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The Future of our Collective Memory: Design-driven Approaches for Digital Artefacts.

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Abstract | A vast body of publications has recently reflected upon the opportunities offered by “digital memories” and the intangible dimension of memory. Nowadays, this theoretical framework affects the interpretation of the social function of collective memory, that is becoming more relevant than ever also in design processes. At the same time, a new understanding of the relationships between temporalities and people, in an age infused with memory and past, has been central to several studies, even related to design cultures.
Starting from the assumption that the growing trend of mobile devices has triggered an immense proliferation of geo-referenced data, digitally connected to the places and spaces of our real lives, this paper argues how digital information could generate narratives and how new forms of collective memory (in our case, we refer to data cultures) can be interpreted, shared, mediated, or performed through design actions.
After presenting a synthesis of the theoretical debate and the historical-critical studies on collective memory, the authors propose a model that reflects upon the possible impact of the use of data and digital visualisation tools on our ability to preserve past experiences. These forms of future communications and experimental visual narratives will be analysed, studied, and described. As a consequence, the paper poses questions about if and how these data can be considered sources in the evolution of the historical interpretations of territories and their inhabitants.
From the reflection upon this topic, it emerges that forms of design action are evolving in new participatory bottom-up practices that generate information. By aggregating knowledge, mediating between material and immaterial aspects, and interfacing with users, designers will be asked to anticipate digital artefacts that allow the stratification of collective memory as a fundamental component of our collective future.

Keywords: design cultures, collective memory, data, communication and visualisation, future of past

1. Introduction

The authors wish to investigate a possible scenario in which the role of the historical researcher will change in relation to the changing role of the digital in our lives. This reflection starts by questioning the future implications of digital artefacts - more specifically *big-data*, *geo-data* and *geo-media* - on collective memory, in relation to territories and urban environments. Are social and personal media activating new possible forms of historical chronicles, as well as chronicles of the contemporary?

The speculative design approach adopted in this research attempts to activate an anticipatory process rooted in the scientific literature on memory, but, at the same time, strictly linked to contemporary projects and design experimentations on data visualisation and social activism. This topic arises from a research background strongly anchored with the study of relationships between design and anticipation. This research started in 2010 and matured, since 2015, at the Advanced Design Unit of the Università di Bologna through a series of publications aimed at defining the links between advanced design and future studies (Celaschi et al. 2019, Formia and Vai 2019). Among the previously explored research field, we would like to focus, in this specific work, on Experimental Design, which uses new materials and technologies in order to reconfigure our understanding of life, nature, and being in a changing human environment (Celaschi 2015).

The topic of memory, and thus of collective memory with its relation to spaces, places and environments, is undergoing a cultural transformation in connection with the use of new technologies. To support this speculative research, we hereby underline a group of publications that has recently reflected upon the opportunities offered by “digital memories” and on the intangible dimension of memory (Flusser 1990; Bisogno 1995; Maldonado 2005; Bagnara 2006). Today, this theoretical framework influences the understanding of the social function of collective memory. The main question that arises is: how is digitalization changing our perception of collective memory?

The discussion on the role of collective memory, with its ambivalent position within the contemporary historiographical debate, has been the necessary background of reference to understand which theoretical frameworks we may include in our proposal. In fact, we have started by considering the definition of collective memory anchored to the intellectual French context, in particular to Maurice Halbwachs’ studies of the early 1920s, later developed by scholars such as Pierre Nora, Paul Ricoeur, and Jacques Le Goff as representatives of the *nouvelle histoire* (Halbwachs and Alexandre 1950; Nora 1984; Ricoeur 2004). From this point, we have traced the evolution of the concept by focusing on the relations between collective memories, spaces, times, and identities, as discussed over the last forty years. We are convinced that this debate is still actual and original, also due to the rapid change of the concept of memory itself. In fact, it implies an extension of meaning that involves, among other perspectives, the political use of collective memories and the relations with places and times (Hobsbawm and Ranger, 1983); the distinction between historical and collective memory; the links between memory and identity (Nora 1984; Gallagher and Greenblatt 2000) and between personal and collective memory (Ricoeur 2004); and the intangible dimension of cultural heritage, as introduced by UNESCO in 2003 and 2005 Conventions.

At the same time, a new understanding of the relationships between temporalities and people, in an age infused with memory and past, has been central to a number of studies which critically discuss existing approaches to time and history (Kemp and Adam 2019). As Arjun Appadurai (2013) has suggested “culture is a dialogue between aspirations and sedimented traditions”; a statement that often implies a difficult intertwinement between past, present and future or, in other words, between culture and development. It is thus evident that one of the key challenges of our time is understanding how to study and create futures we truly care about, and which are more social (Adam and Groves 2007; Fry 2008; Urry 2016). Appadurai (2013, 195) wrote: “By bridging the future back in, by looking at aspirations as cultural capacities, we are surely in a better position to understand how people actually navigate their social spaces”.

The social function of collective memory is therefore becoming more and more relevant also in design processes, as a vast body of knowledge has demonstrated (Branzi 2006; Bannon 2006; Celaschi 2016; Zannoni 2018).

2. State of the Debate

To understand how digitalization is changing our perception of collective memory, we hereby reflect on the form of digital data: *big-data*, *geo-data*, and *geo-media*. In his essay *Memory and Knowledge*, Tomás Maldonado supports the need to open new directions in research on the relationship between memory and digital media, between neuroscience and technological avant-garde, starting from the assumption that "if it is true […] that the advent of *Homo scribens* contributed in many respects to change the memory of *Homo oralis*, it is more than legitimate to conjecture that, with the advent of *Homo digitalis*, the same can happen to the memory of Homo scribens" (Maldonado 2005, 10).

If we try to define the implications on the evolution of the places and territories of a new concept of memory in the digital age, we can find several different positions about the transformation of the cities into digital networks (Mitchell 1995). Nevertheless, the works of Scott McQuire (2008; 2016) in particular are an interesting point of view to understand the concept of the "media city", model that shifts from an idea about the use of the data to govern a hypothetical *smart-city* to a supposition that data is a part of the city (Zannoni 2018).

In any case, the correlation between the data and the place is related to the difference between *big-data*, *geo-data*, and *geo-media*. Explaining the meaning of *big-data* is unnecessary, because they are components of our ordinary digital connected life. Thus, it is more important that we try to explain what happens when people generate data with any ordinary smartphone. The term *geo-data* is a short form of "Geographic data and information", which is defined in the ISO standard as "any data that have a geo-location". As far as the meaning of the term *geo-media* is concerned, there is not a common definition or broader published research. It acquires multiple meanings in different disciplines. Some positions suggest that the term *geo-media* is a shortened version of "Geographical media sources", but especially refers to visual information that has embedded GPS metadata. According to Lev Manovich, we consider that any media with geolocation are positioned in a globally networked hypertext, and this condition changes the concept of "media" itself (Manovich 2013, 182).

To understand these phenomena, since 2014 we have started to observe the experiments and the projects that have tried to give a value to *geo-media*. Is there a relationship between the real world and geographic information collected in the databases on the various Internet servers? It is not easy to answer to this question, however, it is not true that geographic information have a relationship of involvement in the real world. To define which are the conditions to consider *geo-data* connected with our life, it is important to know when these data could be considered media connected with our locations. This condition could be satisfied if, on one hand, data have a direct relationship with the people and a persistent connection with other data and, on the other hand, when this information generates a cultural relationship with the places and improves forms of memories that create a common identity.

This is only a primary valuation matrix, but it is a first step to define a classification of *geo-media* (Hochman and Manovich 2013). Starting from the assumption that the growing trend of mobile devices equipped with GPS has triggered an immense proliferation of geo-referenced data, digitally connected to the places and spaces of our real lives (Zannoni 2018), it is possible to argue how digital information could generate real values for territories and their inhabitants. This multitude of geolocalized data shared by people is forming a new layer of digital information: it represents an invisible reality, but, at the same time, is strongly related to the places where we live. On the base of these considerations, it is possible to question how design cultures could contribute in giving shape to possible forms of new participatory actions related to the use of technology, strictly connected to real places and people, through new forms of bottom-up activism. What is the space for design in this process? Can it play an anticipatory role in the development of our urban environments? Is *geo-media* the new field of study for the future of memory?

At the same time, the reflection upon the possible impact of the historical-critical studies on collective memory – and, consequently, on the future of our past –, as previously described, is widely manifested and described in design literature. By aggregating knowledge, mediating between material and immaterial aspects, and interfacing with users, designers will be asked to anticipate digital artefacts that allow the stratification of collective memory as a fundamental component of our collective future. Ongoing design projects are interesting to be analysed because they represent field experimentations that

anticipate future design practices. For example, the idea to represent "Cartographies of Invisible Networks" (Santamaria-Varas and Martínez-Díez 2015) is one of the most anticipated challenges of data mining processes. This data has progressively become a substrate of connections, or a representation of recursive behaviours that can allow a predictive interpretation of people's behaviours in urban spaces (Ashbrook and Starner 2003; Manovich 2009; Hochman and Schwartz 2012). At the same time, the early studies by Carlo Ratti and Francesco Calabrese on the analysis of GSM cells in urban spaces (2006) and the experiments of Lev Manovich in the 2013 "Phototrails" project, show how the territory can be observed and listened in different ways.

Since 2017, we are experimentally investigating this field from a "research-action" point of view. Together with scientific outputs, such as papers and articles, we have experimented this topic in didactic activities involving our bachelor's and master's design students. In 2018 and 2019, we discussed with students the possibility to develop design projects that started from geo-media and digital memories to improve urban and non-urban spaces. Furthermore, in 2020, we proposed a design studio about the role of design in generating new forms of interpretation of cultural heritage, involving also the intangible dimension of digital memory. The key concept was that of human traces, while the research question concerns the possibility to imagine a future in which data could acquire a collective value and become a new form of cultural heritage: in short, the objective was to design new products and services aimed at generating new forms of collective memory and its link to territories, starting from digital data as raw material for the project.

In order to share the first results of the research, in a recent publication (Zannoni and Formia 2018) we sustained three possible approaches (narrative, generative, aggregative) as expressions of a growing sensitivity towards design-driven forms, processes and tools that can activate the collective memory of places. These approaches emerge from in-depth field research on cases of international experimentations based on new design scenarios that explore the possibilities offered by the digital dimension of spatial information. Regardless of whether the results of these projects are physical or digital interfaces, the designers need to consider how people could realistically use this information and how these data can become of value to territories. This huge group of case studies represents an interesting field of research in which new methods and forms of historic analyses may be identified.

3. Define the Observation Model

In relation to the possible implications on the use of data to create historical interpretations, it is important to open a debate on how we can use geo-media to activate forms of narration and collective actions.

Before answering and articulating the discussion, we need to analyse the current design and making practices in this field. We have tried to monitor a number of projects based on the use *geo-data* to generate a social innovation and strong relationship with the territories (a data sample of approximately thirty projects).

The thirty projects were classified following the systemization offered by the three main approaches defined at the start of this research. This initial analysis phase revealed design patterns deriving from the actions brought forward by designers and citizens. As the classification took shape – in the form of a preliminary register of case studies – the design actions became gradually more recognizable and led us to define the three previously described approaches (narrative, generative, aggregative).

Some of the designs analysed fell under possible categories focused on designers'/citizens' initiatives focused on narrative forms to develop new awareness of datasets.

Others gave life to citizens' initiatives that generated new data through the development of designers' tools and bottom-up actions.

Particular situations highlighted a mode in which different data sources led to the development of a knowledge process deriving from newly discovered aggregations of datasets without a direct connection.

The three approaches were thus focused on actions introduced by the designers who developed design-driven projects based on geo-localised data. A similar form of analysis was developed by Giorgia Lupi who, in her attempt to categorise narrative

actions based on data, proposed two main approaches: *Visual-driven* and *Data-driven* (Lupi 2015). These were an interesting starting point but, once again, required a broader scope and relation with the topics of location, identity, and memory. The primary classification based on the three previously mentioned approaches gave rise to a set of guidelines for the setup of a permanent observatory on design actions. These projects: through data use or generation, become activators of knowledge of places and the people living in them, by producing chronicles and perspectives of past or ongoing events.

The observatory has developed semantic thesauri for the classification of case studies and configures itself as a set of tags and shared vocabulary allowing the construction of a register of ongoing design works. With this approach, data types and sources are also fundamental pieces of information in order to understand the processes and relationships with the areas where design and experimentation works have originated.

4. Discussion

The convergences between the approaches we have highlighted and Advanced Design Cultures pave the way for a process of historic research, where the activity of designing artefacts is a way of learning. The reflective practice of the designer thus becomes evident. The design projects we have seen are “experimental forms of design” which use new raw materials and technologies that reconfigure our understanding of culture, identity, territory, and life in a changing human environment. We have essentially tried to pose the question of how anticipatory design practices can shape future social and cultural paradigms. Evidence tells us that the overlapping areas concerning methods, tools, and themes, combine in the previously presented designs possible actions to create forms of narration and paths to understand, study, and preserve the non-distant past.

All three of the approaches selected as possible models for analysis prove the primary role of design action as a form of data interpretation in which the author operates to build intersections of data, narratives, and perspectives, with the aim to broaden the knowledge of people living in an area and, consequently, facilitate individual/collective action towards the development of identity-making social relations.

The considerations made – over time – in historical-critical, sociological, philosophical, cultural heritage, and anthropological studies on collective memory, as well as the research that such fields have activated in design disciplines, are currently shedding a new light on new challenges and posing unprecedented questions: on one hand, on the value of electronic data to develop new relationships to consolidate, promote, and activate knowledge on the identity and memory of places and territories; on the other hand, on the comprehension of a series of design experiments through which the potential of design to generate new cultural values is glimpsed. As the design disciplines produce awareness by combining forms of knowledge, mediating between tangible and intangible aspects, and interfacing with users, they open new scenarios in which the designers are asked to develop digital artefacts. The latter will allow a stratification of collective memory: a component that is inseparable from a territory’s identity.

It is important to understand how the classification of processes following design-based approaches may be broadened, triggering the interpretations of designs at a temporal level, in relation to multidisciplinarity. More specifically, a design issue arises where designs disappear or become technically obsolete over time, becoming illegible or non-consultable traces of memory. Whilst the data generating them remain on servers and are still legible, the designs are removed or – even worse – the domains hosting them disappear. The life span, vitality, and update of such designs are fundamental indicators to understand how the presented interpretations have a real relationship with places and people.

A final, fundamental element that is still not included in the filing process is the role of artificial intelligence in such designs for data generation and construction projects such as IAQOS by the Italian artists Salvatore Iaconesi and Arianna Persico (2021) who, in 2019, through the use of a “Neighbourhood open-source artificial intelligence”, developed a collective action in the Torpignattara neighbourhood of Rome. In the long term, projects combining citizen sciences, design, and artificial intelligence will be more and more frequent and effective. The need to develop initiatives with individuals at a local level will increasingly become common practice.

More specifically, narratives and prototypes are tools that involve research on several aspects of investigation and analysis. The role of the designer, and in particular the Advanced Designer, is becoming crucial: it is rapidly evolving from giving form to future scenarios, to making the practices to imagine the future and the related processes available to students and citizens, as well as private and public organisations.

The main goal is to change current conditions, engagement, and effects into alternative, preferred, or proposed ones. This can be done by working on the idea of time and temporality.

There is evidently a close relationship with enabling technologies, which are evolving and generate new ways to communicate and provide paths and narration to our places and personal environments.

The centrality of processes represents a fundamental aspect, in particular for the emphasis on transformative and participatory processes. Co-generation of future changes may be the goals – nurtured by a cross-disciplinarity and cross-sectoriality approach – that we may aspire to achieve through such processes.

5. Conclusions

In this paper, we tried to introduce a possible reflection to link design research and historical research, starting from the topic of collective memory by introducing the origins of its conceptualization. On one side, we noticed the growing role digital artefacts can play as new possible sources in the hands of scholars from different disciplines: in a future scenario for research, it would be interesting to translate the concept pf "digital natives" to that of "digital native heritage" which is progressively germinating. On the other, we mapped, through the observation of contemporary projects, how design cultures are implementing approaches and tools to read more critically this kind of data. By merging this research, we propose to offer new possible overlapping fields of investigation: the anticipatory approach suggests introducing new possible perspective on the future of our past and memory. Historical-critical, sociological, philosophical, and anthropological studies on collective memory, and thus on the future of our past, can benefit, on one hand, from the value of computer data to build new relationships, and, on the other hand, from understanding a series of projects and experiments which demonstrate the potential of design to generate new cultural values. By aggregating knowledge, mediating between material and immaterial aspects, and interfacing with users, designers will be asked to anticipate digital artefacts that allow the stratification of collective memory as a fundamental component of our collective future. This is close to the concept of “Knowledge Design” proposed by Jeffrey Schnapp (2013): a conceptual model in which the need to test new tools and co-design initiatives with a strong cross-disciplinary perspective is highly recommended.

In conclusion, if we were to trace a new possible research outlook, we could argue the need to open the debate towards a cross-fertilization of knowledge. Institutions of memory like museums, libraries, and archives are very good at accumulating, taking inventory, sorting, and storing the sorts of materials that make up a cultural record. On the other hand, designers may offer new approaches to narrate data and propose new interpretations of digital memories, with their intrinsically immaterial dimensions.

Thus, the cross-fertilization of curatorial scholars, such as semiotics experts and others, can represent the next step of the research, combined with the sharing of design projects and their progressive aspiration to a more complex scientization of the underlined studies.

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