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Peel Street Caves and Archives Centre

Creating a new memory of underground spaces

Jiayi Jin

It also happens that, if you move along Marozzia's compact walls, when you least expect it, you see a crack open, and a different city appears. Then, an instant later, it has already vanished.

Calvino, *Invisible Cities*

The perception of underground spaces

Memory can be considered as one of the most abstract processes of the human mind, it is a structured process that can relate to actual physical structures as it creates the foundation of ourselves and our environment. Memory is where the cities arise from their history to create an experience to be perceived in the future. The memory of the underground city in general is passed on natural and cultural aspects that started with nature itself (the caves) and developed with the culture of the modern city. Further, each space and structure had its own events that created its memory (Boschi, 2021). There is no doubt that the nature of the subterranean layer is distant and mysterious due to the hidden nature that separates it from our daily perception, although this situation has not always been the case.

From a historical point of view, the underground spaces have been the shelter, as going under the surface of the Earth was seen as a survival and protection method. However, by the arrival of the industrial revolution, the surface became more valuable (Lawrence, 1994) and the underground took the role of a network— for sewage, trains and storage, which resulted in associating the underground city with darkness, filthiness and coldness, affecting the human perception and thereby the memory of the underground city (Boschi, 2021). During the First and Second World Wars and the Cold War, the underground was used as a military layer. Major constructions were developed in order to create bunkers, air-raid shelters and military bases, like the Maginot Line in France and the NATO headquarters in Limburg, The Netherlands.

Edward T. Hall, anthropologist and cross-cultural researcher, explained that the perception mechanism of humans evolved into two systems: distance receptors and immediate receptors (Hall, 1966). The evolution of the human receptors and senses has shaped the perceived world and the space occupied, as each receptor and sense have their space that they demarcate and function within. The immediate receptors usually perceive a space rather than make one. For example, the skin perceives the thermal space through the exteroceptors that sense heat, cold, and humidity, while the kinaesthetic space is perceived through motion using the muscles to create the perception. Likewise, the tactile space is created by using the skin and muscles as receptors to perceive warmth and texture (Hall, 1966). As described by Antonello Boschi, an architect and associate professor at Pisa University,

Dr. Jiayi Jin is an Assistant Professor at the Department of Architecture and Built Environment, Northumbria University. Her research is transdisciplinary, spanning the fields of architectural theory, spatial morphology, digital technologies, social sciences and cultural studies. Former to her appointment at Northumbria University, she was leading the research project *Augmented Spaces* (funded by AHRC, NESTA and Arts Council England) at the University of Nottingham as a R.A., and engaged in several research projects on emergent ways of designing the interactive space grounded in the field of Human-Computer Interaction at the Mixed Reality Laboratory (MRL). She has an architecture and idea studio *Inter-lab*, founded in 2014 for practice-based projects covering museums & exhibitions, architectural design, urban studies and planning.

jiayi.jin@northumbria.ac.uk

the perception in the underground spaces takes another dimension as the human most critical sense, vision, becomes limited due to the light conditions. As a result, in a dark environment the vision focuses more on shapes and edges, instead of colours. Then, the human perception mechanism depends on the thermal, kinesthetic, and auditory receptors, which also suffer from insufficiency resulting in a lack of sensory stimuli. This translates into eyesight problems, like blurriness, weak hearing, neutralising of smell and disorientation as human beings lose the sense of time and seasons due to the lack of daylight (Boschi, 2021). Blinded persons and people who spend more time in the darkness learn to recognise higher audio frequencies and become alert to thermal changes while

The usage of the underground as war shelters and bunkers became also associated with war and conflicts

moving in the darkness activate the kinesthetic receptors, which allows them to make stable movements (Hall, 1966). The underground space, therefore, becomes perceived differently since the human receptors have their limited space, result-

ing in segmenting the actual underground space. Moreover, perceiving the underground space from the upper layer is usually restricted, as it limits itself to the two dimensionalities of the entrances, which already largely disappeared from the upper city, or remain closed amid safety fears.

From a cultural point of view, our perception is influenced by literature, cinema, myths, and stories. Here, underground spaces such as parking and metro lines have been connected with criminals, illegal deals, and attacks. Fear becomes a physical and psychological barrier to the underground spaces, linking the physical environment with darkness, filthiness, dampness, and mysteries. The ancient classical myths about the cavern of the gods and the religious traditions which share the idea of burial space make underground spaces reflect fear and hesitation (Boschi, 2021). The usage of the underground as war shelters and bunkers became also associated with war and conflicts, as shown in a painting by Henry Carr (Figure 1). The limitation of the human sensory system and the cultural and historical imaginary of the underground has affected human perception, which in turn affects the memory humans hold of the underground (Hall, 1966). Therefore, the memories created in the subterranean layer become fragile, due to their association with darkness, fear, isolation, and invisibility. On the other hand, underground structures convey memories that often come with historical events and stories from families, regions, and nations in the form of collective memory.

The collective memory of the underground

Collective memory is created by a social group based on specific relationships. Halbwachs (1980) argued that collective memory is evoked and preserved in physical objects through their permanence in the environment, which confers them stability. Permanence and stability translate into familiarity and comfort. According to Halbwachs (1950, 1980, p. 130), 'when a group is introduced to a space, the group transforms the space into which it has been inserted and yields and adapts to its physical surroundings. It becomes enclosed within the framework it has built'. The group's image of its external milieu and its stable relationships with this environment becomes paramount in the idea it forms of itself, permeating every element of its consciousness, moderating, and governing its evolution. Cities, districts, buildings and interiors thus become part of the spatial image of a group's collective memory, which clarifies the inhabitants' sensitivity towards their environment and the changes that might occur in spatial settings, such as the demolition of a particular building, or the construction of a new one.

Jan Assmann divides collective memory into communicative and cultural memory (Assmann, 1995). While communicative memory relies on the recent past, cultural memory transmits itself from one

generation to the other through sacred scriptures, ritual activities, or the hieratic language of forms inside a canon of architectural and artistic types (Assmann, 1995). The Italian architect Aldo Rossi had already introduced the concept of collective memory into the architectural field with his 1966 book *The Architecture of the City*. Rossi argued that collective memory appears in urban artifacts that relates to collective imagination and the continuity of urban structure, shaping 'the soul of the city'. An urban artifact stands for its individuality, its locus, its design and memory (Rossi, 2007). The city becomes the collective memory of its people when it associates itself with objects, places and events, as many guidelines to establish the urban structure and its artifacts, either individual or collective.

Marcel Poète (1929) and Pierre Lavedan (1959) also addressed the city as a man-made object that needs to be researched through time development while considering that its past and future are only partly experienced in the present (Chizzoniti, 2018). This means that the object's history is made as long as it is in use. When a particular object has served its function and form, history transforms into a memory be activated by the object. In this notion, collective memory is thus the outcome of processes involving events, time and space created with history of a specific physical structure or artifact.

The collective memory of the underground city is influenced through time. Taking into account the notion of the social group addressed by Halbwachs, Assmann and Rossi, it becomes clear that, for instance, war-time bunkers and air-raid shelters embody a specific collective memory, since they were used collectively. That explains why the negative images created around war-related underground spaces, and transmitted through the collective memory, resulted in the neglect and abandonment of those structures.

Towards a new Memory through the design project: Peel Street Caves and Archives Centre

Michel Foucault developed the concept of counter-memory to define resistance against history (Weedon & Jordan 2012). For Foucault (2021) counter-memory challenges the topics at stake in collective memory, creating broader social connections in society (Weedon & Jordan, 2012). With the fall of the Berlin Wall in 1989, for instance, James Young dwelt on the notion of counter-monument (Young, 1992). As Anna Saunders stated in her book *Memorizing the GDR: Monuments and Memory after 1989*, a counter-monument is a phenomenon that can develop a sense of confidence and self-consciousness in society. (Saunders, 2018). Foucault's concept could also create a link to a counter-architecture to re-establish relationships with the underground city. Thus, abandoned underground air-raid shelters and bunkers can create new individual and collective memory through new spatial architectural experiences.

This concept was adopted for the design project of Peel Street Caves in the city of Nottingham, UK. Peel Street Caves are the largest of Nottingham's four remaining sand mines and cave complex. Situated to the west of Mansfield Road, the mine is 200m from end to end. The mine was in use from around 1780 to 1810. A map of 1844 shows a number of properties on Mansfield Road, some of these have basements cut into the sandstone which open out into the sand mine, as shown in [Figure 2](#). In the Second World War the caves were used as air raid shelters along with 75 other sandstone caves, two new entrances and associated tunnels were cut to give alternative access routes at the northern end, lighting fitted, and blast walls were added (Waltham, 1994; Lomax, 2013)

After the war, the caves were almost forgotten until 2010, when the project "The Nottingham Caves Survey" sought to produce digital 3D scans of the site. By the time of the project the caves were in a poor condition, unsafe and lacking ventilation. Its tunnels look like smoke rings breaking apart and slowly looping inside the earth; their near-endless recursivity makes it almost impossible to see where they begin. The Peel Street Caves and Archives Centre project explores the ideas of underground urban space and sustainable adaptations through the manipulation of the Caves. The new

design proposal focuses on adapting the existing environment to create a new type of memory – a counter-memory that allows us to rethink the abandoned underground structure. The focus of the design is directed to the creation of new spaces, reusing the tunnel's quality as part of new functions. A new memory of the underground city can be developed by combining individual exploration and collective memory. Individual perception is afforded by free exploration allowing people to experience the vast dark underground space (Figure 3). Materiality, darkness and spotlight are the main ingredients to develop the interior space, which can also become an ideal place for meditation exercises.

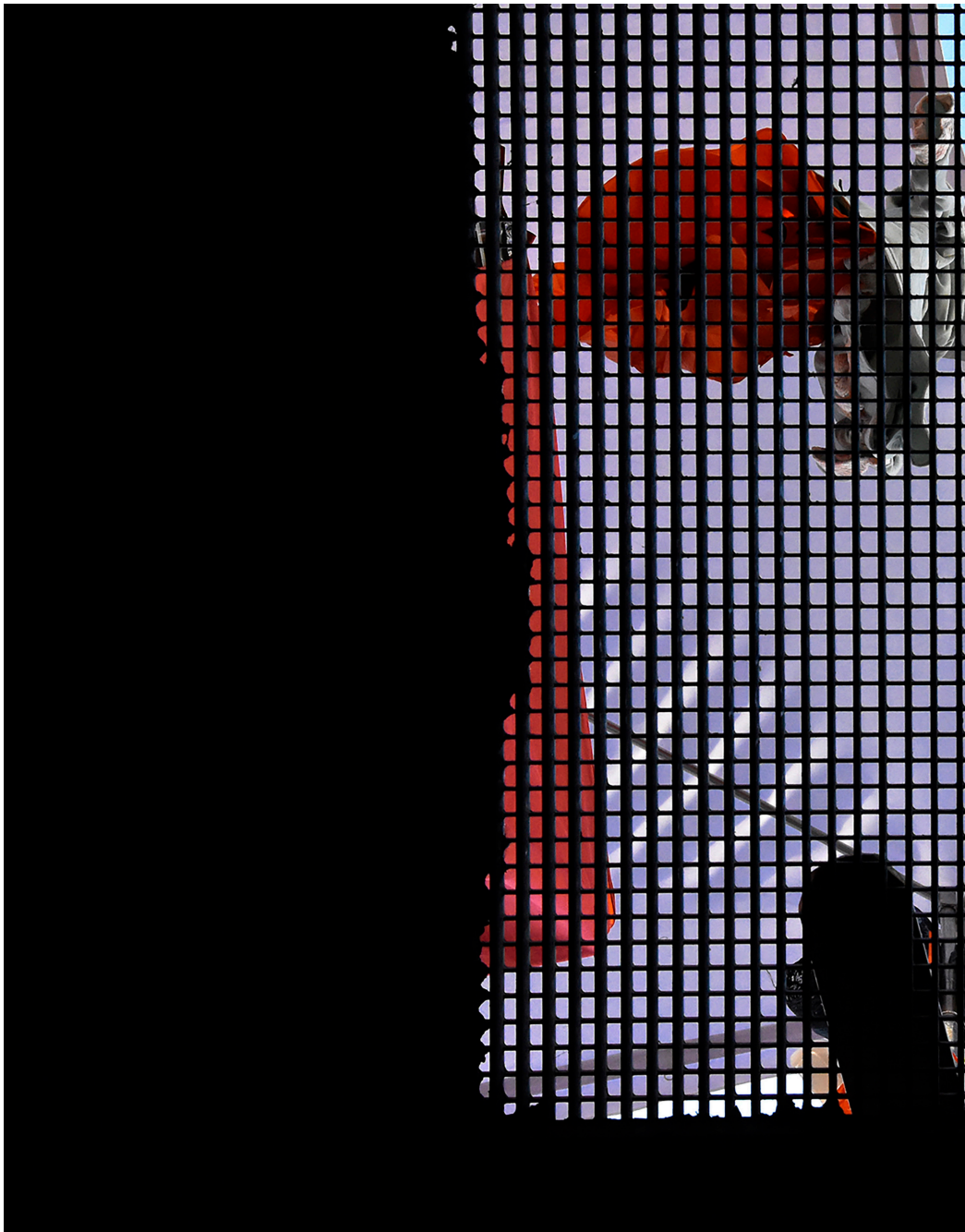
The project also stimulates the collective memory of World War II. It involves eyewitness accounts of wartime and objects from the Nottingham Castle collection. With 3D light projections and augmented reality, animated scenes of air raid shelters are recreated. Along the visit, these animated 'performances' with the wall memorial on the caves' facades allow visitors to interact with the experience of the events that took place during the war (Figure 4). Apart from audio-visual content, the visiting journey is also filled with authentic artefacts of the war period, these artefacts are able to engage the viewer (or toucher) in more than one way. While initially they might be purely appreciated in a visual (or haptic) context, they are also plainly able to morph into influencers of emotion or inspirers of sensorial engagement.

Discussion and Conclusion

Building on Halbwachs' and Rossi's theories of memory, underground urban structures can be said to convey collective memory. The collective memory becomes a part of the object enabling it to embody memory narratives. However, in the case of underground structures, particularly war-related structures, individual and the collective memory are affected by human perception, cultural aspects, and events related to the history of these spaces. In this context, counter-architecture can help re-establish a relationship with the underground city creating a new memory (individual and collective) through new spatial architectural experiences.

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Io Squaderno 63

Holes & Tunnels

edited by // Lorenzo Navone & Andrea Mubi Brighenti

Guest Artist // Léa Byczinski



Io Squaderno is a project by Andrea Mubi Brighenti, Cristina Mattiucci & Andrea Pavoni.

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Contact | losquaderno@gmail.com