's relationship with death, of the link between the afterlife and the earthly life, and more generally of the concept of life. Precisely because of this

particular nature of worship, not entirely attributable to Christian funeral practices, the site was closed in 1969 by the archbishop of Naples in an attempt to bring the practices back to the norm. The Fontanelle Cemetery was then reopened to the public in 2010, following the locals' requests, after the structure's consolidation.

It is currently not only a destination for visits and cult, but it has also become an attraction for tourists. Its context contributes to making the site even more attractive: the Sanità district. Within the city of Naples, this district is one of the most popular whose development - structural and social - has decreed a sort of isolation.

A key event in this context was the change to the road network that took place at the beginning of the 19th century with the creation of Corso Amedeo di Savoia. The creation of an elevated road network greatly facilitated the connection of the city centre with the Capodimonte hill, just above the Sanità district. This operation, however, decreed the isolation of the area (see below a detailed description in 'Infrastructure'). Physical isolation brought with it social isolation, transforming the neighbourhood into a clandestine market that welcomed the poorest part of the population [3] [5]. In this context, the challenges to be faced to enhance the Fontanelle Cemetery through Creative tourism appear clear and can be summarised as follows through the guide-questions addressed by our group during the training school workshop:

- *How can the local community benefit from the UBH itineraries?*
- *How can we overcome the remoteness of Rione Sanità?*
- *How to incorporate infrastructure into planning*?

The concept of Cultural Heritage (CH) we share has facilitated our teamwork. We all believe that CH is not merely constituted by the site itself; it is a more comprehensive, holistic reality, which includes landscape and socio-cultural elements in a diachronic perspective. In this sense, CH is an organic reality of tangible and intangible elements kept alive and nourished by the local communities. Each intervention, therefore, cannot be separated from them.

With this in mind, we jointly decided that the road of Creative Tourism as a strategy to enhance and promote the Fontanelle Cemetery into a broader tourist circuit - our task for the workshop - should have had the community as an element of departure and arrival. We have, therefore, considered the concept of Creative Tourism with a community-based perspective, inserting the concept of 'Community-based Creative Tourism'.

24.3. **Community-based and Creative Tourism**

In the past two decades, the tourism industry has seen a significant increase in its activities and a change in users' demand. Cultural tourism, still widespread, has shown its limits. Although efficient in disseminating and educating the public about CH and artistic beauties, it often risks constituting an experience for its own sake, which begins and ends within the journey. In this way, the tourist experience is confined in a defined space and time. On the other hand, local communities have concentrated their offer in on-site, consumable products to get the maximum benefits from the visits, creating a

consumer-oriented economy that aimed to create immediate income, based on the stable or growing tourist flow of the last decades [6].

Furthermore, the public has become more demanding since the 1990s, asking for a more engaging tourist experience. Holidays have started to take on a different character; they are no longer a moment of leisure and rest enriched by artistic and landscape beauties. In the last decade, many tourists expect to enhance their holidays' experience through contacts with different cultures, with their traditions, to get to know others by experiencing their everyday life, to discover themselves through the interaction with other realities [7]. This new trend has been defined as Creative Tourism:

> 'Tourism which offers visitors the opportunity to develop their creative potential through active participation in learning experiences which are characteristic of the holiday destination where you are undertaken'[7].

From this definition, it follows that the development and application of a Creative Tourism model cannot be separated from the involvement of local communities. Their function is precisely that of introducing the tourist into the local reality, of involving him and establishing a relationship that goes beyond the commercial one, as has been the case with mass tourism so far. Tourists and locals are equally involved in this relationship of cultural and social exchange, and Creative Tourism involves both, as explained by Richards [7]:

- 'For tourists, creativity provides an opportunity for more satisfying holidays
- For tourism hosts, creative tourism can provide an important outlet for local creativity, showcasing the skills and talents that relate to the destination
- For SMEs creativity is important in developing innovative and engaging tourism products
- For destinations, creative tourism is a potential means of distinguishing themselves in an increasingly competitive marketplace, and also for developing positive links between visitors and the local population'.

In the case of the Fontanelle Cemetery, the enhancement and promotion of the site cannot take place except within the community of the Rione Sanità, taking advantage of what is already present and has developed in the last decade in the context of community engagement [5]. Local stakeholders, such as the cooperative La Paranza (https://www.catacombedinapoli.it/en) and the San Gennaro Foundation (http://www.fondazionesangennaro.org) are committed to involving the community in cultural and recreational activities that use the cultural heritage of the Sanità district as a catalyser. Several UBH sites have been recovered and promoted, constituting one of the means not only for the territorial but also for the social regeneration of the area.

So far, the Fontanelle Cemetery has remained outside of these activities, despite the attempts and willingness of local stakeholders to include it in the existing network. Our work dealt precisely with that. We sought solutions to the above-

mentioned existing problems aiming to include the site in a broader tourism system through Creative Tourism approaches.

Richards indicates four factors to work on in order to implement a creative tourism model [7], which are:

- Identifying creative resources
- Finding creative 'switchers', or people who can link the local and global levels
- Developing platforms to link with creative people elsewhere
- Creating events and other engaging content

Based on that, we identified six topics to address to implement a sustainable model of community-based Creative Tourism where the site – the Fontanelle Cemetery – represents a socio-cultural and economic catalyser.

24.4. **Community Engagement and Educational Program**

Facing global challenges in tourism, such as the COVID-19 pandemic [8], a focus on local ecosystems offers a starting point to develop sustainability, and moreover, to promote solidarity and support recovery. The inclusion of local communities in CH and tourism-related projects in mutually beneficial ways underpins the value of innovative forms of collaboration, both, at local and transregional level.

In the last years, there has been an increasing interest in community engagement in the context of urban regeneration and education. Citizen science has already proved to be a valuable instrument not only in collaborative knowledge production but also in co-creation and in various educational context including professional, life-long or community learning:

> 'Citizen Science is a common name for a wide range of activities and practices. [...] These are found in different scientific disciplines - from the natural sciences to the social sciences and the humanities - and within each discipline, the interpretation is slightly different. [...] There is little doubt that a project with an open call to a wide range of volunteers to take part in either data collection or data analysis of a clearly defined research hypothesis will be recognized as citizen science. [...]' [9]

> 'Furthermore, citizen science can support democratic processes or forms of participatory governance on a local or regional level and [...] may include an intervention into the current state of affairs, such as local decision making. This might happen in activities that fall under banners such as participatory action research, community science or addressing environmental injustice [...]'. [9] [10]

In the context of our case, citizen science can provide attractive offers to visitors inviting them to become citizen scientists exploring e.g. local history [11], but offers also possibilities to include local communities in varied processes building sustainable tourism. Given this background, we suggest developing an off- and online community platform as well as a toolbox featuring community science, community learning and collaborative decision-making to better support initiatives

and projects for the quarter surrounding the 'Cimitero delle Fontanelle' by a set of activities such as:

- building a regular appointment and rituals together
- initiating peer-to-peer discussion, exchange and learning within the community
- capitalizing on experiences of community members for sustainable tourism in the quarter.

Approaching a best-case scenario, the identification of a final focus and major target groups could be part of a joint effort and analysis by the local community. Furthermore, it would be the starting point of the communication and dissemination activities (see also further considerations on 'Communication') and part of a preferably holistic concept for this specific urban district of Naples.

Figure 24.2: Palazzo Sanfelice, Naples

24.5. **Infrastructure**

The 'Cimitero delle Fontanelle' is located in the Sanità district (Rione Sanità), a historically known district for the presence of different hypogea used for burials or religious rites. The excavation of tombs or underground structures dates back to the Hellenistic period: there are hypogea datable to the IV - III century. B.C. (Hypogeum of Cristallini and hypogeum of Vico Traetta). Some of the most important underground structures in the neighbourhood include catacombs of San Gennaro, catacombs of San Gaudioso, catacombs of San Severo and catacombs of Sant'Eufemia.

In the 15th century the area was chosen for the construction of a lazaretto because it was considered particularly healthy (Salute in Italian means health), but also for the presence of ancient burials site. The local superstition asserts that the dead could intercede positively for the healing of the sicks': a sort of mystical and religious added value for the place.

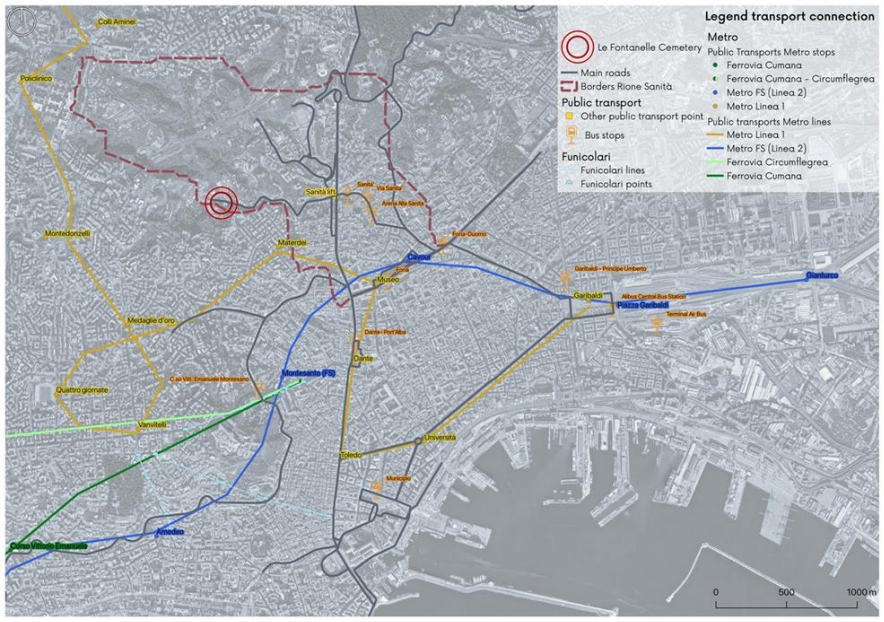


Figure 24.3: Naples Public Transport Network

The residential use of the area started with the aim of creating a place for the upper-middle-class as evidenced by the buildings of Palazzo Sanfelice (Fig. 24.2) and Palazzo dello Spagnolo, dating back to the 18th century. Despite the initial intentions, the development of the neighbourhood followed another path, turning the area into a popular district, today inhabited by poor population and characterized by severe social problems.

One of the main issues of the neighbourhood is its isolation. The north-west part is morphologically distinct from the rest of the city due to the orographic

conformation of the area. The district results, in fact, at a lower level compared to other areas (Fig. 24.3).

Figure 24.4 and 24.5: The bridge to Capodimonte. The lift to access Rione Sanità.

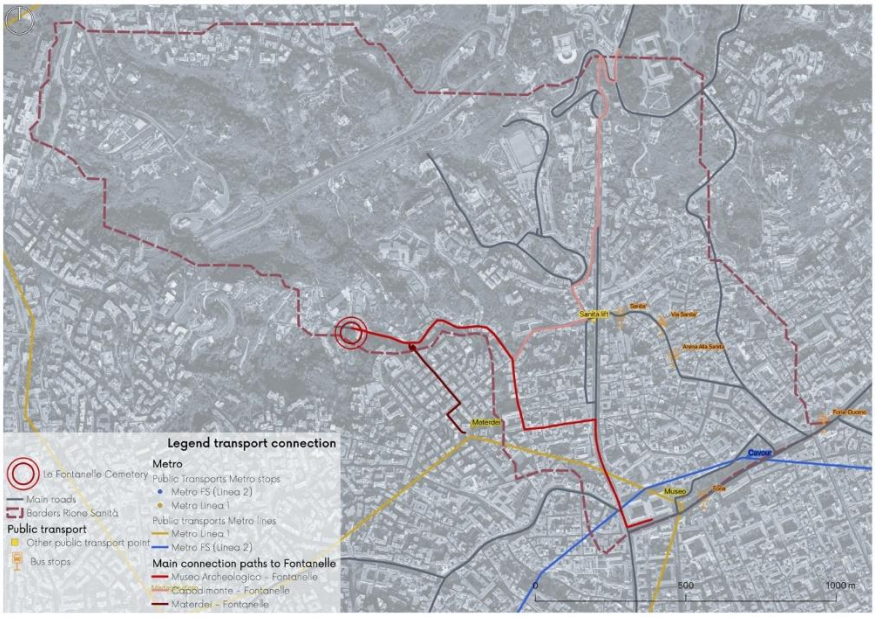


Figure 24.6: Public Transport Network to Rione Sanità

Furthermore, between 1806 and 1809 a new bridge (Ponte della Sanità, known today as Maddalena Cerasuolo) was built to facilitate the access to the Reggia di Capodimonte. The structure was used to pass over the Sanità plain, thus improving

the connection between the historical centre and Capodimonte hill (Fig. 24.4). The bridge's construction, beyond obliterating relevant historical buildings such as the cloisters of Santa Maria della Sanità, has isolated the district from the city centre, thus becoming one of the contributing factors of its decadence. Paradoxically, what was meant to connect and integrate has become an element of separation and isolation.

In 1937 an elevator was built to connect the bridge to the underlying district that is now de facto one of the main entrances to the district. Nevertheless, it is still challenging to reach the Sanità district (Fig. 24.5).

The public transport does not guarantee an efficient connection service: the underground network only reaches the southern border of the Rione Sanità, with three stops (Materdei, Museum, Piazza Cavour) while the buses lines offer a slightly better connection. On our visit to the district, coming from the city historical centre, we still had to use a taxi, and the return walking took some time (Fig. 24.6).

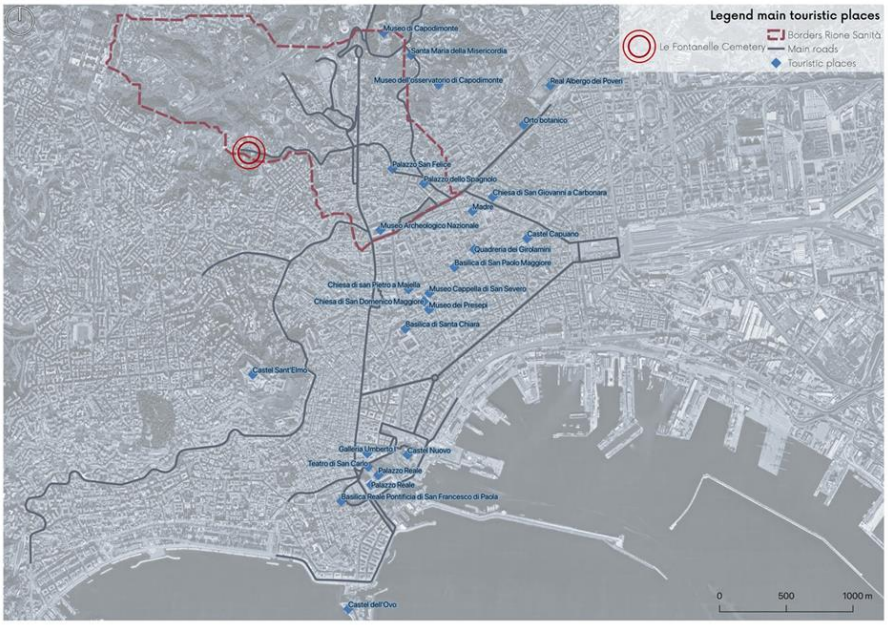
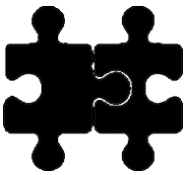


Figure 24.7: Naples relevant Cultural and Touristic sites

24.6. **Physical Integration**



The development potential of tourism-related activities in the neighbourhood is facilitated by the presence of numerous cultural elements, strongly connected to the history of the city and located within the district or in adjacent areas (Fig. 24.7). However, the lack of infrastructures and public transport facilities discourage visits.

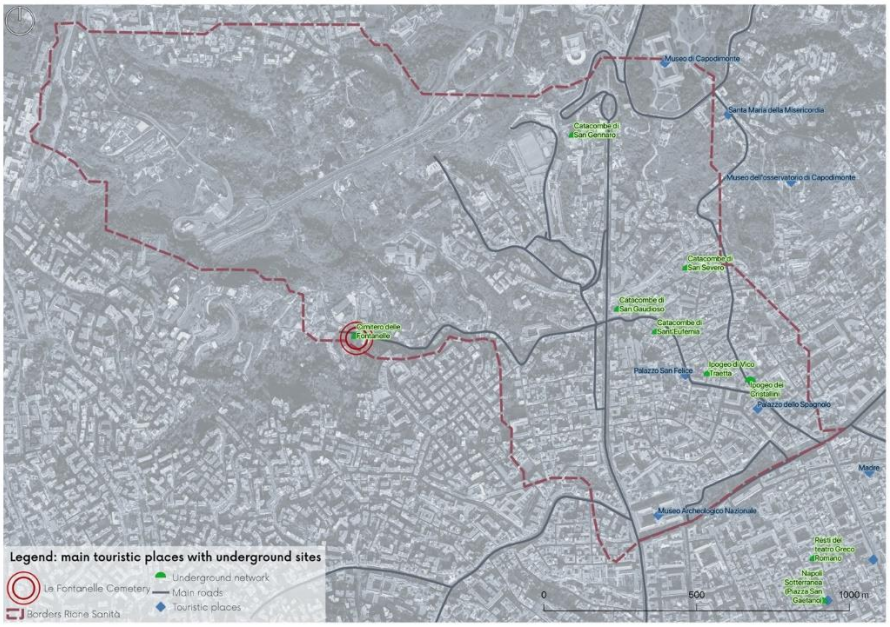


Figure 24.8: Rione Sanità Cultural and Touristic place

The inclusion of the district in the public transport network represents a necessary parameter for better development and success of the area itself. Improving the connection of Rione Sanità is a radical action not only to allow a better cultural and tourist enjoyment, but it is also an essential service for enhancing the residents' quality of life.

Thanks to its history, the district preserves relevant sites that are already or can become attractors for the tourist sector. These places could also be suitable for cultural events such as shows, concerts and public lectures. Within them, during our visit, we noticed old stately homes with original and characteristic architectures, places linked to popular traditions, and many underground sites, with great potential (Fig. 24.8).

A first step to enhance the knowledge and disseminate the cultural and historical importance of the neighbourhood's CH is their inclusion in a larger network. In this way, a site of an existing city network (mainly if external to the neighbourhood) can act as a promoter for the other networks' hubs. The creation of thematic routes is useful, not only for the promotion of the single sites within a broader context but also for their specific management, analysis and study.

One of our suggestion is to create a network of the city's UBH that includes the sites in the Sanità district such as the Fontanelle Cemetery, the Hypogeum of via Cristallini, the Hypogeum of vico Traetta, the Catacombs of San Severo and the catacombs of Sant'Eufemia (Fig. 24.9, 24.10). Including this network in the existing one called 'Napoli Sotterranea' could be a first step to enlarge and promote the new sites within broader and already consolidated itineraries.

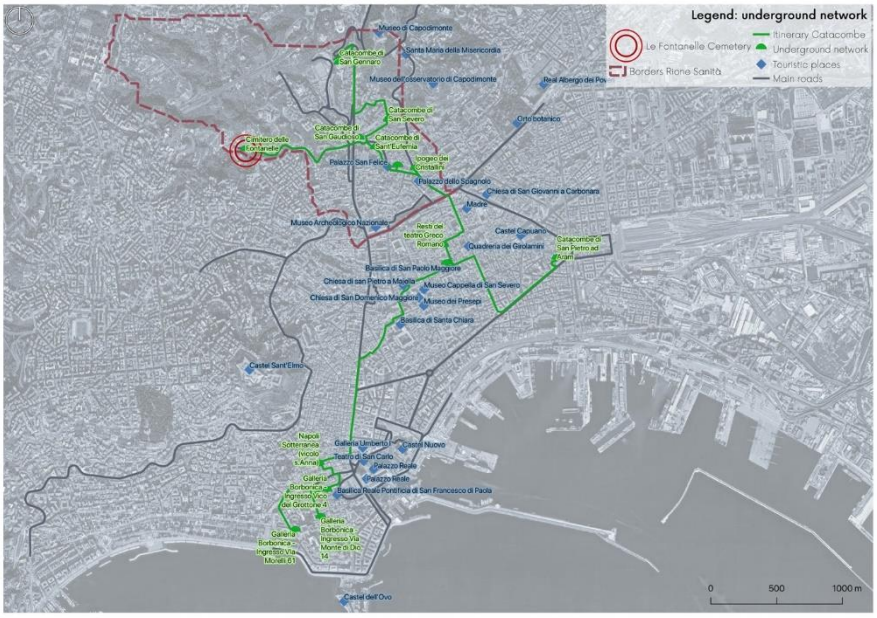


Figure 24.9: Naples UBH network

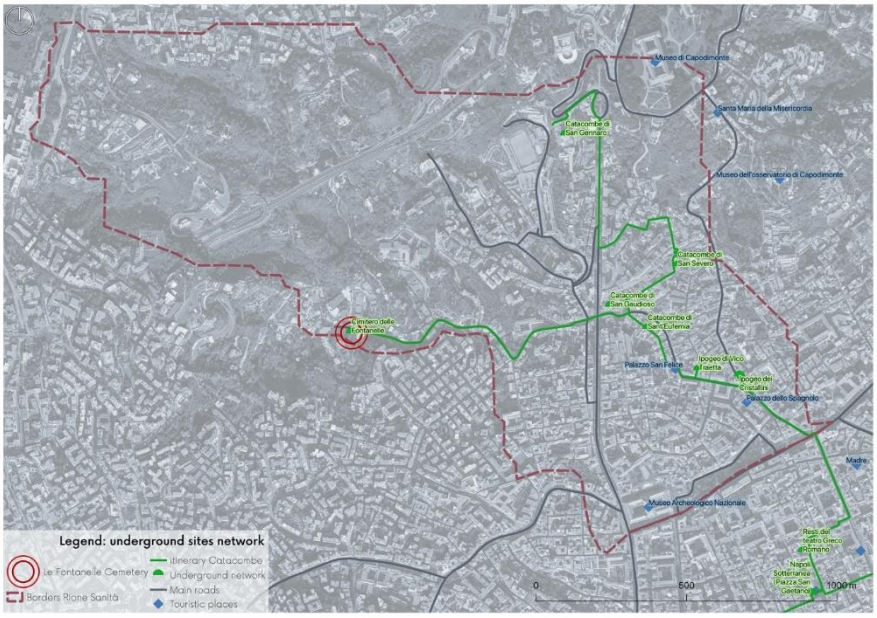


Figure 24.10: Rione Sanità UBH network

The UBH is a characteristic of Naples and includes many different sites joint together by their underground location but differentiate, at the same time, for their origin, history, dimension, use and characteristics.

The connections supporting this network should be non-exclusive for the tourism system, enhancing and expanding the existing public transport services suitable for visitors and residents.

24.7. **Cultural Events**

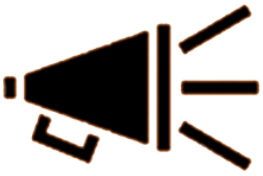
In recent decades, planning, conservation, and architecture have evolved through community and culture, factors that were previously considered, yet not as parameters involved in placemaking [12][13].

Considering this approach as central in our study regarding Fontanelle Cemetery, we decided to bring together community and tourists through a methodological approach that involves tourists into the local Neapolitan culture. As the most reliable way to do this, we regarded the different cultural events that might happen nearby or in the cemetery [14]. Besides the problems that the cemetery faces regarding its physical accessibility, we were impressed by the way that the community uses this particular UBH to express via rituals like “Per Grazia Ricevuta” their precious culture. We wanted to implement this in our methodology of community valorisation by proposing cultural events like theatre plays, concerts, exhibitions, competitions, and other school events to take place in/around the site of the cemetery.

Through emphasizing community and their culture, we empower the locals and could yet give to tourism another glance of authenticity. However, the authorities would fund projects with measurable outputs on visited and confirmed profitable places rather than the ones that need urban revitalization. Written sources also argue that it is rather difficult to invest in methodologies of creative, communitarian, and culturally based tourism when cities race for talent and the touristic factor [15]. Other sources argue upon the role that these events have in placemaking, and city branding, and how they could be the energizers for local brands and could be the initiator for commercial-led regeneration projects [16] [17]. As Sasaki (2010) claims [18], there is no bottom-up research regarding the cultural events and placemaking; so, we chose for the Fontanelle Cemetery case study to be emphatic about the funding opportunities that might come along with a proper methodological plan. To invest in a potential methodological approach might enhance the sense of community and social cohesion for the locals [19], as well as it might suggest a commercial value for the neighbourhood. Art, culture, and creativity can suggest urban regeneration and economic development through creative approaches when it focuses on creative industries [20]. A possible methodological approach similar to the one we suggested could implement in site what these studies claim and benefit to the area of Rione Sanità and suggest a new dimension for economic and social development. It could be challenging to suggest a culture-led regeneration as the measurability of its impact on economic

development is difficult, and the indicators of change are also immeasurable variables.

24.8. **Crafts and Food**



It is difficult to define craft, as it was after the 17th century that it got separated from arts as a practice [21]. Crafts refer to the artisanal objects and the activity for their creation [22]. We consider it an integral part of our study since we want to foster the craftmanship through traditional activities representing and the Neapolitan image to be part of its regeneration. We considered offering to the visitors the experience of participating during the creative activity of craftsmanship with the possibility of realising their own object as a little souvenir to carry from Naples. Having a living experience that brings visitors closer to art and creativity as well as foster different interests about the environment, creating an authentic experience rather than just visiting a UBH heritage site like Fontanelle.

Food is also an essential part of Neapolitan culture. The Mediterranean diet has been part of the UNESCO list of intangible heritage since 2010 [23], and the city of Naples on the shores of the Tyrrhenian Sea is one of the wealthiest cities perpetuating this tradition. Neapolitan people are the ones who are used to fishing, canning, processing, preparing, and consuming good quality food.

As we consider suggest a culture-led urban development proposal through Creative Tourism, it is essential to rely on the properties of this culture. Gastronomy, and the activities of the Mediterranean diet that follow food preparation and consumption, represent the Mediterranean region more than the climatic conditions itself. We considered implementing these features to our proposal and make food part of the cultural activities to be carried in the Sanità district. In our proposal for Fontanelle cemetery, we considered besides concerts and theatre plays gastronomic events nearby the Cemetery in religious celebrations days, where along with the ritual tourists will get a glance of the Neapolitan traditional dishes. Tourists will get simple recipes and suggestions from the local community as well as they might participate during the cooking process.

24.9. **Communication**

Creative Tourism could play a fundamental role in the spread and valorisation of less-known places. Naples has always been a national and international tourist attraction, so our aim is not only to increase the number of visitors to the city but also to direct their attention to the heritage that has been ‘hidden’ and marginalised by tourist tours for too long. The idea of enhancing the interest in the Fontanelle Cemetery with the promotion of Creative Tourism allows not only to focus on the site itself but also to extend the attention to the entire Rione Sanità. Within this process, the identification of a correct strategy for advertising and disseminating the site plays a fundamental role.

Beyond the problems related to the Rione Sanità itself, such as the marginality respect to the centre, the poor infrastructures and the insufficient connections, a fundamental aspect to consider is also the lack of knowledge concerning the site. The Fontanelle Cemetery, unfortunately, too often represents a little-known heritage.

Figure 24.11: Traditional and innovative methods to communicate the site and the related activities

Therefore, the identification of new strategies to promote the visibility of the area represents another step for overcoming the remoteness of Rione Sanità. Nowadays, we can benefit from a wide range of communications methods, from the most traditional to the most innovative. However, given the considerable heterogeneity of resources available, it is essential to identify an efficient methodology that would ensure to achieve the set target with a minimal expense but with maximum efficiency. We have therefore focused on the two main pillars of the advertising strategy: the message has to be transmitted and the selection of the most suitable media to advertise it [24].

The message is to valorise and safeguard a part of the city of Naples still marginal today. The idea is, therefore, to inform about the existence not only of the Fontanelle Cemetery but of the whole Rione Sanità and the various opportunities that this area offers to tourists (craft and food, cultural events as described above). The selection of media, although, is strongly related to the "type of tourist" that we want to reach. The idea is to create a point of attraction both for locals and visitors,

able to fulfil the demand of different age groups and interests. In this regard, we decided to combine the usual and traditional methods of advertising with some innovative communication strategies, taking advantage of new technologies in the field of communication that have gradually revolutionised the tourism industry (Fig. 24.11).

The distribution of brochures and flyers, the posting of advertising panels in the city or at the various metro stops, are still effective advertising methodologies able of transmitting valuable and concrete information to tourists who are already visiting the city, for attract their immediate attention. Radio and television, on the other hand, would tend to attract more local tourism to be implemented mainly for the communication of cultural events planned (theatre, concerts, exhibitions, school events…). Moreover, during the last years, digital applications have strongly influenced the tourist industry. Online advertising has grown in relevance thanks to Search Engine Marketing [25], as well as the use of social networks [26]. This is the reason we also decided to use these channels to capture the attention of young people as well as an international audience. Creating social profiles on which to share events and experiences, hashtags to identify the place and advertising promotions it would allow a greater spread of the message [27].

24.10. **Legal responsibility**

The identification of a correct and focused communication strategy is of great importance to direct the attention of tourists towards the site. However, the involvement of policymakers, stakeholders to make the strategy effective, would be fundamental. In this regard, it would be necessary to envisage some approach to attract public and private investments. The idea to focus the attention not only on the Fontanelle Cemetery but, also, on the whole area is itself a strategy. Visitors coming to the site will be actively involved in creative experiences and activities, thus enhancing the value of the handcraft activities present on site [28].

The classic form of tourism, therefore, would be supported by tourism based on experience, on retracing and learning the traditions and arts of a place. But also, innovative activities such as pictorial or photographic holidays, gastronomic experiences and religious holidays [29]. All these activities would generate a community-based Creative Tourism system, providing a new economic opportunity for the Rione Sanità, attracting the attention not only of the public but also of the private sectors.

The strategy of Creative Tourism is advantageous, therefore, to stimulate a series of results, not only cultural and tourist but also social and economic. The private sector could intervene in this development by supporting progress with various forms of attraction: cultural events, crafts, design, art, all activities that would stimulate creative production and the private economy. The development of creativity would actively contribute to the growth of society but also acting positively on the evolution of the site and inevitably directing the attention of the public towards new forms of governance of the site, intervening on an urban and infrastructural reorganization of the place [30].

24.11. Conclusions

While drafting the present paper, we realised how COVID-19 pandemic affected every aspect of our societies on a global scale. What happened makes even more relevant the presented approach and the suggestions we proposed. If before there were a will to valorise the Fontanelle Cemetery in a community-based perspective able to bring socio-economic benefits to the Sanità district, now it is an urgent need.

The city of Naples, due to its high density and the economy based on tourism will suffer from the impact of the pandemic, mainly within isolated and less developed areas, such as the one we investigated. In this perspective, we hope that our suggestions can be useful to restart the discussion and the promotion process of the Fontanelle Cemetery enhancing the existing UBH network of the area, enriching the visitors' experience and motivating the local community to face the post-pandemic situation.

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NOTES

[1] This chapter is the result of a collective effort. During the training school, the team elaborated the relevant ideas which were included in a poster. As for this chapter, Mia Trentin drafted the sections 24.1, 24.2, and 24.3; Pamela Bartar the section 24.4; Francesco Paci the sections 24.5, and 24.6; Gresa Calliku the sections 24.7, and 24.8; finally, Sara Morena the sections 24.9 and 24.10. The conclusions are collective.

CHAPTER 25

Heritagisation of a Place of Worship
Frictions and Solutions

Elisa Bellato, Amber Keurntjes, Andrea Murzi, Felicia Peronace, Tugce Sozer, Yunus Sacid Yildiz

25.1. Heritagisation: risks and assets

Our research teamwork deals with a particular kind of underground built heritage: we can say that its specificity is a "double soul". Indeed, the Fontanelle Cemetery is at the same time a place of worship and a touristic site. Finding the balance in this duality is a delicate job which entails the risk of the latter prevailing over the former.

Thinking about a new management means, above all, to start from respecting the history of the site, and meanwhile to suggest a transition plan taking into account the current needs. It means looking at the site on the basis of the current situation: interpreting what the place is and what it could be, and working toward an adaptation in order for it to stay relevant in the present and perhaps in the future.

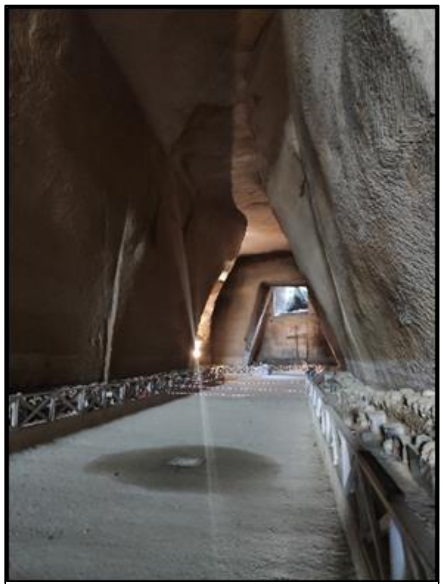


Figure 25.1: Fontanelle Cemetery Lateral Nave (Sozer, 2020)

Our generation has developed a widespread awareness and responsibility towards the past and its preservation. The fear of losing cultural memory throughout generations is real. However, we also know that the Fontanelle Cemetery has been used in different ways throughout time: to change is part of the flow of history. Now the risk is that heritagisation grows to the detriment of the religious vocation.

The group got inspired and summarized all these items in order to create a strategy whereby the ossuary can be valorised both from the social/spiritual and cultural/touristic

point of view. Wishing that old and new rituals could cohabit in a modern way of living the site: to pray, to ask for grace donating little jewels, to take pictures and selfies, to participate in guided tours, to visit a peaceful place.

25.2. **The case-study**

The Fontanelle Cemetery is situated inside an ancient tuff cave excavated into the Materdei hill and contains the remains of an unknown number of people. It is located in the Rione Sanità, one of the most famous districts in Naples, known for his history and tradition but also for the high rate of unemployment and crime.

The name "Fontanelle" comes from the numerous water sources present in the past in the area. The site has been used as an ossuary since 1600, when Naples was decimated by famines, epidemics, earthquakes and eruptions of the volcano Vesuvius. The bodies of poor people with no means for proper burial were moved to this site.

Figure 25.2: Details of the bones inside of the cemetery (Peronace, 2020)

In the second half of 1800, the ossuary was entrusted to the canon Gaetano Barbati who took care of the reorganization of the bones, the same that is visible today. The cemetery gained popularity as it became a scene where to practice the cult of the anime pezzentelle: the adoption and care of a certain skull of an abandoned soul (locally called *capuzzella*) in exchange for protection. This spontaneous cult had provoked the closing of the cemetery in 1969 by the Ecclesiastical Court who wanted to stop such a folk superstition that was contradictory to the Catholic doctrine of the Second Vatican Council.

For years in a state of neglect, the Fontanelle Cemetery was secured and reordered in 2002, but never reopened to the public except for a few days per year. On 23 May 2010, a peaceful occupation organised by the inhabitants of the district

convinced the Municipal Administration to reopen it. Since that day, the cemetery is accessible again and became a touristic attraction of considerable interest.

Figure 25.3: Boundary lines of Rione Sanità and Fontanelle cemetery's location (not to scale) (Google, 2020)

25.3. **Approaches**

The research group's aim was to understand the distinctive value of this specific underground heritage, trying to suggest a reinterpretation of it under different aspects. The group understood that, in order to develop a strategy and grasp the true value of the Fontanelle Cemetery, a holistic approach was necessary.

Indeed, the site had to be examined in its social, economic and cultural context and taking into account the local point of view. Furthermore, learning about stakeholders was considered a crucial part of the process as private, semi-private and public actors are involved in the area.

Connection is the first keyword identified as useful analysis tool: connection between religious, social, cultural, economic and political factors as well as connection between different levels within the contest (local community, district, municipality).

We looked at the Fontanelle Cemetery considering it as *heritage*. Our theoretical landscape looks at the heritage as a resource for economic development and social wellbeing. However, we are aware that there are other effects, too.

As a matter of fact, heritagisation implies a change for the site's relevance, going from being important for just a few people to a wider audience. Now local and also universal audience give value to the site. Of course, the heritagisation theory implies the belief that the change will provoke positive effects.

Figure 25.4: The route to arrive at the Fontanelle Cemetery (Sozer, 2020)

25.4. **Visit to the site**

With no opportunity to conduct fieldwork in order to understand the case study properly, we decided at least to visit the Rione Sanità district and the Fontanelle Cemetery. The main aim of our visit was to understand the intangible aspects of both areas and the ideas and impressions they gave. It was important also to provide an architectural perspective of both the cemetery and the district.

Our journey started as we arrived at the Materdei metro station. Initially, we noticed a sign leading towards the Fontanelle Cemetery, but indications became scarcer as we continued our journey. The way leading towards the cemetery consisted of two clearly distinguishable neighbourhoods within the district: the first being more well maintained and looking more organized whilst the second looking and feeling more deprived.

We stopped for a moment and appreciated the viewpoint that highlighted the tuff hill behind the cemetery and a large view over the district. Unfortunately, the roofs had not been maintained and gave a dilapidated feeling and aesthetics to the district. The transition between the two neighbourhoods during our journey was a smelly staircase and the conversation started about the prejudgments that we had heard about Rione Sanità district.

Although we had to walk only one street in order to get to the Fontanelle Cemetery, the route felt much longer. The urban fabric in the lower area of Rione Sanità looks quite organic and is enhanced with the application of cobble stones used for the roads. The pedestrian sidewalk is really narrow or non-existent and the district is not wheelchair friendly.

The area itself is mainly focused on what the eye can see (the rest is not maintained and deteriorated). The connection between the street and the houses is

very evident and there is barely any transitional space; this influences the feeling of being looked at and not feeling welcome.

Figure 25.5: Showing the harsh transition from a plain facade to a highly coloured facade and how little the entrance of the cemetery can be noticed (Google, 2020)

Many noteworthy occurrences happened highlighting the difference between the two neighbourhoods. A memorable example was when we saw angry pitbulls on a balcony and they would not stop barking. The notion was heightened since there was no proper semi-private space or front garden – meaning that the street and the houses were too close to each other.

Another, more positive experience was seeing the church that is located next to the cemetery: it is highly decorated with many colours and details to be appreciated by the eye. Furthermore, it stood out completely from its surrounding urban fabric and felt welcoming compared to what we had seen so far.

It is questionable whether the colourful, detailed church next to the cemetery distracts the eye and prevent it from noticing the entrance to the cemetery or the entrance itself is misleading because it seems rather similar to the entrance of a parking garage. Most of us passed it without question which clearly signifies that the entrance should be improved if one wants to attract more tourists. The cuts created in the tuff hill looked very interesting and, in some way, led us closer to the area of the cemetery.

This aspect also enhanced the overall experience since the height of the spaces gave a different dimension to the overall space and resembled the idea of being in closer connection to the afterlife. The change between in and outdoor was very noticeable through the sudden change in the amount of natural lighting. In combination with the location of the stairs, they enhanced the idea and the mysterious feeling of entering a new, much darker space.

As the visitor moves towards the edges of the space, it is possible to notice all the skulls and bones that are placed on the edges of the walls. It looks quite impressive due to their amount and yet it brings this darker, emotional vibe to the experience. Some of the members of our group did not enjoy the experience at all whilst others were highly interested.

Figure 25.6: The current entrance of the Fontanelle cemetery, clearly unattractive to the eye (Sozer, 2020).

The feeling and impression of the space was interpreted differently by all members of the group. Many enjoyed the experience because it was a new form of (dark) tourism, and they had never experienced anything like it before. Others did not enjoy it as much and had a less positive experience. Most of those comments were related to the repetitiveness of the same artefact, the quantity of skulls and how this gave a creepy feeling since they belong to people that lived in the past.

Especially that sense and connection to the past can evoke different feelings regarding the space. Other comments on possible improvements were about the way the skulls were displayed and the poor lighting. Proper lighting is imperative to transform the space from just an evocative, gloomy site to a cultural and touristic destination. On the other hand, these could be proper architectural features to connect the space with its function, but it depends on the experience and interpretation one is seeking to achieve when it comes to attracting tourists.

It is interesting to note that all of the participants were aware of the history of the site and one could question if the space displayed that aspect properly. Although a cemetery immediately provides this connection and feeling between the past and present, it must still be validated through proper architectural design.

The space seemed to be slightly neglected in that sense due to the use of simple rope systems to show boundaries and the stacking of the skulls. With proper lighting and other ways of showcasing these elements the experience could be enhanced. Another proposal is in the form of highlighting the ritual aspect (‘asking *grazia*’ to *anime pezzentelle*, poor souls) and connect the tourists to that layer of history.

All in all, the experience could be highlighted much further in this opportunist space by tapping into its layers of history, architectural decisions to highlight the

experience and interactiveness between the visitor and this darker form of tourism that is the Fontanelle Cemetery. Dark tourism has already ascended over the past decades, but this space could provide an even deeper and more interesting experience that tourists are seeking for.

It was important to meet and to speak with one of the guardians. At first, he was suspicious toward us demonstrating that the ongoing dynamics are problematic. He was worried about us: a big group of people arrived "to control". Quickly, speaking together his mistrust was gone and finally he shared with us his thoughts.

First of all, he said that the cemetery belongs to the community, and precisely to the inhabitants of the district. Hence, he expressed the opposition to the introduction of a ticket and to the management given to any other actor that is not the city administration. He suspected that those who want to control the cemetery have different interests than preserving its value and history. But we can understand also that he was concerned about his own job and role inside the cemetery.

25.5. **Ticket dilemma**

In which way is the image of a site defined by its vist conditions? What is the meaning of a free entrance? Is the ticket only economically important?

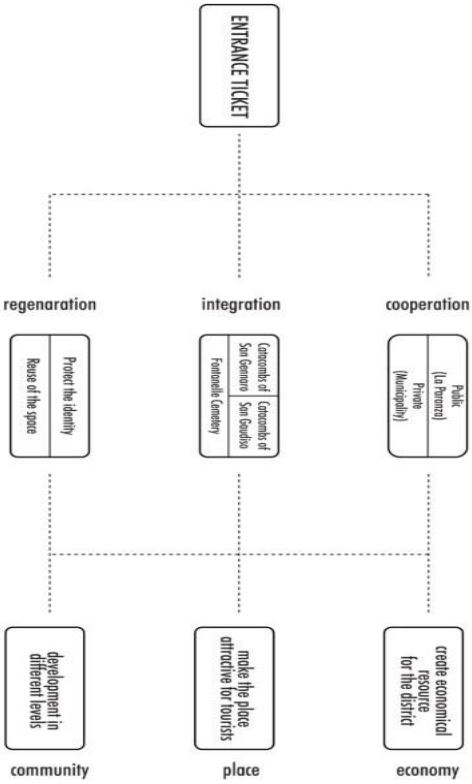


Figure 25.7a: The Ticket Dilemma

In order to design our plan to valorise the Fontanelle Cemetery, we have started by analysing the pros and cons of establishing an entrance ticket to the site. The brainstorming and the following discussion served as a strong basis on which we built the core of our proposal.

To begin with, in general, tourists are usually prone to visiting a place when there is an entrance fee as it gives the feeling that the place in question is valuable and spending the money is worth it. All the more so if the visitors have a great specific interest in religious and/or spiritual activities: they would be happy to visit anyway, regardless of the ticket. Buying an entrance ticket proves that you are allowed to enter, makes you feeling you are a part of it and that you are supporting the place. In the same

way it changes the mental position, it also places people on the same level since everyone paid for the ticket; there is no distinction between them.

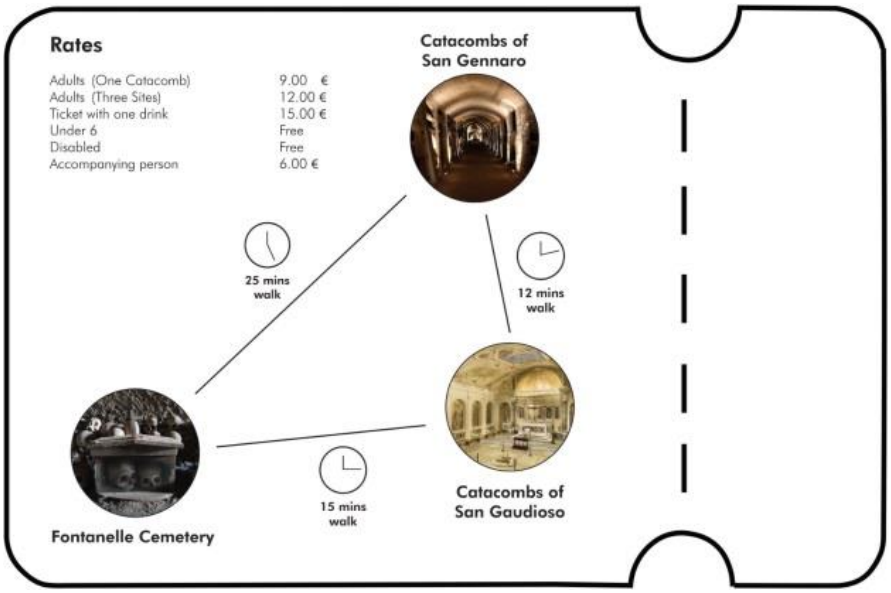


Figure 25.7b: The Ticket Dilemma

Indeed, the type of visitors, as well as the amount, is of crucial importance to answer the question concerning the ticket. There is no point in asking for an entrance fee if the number of visitors is limited and they are not naturally attracted by places of worship.

However, with relation to the Fontanelle Cemetery in particular, the main reason to oppose the imposition of an entrance ticket appears to be the special relationship that the local community of Rione Sanità has with the site – and the related rituals. The cult of the *anime pezzentelle* is not alive anymore, but the Fontanelle Cemetery remains a place of worship. Introducing a ticket risks to break the tradition that bound the people with the place and may result in protests.

Nonetheless, the money coming from the ticket sales could be important to boost a much needed process of regeneration: essential services such as maintenance, lighting, signage and surveillance could be improved and informative material (currently absent) as well as general communication online and offline could be sustained while also creating new job opportunities and, in turn, enhancing the image of the entire district.

25.6. **Tourism as resource**

After the lectures, group discussions and site visit, the ideas have shaped around the concepts of valorisation and reuse, thinking about their compatibility with the

history of the site. The objective indeed was to make the place attractive and an economical resource for the district, but without betraying its traditional spirit.

At this point the group had realized that introducing an entrance ticket would make a difference and help to achieve the objective. Moreover, we came up with the idea that the local Cooperative "La Paranza" could obtain the management of Fontanelle Cemetery, create a ticket system in combination with Catacombs of San Gaudioso and Catacombs of San Gennaro, and use earnings from entrance tickets for the regeneration of the cemetery. There are logistic and practical conditions that support this solution.

To create a touristic route between two catacombs and the cemetery can generate a change on different levels. With this strategy, while preserving and reusing a very important place in terms of past, present and future value, the neighbourhood can also develop. The respect of the spiritual dimension of the Fontanelle Cemetery will be ensured through the connection with two touristic sites with a strong religious identity. The statute fo the Cooperative "La Paranza" and its commitment to the district are a warranty for the local community. Investing in ethical tourism would remove the risk of violating the frail local and social framework. It could improve the quality of life of the people living in the district and create an opportunity for employment through a positive chain reaction.

25.7. **The Poster**

Poster presentation is a practical method that allows the researchers to share their knowledge, experience and research results schematically with other colleagues. The poster can be named as the visual presentation form that results from organizing the material of a study in certain dimensions using visual elements and meaningful summaries.

It is the information that determines the value of a poster. The purpose of a good poster should be to inform the target audience and attract its attention. The aim is to briefly provide the target audience with an idea of the research.

In line with these information and targets, we started to prepare the poster of the Fontanelle Cemetery Project with the intent of sharing our knowledge and experience with other tutors and trainees. While preparing the poster, Photoshop software and A2 paper measurements were used to create the main template (Fig. 25.8).

25.7.1. ***Heading***

The heading is the most effective part of the poster where the first eye contact occurs. The heading should be highlighted, legible and informative about the project.

In order to create an impressive title, a slogan was first identified: Holy Site to Heritage Site – positioned in the middle of the Heading. The abbreviation of the slogan H2H made the heading more impactful.

On the left, photos showing the Fontanelle Cemetery were used. On the right, tangible and intangible words brainstormed during the group work were gathere into a word cloud system.

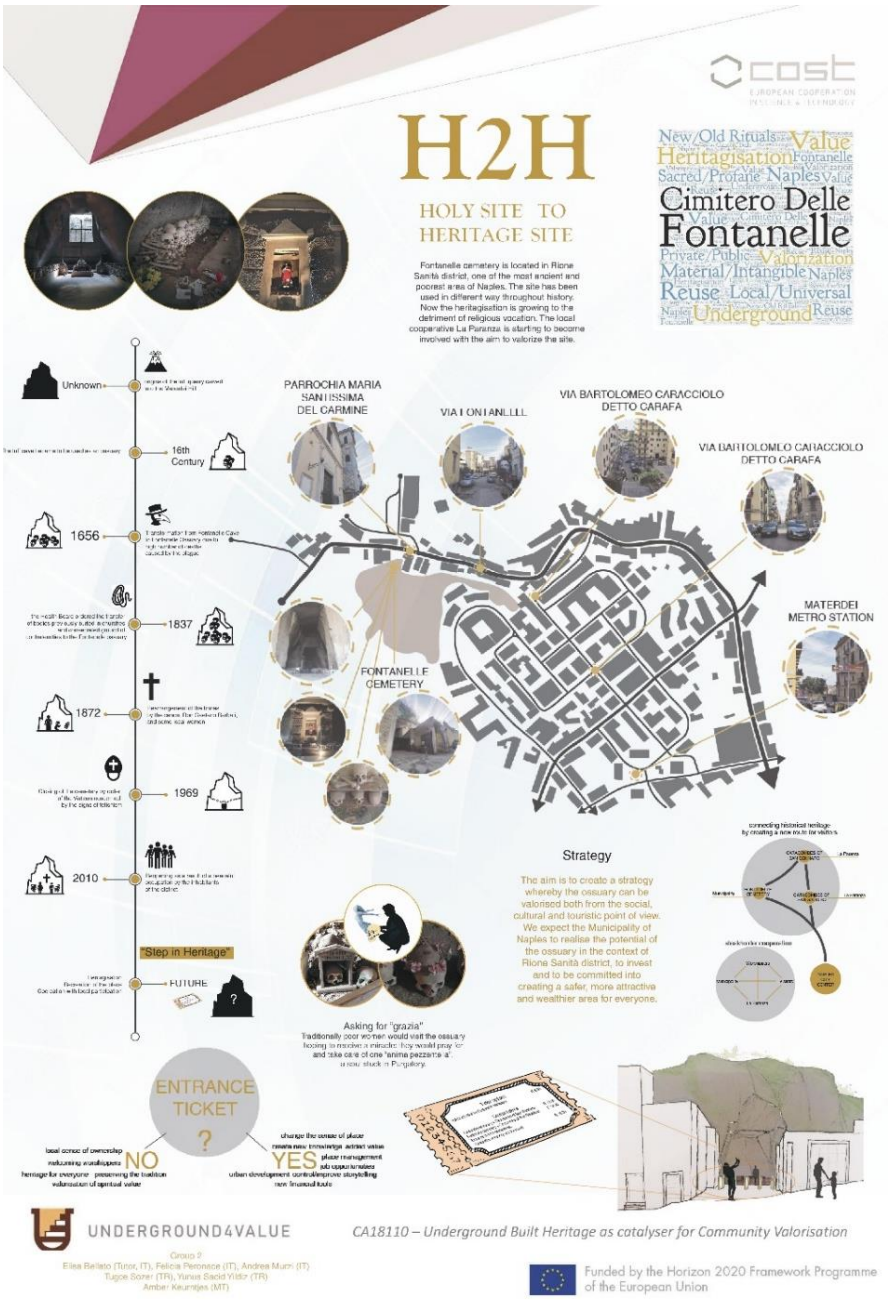


Figure 25.8: The Poster of the Working group 2

Figure 25.9: Heading

25.7.2. ***Mapping***

In order to further inform the target audience, we needed to show the location of Fontanelle Cemetery on the map. We used the map of Rione Sanità and pinned some specific locations in order to show directions.

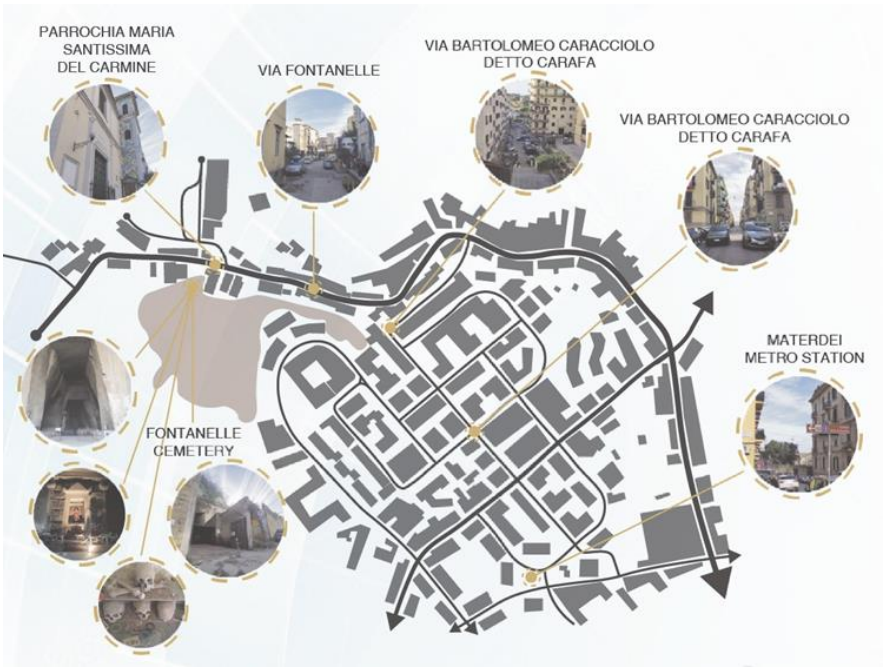


Figure 25.10: Mapping the Rione Sanità

25.7.3. ***History***

With the Timeline graphic, the use of Fontanelle Cemetery in the historical process, its current use and its future status were transferred to the target audience.

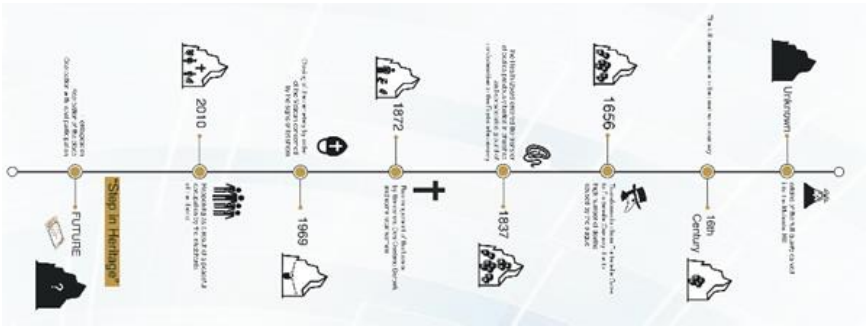
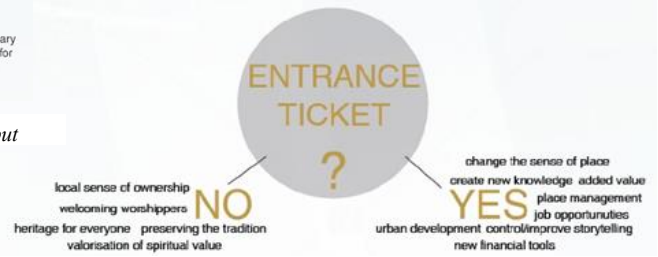


Figure 25.11: Timeline of Fontanelle Cemetery

25.7.4. ***Input***

Figure 25.12: The Input

Considering the situation of the Fontanelle Cemetery, its lack of maintenance and the necessity to be converted into a resource for the district, the result of the group work was the idea to introduce an entrance ticket. Still, there were positive and negative opinions about the issue. On the left side, we showed these divergences.



25.7.5. ***Conclusions***

As a result, the effort to bring together stakeholders such as public institutions, non-governmental organizations, private sector and civil society was deemed to be the best solution. On the right side, the conclusion was showed with thea strategy and a diagram (Fig. 25.13).

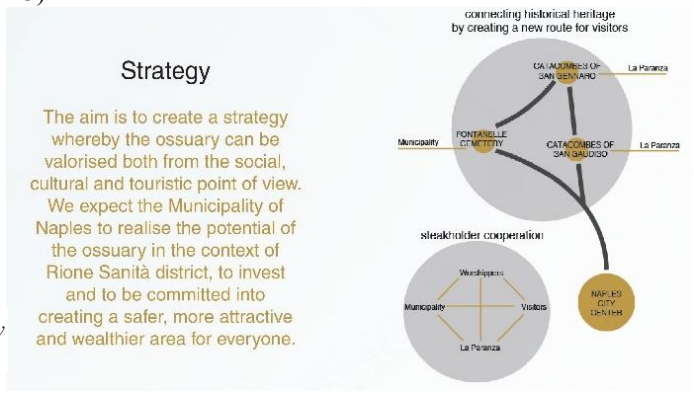


Figure 25.13: Strategy diagram

CHAPTER 26

Karaya is Calling

Business Model Canvas for Developing Eco-Tourism Project in Karaya

Pelin Aytekin Aslaner, Oren Ben-Shlomo, Daniela De Gregorio, Lillie Leone, Antonio Pelegrina, Sasa Zecevic

26.1. Introduction

During the First Underground4value Training School, held in Naples, 10-15 February 2020, our research group 3 designed and elaborated a Business Model for developing Eco-Tourism Project in Karaya. The Project research has been composed by four main activities:

1. Data and information collection by online research, and by the on site experiences.
2. SWOT analysis.
3. Business Canvas.
4. The Karaya Eco-Route.

At the end of the week, the group elaborated a Poster, named "Karaya is Calling", which was rewarded by the Jury of the Training School with the Jury award.

26.2. Data and information collection about Karaya

The challenge assigned to group 3 has been one of the main output of the Living Lab experience carried out in Göreme [1]. The stakeholder meeting had the main task to build a narrative process to increase cultural heritage awareness and maintain the inherent tangible and intangible values of heritage. During the second Living Lab meeting, the stakeholders, in fact, mainly agreed that while tourism contribute to socio-economic development and cultural exchange of the area, it has, at the same time, the potential for degrading the natural resources, social structures and cultural heritage. As consequence of this assumption, they identified a small area to valorise within the Eco-tourism sector.

This area is called "Karaya" (Fig. 26.1), where villagers lived before moving to Göreme. It is a very suggestive, unexplored and not yet valued area, which includes

a volcanic water source with sulphur coming out of the ground and a land art park, made by a well-know Australian artist Andrew Rogers[1].

Figure 26.1: A typical Karaya Landscape

26.3. **SWOT Analysis**

According to the Göreme stakeholders, the objective of research group 3 was to develop a business canvas for ecotourism in the Karaya area of Cappadocia. However, before developing the business canvas, the group needed to evaluate what already exists in Karaya. To that scope, a SWOT analysis was conducted.

SWOT analysis is a strategic planning tool that helps identify the internal (strengths and weaknesses) and external (opportunities and threats) factors that would impact the success of a project, in this case, the creation of an ecotourism destination in Karaya. Not only is this tool essential for early-stage decision making, but it also serves as a guide in later-stage project planning and implementation.

The four dimensions identified include conservation of natural resources, preservation of cultural traditions, sustainable community development and local participation in ecotourism planning and management.

The Figure 26.2 shows the final results of the SWOT analysis conducted on Karaya.

26.3.1. ***Karaya's Strengths***

The *Strengths* dimension of the SWOT analysis refers to characteristics that give Karaya an advantage over other areas in Cappadocia for creating an ecotourism destination. The team began by asking:

What can the Karaya area offer future tourists?

The analysis showed that there is significant potential in Karaya for ecotourism. The main element that makes the area attractive as a sustainable and ecotourism

destination is the richness of the valley's natural and human heritage. Karaya valley, which is a legally protected area, boasts impressive landscape views, geological formations, and mineral pools. Walking around Karaya valley one can also find ancient caves and Roman cisterns that were used for wine production, the famous Cappadocian pigeons houses, and the abovementioned Andrew Rogers' impressive Land Art Park.

Figure 26.2: The "Karaya is Calling" SWOT Analysis

Furthermore, the Karaya valley is part of an area that holds a UNESCO World Heritage Site designation. This recognition is a testament to the beauty and importance of the valley, and also provides access to the global UNESCO brand and preservation and funding opportunities.

Another existing strength identified in Karaya is that the valley offers a peaceful, smaller scale destination to appreciate the beauty of Cappadocia. While nearby Göreme is crowded with tourists, visitors to Karaya can feel as though they've discovered their own little part of Turkey. While the valley is "off the beaten track" for tourists, it is neither isolated nor difficult to find. Thus another strength of Karaya is that there are no logistical challenges to visit the valley: it is very easily accessible using the well-maintained road between Göreme and Nevsehir, the closest town centers.

The final strength identified in Karaya is that there is already strong engagement from local stakeholders, who would like to see (and help) the valley develop into a sustainable tourism destination.

26.3.2. ***Karaya's Weaknesses***

The *Weaknesses* dimension of the SWOT analysis refers to characteristics that put Karaya at a disadvantage for creating an ecotourism destination. The principal weakness identified in Karaya is that it is so unknown that it does not even appear on Google. This lack of publicity is a significant weakness with regards to effective

tourism promotion. Karaya is also relatively undiscovered by scholars and historians, which means that the area would need to be studied by geologists, archeologists, and historians in order to understand the valle's rich past. These studies can be expensive and are often long-term initiatives.

Another weakness of Karaya is the significant initial investment that would be required to build necessary infrastructure. Currently, Karaya lacks the basic infrastructure that would be necessary for tourists to begin visiting the valley, such as sanitary services, potable water, and a parking lot. Significant investment would also be needed to restore parts as of the valley and build any necessary safety infrastructure (which would also require conducting safety and feasibility studies).

26.3.3. ***Opportunities in Karaya***

The *Opportunities* dimension of the SWOT analysis refers to external elements that can be exploited to create an ecotourism destination. Firstly, Karaya has the opportunity to benefit from the existing tourism in Cappadocia, which boasts four of the ten most visited sites in Turkey. Additionally, the region of Cappadocia has a very powerful brand: ask any of the 3 million who are drawn there in the 2019[2]! The ecotourism project in Karaya can build off of the established Cappadocia brand as a highly sought-after tourist destination, and existing tour companies can easily add visits to Karaya valley for the tourists they cater to.

However, unlike the traditional tourism strategy that draws visitors *en masse* to Cappadocia, Karaya also has various opportunities because it has not been "discovered" yet. For example, there is increasing worldwide demand for more natural and unconventional tourism experiences, which Karaya can offer given the strict building restrictions that have been mandated in the valley area.

Additionally, the development of Karaya as a sustainable ecotourism destination would start from a blank slate that welcomes innovation and the use of new technologies such as green energy. Alternative tourism strategies like ecotourism are typically small-scale and does not need to scale or be profitable, which reduces the economic pressures on the Karaya project and makes the destination more exclusive.

Finally, the group identified the existing wine and agricultural traditions of the Karaya area as well as the impressive art installations as a great opportunity for attracting alternative tourists.

26.3.4. ***Threats to Karaya***

The *Threats* dimension of the SWOT analysis refers to external elements that could interfere with the creation of ecotourism destination. The first threat that the Team identified is the existing brand of the Cappadocia region, which attracts a very high volume of tourists for short, single-use visits. This tourism brand largely depends on the "influencer effect," meaning that visitors come to Cappadocia with the objective is taking a photo for their Instagram, without staying and exploring the region in earnest. The Team is concerned that a Karaya ecotourism route through the valley could be too niche for this tourist market.

Additionally, despite promising initial stakeholder engagement, the resistance or lack of participation from the local community could also be a threat to the Karaya ecotourism project. Local buy-in is essential to develop a sustainable

tourism model. A lack of local entrepreneurs that would provide important services to attract tourists, for example a food-truck or cafe at the entrance of the valley walking routes, would be a significant threat to the ecotourism project.

Finally, the last threat identified is the possibility of persisting safety issues in the Karaya valley that would make it impossible to open to visitors.

26.4. The Business Canvas

Starting from the SWOT analysis, and learning from the valuable lecture of Álvaro Dias "Developing Underground Heritage Business Models. Creative tourism as a strategy for the UBH promotion [2], the Group 3 elaborated a Business Model Canvas named "Karaya Undiscovered Cappadocia" (Fig. 26.3). The Business Model Canvas methodology allowed the group to discuss and develop business models by using a simple but effective canvas as a working tool. According to Osterwalder and Pigneur [3], Business Model Canvas is the platform that is used to describe, visualise, assess, and change business models. Elements in the Business Model Canvas include nine basic building blocks namely customer segments, value propositions, channels, customer relations, revenue streams, key resources, key activities, key partnerships, and cost structure.
The following is a description of the solutions that have been developed for each block.

Value Propositions: *what value do we deliver to the customer?*

The identified Value proposition is: *Immerse yourself in a genuine Cappadocian lifestyle*. This stands for inviting unconventional local and foreign tourists to explore natural hiking routes through Karaya valley, learn about historical settlements and human heritage and share the true Cappadocian lifestyle. The value offered to the new segment of tourist is the connection with the local reality, the possibility to reach special and exclusive locations, a different and unique touristic experience.

Customer Segments: *Who are our most important customers?*

Tourists looking for a different holiday experience, such as eco-friendly tourists with adventurous attitude (People who think out of the box). The customer segment could be named: *Outdoorsy*.

Channels: *Through which channels can our Customer segments be reached?*

The anonymity of Karaya does not envisage the sale of tickets, so the group explored other channels coherent with the identified customer segments. The most important efficient are the Thematic TV channels and Public figure (testimonial)

since these channels could create a dialogue with the eco-tourists. Other identifies channels are more traditional like social media or website.

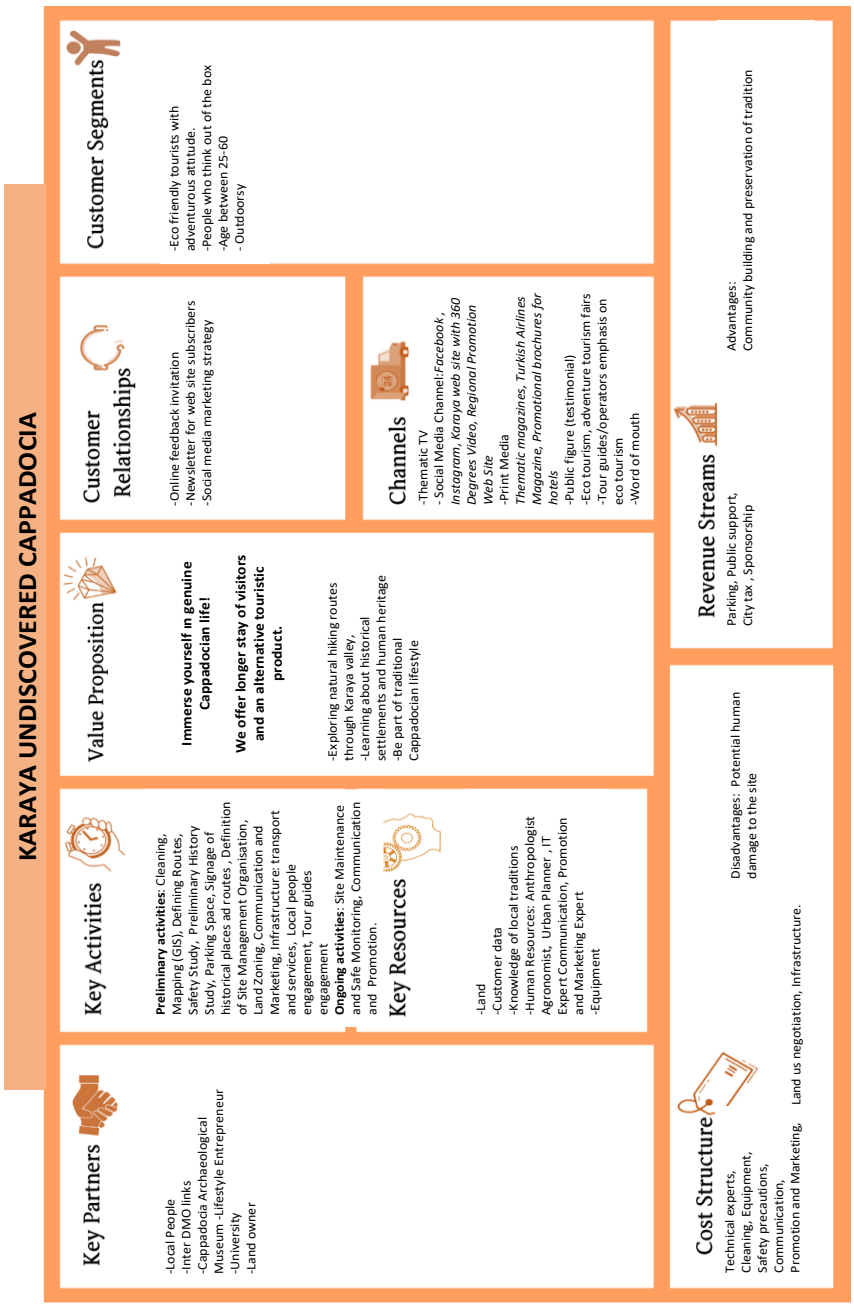


Figure 26.3: "Karaya Undiscovered Cappadocia" Business Canvas

Customer relationship: *which kind of relationship and interactions do we want to establish?*

Online interaction (important for international tourists who want to book in advance), social media (creating an hashtag or an app in order to engage the customer).

Revenue streams: *For what value/channel are our customers willing to pay?*

Since Karaya is very close to Goreme Open Museum, it should be a loser marketing strategy to fix a ticket, so the team focused on a Revenue model based on public and private financial contribution. Besides Funds provided by governments with the aim of promoting economic and social development one can explore other forms like donations, patronage or crowd-funding. Revenues could come out from tourists and visitors Parking and City Tax Sponsorship. The most important "intangible" revenue from the valorization of the Karaya area is the Community building and preservation of tradition.

Key activities:
Among the 9 "BC building blocks" very relevant was the Key activities. Due to the major state of anonymity of the area *("Who knows Karaya?")* a lot preliminary activities are necessary to make the area accessible in order to start the valorisation and the promotion of the site (Cleaning, Mapping (GIS), Defining Routes, Land Zoning etc). After the "pre-accessible" activities, the ongoing activities could be identified (Promotion and Marketing, Infrastructure: transport and services).

Key resources:
Considering the peculiarity of Karaya the identified key resources are the knowledge of local traditions kept by local people and the skills and competences of the experts to be involved (anthropologist, agronomist, urban planner, IT expert, communication, promotion and marketing Expert) .

Key partners:
The identified Key partners should assure the realisation of the preliminary activities. *Cappadocia Archaeological Museum* and national Universities could provide all the activities related to historical and geographical activities, Lifestyle Entrepreneurs that provide the farmer investments in area, as well as the Regional Destination Organization that provide the management structure. Finally very crucial is the involvement in all activities of the landowners, since Karaya is not public area but divided in a lot of small private areas.

Cost structure: *what are the most important costs inherent in the business model?*
It is difficult to determine all the costs in the preliminary stage. The different partners need to check all the costs and complete the related area in a feasibility study. However the team identified the expenditures related especially to the preliminary activities (HR technical experts, cleaning, equipment, safety precautions, communication, promotion and marketing infrastructure). As already mentioned, Karaya is not a public area but divided in many small private areas, so

it must be considered as a cost also the negotiation for the land use. As an intangible cost, finally the group identified the potential human damage to the site once made accessible to tourists.

26.5. **The Karaya Eco-route**

The group decided to design an Eco-route, which could be the first tourism service/attraction to offer to the identified tourist segments.

The question to answer is: *What makes Karaya unique in Cappadocia region?*

The research started from the tangible cultural and natural heritage available, such as Fairy chimneys, rock formations, caves, vine cellars and pools, the Andrew Rodgers Rock park and the valley itself.

26.5.1. ***Google Earth Excursion and Andrew Rogers Sculpture Park***

Since most of the members of the group had never visited Karaya and Cappadocia region, a big challenge was to understand the context. True photographs could provide basic information about location, shapes and contents on the location. Architecture skills like: facts analyze, abstract thinking, orientation, scale perception, shape, 2D drawing making were used in sustainable tourism planning. Challenge was to put everything in a scale, to actually understand space and have 2D and 3D representations of terrain. So, we used certain digital tools.

Figure 26.4: Sculpture park by Andrew Rodgers. Land art is mapped with Google Earth. The Artist also presents land art park on his website through Google Earth excursions

Morphology analysing with Google Earth© data and Sketchup©. Importing terrain from Google Earth© to Sketchup©. Creating terrain model (shape, mesh) in Sketchup©. By cutting terrain model with horizontal planes, we got isohypse and 2D drawing similar to geodesy survey to better "feel" the terrain. Creating sections

and 3D views from interesting positions in 3D model helped us to understand morphology and define main benchmarks and key factors in space.

In that way, the Group defined main dominates and main benchmarks in space and key factors. The Valley is a starting point and the most interesting place, full of natural morphology heritage. It the closest place to infrastructure, to public roads, potential for parking lots etc. Also, there used to be vineyards along the valley, which we would like to restart in cooperation with local inhabitants.

Beside all of their natural potentials, cultural and historical heritage and beauties. What was making it so unique in the world was Andrew Rogers sculpture park, actually the mixture of that.

So, it has been analysed benchmark correlation, by creating 2D map like matrix with benchmarks, and overlapping Andrew Rodgers sculptures position with terrain morphology.

The idea was to combine all positive aspects of Karaya in one unique experience. There is a plenty of valleys with morphology like this in the region, but engaging Karaya in correlation with naturals and heritage values in correlation with the Sculpture Park is the unique way for providing an authentic experience.

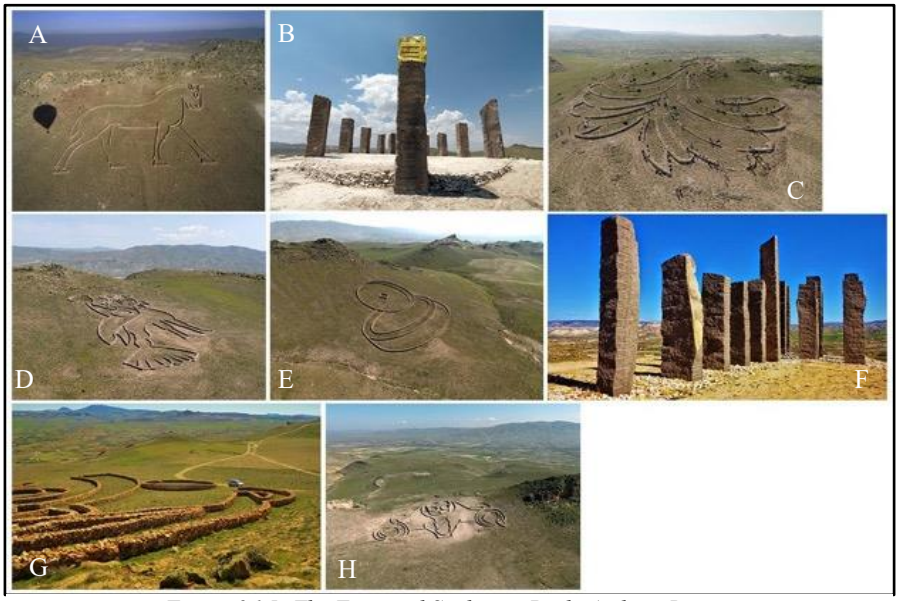


Figure 26.5: The Time and Sculpture Park, Andrew Rogers

26.5.2. ***Andrew Rogers Sculpture Park***[3]

Rogers is an internationally recognized artist. He exhibits internationally and his critically acclaimed sculptures and photographs are in numerous private and prominent public collections in Australia and around the world. He receives many international commissions and has created "Rhythms of Life", the largest contemporary land art undertaking in the world, forming a chain of 51 massive stone structures, or Geoglyphs, spanning the globe.

The project has involved over 7,500 people in 16 countries across seven continents. He also offers on his web site Google Earth Excursion.
The *Gift* (A) derives from a 6000 year old rock carving and signifies the important role played by horses in ancient Cappadocia times.
Time and Space (B) is a spectacular Fibonacci sequence of 12 basalt pillars. The sequence is demonstrated both in terms of height and spacing. Completed in 2009, it measures 24m x 16m x 5.3m.
Sustenance (C) is base an a date palm motif found in a royal tomb built in the thirteenth century BC on the Kayseri Talas road.
Siren (D) is a human head with a body of bird. In shamanistic beliefs, it accompanies humans in their journeys to underworld and heaven. Dimensions 65m x 100m.
Predicting the Past (F) "The arch is about not projecting another yesterday and it is about the difference between the past and the future. What will be the future?" Dimensions 4.2m x 4.7m x 1.1m.
Grind (E) is derived from an ancient millstone that belonged to the elders of the town of Goreme in Cappadocia, it measures 100m x 100m.
Rhythms of Life (G) embodies the changing rhythms of life reflected in the juxtaposition of shape & line echoing life's unpredictable journey.
Strength (H) is a double bodied lion derived from an image found in the Sultan Hani Township, Aksa ray. Dimensions 100m x 50m (328' x 165').

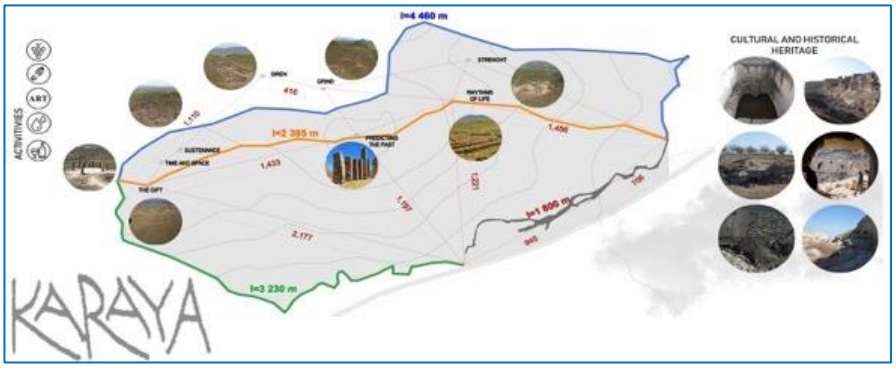


Figure 26.6: Route plan, with main benchmarks, key activities and cultural and historical heritage

26.5.3. ***Development Scenario***

There was only one road access from highway inside the valley, on south-west side. It is kind of entrance of valley. This part has been activated firstly with the application of basic measures in order to try to create conditions for space activation in a sense of users.

Then, a "green" route has been planned (Fig. 26.6). That was the easiest route to hike from valley to top of reefs in landscapes and Sculpture park, with stunning views and scenarios. Route involves only one structure from Sculpture park.

In a subsequent stage, the itinerary has been expanded with an "orange" route, which involves a starting point at the entrance of the valley, "green" route to top of

the reefs and than walking along on the top of landscape, having 360° on whole valley. The orange route involves four new structures of Sculpture park.
The "blue" route was planned on the opposite side, on the north side of the hill. This route involves three new sculptures.

All routes were planned according the morphology and existing benchmark position. The Group also planned expanding Karaya experience to the New Museum of Cappadocia, which has been built on east side of the Valley.

26.5.4. ***The LOGO Route***

According to the Business Canvas, the Value proposition was to offer a new experience in a way of activating all potentials of the location in unique way. The target group of visitors would be people in love with nature, outdoorsy, tourists who are looking for unique experience, local inhabitants which were running from crowd and noise in their home cities towards nature and quiet. So, according to this idea, the Logo was inspired by drawing and writing with stick in mud, like children's play in a free and funny way. That was coherent with what we were trying to offer.

In the Figure 26.7 is described the evolution of the Logo.

Figure 26.7: The Logo design process

26.6. **The POSTER**

During each afternoon of the six-days Training School, the Group worked and elaborated all the elements described in the previous section. The final outcome was the Poster named "Karaya is calling".

The extraordinary work of the roup has been rewarded by the Jury of the Training School by the Jury award.

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[3] Osterwalder, A. and Pigneur, Y. (2010*), Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers.* John Wiley & Sons.

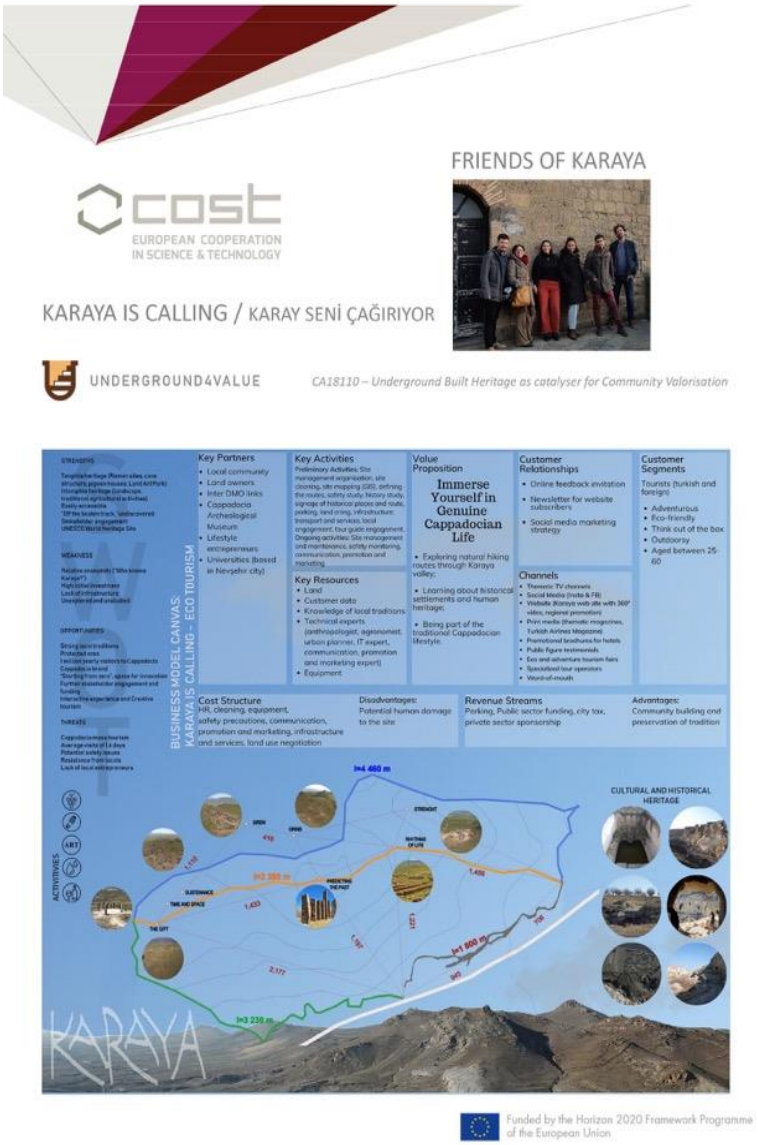

Figure 26.8: The Poster "Karaya is Calling"

NOTES

[1] See https://www.andrewrogers.org/land-art/turkey/

[2] See https://www.dailysabah.com/tourism/2019/12/15/2019-brings-cappadocia-highest-ever-number-of-tourists

[3] See https://www.andrewrogers.org/video/land-art/time-and-space-cappadocia-turkey/

CHAPTER 27

#InTransientKaraya

Approaches for Developing Knowledge, Meaning, and Community Identity in Abandoned UBH

Muge Akkar Ercan, Meryem Bihter Bingul Bulut, Bernard Bugeja, Yasemen Kaya, Jorge Magaz-Molina, Sabrina Shurdhi

27.1. **Introducing Karaya**

Karaya is an underground built settlement located in a canyon in the NW of Göreme (38°41'03.5"N 34°47'55.8"E), parallel to road D-300 connecting Nevşehir to Avanos. Karaya was abandoned in the 1960s. Along the years, it has become a suggestive historical site where recent memories have overlapped with a forgotten past related to monastic movements. Karaya offers an unexplored archaeological complex, surrounded by a plateau of traditional vineyards and fruit trees complemented by a scenic backdrop (Fig. 27.1).

Figure 27.1: Karaya valley.
Source: Google Street View (above), Ahika Regional Development Agency, 2020 (below)

Over the nearest hills, a land-art park was created by the Australian artist Andrew Rogers between 2007 and 2009. Activities related to agriculture have long taken place in the site. Recently trekking tours have been introduced into this valley as a touristic activity.

The Living Lab, held in the context of COST Action CA18110 Underground4value, revealed that Karaya has been suggested by local and regional administrations as the place of opportunity to develop alternatives to mass-tourism. In Karaya, eco-tourism could be given value and educational facilities unfurled. It could also be considered an affordable site for the promotion of domestic tourism. In this sense, stakeholders expressed their desire of outlining a cultural approach to local heritage like gastronomy, traditions, and local manufactures.

Figure 27.2: Perspectives of Karaya UBH settlement.
Source: AHILER Regional Development Agency, 2020

The U4V Training School held in Naples offered the statement of Knowledge, Meaning and Identity of Karaya to study a case by first analysing, and second by proposing strategies, steps, and measures. The goal was to propose a set of ideas to allow for a smooth implementation of new cultural and touristic activities. The expected research results from our proposal should support an empathetic cultural management plan with the local community and should be sensitive to the conservation, accessibility, and security of this UBH site.

Our approach was based on the principles of sustainability, diversity and community participation and technology support. Taking a cultural landscape approach offers the opportunity to explore the territory as it is perceived by its inhabitants [1] and should overcome the large-scale problems of cultural management. Applying the Landscape Character Assessment as a scientific and methodological research guideline offers a multidisciplinary progressive investigation to define the baseline for a Management Plan.

The abandonment of Karaya by its inhabitants was considered an opportunity, instead of a weakness (Fig. 27.2). Learning the recent past from the elderly people could be a strength of the project, which can be implemented by the inhabitants of the nearby towns. This idea can also provide the opportunity to reinforce intergenerational relations with a diversity approach. Meanings, desires, and expectations of younger generations could contribute new ideas to those provided by stakeholders and promotes multi-representative communitary roundtable decisions.

27.2. **A Search for a Local Identity**

The identity of a place is often assumed to remain consistent over a long period of time. Identity does not only consist of the tangible heritage, morphology and place dynamics but also consists of the intangible heritage, such as traditions and practices which are passed down generations.

During the Training School, our group explored and debated several key aspects which were found to be important to the site (Fig. 27.3). The group first began researching where Karaya is located and the identity (or identities) which the valley possesses, and which could have previously had. Although the group did not have the opportunity to physically visit Karaya, research concluded that the site has laid derelict for many decades, resulting in the loss of memory and the identity. It was also noted that since the site is derelict, truly little amounts of information were gathered, and few research projects were carried out on the area. This lack of knowledge requires archaeologists, historians, and other researchers to study Karaya's past and identify the values of the site.

Figure 27.3: Word cloud developed during the research process of Group

We debated whether the values and identities which were present on site should be retained or whether they could be altered. It was also debated whether it would be correct to recreate the same identity which was lost along the years or create a completely brand-new identity.

We also carried out a research on the adjacent locations, giving a good indication of the identity, vernacular architecture, and values which Karaya once possessed. One of the adjacent locations which was chosen to study was Göreme, which is associated with similar vernacular dwellings dug in rock formations as those in Karaya. Göreme was studied due to its proximity and similar heritage. Research about the site uncovered that before the tourism boom, Göreme was inhabited by several farmers who resided in the UBH settlement (i.e. the "fairy chimneys" and the houses connected to caves), and worked the nearby agricultural lands. However, Göreme is at risk of losing its identity due to the tourism boom which occurred in the Cappadocia region during these past decades. It was noted that this boom has led to gentrification as well as the loss of practices and values which the residents

held for many years. It was also identified that touristic activities were being promoted in the destination such as "fairy chimney" hotel experiences, quad-biking, balloon-trips, horse-riding, and trekking.

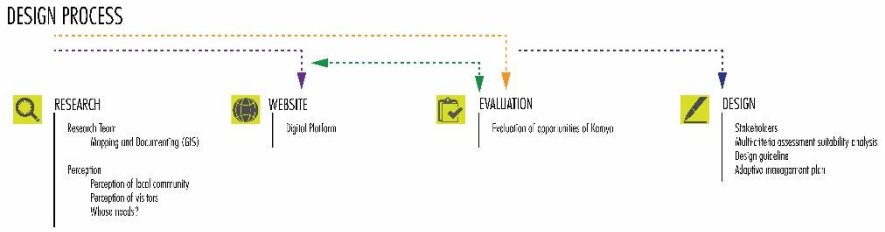

Figure 27.4: Stages of design and identity-building process

From this analysis and research, it was clear that the path for Karaya should be different to that which was taken for Göreme. Our group proposed a more sustainable approach towards the regeneration of Karaya. Allowing Karaya to be re-inhabited means that the community could identify with the area, and thus help maintain the physical and social dimensions of the space. Our decision was to re-situate Karaya as a territory of opportunity, memory, recognition, and future for the local community. Continuous co-creation of the identity with the help of both locals, visitors and tourists would also be beneficial as this promotes collaborations (Fig. 27.4). Another proposal involved the depiction of the past traditions using the latest digital tools such as videography and VR tools. In this way, visitors would be able to gain a small taste of Karaya's past identity.

27.3. **A multiscalar and multi-disciplinary approach to analyse Karaya**

A successful process of valorisation focusing on a place's identity cannot be achieved without determining first 'what the place wants to be', a question raised initially by Louis Kahn [2]. Answering this question will instigate the course of actions required to discover and rediscover collaboratively the identity of Karaya, an 'abandoned place' located in Cappadocia. Thus, there needs to establish a strong connection between the notions of 'intransience' or 'permanence' and 'place identity'. New layers of identity of the place should be incorporated by the local community and visitors, once the abandoned Karaya would be resettled and reused. In this way, new meanings and experiences would continually create new layers of identity for Karaya.

The process of identity transformation of Karaya should consider the perceived meanings of both the local community and visitors. This is an essential fact, because at present Cappadocia's images predominantly include tourists' imageabilities. In the context of meaning and identity, this transformation should highlight the uniqueness of the site and its heritage and not take place in a 'copy-paste' manner. While placing a great importance in the uniqueness of the location, one must not forget the

integrity of Karaya as a component of a larger system. To address the issue of "Intransient Karaya", we should suggest a multiscalar approach in which Karaya will be considered at the microscale, Göreme will be seen at the mesoscale, and the region Cappadocia at the macro scale.

Understanding how Karaya fits in the above-mentioned system will improve the valorisation of tangible and intangible resources. Overlapped on the abandonedness of Karaya, a place's identity is created during a mutual ongoing process of both spatial and socio-cultural milieu as elements with their respective independence in an integral totality. Identification pertaining to both locals and tourists has a strong association with the 'intransience' of 'life-situations' in a place. Besides a multiscalar approach, there also needs information and knowledge provided by different disciplines and perspectives to discover 'identities' and 'meanings' for the abandoned settlement of Karaya. This is also important especially in managing the local multiple resources.

Diversity Approach	I Emphasize	II Participate	III Involvement
Children Gender Immigrants Older people Local promoters etc.	Memory Expectations and desires Visits and approaches to territory	Involved in valorization and conservation Participatory process of take decisions	Local employment Iterative process Adaptive process

Figure 27.5: Draft of the development process

A multidisciplinary analysis will aim to consider a variety of perspectives such as historical, archaeological, environmental, geological, planning, economical, morphological, architectural, social, and cultural. The following objectives should be considered:

- Learning "what the place wants to be" to bring forth the uniqueness of Karaya and manage the resources such as: the community, agricultural land, artefacts, and memory
- Interconnecting the scales of the system in a meaningful way and efficient way so that the users, namely the locals and the tourists would experience 'orientation', and accessibility as a physical connection with the place.
- Centring on the local community and their memory to help establish a psychic connection, 'identification' with the place.

Based on this multidimensional and multi-scalar approach, our research proposes four steps (Fig. 27.5). First is the initiation of research about Karaya's history. It would be relevant to discover recent memories of the last inhabitants of Karaya and their descendants. The second step will be to analyse the current conservation situation, define the characteristics of the UBH settlement and point out its values and risks. Physical and spatial issues should be included in the development of a management plan: functions provided, prevision of impacts, zonification of preserved

areas or caves, tourist capacity, waste management and supplies, accessibility, parking, cyclo-pedestrian routes, adaptability of the caves for new uses, conservation needs, spatial limitations, security measures, new material criteria, etc. Finally, this research should also include the economic, social, and cultural dimension which will support the sustainable development of both local community and local businesses.

We suggest adopting a holistic approach about the whole physical, environmental, and cultural dimension displayed in Karaya, rather than focusing on certain significant features. As part of a major work of landscape characterization [3] a research work should describe an accurate approach to this territory considering a local community empathetic approach. Historic cartography, old photos, memories, and oral heritage could integrate socio-cultural considerations. The spatial framework should be translated to cartographic data developing an infrastructure for spatial information and services with the aim to offer useful and transparent information [4]. UBH inventory should be developed. Results of caves-security and stability, flows-charge impacts, or tourist affluence research can provide actualized monitoring data accessible online.

27.4. **Knowledge as valuable process**

Virtual dimension cannot be forgotten in the strategy of rebuilding the meaning and identity of an abandoned place. Digital devices and social networks have a significant role in the twenty-first century production of common imaginaries that must be considered. Considering social networks, digital devices and virtual contents could amplify not only possibilities of participation, including visitors in the building of meaning and identity of Karaya, but also a way of diffusion of research.

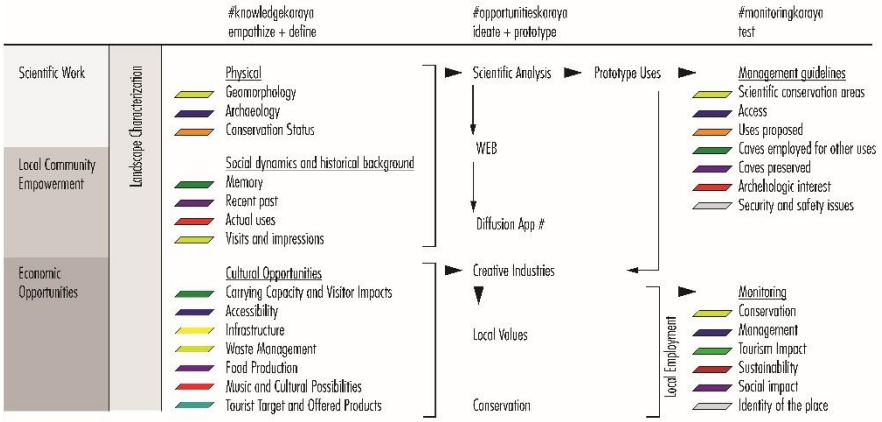

Figure 27.6: Draft of the platform structure

A centralized platform could combine the research script, scientific results and all the contents related to the communitary process of identification and cultural management policies displayed (Fig. 27.6). Local community events, organizers'

facilities, educational programmes, and fests calendars displayed in Karaya could be considered as new intangible values, but also, they could provide important contents as visitor's information. A collaborative platform could offer the possibility to put in contact potential visitors and stakeholders, offering different tour plans. Also, a collaborative tool could offer to the visitors sharing opinions, photos and routes of the complex.

Results of the different researches should be shared online offering an exemplar case study to be replicated. Knowledge not only means a valuable growing resource, but also it represents a tool for displaying a participatory process of management held by the community. To make possible a participatory process of supervision and control of the site, transparency contents should explain investments displayed, agents and stakeholders involved, monitoring data about security and stability, affluence impact, management measures.

27.5. **Karaya Eco-Museum**

Eco-museum is an idea that integrates nature and culture through the leading role of the local community. The components of the eco-museum concept are territory, heritage, memory, and community [5]. Our research intended to re-situate Karaya as a territory of opportunity, memory, recognition, and future for both the local community and tourists. Therefore, establishing Karaya Eco-museum will help us to co-create the identity of Karaya through interactions between the local community and visitors who have deepened their understanding of the value of such UBH. Eco-museum ideas are not a fixed structure; thus, each eco-museum has distinct and unique elements. Karaya Eco-museum has its own characteristics and we have listed tangible and intangible heritages of Karaya (Fig. 27.7).

	Tangible Heritages	Intangible Heritages
Natural and Ecological Values	· The rock caves · Stream · Natural view of the valley · Pigeons · Vineyards	
Cultural and Social Values	· Cultivating vineyards · Using caves as a storage	· Lifestyle at the cave houses · Traditional dishes · Customs and traditions
Historical Values	· Cave Houses	

Figure 27.7: Karaya Eco-museum

The proposed eco-museum will comprise Karaya Valley's significant locations and attach those sites with new actions to preserve the underground heritage as well as community legacy. The main goals of the eco-museum are (Fig. 27.8):

- The development of sustainable landscape management to protect all-natural components of the region and wise use of resources
- The development of sustainable tourism based on the concept of Eco-museum through a co-operation of local governments, related organisations, and local community (Fig. 27.9)
- Raising awareness about the values of the community and the area, enhancing the understanding of local people regarding these values, and contributing to development of the local community.

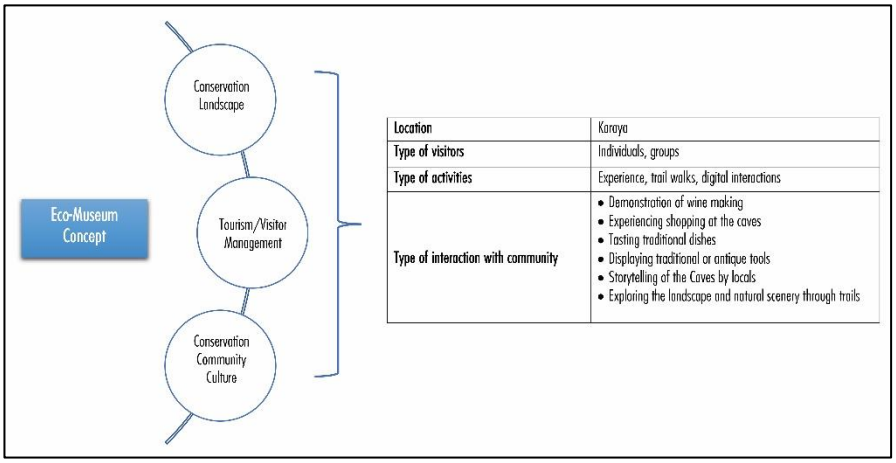

Figure 27.8: The idea of Karaya Eco-museum

27.6. **Conclusions**

UBH knowledge, meaning and community identity development process requires a multidimensional and multiscalar approach. Research should have two main goals: first, to discover its geomorphological, historical, archaeological, ecological and socio-cultural values and secondly, to identify regeneration, accessibility, conservation, security and safety measures that guarantee visitors' access in a sustainable way. An empathetic approach with the local community must attend not only to participation in decision-making and management processes, but also to propose previous research steps aimed at learning about recent memories, wishes and expectations of the enhancement of their heritage.

The feedback of tourists and visitors will be also used to the planning and management policy development of Karaya. Digital devices will support research diffusion and participatory processes and sustain the co-creation of new identities. These digital devices will also work as an assessment and feedback tool for the improvement of research, planning and management policies. The idea of Karaya eco-museum, considering the features of the area, is one of the solutions that must be taken into consideration for development of sustainable tourism in Karaya. The eco-museum will also maximize the benefits to be gained from the natural, cultural,

and historical features of Karaya and, at the same time, minimize the threats and impacts.

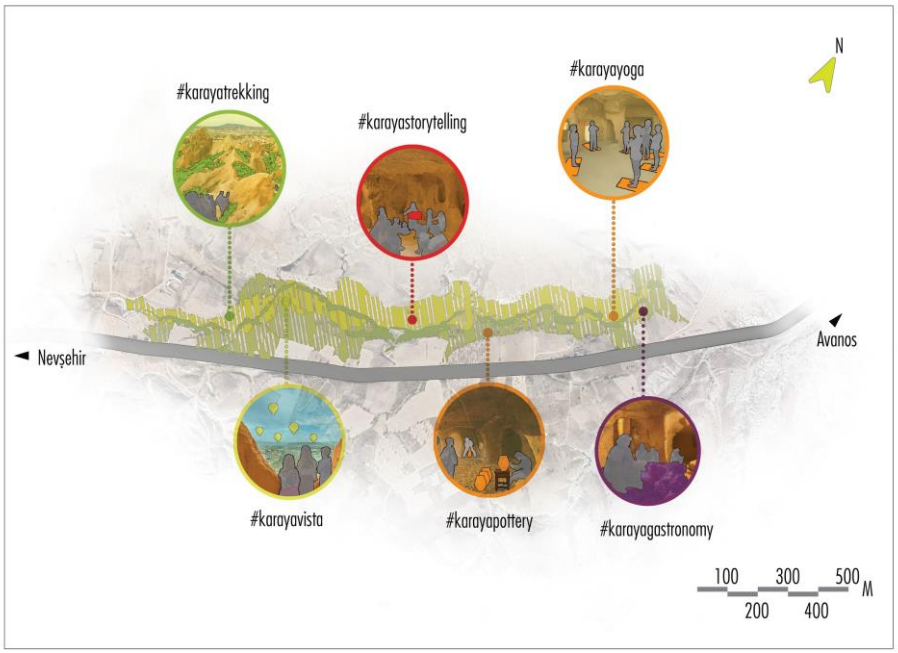

Figure 27.9: Draft of the platform structure

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CHAPTER 28

Deep down into the Green

A strategic pathway for the sustainable re-use and valorisation of the underground built military heritage in the Green Karst Region

Luisa Errichiello, Lucilla Paola Favina, Matej Krzic, Maria del Carmen Solano Baez, Mireille Tabone

28.1. Introduction

Within the framework of the Cost Action 18110 - Underground Built Heritage (UBH) as catalyser for Community Valorization - the organization of training schools in cities is certainly among the most innovative elements. Aimed at stimulating the development of new skills for planners, decision-makers, promoters, and local development facilitators, the training school is conceived as a platform for the creation, integration and sharing of multidisciplinary knowledge about the underground built heritage.

The chapter reports the results of the intensive work project carried on during the first Cost Action training school held in Naples from 10th to 15th February 2020 by working group 5[1], one of the six research teams set up to work on specific topics related to the re-use and valorization of specific UBH sites across Europe[2]. The goal of the project was to design a strategic pathway for the sustainable re-use and valorization of the military remnants of the so-called "Alpine Wall Fortifications", built between the I and II World War by the Italian Army and spread throughout the Green Karst Region in Slovenia. In this respect, it aimed at establishing a line of continuity with the work carried on by local stakeholders during the first Living Lab meeting taken in Pivka (Slovenia) during the Short Term Scientific Mission of the first author. Indeed, on that occasion, twelve people from different organizations, including the host institution (Regional Development Agency) and representatives of local municipalities, shared their ideas and discussed the most urgent issues to deal with in order to start a long-term implementation process of re-use and valorization of the Underground Built Military Heritage (UBMH) of the region, starting from three sites: 1) the Caverns on Primož (hill above Pivka town); 2) the Caverns on Milanja (above Ilirska Bistrica); 3) remains of military tunnels near to the roofless cave of Unška koliševka (Postonja).

At the time of the research, only the fort at Primož Hill had already started a process of valorization, being recently integrated into the broader tourist offer of the park of Military History, while the other two groups of remnants largely laid in a state of abandonment, exposed to natural phenomena (e.g. floods) and human acts of vandalism.

The chapter is structured as follows. Section 28.2 provides a brief description of the context of the Green Karst Region and the main challenges related to the re-use and valorization of the UBMH present in the area. Section 28.3 explains the research methodology adopted by the group to achieve the stated research goal. Section 28.4 contains the key results of the research project. The last section (28.5) is devoted to conclusions and further research development opportunities.

28.2. **The Green Karst Region and its Underground Built Military Heritage**

"Green Karst" is the name used to promote the forested region of Notranjska in Slovenia. It is famous for its woodlands, castles and especially natural caves. As for them only 21 are "show caves", notably Postojna and Škocjan Caves. However, natural caves are not the only kind of underground heritage in the region. There is another hidden built heritage to preserve, protect and promote, i.e. the Eastern remains of the "Vallo Alpino" – an Italian system of fortifications along the 1851 km of Italy's Northern frontier. It was built in the years leading up to World War II as a defensive line facing France, Switzerland, Austria, and Yugoslavia and was defended by an Italian special troops. All of them are owned by the State of Slovenia and all decisions about them are upon the Ministry of Defence. In the region there are a huge number of bunkers and different military systems; however, most of them are neglected or forgotten neither their geographical localization is known even by the State of Slovenia.

In light of these considerations, during a first living Lab meeting taken in November 2019 in Pivka, some local stakeholders agreed on the importance, as future steps of any plan for re-use and valorization, to [1]: map all underground built military heritage, through their geographical localization (notably using the so-called LIDAR technology); create a cadaster for all the identified underground military heritage; use data and knowledge got through previous steps to prepare documents and start a dialogue with State representatives in order to agree about the legalization of the activities of re-use and valorization of military remains. Moreover, they converged that a future plan could conveniently start from the Green Karst, with the three previously mentioned sites selected as pilot sites for a potential strategic path of re-use and valorization (i.e. the Caverns on Primož; the Caverns on Milanja; remains of military tunnels near to the roofless cave of Unška koliševka) (Fig. 28.1)[3].

It was clear from the beginning of the training school meetings that the guidelines: "sustainability" and "integration with the local environment" were the

most important issues for the stakeholders: this was held paramount during all our meetings guiding our goals, approach and activities.

Figure 28.1: The Green Karst Region and potential pilot sites for re-use and valorisation strategies

28.3. **Methodology**

During the first working day, after an initial phase of self-presentation and socialization among group members', a methodological approach was collectively established to frame the activities to carry on throughout the week. It consisted of four key pillars (Fig. 28.2):

- Critical documentary review (scientific articles, STSM reports, etc.)
- Constructive brainstorming among team members
- Critical analysis of existing governance models of natural caves systems in the Green Karst Region in terms of strengths, weaknesses, opportunities and threats.
- Design of a proposal for the revitalization of underground military heritage in the Green Karst Region including the elaboration of: a) a suitable governance model for the UBMH of the Green Karst Region; b) a feasible path of development for the re-use and valorization of UBMH.

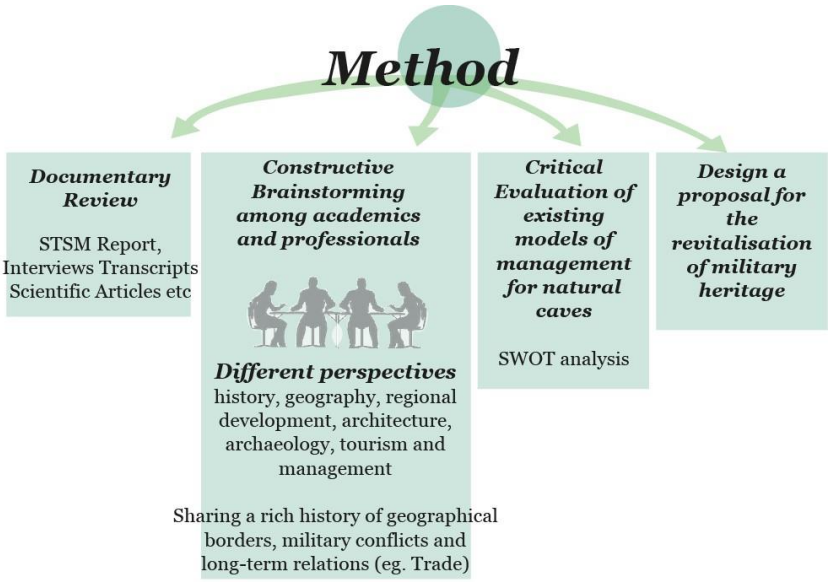

Figure 28.2: The methodological approach adopted in the research project

It is worth highlighting that the above pillars should not be considered in a strict sequential manner since they are highly interdependent. Indeed, all team members flexibly moved from one pillar to another throughout the week so that a deliberate plan was combined to (and benefited from) an emergent approach based on contingency, inspiration and creativity.

Documentary review put the ground for all the project work. Indeed, this step was crucial in enabling all team members to familiarize with the context of analysis and acquire an adequate level of knowledge about the main challenges to address in terms of re-use and valorization of the military remnants of the Green Karst Region. Indeed, a certain level of understanding of the investigated context was critical to share ideas and to collectively work to deal with the identified challenges, elaborating potential tools and solutions. In this regard, before the training school started, the group leader had collected and shared preparatory document materials related to the case study with all team members[4].

The socialization stage revealed the existence among team members of different backgrounds and many areas of expertise that were exploited and effectively integrated to work together. In this regard, the project was based on constant and constructive brainstorming among academics and professionals able to look at the topic by integrating different perspectives. It also benefited from an inter-disciplinary approach, based on synergies among a number of disciplines, i.e. history, geography, regional development, architecture, archeology, tourism and innovation management. Interestingly, all team members shared a rich history of geographical borders, military conflicts and long-term relations (e.g. military conflicts between Slovenia and Serbia, or trade activities between Slovenia and

Italy). It is worth reporting that a team member (Matej Krzic) was a key local stakeholder from the Green Karst Region and that he had a deep knowledge about the context and military remnants in the area. So, he was constantly viewed as a reference person by all other team members, being a key source of in vivo and context-specific knowledge. This stimulated problem-driven ideas and created the conditions for preliminarily "testing" the feasibility of specific solutions.

Very early in the process the research group realized that any potential strategy for re-use and valorization of the military remnants would have required the previous elaboration of a suitable governance model for this kind of underground built heritage that still lacked in the region. In light of this consideration, the team decided to critically examine the existing governance models of another kind of UBH in the Green Karst Region that had the same ownership structures of military heritage so as to identity limits and relevant issues to inform the governance model for military heritage. The reference, in detail, is to natural caves, also owned by the State of Slovenia, but for which two main governance models existed as reference examples, i.e. Postojna Cave and Škocjan caves.

Finally, assuming a suitable governance model for UBMH in the region, the research group elaborated the main stages (and related content) of a potential path of development for the re-use and valorization of this heritage, including the identification of potential solutions for pilot projects.

28.4. **Results**

28.4.1. ***Learning from the management of natural caves***

In contrast to UBMH, since 2003 Slovenia has reinforced - through a specific law - the protection given to another UBH owned by the State, i.e. the 8726 known caves. The so-called "Slovenian Cave Protection Act" was introduced to regulate the utilization of caves for tourism to ensure a balance between preservation and tourism exploitation. Among them, Postojna Caves and Škocjan Caves are classified as caves open to visitors or "show caves" [2]. As tourism activities began in the two areas and both became major tourism attractions, the balance between preservation of karst landscape and tourism development increasingly became an urgent issue to deal with. However, they present two quite different approaches in the management of the above dialectic.

The research assumes that the critical analysis of these two management models, also in comparative terms, can be valuable to inform to some extent the design of an effective governance for UBMH. Indeed, such a governance should be "sustainable", i.e. ensuring a right balance between preservation of heritage and tourism development as well as be based on an integration to the local community (i.e. community-based tourism); at the same time, the governance model should be "replicable", that is applicable to a significant number of military heritage sites. Clealry, replication does not esclude its adaptation to the specific characteristics of each military heritage site.

The Postojna Cave System, the second-longest (24,340m long; 115m deep) known cave in Slovenia [3], is the most important show cave in the country and among the most famous worldwide. Part of Postonja Cave Park, that includes other attractions, notably the Predjama Castle and an interactive museum, it is property of the State of Slovenia, but it is controlled and managed by a public limited company, which is owned by the private company Postojnska jama (74,9%) and by the Municipality of Postojna (25,1%). Thanks to the private management and its successful marketing strategy, the declining profitability of the cave was re-established and an increasing number of tourists every year visits it. In detail, visitors increased over years to almost 780,000 in 2017. Up to 2018, the Postojna Cave System was visited by a total of more than 38 million people. However, as emerged through interviews to local stakeholders taken by the lead author during her STSM and as confirmed by Matej Krzic, the management approach cannot be considered as sustainable for at least two reasons. First, although the Cave Protection Act regulates the use of the cave for visits and tourism activities and the Institute for Natural Conservation is up to approve special visits and events, huge interventions during exploration stages along with the building of infrastructures (e.g. a railway) and installations (e.g. an artificial lighting system) have been primarily driven by economic interests and the growth in visitors' numbers rather than by the urgence to ensure its conservation. This has unavoidably contributed to reducing the value of the cave both as a natural phenomenon and as a tourist attraction [4]. Moreover, although part of the concession fee goes to local communities, the cave management is not oriented at community engagement and broader collaboration with local stakeholders. The cave basically works as a "self-sustaining" economic system exclusively oriented at maximizing profits, with scant commitment in supporting the economic growth of the area or sustainable tourism development. The revitalization of the area is also impeded by the extant ownership of the company, that contributed to creating a monopoly, through significant investments in key assets and extant control of most complementary tourism services in the surroundings, including the parking lot, a hotel and a number of restaurants and tourism businesses in the Park and in Postojna town (Fig. 28.3).

If the management of Postojna Cave can be considered as "lax", Škocjan Caves deal the trade-off between preservation and development through a strictly controlled and much more sustainable approach [5] [6]. Škocjan jame cave system is in the Škocjan karst and is composed of karst cavities, collapsed dolines and archeological sites. It is a permanent ponor of the Reka River, the greatest sinking river in Slovenia, which flows for about 2 km inside the cave [6]. The Škocjan Caves are about 6 km long and 250 m deep, with large galleries and chambers, and the underground canyon carrying the Reka River [7]. At national level, the cave (like its surroundings) has been protected as a natural and cultural monument since 1980 and as a Regional Park since 1996. The Regional Park Act, in particular, is aimed at regulating the conservation and exploration of the its unique and valuable features and resources, including flora and fauna, archeological sites and landscapes, and to this direction limitations and prohibitions were listed in the act. In the same year, a

public service agency was established as the park's managing authority and to control activities in it.

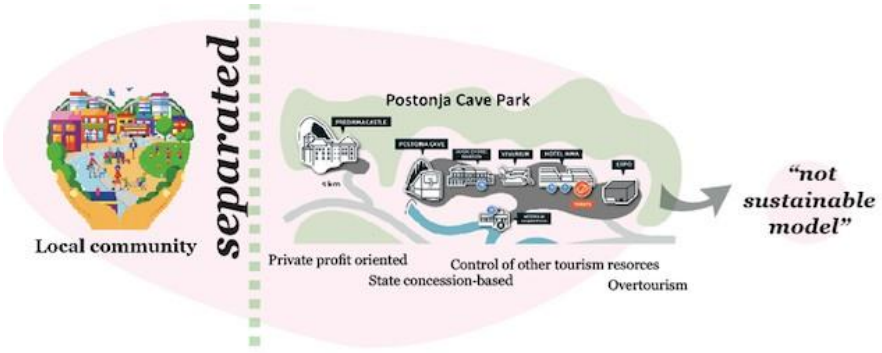

Figure 28.3: The Postojna Cave management approach

The management of the park is based on a global and multi-disciplinary approach that overcomes a counter-productive distinction between nature and culture and that covers both the cave and the buffer zone [5]. Direct control is guaranteed through the work of the ranger service of the Park along with the action of two Inspectorates of the Republic of Slovenia (respectively for the Environment and Spatial Planning and for Culture) [6]. Next to the provision of international documents, including the Regional Park Act and the park's management plan, the protection of Škocjan Caves is also ensured by its inclusion in the UNESCO Word Heritage List in 1986. In this respect, it is worth reporting that despite the international reputation of Postojna cave, that also was on the list of potential worlds heritage sites, Škocjan Caves were preferred because considered "more natural" in comparison to the too "built up" Postojna cave [5]. About 3 km of the cave system is open to tourists and has attracted an increasing number of tourists over time (over 12,0000 per year at the end of 2015). In this respect, the cave management is constantly oriented at balancing cave protection and tourism exploitation trying to disperse visitors throughout the years (however, the summer season continues to make the greatest pressure on the cave system) [6].

The main sources of funds derive from tickets and European projects, although the contribution of volunteers has become increasingly important over time. In this respect, it is worth highlighting that cooperation is pursued by the Park at both European and national level (e.g. with other protected areas) but also at local level, where integration with the community is high. A significant number of locals are cave explorers and cave guides and many residents participate in the activities of the Park as volunteers [6].

Moreover, the Park carries out significant awareness-raising and educational activities locally (e.g. through collaboration with schools) aimed at increasing the level of understanding about the importance of protecting the valuable and vulnerable karst land and its underground [8]. It is undeniable that the continuous search for balancing conservation and tourism development and the significant integration with local community contributed to making the management approach

to Škocjan Caves site highly sustainable. However, since it is based on a "special-law" and receives a privileged treatment from the State, the underpinning governance model cannot be replicated on a large scale or easily applied to other underground heritage that are property of the State of Slovenia (Fig. 28.4).

Figure 28.4: The Škocjan Cave management approach

28.4.2. ***The "Ghiro" multi-level governance for underground built military heritage in the Green Karst Region***

In elaborating the main features of a feasible governance model for underground military heritage (jokingly called "Ghiro"[5]) the research embraced a "territorial approach" that assumes as key elements of the planning process a bottom-up design, the active participation the agents of the territory and the creation of governance structures that facilitate the design of strategies based on endogenous resources of the territory [9], [10], [11], [12]. These aspects, indeed, are perfectly aligned to the main objectives of the Cost Action 18110 Underground Built Heritage as catalyser for Community Valorisation.

According to a territorial perspective, the "territory" is: a) a "dynamic resource", as new valuable elements such as imagination, organization and coordination of local actors emerge [13], [11]; b) a "collective construction" [10], [14], which arises from the organization of local actors around some common values that inform the design of a strategy supported in its endogenous resources [11]. In this way the territory acquires a specificity based on its cultural heritage ("heritage as a value"), which allows it to generate processes of change [15]. This implies a total change in the implementation of territorial strategies that should leverage the above elements. As a result, the advocated structures of governance overcome the traditional vertical approaches and claim a progressive participation of local actors [16]. In accordance to this theoretical frame, it is assumed that "Ghiro" governance should be aligned to a territorial governance perspective, i.e. "*a process of coordination between actors oriented towards the organization of economic activity [...], this process not only varies from one territory to another, but depends on the specific configuration of each territory*" [13:322].

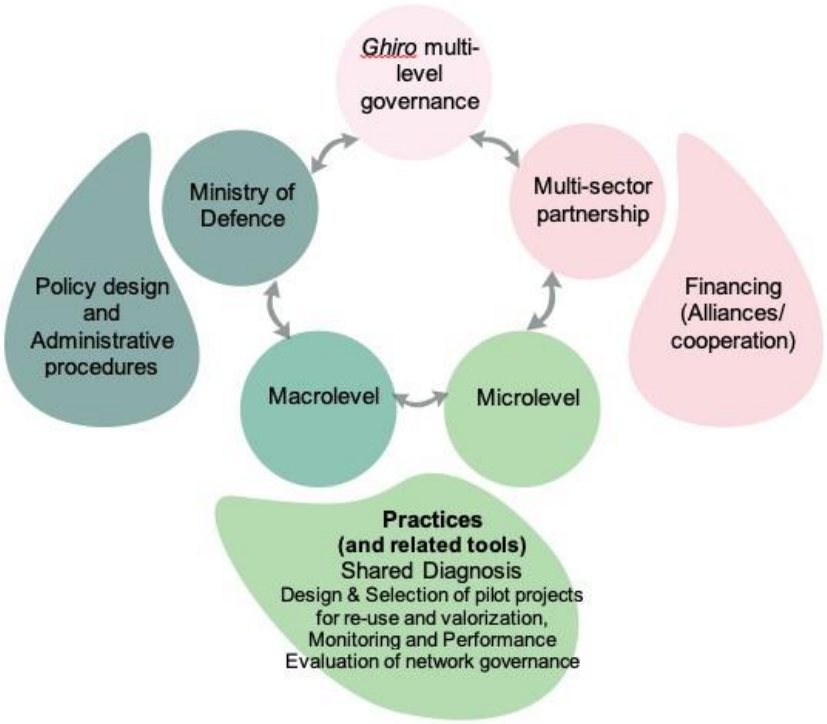

Figure 28.5: The "Ghiro" multi-level governance

Acknowledging a close relationship of dependence between the territory and the configuration of the governance system and taking into account the specific ownership structure of underground military heritage in Slovenia, some key elements characterizing the Ghiro governance model have been identified (Fig. 28.5):

1. a regular dialogue with the Ministry of Defence throughout the implementation of any territorial strategy based on the re-use and valorisation of this kind of UBH. This dialogue will facilitate the procedures and the policy design for the protection of this heritage;
2. a multi-level nature, that should take into account both the perspective of the individual organization (microlevel) involved in the management and valorisation of specific groups of military remnants and the functioning of the overall network of actors involved in the governance process, like the groups of experts and the local community (macrolevel). In order to gain social value a shared diagnosis will be needed between the different levels, together with an adequate articulation of policies, programmes and projects so that the different uses of space are integrated into a single strategy;

3. the creation of multi-sector partnerships, notably those between public and private actors, will facilitate the access to financial resources and the creation of new alliances for the dynamization of local resources (e.g. between private companies interested in investments for the re-use of military remnants and local municipalities);
4. the provision of tools that allow both the structuring of its own governance system, including its regular monitoring and performance evaluation and that are useful at microlevel and macrolevel (e.g. for intercepting opportunistic behaviours in the network) as well as the development of capacities and the involvement of local actors for the promotion of a bottom-up and balanced process;
5. a bottom-up, modular, flexible and pilot-based approach for the re-use and valorisation of military remnants, that should be realized faithful to the territorially shared values on military heritage.

In building this governance, it is important to emphasize the key role played by groups of experts (such as Matej Krzic and his organization), that could participate as "facilitators" of the process and - at a second level of diagnosis – could assist to prioritize between the desired actions identified by the social base (including the local community) and the possible actions enabled by existing regulations. Where appropriate, these groups could facilitate decision-making processes involving the public administration. An effective governance requires that structures of participation-responsibility are created. These structures make it possible to know the decision-making structures. Each level will have different levels of participation-responsibility but at the same time they will result interdependent. In other words, the prioritization of the actions to be carried out will depend not only on a vision of the experts but also on the identification of the local population, their knowledge and their wishes about their heritage. Therefore, the community involvement phase is important because if there is no care about the heritage, destructive acctions would be decided, or it could be chosen only an expert vision that in the long term is not sustainable due to the disassociation of the community from its heritage.

The "ghiro" multi-level governance underpins the social construction of a territory for the design of territorial development strategies in general [13], [11], and the construction in particular of a tourist territory[6], which is a precondition for the creation of a tourist destination [17]. The aim is to avoid the trivialisation of the territorial planning process, which in turn leads to aggressive reuse actions or to a mass, unsustainable and distant tourism development that is far removed from the heritage values of the region. Beyond sustainable tourism and opportunities for regional tourism development, the adoption of such a governance would ensure a collective understanding of the "significance" of military heritage. Figure 29.6 reports the main features of the multi-level governance for military remnants in the Green Karst Region and expected socio-economic impacts. It also contains an illustrative example of multi-level territorial governance (Sierra Espuña Regional Park[7]) that could be analysed in more depth to guide local stakeholders in the plan

of the territorial governance (e.g. in terms of coordination mechanisms among stakeholders).

Figure 28.6: Key features of a feasible governance model for Underground Military Heritage in the Green Karst Region

28.4.3. "*On the shoulders of giants, hand in hand with the community": the key stages of the strategic development process of re-use and valorisation*

Assuming that the creation of a tourism product based on the valorization of military heritage requires the building-up of a territory, during a week of multidisciplinary dialogue, a series of stages were designed to facilitate dialogue between key actors in Green Karst Region and to encourage their involvement in the development of UBMH. As such, the working group elaborated a "strategic path" rather than pre-established solutions; the model was conceived as a guide of strategic recommendations, aimed at favoring a more effective governance and management of the UBMH in the region.

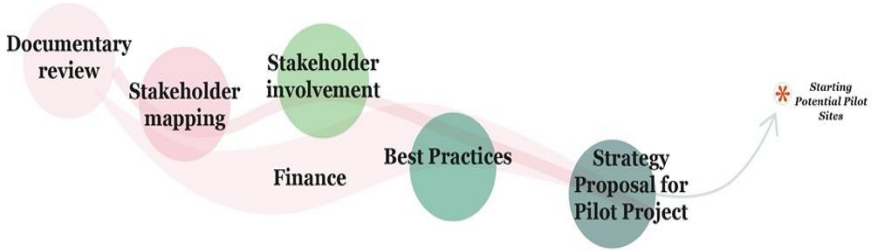

Figure 28.7: The strategic development process for the re-use and valorisation of UBMH

To this end, the research teams elaborated a modular methodological design aimed at imaximizing the efficiency of any intervention while ensuring technical rigor in the implementation process, boosting the involvement of local stakeholders. In detail, the design consists of six stages (Fig. 28.7): documentary review; stakeholder mapping; stakeholder involvement; capitalizing best practices; designing a strategy proposal for pilot projects; financing.

Documentary review contributes to contextualizing the intervention area. Stakeholder mapping and involvement allow to identify the key actors and potential relations between them, in terms of coordination and integration mechanisms enabling collective decision-making and management of military heritage. As territorial actors are involved, good practices can be a basis for capitalizing on and learn about other projects for reusing and valuing military heritage. The last stage marks the design of a strategy proposal, where the three groups of visited military remnants are considered as pilot projects.

Moreover, the proposed model, built with the active involvement of local communities, assumes financing as a transversal line to all key stages. Indeed, funding is required across all of them to make the process sustainable. Clearly, the choice of specific solutions depends on the specific stage of implementation. These solutions can vary from more traditional measures, like structural funds, EU funds, national funds, private investment, sponsorship, donations and patronage to more innovative, such as Local Action Groups (LAGs), crowdsourcing and crowdfunding. A detailed description of each stage is provided below.

I. Documentary review: Learning from the past to build the future

This preparatory stage refers to the analysis of strategies and projects previously carried out especially in the Green Karst Region; these can be more specific, i.e. directly linked to the underground military heritage, or broader in their scope, i.e. aimed at sustaining tourism development. The purpose is to contextualize the intervention area and identify the constraints or potentialities of the realized plans. It should identify actions at least oriented at: a) the rehabilitation, cataloguing, conservation and special protection of heritage; b) economic revitalization, multifunctionality of heritage, support or diversification of various economic sectors, notably tourism. Subsequently, a bibliographic archive collecting relevant technical, scientific or population studies, plans and projects related to military heritage in the region should be set up. This stage also includes a regulatory and institutional analysis, informing about the possible uses or impediments in the management of military heritage. The phase is intended to provide an institutional framework to future proposals of re-use and valorization. Strictly linked to activities related to this stage is the creation of a cadaster that allows for an inventory of all underground military heritage spread throughout the region and its geographical location. In this respect, we suggested to create a robust database by combining social cartography with the use of LIDAR technology (as suggested by local stakeholders during the first Living Lab meeting) and geographic information systems (GIS).

II. Stakeholder mapping: who is who?

Drawing on Freeman's [18] seminal work, the term "stakeholders" refers to those groups or individuals who have the right and capacity to participate in initiatives of re-use and valorization of underground military heritage in the Green Karst Region and therefore can affect or are affected by the decisions and actions concerning those initiatives. Integrating stakeholder and collaboration theory, it can be assumed that the involvement of all interested parts in decision-making processes "*allow them to take responsibility, enhance their self-relience, and their own awareness of the issue – all of which enables to enjoy a greater degree of consensus and shared ownership*" [19, p.31]. If awareness about the issue is highly relevant when the stakeholder is the local community, treated as owner and custodian of heritage [19], it becomes even crucial in the case of military remnants considering that locals have scant knowledge in this kind of heritage in the region. Clearly, since heritage and tourism are interdependent, protection and preservation should be balanced with the benefits of profits deriving from tourism exploitation. This means that any successful strategy should be based on a symbiotic relation between tourism and heritage and the involvement of all stakeholders in the development of the cultural resource [19], [20], [21].

The stage should aim at: 1) identifying relevant stakeholders to involve for the enhancement of the UBMH in the Green Karst Region; 2) carrying out an analysis of existing relations among them; 3) associating the nature of these relations to the local socio-economic dynamics. These goals can be achieved by relying of both qualitative tools like sociograms, and quantitative tools like social network analysis (see [22]). In this direction, a process of stakeholder mapping was initiated during the training school mainly drawing on network matrices elaborated as outputs of the STSM through a snowball mapping method, and in vivo knowledge provided by Matej Krzic as a key local stakeholder (and member of the group). Specifically, team members started to identify key stakeholders and recognized the importance to deepen the analysis with qualitative and quantitative methodologies in order to know in depth the relationships between them and their relations with the socioeconomic dynamics. Although the associative fabric of the territory is limited, a number of public and private social agents were identified and grouped into four main categories: 1) social base, that includes the local community; 2) associations; 3) private sector, including tourism actors; and, 4) managers. Indeed, all the categories are required to implement a valorization strategy along with the set-up of the "Ghiro" governance (Fig. 28.8). Clearly, the current map is not exhaustive and further work would be required in the future.

The analysis only went so far as to identify possible conflicts in detail. Conflicts of interest in heritage management (and tourism development) can potentially arise between some stakeholders (notably, see actors highlighted in bold in the figure). However, it is worth highlighting the necessity to involve representatives of each category for the effective implementation of any strategic plan of re-use and valorization, as well as of the governance system functioning.

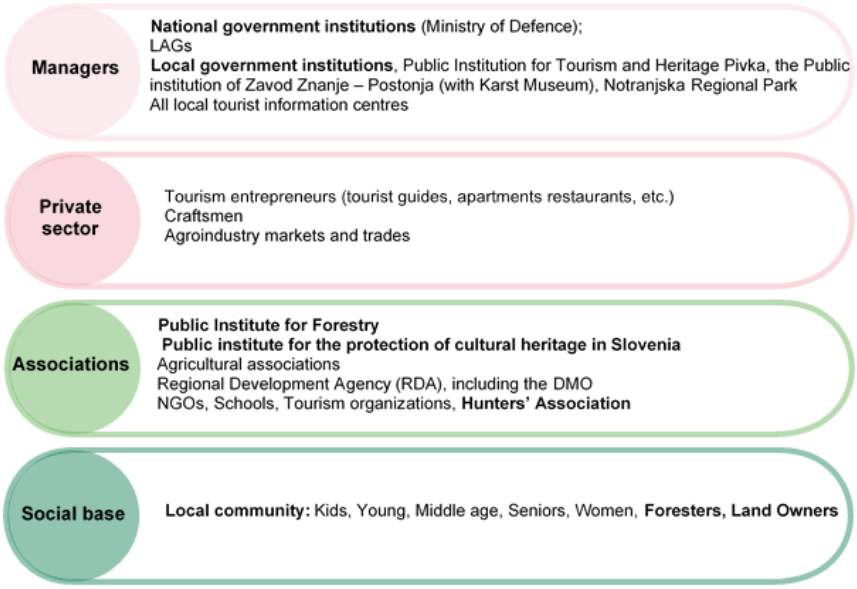

Figure 28.8: Stakeholder mapping for the re-use and valorisation of military remnants in the Green Karst Region

III. Stakeholder involvement

This stage assumes that the involvement of stakeholders is crucial for "*collaborating as a group to achieve a common goal while sharing mutual responsibility for their joint endeavour* " (Austen & Baldwing, 1991 cited in [23]). Acknowledging the mutual benefits of heritage management and tourism, with tourism offering opportunities for income generation for the local community and supporting the preservation of its culture, it is important to address the challenges of collaboration, notably [19]: 1) establish channels of communication to avoid uncontrolled and destructive development; 2) balance between conservation and the use of military heritage sites for tourism purposes to avoid the commodification of culture; 3) funding additional sources of income beyond those deriving from tourism for upkeeping and managing the cultural sites; 4) optimizing the economic benefits for the local community deriving from the synergies between tourism and culture. In this respect stakeholder involvement by the local community in the planning process is crucial also for additional goals, such as reducing potential conflicts, ensuring higher quality and the sustainability of the planning process, increasing local community's ownership of its heritage and trust in heritage management [21].

As previously pointed out, the Green Karst Region currently has a weak associative fabric and the local community is not linked to the military underground heritage. This makes it important for the driving group to adopt participation strategies, aimed at each group of identified stakeholders, including the local

community. The aim of this task is to make the population aware of the value of their heritage, so that it eventually can be involved in the process of valorization. Literature has pointed at the value of education and, in general, of campaigns aimed at creating awareness [2]. In this respect, a number of potential tools for stakeholder involvement, notably the local community, have been identified, including field visits, local media, formal and informal presentations, local fairs or events, local village government, lectures and workshops in schools, open days on military heritage.

The potential offered by digital media has also been acknowledged. In detail, it is suggested the realization of a website with an interactive map on military heritage in the region, the online search of potential investors, the use of sentiment analysis tools for both foreign and national visitors. Incentives for collaboration directed to other stakeholder include the provision of financial support and tax reductions along with opportunities of membership in new projects. It is on the success of this process that it will depend the design of an effective bottom-up, participatory process, the delimitation of the territory to intervene and therefore the social construction of a territory accompanied by the definition of a territorial governance structure [10]. In other words, this is the point that will make it possible to define the roles of involvement for each group of agents previously identified [23].

The definition of potential roles for stakeholders is a key requirement for building the multi-level governance described in section 28.4.2. Indeed, these roles can vary in terms of level of involvement in accordance with the responsibilities in the system set forth in the governance scheme: participation in the shared diagnosis procedure, participation in the motor group for the effective search for good practices for their learning, and thereby participation in the preliminary design of pilot projects. So, for example, members of the local community could get involved as volunteers or as "explorers" of new military remnants as well as privileged informants about specific military heritage sites. A key role would be played by potential entrepreneurs or investors interested in the re-use and valorisation of specific military remnants. In this respect, it is worth highlighting that during the first Living Lab meeting of local stakeholders, it was pointed out that both conservation and valorisation put serious challenges: as for the former, participants underlined that there is a lack of people specialized in this kind of heritage even among those working in the Institute for Protection of Cultural Heritage. However, only if someone shows interest in starting the re-use and investing in these UBH to make profits any initiative to include these UBH in the list of cultural heritage would be relevant.

As a result, the Institute for protection of cultural heritage could start to take care, protect or manage it. As for the latter, there is scant interest in private investments to develop products regarding this kind of heritage although some opportunities could arise from foreign investors interested in business exploitation of innovative ideas and value propositions.

An additional challenge is the need to identify stakeholders (e.g. a person, or public institution or private company) who are willing to manage specific locations

along with an actor interested in acquiring knowledge about military structures and accessing documentation and publications from the Italian State Archive (in Rome, Italy).

In setting a governance model, academic or technical institutions would play the role of knowledge supporters, also providing education and mentoring services. Clearly, the nature and level of involvement would also influence the decision-making power that would be assigned to each stakeholder. To sum up, stakeholder involvement can be considered as the most crucial state of the overall process, affecting all future decisions, including the possible uses of the heritage, influencing the effectiveness of the overall governance structure, ensuring that sound plans would remain sustainable and unchanged over time.

IV. Best Practices: learning and experiencing

The process of capitalization of good practices seeks to identify lessons and practical applications that can be adapted to the context of the Green Karst Region. To pursue this goal, it is suggested to combine two methodologies: Learning Paths and Countryside Exchange. Both are valuable to orient the process towards the object of study that interests the population, and the information collected is intended to provide tools for the population itself. Below a brief description of each methodology.

I. *Countryside Exchange*: it is an innovative "expert exchange" methodology successfully applied in the United States and Northern Europe. It facilitates cooperation aimed at knowledge transfer and has proven to be a valuable tool to facilitating networking. The methodology "*brings together international teams of volunteer professionals to work with communities on their most important issues [...] It uses a visit by an objective team of "outsiders" to identify a wide range of potential solutions, create diverse coalitions, spur the emergence of new leaders and inspire collaborative action*" [23, p. 48]. According to this, the exchange acts as a catalyst and can encourage both hosts and visitors in benefiting from the ideas.

II. *Learning Paths methodology*: it is an effective tool for the direct exchange of local knowledge related to specific topics of which it facilitates practical learning on the field, through on-site visits. Visits are made to areas object of analysis in specific projects that are relevant for the plan to realize. The methodology successfully combines collection, systematization and transfer of new knowledge produced by local organizations or communities [25].

These techniques will allow to achieve a double objective. On the one hand they will widen the range of possible projects to be carried out. On the other hand, they wll enable to connect with projects that are already anchored to reality. This is linked to proposals that go from zero impact to high impact ad discussed in section 28.4.4 (where some examples are presented for various levels of impact). It is important to note that the possible resignification and reuse of underground spaces can be varied and the examples provided in that section do not exclude other possibilities that could be more attractive to the local community. In this way -

together with cultural tourism - other possible options include creative tourism, scientific tourism or even other activities linked (or not) to the productive specialization of the territory (such as the production of mushrooms inside the fortifications).

V. A Strategy Proposal for Pilot Projects: co-creating with the community

As previous phases have been completed, the strategy implementation process requires the elaboration of a proposal for specific pilot projects. Clearly, this stage can be repeated more times as new projects and ideas emerge through a bottom-up participatory approach involving all identified stakeholders (as discussed in stages II and III). In this phase, stakeholders should already be aware about their potential contribution into the process of conservation, re-use and valorization of UBMH.

The authors recognize that a Living Lab methodology [26], [27] potentially inform all the stages of the strategic path hitherto designed. However, they argue that it is in this last stage that such an approach assumes the highest potential as an "*open innovation environment in real-life settings in which user-driven innovation is the co-creation process for new services, products, and societal infrastructures.*" (European Network of Living Labs, 2006, cited in [28, p. 357]. Innovation processes realized through a public-private-people partnership within a territorial context (e.g. a region) are at the core of this approach [29].

A "community Living Lab" [30], in particular, is aimed at supporting the sustainable development of a community (e.g. the rural community of the Green Karst Region) that is achieved through the integration of ideas, interests and objections of different stakeholders' groups to create, prototype, validate and test new solutions. Since these collectively-developed solutions are produced in real-life settings taking into account the specific context and community needs, their successful implementation becomes more likely [31].

Looking at the specific case of military remnants in the Green Karst Region, a community Living Lab could be set up to collectively develop specific solutions of conservation, re-use and valorisation of specific sites or groups of them. Adhering to local stakeholders' previous decisions, the caverns on Primož hill, on Milanja and near to the roofless cave of Unška koliševka have been selected as starting pilot projects to focus on.

In this respect, as specific solutions (e.g. tours and experiential services around specific military heritage sites, cultural itineraries based on the integrated fruition of more military heritage sites, integrated tourism packages based on the integration of more cultural attractions and ancillary services) will be collectively realized, the further step would consist in the development of a business model that describes - for each solution - how it is possible to make profits from its exploitation on the market [32]. A viable tool could be the so-called "business model canvas" [33].

28.4.4. **Zooming into a pilot project proposal: a portfolio of potential re-use and valorisation solutions**

I. Principles

During the Underground4value Training School 2020 held in Naples, the research team was given the chance of working on the valorization of three significant World War One fortification buildings, classified as heritage places and located in the Green Karst Region: these places were proposed by the stakeholder, and the international team has provided some solutions, considering some most important guidelines:

- Sustainability
- Integration with the local environment
- Inclusion of the local population
- Low impact on the surviving buildings (the goal was to leave the buildings the way they are at present moment)
- Valorisation and requalification

The team work focused on identifying a suitable reuse strategy proposal.

II. Choosing a strategy for reuse

The strategy for reuse should take into consideration several factors. Among this, (1) the values of the sites as remnants of military heritage; (2) their current situations as dilapidated structures (i.e. level of degradation, including the physical accessibility); (3) their proximity to the nearest villages or towns; (4) the physical accessibility; (5) the climate conditions; (6) the ownership of land parcels. These contextual factors should be critically examined to inform decision-making processes, that are, in addition, highly dependent of the opinion of the locals themselves (7).

In forming the reuse strategy, the authors looked in more depth at the meanings (functions or values) that the fortifications offer for the users, as well as the availability of resources to carry out through the conservation process [35]. Below the previously mentioned factors are examined in detail.

Values. The sites contain historical value, since they are testaments to the planning of military fortifications in World War I as well as to military strategies themselves, as they served to control the border. They also contain architectural value since they are examples of military forts of the time, as well as construction technologies using the underground. Finding a reuse strategy is an opportunity for the line of fortifications. It would enhance these values, while also giving a new importance to the social and use values. Taking into consideration the meaning of the heritage site as well as which values are the most important, could mean a different solution for a number of heritage sites [36]. It defines these values as being the cultural significance of the place, so any new work, or adaptation should always respect the cultural significance (p. 2). Therefore, the new use should be compatible, one that respects meanings and associations. Finding reuses that are compatible with the space is important. This would minimize the interventions needed on the historic fabric.

Current Condition. To adopt a reuse strategy, there should be an assessment of the architectural qualities and a historical study to determine the level of maintenance needed. If the remnants are in a state of disrepair, considerable amounts of irreversible interventions have to take place in order to restore its functionality. Therefore, this brings up the issue of the reversibility of the intervention.

Proximity to nearest villages or towns and context. The proximity to nearest local population is also a factor to consider, since certain uses are not feasible nor appropriate if the fort is secluded. It is not as effective to have a use dedicated to tourism if it is not easily accessible from the local population. On the other hand, proximity could mean there is a higher opportunity for the fort to be visited and used. The context relates to the immediate surrounding of the site, and this involves considering and rethinking accessibility, pathways, services and parking.

Climate. Exploiting the conditions of the underground conditions can be an opportunity in itself, and exciting solutions emerged, where the darkness and humidity were integral elements in choosing a possible use for a reuse strategy.

The ownership of land parcels. Although the State of Slovenia is the owner of all military remnants, it could not be the case for the land where a specific fort, barrack or bunker is geographically sited. Ownership could be private or public (e.g. a municipality). In both cases, a strategy of re-use and valorization could require the interaction and agreement with the owner of the land.

The opinion of the people. It is important that people participate in the conservation process and in the formation of a suitable reuse strategy. In contemporary conservation theory it is about the people and what the intervention means to society. The principle of sustainability also applies in this case, since in conservation processes sustainability also means how the intervention works in the long term for the users [35].

> "Conservation, interpretation and management of a place should provide for the participation of people for whom the place has significant associations and meanings, or who have social, spiritual or other cultural responsibilities for the place" [36: 5].

In this regard, having a "prototype system" where people try out the uses is interesting in theory, since one is investigating what people expect from their military heritage. It is a way to understand what people want to remember from the sites, and what values they entail. However, from a practical point of view, there is the issue of reversibility. Therefore, by choosing a reuse strategy and implementing it for one fort means interventions on the built fabric are being carried out. A fort that is transformed into a museum cannot be reversed into its original state as a ruin.

The notion of reversibility in conservation theory has changed from it being a solid basic principle to the acceptance that it cannot be truly achieved. Thus, the notion of removability and treatability are being introduced. For instance, one acknowledges that the interventions for the reuse strategy are bound to leave a

physical effect on the building, but leaving this to a minimum so the built fabric is not damaged.

As noted, it is extremely important to take into consideration of what these heritage sites mean to the people, and what values are considered most important. However, the ultimate reuse strategy should always be a balance to what the people want from the site, and what the site is offering in terms of heritage [35: 208-209]. "Contemporary ethics of conservation invite us to consider the different meanings of heritage sites to different groups of people. Therefore, the reuse strategy should not only decide which meanings and values are the most important, but how to combine them and satisfy as many views as possible" [35: 214].

III. Types of Reuses

Taking into consideration the above factors, these reuse strategies can be implemented into the pilot project. These range from a less intrusive intervention (i.e. more conservative), to more intrusive (i.e. less conservative). The fortifications remnants could be all requalified, leaving to the stakeholder the possibility to decide the impact of the restorations from a grade named "zero" to a grade named "advanced", with "zero" corresponding to no valorization intervention at all, and "advanced" meaning a significant, higher impact on the remnants (see Fig. 28.9 for examples of each type of reuse).

Zero impact: Leaving the remnants the way they were. This would require the remnants to survive in a ruin state, therefore the ruins must be stabilised.

Low impact: Creating underground mushroom or salad farms, placing the farming soil in wooden boxes which would not affect the original pavement at all. Another low impact green proposal is to use the underground as exploitation of the darkness and humidity of a difficult space; salad can be grown there. It is expensive and could be sold commercially for a high price and pharmaceutical industries can get Vitamin A produced with profit in the underground.

Medium impact: Drawing an itinerary in and around the building, cleaning, and mopping up the exterior so that "sight and sound shows" and "video mapping" might be broadcasted, at least during touristic seasons. Therefore, this implies recognizing the values of the fortifications and appreciating them as museums.

Medium-high: Reuse of the fortifications as accommodation.

High impact: Restoration of the remnants to create an "escape room" underground track finalized to team building activities, to be promoted in Slovenia. It all works this way: new fellows having to work together, because they do not know each other, they do not trust, they do not talk. In team building experiences, they must work together, help each other, in a tight time. They will wear like WWI soldiers and they will have to decrypt a message and find their way out in a set time.

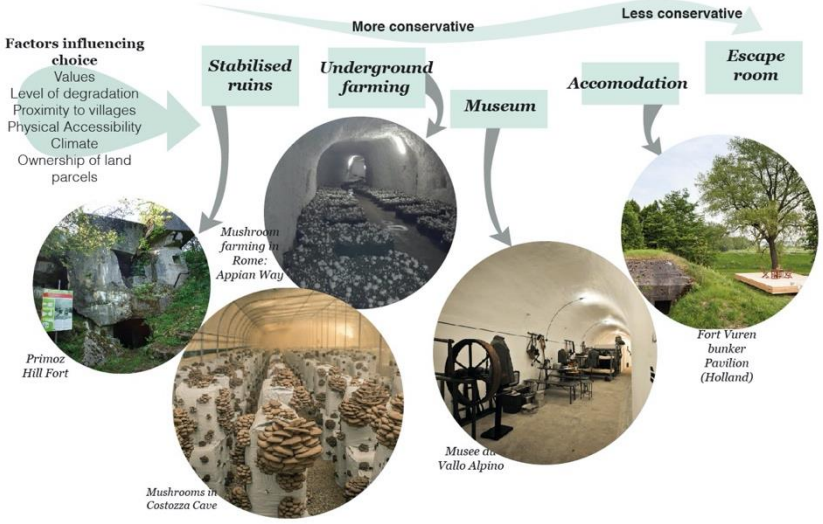

Figure 28.9: Potential types of re-use and factors influencing the choice

IV. Realizing a "logo"

During the training school, the group also worked to create a logo for the underground military heritage of the Green Karst Region that was evocative of some key features of the regions (fauna, flora, food, underground heritage) and of the kind of experience offered by this type of UBH (Fig. 28.10).

In detail, the logo consists in a circle over which two dormice seem to move a trail: the dormouse represents very well the wild animal population of the Slovenian Karst Region and it is also famous as food. In the very circle, a tree appears to grow nearby the entrance of a fortified building, the tree meaning the forces of Nature able to re-grow next to a war building. The building shows very well the entrance becoming like a dark, underground river path. This means that the building offers an underground trail to explore. The dark path meanders like a river, touching the circle at the bottom, where another dormouse with its long tail moves his way up and outside the circle.

Figure 28.10: A potential "logo" to promote the underground military heritage of the Green Karst Region

28.5. **Conclusions**

The intense work carried on by all team members during the afternoons of the Training school in the suggestive location of Castel dell'Ovo converged in the elaboration of a poster (Fig. 28.11). The poster was evaluated by a technical jury composed of a variety of academics (e.g. historian, archeologist, economists, urban planners) expert of Underground Built Heritage who conferred to the poster "Most Sustainable Proposal Award" during the final event of the Training School.

Through this methodological approach adopted, based on the integration of diverse perspectives and the integral combination of multidisciplinary knowledge, the group contributed to making the Training School a fruitful space of co-creation, where theory and methodological rigor were combined with discipline, commitment, creativity and inspiration. This space allowed the identification and experimentation of methodologies and instruments to support the construction of strategies for the reuse and valorisation of the underground military heritage in the Green Karst Region. However, rather than providing specific solutions, the working group elaborated a strategic path of development, proposing a "toolkit" of mechanisms and solutions that could guide the trajectory of decision-making processes and characterized by a marked community engagement since first stages. Beyond potential solutions for re-use and valorization, the poster clearly shows how this trajectory underpins a sustainable model of governance that could be applied also for other typologies of heritage with a similar ownership structure (e.g. natural reserves). Definitively, the work would be a valuable basis of reference for guiding plans and activities of stakeholders involved in implementing community-based approaches for decision-making processes concerning governance and innovation.

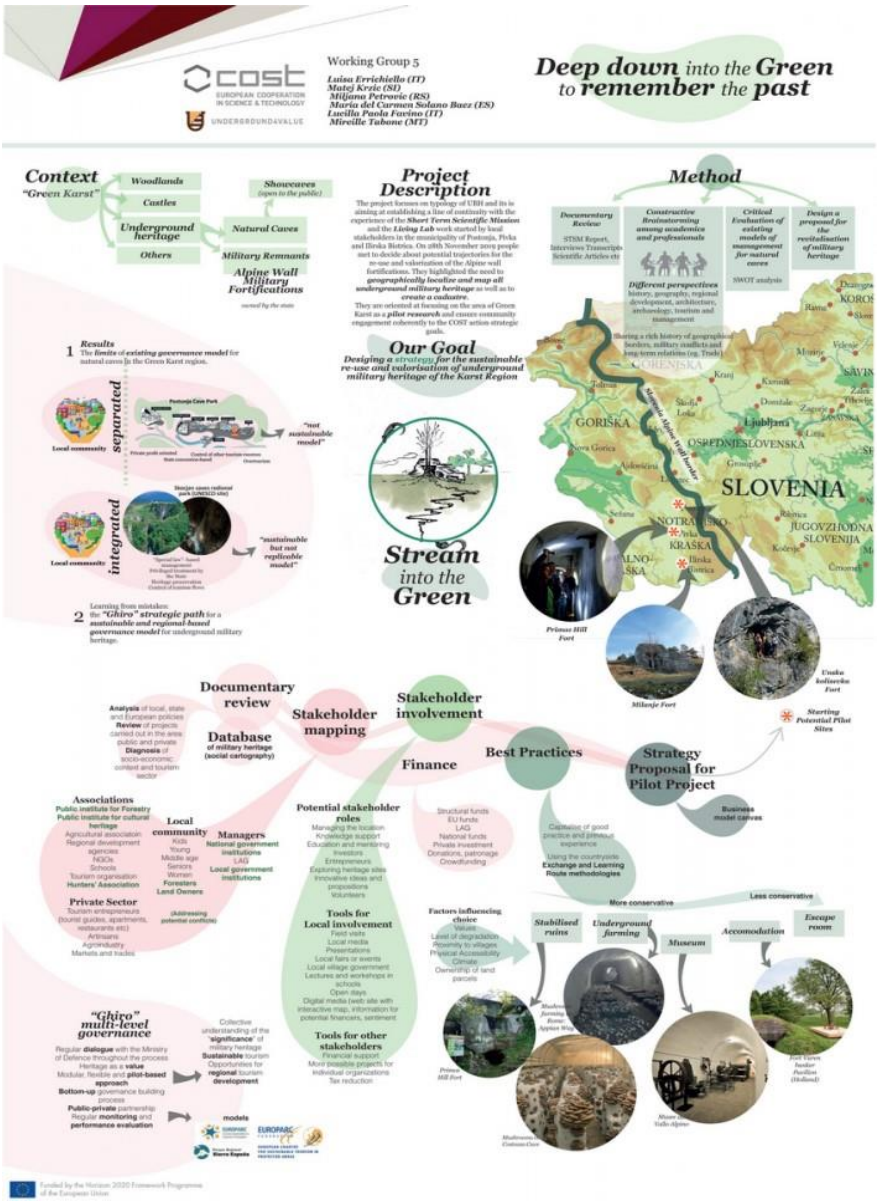

Figure 28.11: The poster of the Working group 5

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NOTES

[1] The Group 5 was composed by: Luisa Errichiello (Italy, tutor; email: luisa.errichiello@ismed.cnr.it); Lucilla Paola Favina (Italy, trainee); Matej Krzic (Slovenia, trainee); Milijana Petrovic (Serbia, trainee), Maria del Carmen Solano Baez (Spain, trainee); Mireille Tabone (Malta, trainee). Although the project is the result of a collective effort, Luisa Errichiello wrote sections 28.1, 28.2 and 28.5. Luisa Errichiello and Maria del Carmen Solano Baez wrote sections 28.3 and 28.4.3. Maria del Carmen Solano Baez wrote section 28.4.2. Luisa Errichiello and Matej Krzic wrote Section 28.4.1. Finally, Lucilla Paola Favina and Mireille Tabone wrote section 28.4.4. To them, the logo and the overall graphic design are also respectively attributable.

[2] Before the training school took place, these sites had been object of investigation by expert researchers involved in Short Term Scientific Missions (STSM) realized within the Cost Action. Coherently, topics were established in relation to specific issues and relevant challenges that have been identified by researchers during their previous STSM. In this regard, the working group 5 was leaded by Luisa Errichiello, researcher at the Institute for Studies on The Mediterranean (ISMed) of the National Research Council of Italy (CNR) and expert in innovation management, who was selected as participant in the first year STSM mobility program (2019) to carry on research on the UBH re-use and heritage-led regeneration processes in the Primorsko-Notranjska region, touristically marketed as Green Karst Region (Slovenia).

[3] For a more detailed analysis on the regional context and the challenges for re-use and valorization of the three groups of military remnants cited in the text see [1], in Part 2 of this Handbook.

[4] Documents included, among others: scientific articles about the history of the cultural sites of interest; qualitative and quantitative data (e.g. statistics) about the Green Karst Region (e.g. geography, morphology, physical and digital infrastructures, accessibility to the cultural sites, demographical and socio-economic data, touristic offerings and tourism flows), various scientific outputs of the STSM personally carried on in the Green Karst Region, including the final report, a map of some relevant stakeholders, transcripts of interviews to key actors involved and/or interested in the process of re-use and valorization of UBMH. These preliminary materials were gradually integrated with those related to the lessons that trainees attended in the morning, so as to critically evaluate day by day the potential application of relevant concepts, theories, methods and tools to draw on during the group project.

[5] In Slovenia, the hunting of dormouse has a long popular tradition; it is also recognized by the European Union, which has not placed the species under Community protection there. In Slovenia, the dormouse hunt begins on 1 October and ends at the end of November, when the rodents hunt for winter hibernation.

[6] Such a territory should emerge through a bottom-up, participatory and integrated social construction process based on [17]: 1) an act of collective will; 2) shared identity and common values; 3) social capital and shared endogenous resources; 4) the respect of the configuration of the space at a natural and/or cultural level; 5) collective management structures.

[7] The experience of the Sierra Espuña Regional Park offers a comprehensive practice with a territorial approach in a PNS. The territory of Sierra Espuña is made up of 6 municipalities whose rural communities have a relevant UBH (oriented to scientific tourism and in some cases not exploited) as well as by different territorial levels in the field of 'tourism development' and 'sustainable use of locally-based endogenous resources'. Since the adoption of the European Charter for Sustainable Tourism (CETS), the adoption of aa territorially based multilevel governance system has modified the relations among key local stakeholders, including the inhabitants. A collective and integrated management of the territory has been realized through connecting all endogenous resources to a long-term territorial strategy. Although the CETS has a procedure standardized by EUROPARC, all territorial agents agree that each territory is defined by: one of the most deeply rooted specificities of the territory, social capital and a participatory process. For further details, see the webages: https://territoriosierraespuna.com/ and http://cetssierraespuna.com/.

CHAPTER 29

A Plan for the Valorisation of a Mining Park in La Unión (Spain)

Tony Cassar, Marija Jovanovic, Susana Martinez-Rodriguez, Maria Murillo-Romero, Tommasina Pianese

29.1. Introduction

The First Underground4value Training School has been an intensive training programme on topics related to the valorisation of the Underground Built Heritage (UBH) as a catalyzer for community engagement and empowerment. The Training School was held at Castel dell'Ovo (Napoli, Italy) from 10th to 15th February 2020. Following the spirit of the COST Action CA18110, the organisers of the school have identified six research groups where trainees with different backgrounds had to work together, through a flexible and open approach, to develop a project for the valorisation of a UBH site.

As for the Research Group 6, the project has dealt with the elaboration of a coordinated set of strategic actions aimed at the valorisation of a Mining Park, a large underground site in La Union (Spain). This has been one of the case-studies conducted during the CA18110 first year whose main geographical, political, and economic characteristics has been presented during the first day of the Training School.

The project has taken advantage of the multidisciplinary competencies and backgrounds of team members. Specifically, Marija Jovanovic (RS) got a bachelor in management and currently is student of a Master's Degree in Economy at the University of Management in Zajecar (Serbia). In last years, she has worked in tourism and in the valorization of intangible cultural heritage as driver for the development of rural areas. María Murillo-Romero (ES) is an architect and PhD student at the University of Basque Country (ES). Her fields of research are historic urban landscapes, wine landscape, industrial heritage and building restoration. She has also worked in building design and urban planning, and she has taken part in several congress about its expertise field. Tommasina Pianese (IT) is a researcher at the National Research Council of Italy (CNR). She has a bachelor in Business administration and a PhD in Sport management. She has conducted researches on strategic competitive analysis, brand exploitation, use of social media and role of digital communications. Her researches combine theoretical study with qualitative empirical investigation, based mainly on in-depth case studies.

During the training school, the group members abovementioned developed a project for the valorisation of the Mining Park in La Unión. They had the opportunities to work alongside professors and professionals and share knowledge about UBH, valorisation strategies and creative experiences, and learning about participation tools for community engagement and empowerment.

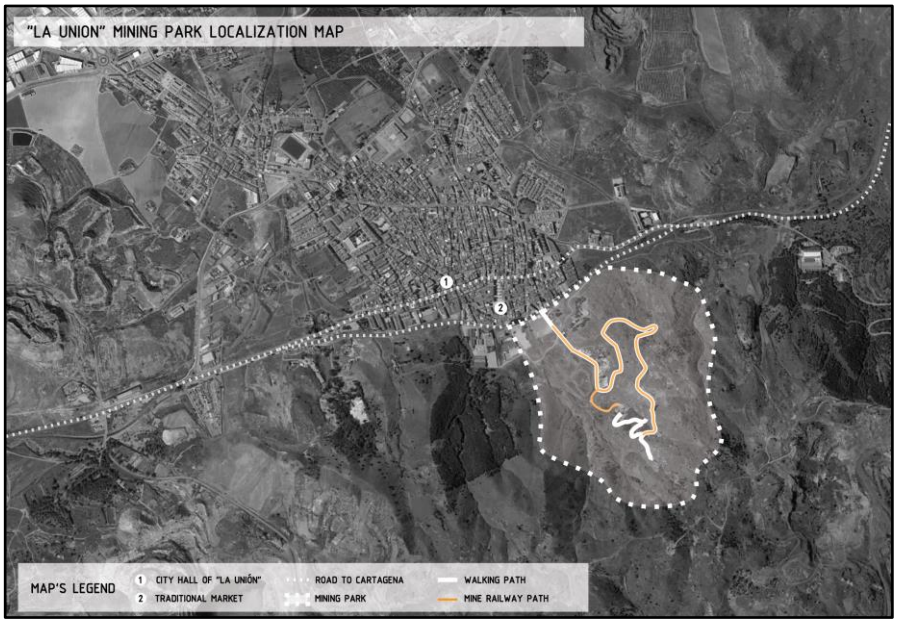

Figure 29.1: Localization map of La Unión Mining Park
Created by the team group designer during the TS

The research group was tutored by Susana Martinez-Rodriguez, whose area of expertise is the social and business history. Regarding CA18110 she has developed several activities related with the case study of the Mining park of La Unión. Tony Cassar, who has a long experience in developing creative activities to value cultural heritage, also supported the group.

The project was presented with the visual support of a poster the last day of the school to an evaluation commission composed by several experts. In the following months, team members drafted this chapter[1].

The chapter is organised in order to describe first the context where La Unión Mining Park is located. This aimed to let readers familiarise with the case study and understand the opportunities along with the challenges faced by its management for the valorisation of this underground site. We also provide with a geographical description and practical information about La Unión.

After the section explaining the research methodology, we present our project that, for the sake of clarity, has been articulated in three main parts, notably the definition of the La Unión Mining Park's value proposition and following brand creation, the identification of a set of creative experiences aimed at expanding the current offer of the La Unión Mining Park, along with a social media

communication plan to increase the awareness and improve the image of the Park at European level.

29.2. **Context and challenges**

La Unión is located in the Region of Murcia, in the South West of Spain. It has 20.000 inhabitants, over 24,6 km^2, and it is known mainly for: a) the International Festival of Flamenco held every August; b) the International Minerals and Fossils fair, organised annually by local entrepreneurs during the month of March and attracting several collectors and sellers of minerals; c) a Mining museum opened the all year and located in the center of the city with small installations, e.g. sound of mine activity; and d) the Mining Park, which is the focus of our project.

The Mining Park (Fig. 29.1) represents an exceptional underground site with 4.000 m^2 of visitable galleries, with vaults of 8 meter, and many galleries. In this site, there has been an intense mining activity until 1991, after which the mine has been closed for almost two decades. Mostly of miners' families migrated while others remained in the city finding a job in the industry services.

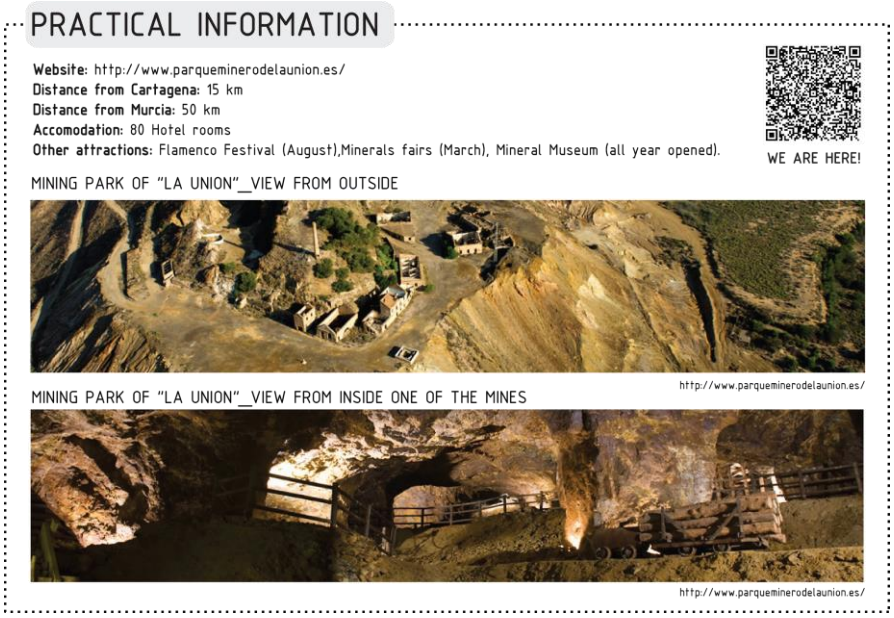

Figure 29.2: Practical information chart on La Unión Mining Park and its surroundings
Developed by the team group designer. Pictures from the official website of the mining park: http://www.parqueminerodelaunion.es/es/

The industrial landscape of the mining mountain of La Unión is protected by the Spanish National Plan of Industrial Heritage and it is also part of the list "100 Elements of Industrial Heritage in Spain" [1], which includes the Spanish National Plan developed by TICCIH (The International Committee for the Conservation of the Industrial Heritage) Spain and IPCE (Instituto del Patrimonio Cultural Español).

In particular, the Mining Park has been part of a specific Strategic Plan carried out in 2004-2006 to value this UBH considered to be an immovable *Asset of Cultural Interest*.

In line with this plan, in 2010, the Mayor of La Unión decided to value the existing caves, which is a public property. A private company was entrusted to organize a Mining Park tour, which comprises:

- a video projection which introduces visitors to the area of Cartagena and La Union;
- a shuttle trip to the mine;
- a guided tour for 20 visitors inside the mine offered twice a day in English or Spanish.

Since the beginning, the Mining Park has attracted an increasing number of visitors. Anyway, in last years the number of visitors has remained stable, and this is the underlying reason why our research group was required, starting from the analysis of the La Unión leisure and cultural supply, to identify a set of strategic actions to value this UBH and increase the attractiveness of the park.

29.3. **Methodology**

Considering the short time available to present a tangible outcome during the TS (5 days to create a poster), we embraced a qualitative approach to produce contextual knowledge. In order to gain a better understanding of the opportunities for the valorisation of UBH of the La Unión -Mining Park, as a first step the research group revised the extensive set of documents already collected by the TS organisers [2] [3] [4] [5] [6] [7][2]. These were triangulated with the rich information provided during one lecture of the training school devoted to present the case studies of the CA first year. La Unión-Mining Park was one of them, even though the focus was not the Mining Park by itself. The lecture focused on characteristics of La Unión and included visual information and a description of leisure and cultural activities in the area. This put in the foreground that the Mining Park was the biggest attraction of the area and it could be exploited to favor tourism in La Unión and introduces more dynamism to the economic fabric.

Based on these data, the research group conducted a SWOT analysis to put in evidence strengths, weaknesses, opportunities and threats for La Union-Mining Park. Although scholars have pointed out the limitations of the SWOT as a strategic management tool, we have chosen it as an efficient way to perform a multidimensional competitive analysis [8].

It is noteworthy to evidence the different level of knowledge of the team members. Susana Martinez-Rodriguez conducted the CA18110 case study, so she had an in-depth knowledge of La Union. Tony Cassar had visited several mining parks in different European countries, as part of his professional activity. The description of his own experiences represented a valuable insight for our comparative analysis, and for understanding meanings, interpretations and expectations of families and tourists going to a mining park. Although the other three members of the RG had never gone in similar parks, they have contributed

actively to the development of the project because they provided an external and fresh perspective, which was not influenced by the context itself [9].

Then, based on the Tony Cassar's lecture in the training school, the research group referred to the "Design Thinking" methodology for identifying new creative experiences to be included in La Union-Mining Park's offer.

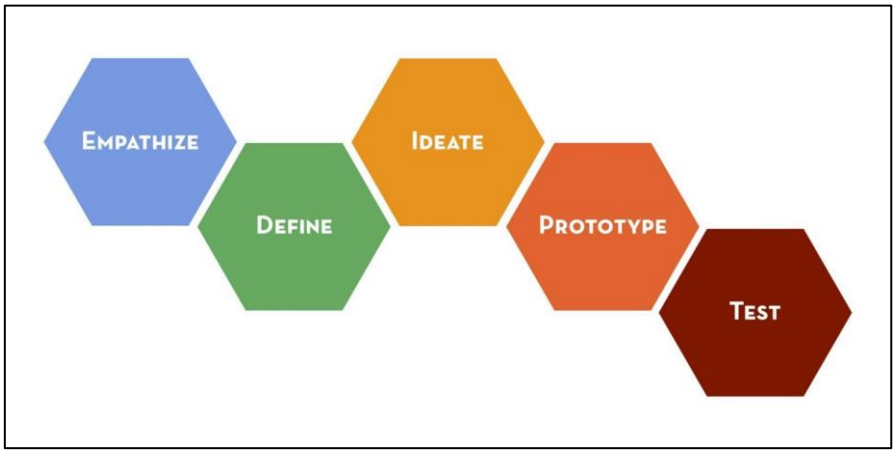

Figure 29.3: The Stanford d.school Design Thinking Process.
Source: Hasso Plattner Institute of Design

The Design Thinking is a problem-solver approach that encourages the practice of creative thinking for improving innovation outcomes [10] (Liedtka, 2018). In order to reduce the cognitive biases of decision-makers [11] (Liedtka, 2015), it assumes an iterative and flexible approach where "designers (i.e., Mining park's managers)" and "users (i.e., visitors)" collaborate in order to bring ideas that reflect what users think, feel and behave. This way it seeks to find higher-order solutions that accommodate seemingly opposite forces [10] (Liedtka, 2018). As defined in Lockwood [12] (2009), design thinking is a "human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis". Coherently, the process of design thinking encompasses the following five stages of empathise, define (the problem), ideate, prototype, and test:

- *Empathising* aims at gaining an empathic understanding of the context and of the problem through observing, engaging and empathizing with people.
- *Defining the core problems*, based on the analysis of data collected in the previous stage with visitors at the center of the Mining Park's experience (e.g., making sense of the data to define visitors' needs and constraints).
- *Ideating*: in this stage, it is important to "think outside the box" and use ideation techniques (e.g., brainstorming) to generate as many ideas and new solutions (i.e., creative activities and experiences) as possible for valuing the La Union-Mining Park.

- *Prototyping and testing* refer to scaled-down versions of the creative activities and experiences in La Union Mining Park, which will be tested and thus accepted, improved and re-examined, or rejected based on the users' experiences.

Based on existing data, the research group worked on the first three stages of the Design thinking process. We are expected that the management of the La Union Mining Park enrich our analysis by collecting further data (e.g. by interviewing and observing real visitors to obtain an in-depth understanding of their experiences and motivations) and following work on the prototype and test stages.

We followed the Design thinking diagram reported below (Fig. 29.3).

29.4. Our project to value the UBH in La Unión

The following pages are devoted to report our project elaborated during the training school for the valorisation of the La Unión Mining Park, as a result of the methodologies applied. First, we conducted a SWOT analysis in order to distinguish among elements having a positive or a negative relevance for the Mining park and its surroundings (par. 29.4.1). Second, we have worked on the identification of a new value proposition, as well as on the elaboration of a new brand for La Union Mining Park in line with our desired positioning in the local tourism offer (par. 29.4.2 and 29.4.3). Third, we have identified a set of creative experiences aimed at enriching the current offer of La Union Mining Park (par. 29.4.5). Finally, we have identified a set of actions aimed at leveraging social media for the effective promotion of the mining park (par. 29.4.6).

29.4.1. *La Union Mining Park: a SWOT analysis*

The primary objective of the SWOT analysis that this group elaborated during the training school was to highlight all elements and features that take place in La Unión Mining Park, the positives and the negatives ones, in order to have an accurate understanding of the case study. This preliminary analysis was paramount for the following development of a new brand along with the identification of creative activities and experiences.

First, it is necessary to make a brief introduction about how a SWOT analysis works. As you can see in the graph below (Fig. 29.4), a SWOT analysis consist of four parts: Strengths, Weaknesses, Opportunities and Threats. These four headlines concern positive (Strengths and Opportunities) and negative aspects (Weakness and Threats), from internal (Strengths and Weaknesses) or external origin (Opportunities and Threats). When the group decided to use the SWOT analysis as an analytic tool, it was compulsory to distinguish between all of them and to organise all the information provided throughout the training school. However, they present two quite different approaches in the management of the above dialectic.

First, the group assessed the information that was considered from internal origin, as it was said before, related to strengths and weakness of the Mining Park. **Strengths** were considered the positive aspects from internal origin and were related to several features from the place:

- One of the most characteristic points was that La Union Mining Park is in an extraordinary area packed with natural open spaces underground, as a result of its history and its condition of mining park, and overground.
- These amazing spaces are susceptible to multiple uses, in fact, there is a "Flamenco" musical festival inside the caves every year which takes advantage of the acoustic isolation that this place owns.
- Besides, as it is shown in the localization map, another crucial strength from the Mining Park was its accessibility and nearness to La Unión urban center and to its mains historical buildings and museums.
- Furthermore, the municipality has expressed his deep engagement with all the proposals for the valorization of the mining park and, as a consequence of that, have a positive effect on the inner city.
- During our research, we have also observed a relevant interest for the kids, as shown by the existing offer of school and family activities inside the Mining Park.

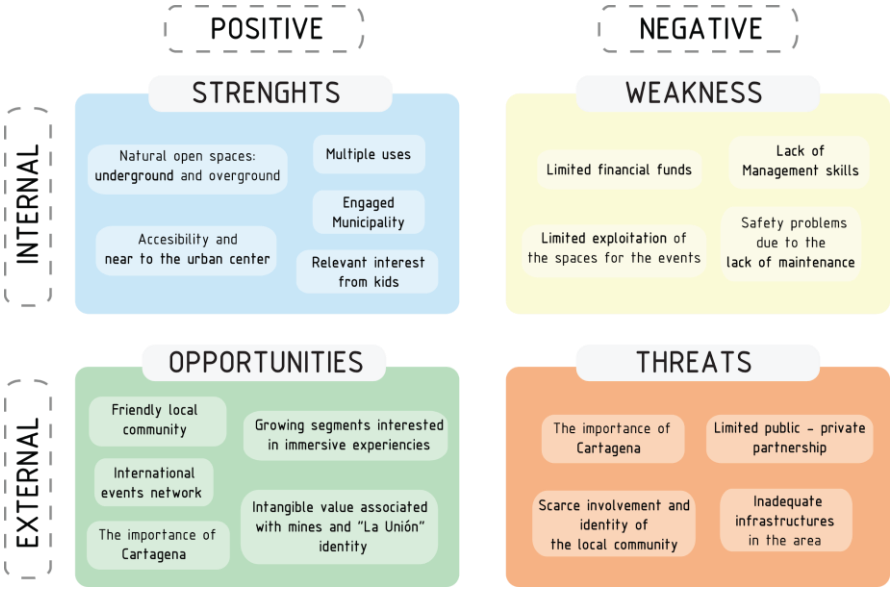

Figure 29.4: La Union Mining Park SWOT Analysis

On the other side, **weaknesses** meant to be the negative aspects from internal origin of the Mining Park:

- Despite the interest shown by the municipality and the inclusion in the list of the 100 Spanish Industrial Heritage, the park has limited public financial funds. This situation was a consequence of some legal actions that has blocked the budget of the local government. Even from the private sector, the financial contribution is minor.
- Along with the lack of funds, the exploitation of the Mining Park has been so far inadequate because of an inability of local managers in the valorisation of an underground site.

- In spite of the ability of accommodating several activities inside the Mining Park, there was a limited exploitation of the spaces by events for no apparent reason.
- Finally, the lack of maintenance resulted in safety and technical problems.

Once developed the aspects of the SWOT analysis related to the internal origin, we focused on those from external origin, that is, *Opportunities* and *Threats*. In the same way, it was necessary to differentiate between the positive and the negative ones.

Opportunities were the positive side from external origin of La Unión Mining Park, and they were related to:

- La Unión offered the possibility to create a family friendly environment in the Mining Park taking advantage of its amazing location, using bike lanes, zipline, etc., and of the friendly local community
- Creating an international network of family parks and connecting it with other existing events, as the international "Flamenco" Music festival. Consequently, the Mining Park could be renowned for its family target and also for other cultural activities, benefiting from the musical event that took place there
- We have also observed the possibility of creating alliances with Stakeholders in order to explore new funding opportunities, for example, submitting applications for European funds, attracting private funds in terms of sponsorship deals, public-private partnerships, crowdfunding, business angels coaching
- Nowadays, there are growing segments of population interested in immersive experience, this tourism could be also an amazing idea for the revaluation of the Mining Park as mining experience
- We wanted also to point out the intangible value that this activity provides to the community, from the memory of the place, songs, crafts, the society developed during the 19th-20th century around the mines and minerals
- Finally, one of the main opportunities that we could use to set our Mining Park in motion again was the importance of the city of Cartagena in the Mediterranean area and its contiguity to La Unión.

Last but not least, we were going to focus on the **Threats** of La Unión Mining Park, which came from the negative features related to external origin, and were:

- The city of Cartagena plays a decisive role as an opportunity and as a threat. Its importance, size and attractiveness, was also the reason that explains some problems that "La Unión" experienced in tourism. The city was penalized by the proximity to the much more renowned and richer city of Cartagena (the second largest city of the region)
- The lack of adequate infrastructures in the area. This threat has a negative effect on the accessibility to the La Union city centre, which is 45 minutes far from Murcia, 20-25 far from Cartagena, by public transport. In addition, there were a few accommodations (80 rooms in 2 hotels), so the city attracted only 1-day tourists. Both had implications for the number of visitors of the Mining Park that, as we have seen during the lecture devoted

to the case study, has remained stable between 26.000-27.000 visitors each year.

- Although public institutions have shown to be interested in the revaluation of the area, we have observed a scarce involvement of local community in the valorization of their cultural roots and local identity based, among others, on flamenco songs and tradition, mining Cultural Heritage, etc.

Throughout this SWOT analysis, we have been able to understand how the Mining Park and its surrounding are working now, and to recognise its potential in order to develop a new value proposition and a new brand, which would allow us to establish an accurate project for the valorisation of the area.

29.4.2. *The new value proposition for La Union Mining Park*

Starting from the competitive analysis conducted through the SWOT [8] and according to the Business Model Canvas, the group worked on the design of La Union Mining Park's Value Proposition (VP) [13] [14].

Value Proposition is a statement that defines the benefits (i.e., the value) that a customer will receive by purchasing a product or experiencing a service from a vendor. This statement supports the managers of the Mining Park in understanding their primary focus and goals. At the same time, it serves to differentiate the La Union Mining Park and convince consumers that its product or service is better than others on the market [13].

The elaboration of the Value Proposition encompassed two major aspects [14]:

1. Identification of Customer Profile (demand side), with a related in-depth understanding of their main requirements
2. Elaboration of a Value Map, which is a map of how we intend to create value for that customer (offer side).

Our value proposition for the Mining Park was "*Delivering an interactive Mining Park for European family with children*".

This would be achieved by:

- Exploiting La Unión own identity, based on the secular tradition of mining exploitations;
- Involving the local community (there is a number of ex miners living in La Union so the project aims at involve citizens in the design and even in the delivery of activities for the valorisation of the underground heritage of La Unión).

As for the point 1), the identification of the European families as main target of visitors was relevant to understand the needs, type of expected activities and experiences, as well as the budget they are disposed to invest in the area.

As for visitors' needs, we referred to the Maslow's hierarchy of needs who identified five levels, which is psychological, safety, love/belonging, esteem needs, and self-actualization needs [15]. Maslow suggested that people are motivated to fulfil basic needs before moving on advanced needs [15]. Coherently, even if self-actualisation is the ultimate goal, it can be achieved only after having met the basic requirements for food, safety, love, and self-esteem [15].

As for the Mining Park, it was important to ensure safety needs because mines can be claustrophobic and perceived as dangerous by the family, and no parents will

bring family in a place considered not to be safe (security needs). As for needs at the highest level (self-realisation), it was relevant to pose these questions:

"*What is this place and what am I learning? How does this affect my life? It is just a park where I can have fun, or a place where I can understand who were the mines and who worked there? How does this change my perspective on life?"*

In next sections, we present the map (point 2) through which we intend to create value for the potential customers by:

1. The creation of a new brand
2. Identification of creative activities and experiences
3. Definition of a promotion and social media communication plan.

29.4.3. ***A new brand for the Mining Park: Journey to the Centre of the Earth***

The group created a new brand to identify the experiences in the Mining Park in La Union, thus becoming more attractive to visitors (Fig. 29.5). All members of the group, with transdisciplinary backgrounds and different level of knowledge about the Mining Park, participated to the creation of the brand. Using this participatory approach made all participants feel like it is theirs, and as if they could contribute to promote the brand's differentiating values.

LA UNION MINES - MURCIA

JOURNEY TO THE CENTER OF THE EARTH

Figure 29.5: Brand created and proposed by the group during the TS

Attention was also paid to define a brand image strongly connected to the local identity (i.e., tradition of mines exploitation) to improve its differentiation. A differentiated brand allows speaking directly to the most relevant audiences.

The new brand has been inspired by Jules Verne's novel about the expedition made by a visionary scientist underground. As Tony Cassar suggested, "The brand focuses more on the experience than just on the mine itself".

The brand included also a new logo to facilitate marketing activities to establish brand image and identity. This was particularly relevant before the actual visitor experience. As consumers can choose among thousands of places to visit, logos can effectively stimulate awareness and communicate desired attributes [16] to visitors,

thereby reducing search costs and influencing visitor choice behaviour, particularly if the logo "connects" with the target markets.

29.4.4. *Enriching the offer of La Union Mining Park*

Our project is aimed at enriching the existing offer of the Mining Park through the identification of additional activities, which exploit new technologies and involve local community.

Based on the concepts and principles of the Design Thinking Methodology, we have identified a set of creative experiences, which assumed the active participation of visitors and co-creation of the experience. Creative activities emphasize the importance of interactive experience with visitors who actively participate in dynamic creation processes, learn and apply knowledge to develop skills and interact with local people at the site (e.g. expert guide) as well as with local residents [17].

In the following part, we provide a brief description of creative experiences identified by the group aimed at increasing the number of European people interested in visiting the La Union Mining Park.

1. Visitors will be provided with helmets, uniforms, pickaxes and carts in order that they feel to be a mine-worker during "simulation work into the mine" or while performing different *Adventure Paths*[3] (e.g. zip line).

2. As for activities based on the exploitation of *Digital Tools*:

Audio guides[4]: Multilingual audio guides will be available for individual visitors as well as for groups where local guides transmit information via wireless. These will help visitors understand the mine history and the processes of mineral extraction. A visitor-centered storytelling will make the visit more interesting.

Touch screens[5]: Interactive multilingual touch screens will be available with video and games for kids. They will discover information about the mines through gamification, which is an excellent fun way of engaging visitors thus bringing them to come back.

Digital performances: Walls of the mine will be used as large format projections to create an immersive multi-sensory experience for visitors. Artists will be invited to exhibit their art via these large-format projections. This will make the venue a cultural experience apart from just a mine interpretation area.

5D cinema experience[6] : Short show will take the visitors in a journey to the center of the earth. The aim is to learn about local geology thus acting as an educational experience, which will encourage schools to visit the mining site.

3. *Exhibition of photos and live interviews from former miners*, who will tell the stories about history and work in the Mining Park and how was life before in La Union, keeping alive their legacy and preserving their culture which has always been strongly connected to the mining activity

4. *Exhibition of a collection of minerals*, with short interactive stories about the mining process and the (past and actual) use of minerals in different industries. Their preservation could be seen as an opportunity to identify alternative uses of these materials in a environmental sustainability perspective.
5. *Green lanes:* outside the mine, green lanes will be created to connect by walking the different attractions in La Union. At the moment, the different sites (e.g., historical urban patrimony, cultural sites in the city as the museums) are not connected with each other and it is not easy to reach one site from another one by walking.

6. *Bikes and quads*[7]: We will also provide the mining park's visitors with the possibility to rent bikes and quads to explore the surrounding area. This way we will answer to the increasing demand for outdoor sports activities.

7. *Scholar activities*[8]: creation of laboratories with instructors teaching scholars e.g., how they can produce toys different materials (clay, wood, etc).
8. *Organization of Flamenco (song and dance) workshops* and events to spread the awareness of the Flamenco and of the International festival organized annually in La Union. Flamenco was included in 2010 in the Representative List of Intangible Cultural Heritage of Humanity - UNESCO. It is an artistic expression fusing song (*cante*), dance (*baile*) and musicianship (*toque*). Andalusia, a region in Southern Spain, is the hearth of Flamenco, although it also has roots in regions such as Murcia and Extremadura [18]. Through a collaboration with universities and Flamenco associations (e.g. *Agrupacion Musical de la Union*), it will be possible to organise courses and training schools of flamenco, along with spin-off festivals (i.e. small events in different cities to select singers and dancers who will be invited to join the festival in August).

We also identified other initiatives for valuing UBH in La Union as explained below.

1. *Creation of a network of mining parks across Europe*[9]. Use the influence of the La Union municipality to create a European network of mining Parks with an appropriate storytelling linking different sites. By connecting with other mines across Europe, also through collaborations with national and European tourism organizations, it will contribute to the popularity of La Union, which will become not only a local tourist attraction, but also a European destination for "adventure tourism".
2. *Organization of events inside the Mining Park*, such as corporate meetings; competitions in folklore dances and songs, in preparing traditional dishes, etc.; exhibition of old crafts; weddings; live performance and concerts, organised constantly into the mines and also in the open area, etc.

3. An area will be devoted to *Business activities*[10]:
    a. *Bars* constructed in an old fashioned way, with local traditional food and wine
    b. *Shops* with merchandising of the park.
4. *New accommodation solutions*: we will create a camp with tents built in the traditional way where families can stay for one or more nights, can cook with other visitors traditional recipes and eat in old dishes used in past time. This may attract people who like hiking, biking, travelling and discovering the nature who have the opportunity of staying in an accommodation that is cheaper than hotels.

29.4.5. ***Social media communication***

It has been largely demonstrated the relevance of social media and social networks for valuing cultural heritage, so that we are assisting to an emerging phenomenon called *Digital Cultural Heritage* (DCH). Technological platforms have been acquired even more importance to value Cultural Heritage in last months because all museums and cultural sites have been closed to visitors due to health issues, namely the Covid-19 disease that has affected the entire world.

Coherently, our project assumes a consistent investment in social media communication (website, social networks, Apps) to improve the image and awareness of the La Union Mining Park.

As a priority, we suggest hiring a social media manager or invest in training courses to improve the digital skills of the employees. This will be important:

- To improve the actual *website* of the Mining Park. A QR code can be used to obtain that people connect directly to the website of La Union Mining Park.
- To create accounts/pages on the *main social networks*, namely Instagram, Facebook, Twitter, YouTube and TripAdvisor.
- To produce contents to be accessed through a *smartphone App* that would be useful for families before, during and after their visit to the Mining Park.
- To establish a *Viber community* with possibility to share news about La Union; the activities and events held in the Mining Park and in La Union; interesting stories of ex-miners, etc.
- To create an account *What's Up Business App* for sharing photos of minerals, products and souvenirs of the Park along with the prices.

29.5. Conclusions

Throughout this amazing experience, that has been the First Underground4value Training School, we have been able to approach to the UBH phenomenon and its knowledge, and to establish links from different fields and disciplines according to the backgrounds of our research team. This enabled to develop a project for the

valorisation of the La Union Mining Park, which is expected to have several positive social implications.

We expect that our contribution will help to preserve local cultural heritage, improve community empowerment and engagement, and favour the development of a sustainable entrepreneurship network along with an improvement of local economy.

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NOTES

[1] This project for the valorisation of the La Unión Mining Park is the result of a collective effort. During the training school, the team elaborated the relevant ideas, which were included in a poster, whose graphic design has been completely entrusted to Maria Murillo. As for this chapter, Maria Jovanovic drafted the sections 29.4.4. and 29.4.5; Maria Murillo the sections 29.4, 29.4.1, 29.5; Tommasina Pianese the sections 29.1, 29.2, 29.3, 29.4.2., 29.4.3, 29.5. Tommasina Pianese also managed the information provided during the TS and framed the contents of this chapter in order to be methodologically robust and accurate. María Murillo and by Marija Jovanovic implemented comments provided by tutors.

[2] *Acknowledgment*: The Research Group wants to express gratitude to Prudencio José Riquelme Perea, Cesar Garcia Pina, Maria del Carmen Solano Baez for sharing data collected during their Living Lab activities, with representatives of the La Unión's community.

[3] The image has been taken from https://williamsonsource.com/10-tennessee-caves-to-visit/

[4] The image has been downloaded from https://www.tonwelt.com/en/technology/audio-multimedia-guides/supraguide-eco/

[5] The image has been downloaded from https://medium.com/@tonycassar_98004/how-to-keep-museum-touchscreens-safe-from-covid19-83edbd1a7311

[6] The image has been downloaded from: https://avstumpfl.com/de/aktuelles/news/av-news-single/aufwind-group-realisiert-alpines-5d-kino-mit-pixera/

[7] The image is for demonstrative purposes. Picture has been taken from “pixabay”, which is a website with free-accessible photos. https://pixabay.com/photos/quad-drift-dust-horse-recreation-3257852/

[8] The image is for demonstrative purposes. Picture has been taken from “pixabay”, which is a website with free-accessible photos. https://pixabay.com/photos/cup-clay-traditional-jug-pottery-551205/

[9] The image is for demonstrative purposes. Picture has been taken from “pixabay”. which is a website with free-accessible photos. https://pixabay.com/photos/world-europe-map-connections-1264062/

[10] The image is for demonstrative purposes. Picture has been taken from “pixabay”, which is a website with free-accessible photos. https://pixabay.com/photos/festival-medieval-medieval-door-3305615/

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HERITAGE AND COMMUNITY IDENTITY, 1

Underground Built Heritage Valorisation: A Handbook

Why to publish a handbook focused on Underground Built Heritage valorisation? Why is important to tranform tangible and intangible components of underground spaces into active values for local communities? Can researchers, professionals and decision-makers work together to devise a common perspective of innovation? These pages aim at providing a first set of answers, with backgrounds, research's results, and elements for an operative framework. All different contributions are results from the First Training School organised in the framework of the COST Action CA18110, Underground4Value.
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