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DIGITAL

MEMORIES



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EDITORIAL #23

Digital Memories

What future for the past? What past for the future?

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For this first PAD journal issue dedicated to the theme of *Digital Memories*, we have chosen, as the opening image, a *quipu* (or *khipu*). The image represents the artistic interpretation made by Cecilia Vicuña on the occasion of her exhibition, still in progress now, at the Tate Modern's Turbine Hall. Vicuña has been exploring and transforming the *quipu* in her work for over five decades, getting inspiration from this ancient recording and communication system used by the Quechua people of the Andes from 2500 BCE through to the 16th century at the time of the Spanish conquest. Literally, *quipu* means 'knot' in the Quechua language and consisted of a long textile cord from which hung multiple strands knotted into different formations and in different colors that were able to encode as much complex information as the alphabet. It is thought that they were used to record statistics, poems, and stories, thereby creating a tactile relationship between memory and the imaginary. This reference seemed perfect to introduce the present issue's central theme: an ancient, alternative, and complex system of recording memories.

It is a fact that the externalization of memory – i.e., the invention of writings and other forms of notation – is at the very basis of the concept of history, at least in Western cultures. The act of dividing/separating the owner of information from the information itself creates the condition to make that knowledge communicable and shareable in different space-time-related scenarios (Ong, 1982).

Opening photo: *Brain Forest Quipu* by Cecilia Vicuña, installation view at Tate Modern's Turbine Hall, 2022. Courtesy of Hyundai Commission.

The possibility of extending and extrojecting the personal and collective experiences and translating them intentionally or not in document traces to be then intercepted, collected, and accessed by others is the humus of knowledge sharing and cultural transmission and preservation.

In the last 30-60 years – depending on the references we consider, especially in the evolution of Information Communication Technologies – the processes of production, dissemination, and preservation of human tangible and intangible activities have been profoundly transformed and reconfigured by the introduction and impact of digital technologies.

The so-called *fourth revolution* – at least in the history of communication (McLuhan, 1962; Floridi, 2014) – introduced by electronic tools and operators has now been turned into an overlapping layer in every daily activity that modifies our perception of reality. Besides, it transforms the production, transmission, and conservation of data, information, and knowledge at a structural level.

While the collection and preservation of ‘analog’ traces of the past have benefited from digital supports and infrastructure – for instance, the possibility of connecting fragments, creating possible multimodal narratives and enhanced formats (Whitelaw, 2015) – the change of paradigm, especially in the case of hybrid or native digital documents, artifacts, and sources opens unprecedented questions and scenarios.

The digital is, at the same time, support and storage for other tangible heritages, as well as ‘materiality’ to the intangible format of the *post-information* society (Webster, 2014).

Design – as a practice and as a disciplinary culture – has always played an explicit role and is therefore directly responsible for these mutations and changes at several levels: the design of interfaces, interaction and experience, devices, (smart) products, processes, and services. The digital world – understood as an ecosystem encompassing media, channels, devices, and touch-points with their languages, knowledge, use, and functions – tends to flatten the relationship we have both with *short*- and *long*-term memory, not only in cognitive terms.

The possibilities opened by the migration *in-cloud* of many of our activities – a place simultaneously *virtual* and *physical*, *present* and *distant* as well – create the utopia of an infinite storage capacity, both in terms of abundance – the preservation of everything! – and duration – forever. Apparently. However, memory space is not unlimited unless we think about it in abstract terms. And, above all, it is material. Its impact is tangible and concrete. It has its physicality and a consequential effect on the real world, but it is barely sustainable at the ecosystem and infrastructure level (Paniagua, 2021).

Moreover, the way we search for information and retrieve knowledge through digital tools tends to blur the perception of time and sequence: events – chunks of information – follow one another as in an a-temporal flow – an infinite scroll exasperated in TikTok, overtaking Google as the search engine for post-millennial generations – in which the *synchronous* and the *deferred* overlap each other. The relationship between *before* and *after* becomes impalpable and pointless.

Technological transformations, innovations in hardware and software fields, frameworks, and codes underpinning the connected infrastructures at the basis of our contemporaneity have emerged in a relatively short time if compared with other ones and with the progression that has characterized the evolution of humankind, especially during the latest centuries, already accelerated and *short* (Hobsbawm, 1994). These transformations tend to obliterate memory or even erase it and make it fragile by jeopardizing the preservation of the memory of progress itself.

In a moment that seems to be flattened on the present, the possible perspectives face, on the one hand, the past and, on the other, the future, two seemingly antithetical yet inextricably intertwined horizons. Two are then the questions that come spontaneously to mind: what *future* for the past? What *past* for the future?

Many of the activities developed in the field of digital design have been aimed at the translation or migration of previous analogical information, artifacts, or systems to be then stored, displayed, and presented thanks to digital or online means of communication.

First and foremost, it is a process of migration – still ongoing, in many cases – in terms of *statute* and *object*. *Digitization* – according to the Oxford dictionary definition: the transfer of the analog world into bits – is, in fact, the first step necessary but not sufficient. Secondly, we have *digitalization*, a transposition not only of fragments but of relationships between the objects themselves and others rematerialized and reconfigured in the digital realm (Resmini & Rosati, 2011). Relationships that are becoming fluid shape not-yet-explored meanings and

interweave different paths, giving rise to original associations, new memories, and further layering. Digital memory, in this case, is what can guarantee the permanence, parallel, or substitute of traces, sources, and objects that, in the form embodied by technology, replicate and multiply presence, findability, access, knowledge, and understanding. There are several possible considerations, debates, and discussions about these issues in different fields. It could be a matter of which technologies to use, which protocols or devices, formats, and standards, or what is the “fragment” to digitalize.

Nevertheless, on the opposite extreme of this possible spectrum, we find digital-native *objects*. Creating new worlds, scenarios, and perspectives, they populate the present time and have an uncertain future. What will happen to this mass production that grows at exponential rates, made up of images, tweets, emails, instant messages, reels – already ephemeral by nature of the platforms on which they are produced and shared – or, simply, dispersed in the constant flow of endless scrolls (Bollini, 2020). As stated by Google engineer Vincent Cerf at the American Association for the Advancement of Science’s annual meeting in San Jose, California, in 2015, we would miss an entire century or more in the next future:

We are nonchalantly throwing all our data into what could become an information black hole without realizing it. We digitize things because we think we will preserve them, but what we do not understand is that unless we take other steps, those digital versions may not be any better, and may even be worse, than the artifacts that we digitized. If there are photos you really care about, print them out. (Sample, 2015)

A *low-resolution* world (Mantellini, 2018) that, once past, is in danger of not surviving into the future, not even as a documentary trace, due to the obsolescence of technologies, problems of access, manipulation, and falsification, or, more easily, due to unfindability. Present as digital sources and as data, but no longer processable or readable. Thus, how can one build now, in the present, the only viable time, the future of this new digital materiality once it becomes the past to transmit and preserve it?

The political, social, and climatic crises we are experiencing, the need to digitalize, archive, and communicate what exists, the change of generations, experiential and interpretative paradigms, the questioning of responsibility and the role that design can play in this context are among the themes addressed in this monographic issue dedicated to *digital memories*.

The first part, entitled *Memories in Time of Crisis*, allows us to reflect on the value of memory and testimonies in a future perspective of historical interpretation of the present. The five contributions offer different points of view on situations and events that we could define as of crisis or, in any case, critical: wars, protests, the recent pandemic, and a theme such as the different gender representation that emerges from Italian cities' toponymy. However, beyond the various cases analyzed, the role of design emerges in identifying strategies and ways of using digital channels effectively, all characterized by approaches of political activism, civic engagement and participation, and social design.

The essay by Andrea Facchetti, *Mnemonic wars, ephemeral narratives and contested terrains. Collective memory as a conflictual space of confrontation*, opens this chapter. It analyses and discusses some case studies in infographic design and counter-forensic fields, introducing us to a conflictual or adversarial understanding of collective memory as a contested terrain. The author specifically focuses on the idea of memory shared through digital media and how these affected the way collective memory can be constructed, represented, narrated, and disseminated. The aim is “to question collective modes of remembering molded on the idea of consensus, and to orient design practices towards a conflictual understanding of memory”, proposing a contribution to the discussion of the political dimension of design.

Sabrina Melis e Daniele Murgia, in the contribution entitled *Digital Design Interstices. A Space for Collective Counter-Memories*, explore the concept of *design interstices* in digital media and the possibilities these offer for creating and preserving collective memories. *Design interstices* are spaces *occupied* for unprecedented use in case of emergency or dramatic events. Specifically, in their paper, the authors analyze some significant case studies developed on different levels, from initiatives by individual citizens to organizations such as the international collective of online open-source investigation named Bellingcat. Their intention, presenting these alternative uses of media, is to discuss Foucault’s concept of *counter-memory*. A parallel discourse to the official one that arises as a form of resistance from people marginalized by power.

Carola Ureta Marín and Marcos Chilet Bustamante's paper, *The City as Text. A Kilometric Scroll Through the Memory of the Uprising in Chile, 2019*, present a virtual memory archive from the social uprising in Chile 2019, responding to the urgency of preserving the memory engraved on the walls faced with the threat of being whitewashed. This project explores different topics related to the ephemeral nature of public space and the importance of design in allowing people to experience, understand and study political processes. It documents heritage in new formats and aims to contribute to building a more conscious, connected, inclusive, and respectful future.

Matteo Moretti, in *Mapping Diversity. The Memory Street Names Celebrate*, opens the discussion to the relevance of open data and their use, as well as to the role of design in the social and digital spheres. He also discusses the topics of the value of memory and the gender gap by dedicating a street to a specific person, presenting the web platform *Mapping Diversity*. Also, in this paper emerges how it is possible to use design to “support greater civic awareness and a better-informed discussion on complex and multifaceted issues toward a more inclusive and diverse society”.

Finally, in *Design Experiences in Pandemic Times. Constructing and Enhancing the Memory of the Present in Museums*, Alessandra Bosco, Silvia Gasparotto, and Margo Lengua analyze and discuss how some museums fronted the COVID-19 pandemic, expanding their offer, providing, designing, and implementing services to involve the public remotely. The authors present a model and visualize the complexity and peculiarity of the

actions undertaken by museums, articulated in activities that refer to calls to action, curatorial projects, and the production of records, opening new scenarios for design.

Design Heritage and Visual Memories, the second chapter of this PAD's issue, collects three contributions that have a common topic in visual communication design and graphic design history. The first two essays introduce two different points of view related to the use of digital technologies to renovate the material heritage of graphic design. The third essay presents a micro-history of Italian web interface design: a general topic that we intended to discuss more through the call we launched one year ago and that we still think can offer a lot in terms of historical research.

In their essay entitled *The Importance of Printed Ephemera in New Type Making. Between Historical Research and Reuse of Tangible Heritage*, Elettra Scotucci and Andrea Vendetti “highlight the relationship between typographic *ephemera* and new movable type making. *Ephemera* are a fundamental component in the constitution of a more conscious history of graphic design”. They support their discussion by analyzing the history of typography primary sources as type specimens and catalogs and introducing us to the phenomenon of the letterpress resurgence as an opportunity to use a combination of traditional and new technologies in *remaking* new movable type sets.

The essay *Poster World. Bespoke AI Meets Curator Expertise for Public Engagement* discusses the use of digital technologies and artificial intelligence to support the enhancement

and renovation of sources and archives in the graphic design and visual communication field. The team of authors (Andre Andrade, Lara Défayes, Emily Groves, Nicolas Henchoz, Delphine Ribes, Mathieu Salzmann, and Andrea Schneider) presents an interesting project made with the Zürich's *Museum für Gestaltung* on its unique poster collection. The combination of artificial intelligence with curator expertise, supported by user experience psychology protocols, allowed them to develop an interactive installation to support the Museum in maintaining and developing digital resources and finding a new way to show its rich heritage.

Ilaria Ruggeri and Gianni Sinni introduce in this discussion, with their paper entitled *The Italian Government Interface. From the Spoils System to the Guidelines*, the issues related to digital interfaces and design history. The authors, presenting the Design Guidelines for Public Administration introduced in 2015, analyze the evolution of the Italian Government website in relation to the development of web technologies and the growing digitization from 1998 to nowadays. The analysis, highlighting the evolution of the Government website from a political communication tool to an institutional communication site, is supported by documentary material and direct testimonies. A critical issue emerges about the sources to use in making and writing the history of digital and web interfaces.

In the third and final chapter, *Digitized and Digital-Native Memories*, we collected four papers that open the discussion on digital memories to other and various areas. The two extremes expressed in the title, *digitized memories* and *digi-*

tal-native memories, are addressed with different approaches and related to various fields of design.

Alessandro Pollini and Michele Zannoni, in their essay *Are Memories an Interaction Design Problem?*, argue on the construction of personal memory through the use of the content on digital media. The lack of permanence of objects and the increasing process of emptying one's digital personal space affects our relationship with our memories. Their research, considering the lack of design in interfaces and how memory processes adapt themselves to digital tools, aims to understand how interaction design and cognition are connected in memory-related interaction projects.

Daria Casciani and Angelica Vandi with their dense essay entitled *Hypersensing Creative Acts. The Role of Design in Transmitting Intangible Cultural Heritage through Digital Tools*, discussing how digital technologies could preserve and valorize Intangible Cultural Heritage, introduce us to the concept of *creative acts* in craftsmanship and fashion design. Through literature review, their contribution, identifying applicative crafts sectors and highlighting limits and opportunities of digital tools and procedures for crafts ICH representation and presentation, define guidelines for designing new interactive experiences and narratives.

In *The Invented Mnemotopes Archive. Design Digital Practices for the Memory of Places*, Clorinda Galasso discusses the importance of the quality of translation strategies in the analog-to-digital conversion processes, introducing us to the

mnemotope and the *invented digital archive* concepts. The paper presents two case studies in which communication design leads to a digital representation aiming to “stabilize a dense network of spatialized memories and cultural objects of territorial interpretation”, personal memory, and its territorial context.

The last selected paper is *Exploring Futures of Infinite Data Storage through Speculative Design* by Agnieszka Dutkowska-Zuk, who discusses the issues of forgetting and remembering projected into the digital space, presenting a speculative design artifact named *Horcrux Ear*. The project, based on mental model of memory, intends to induce a reflection on the relation between the advent of infinite data storage and personal memory, posing the paradigm shift of “how forgetting a memory can help remembering in longer terms”.

All the presented papers open different scenarios of discussion on the issues of memory in the digital age. How digital tools, technologies, and channels affect and impact human memory is not yet fully understandable. However, we are firmly convinced that this topic is a possible and unavoidable argument to be more, and for sure, debated.

This discussion is just at the beginning.

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MEMORIES IN TIME OF CRISIS

Mnemonic Wars, Ephemeral Narratives and Contested Terrains

Collective Memory as a Conflictual Space of Confrontation

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Adversarial Design, Visual Epistemology, Politics of Memory, Entangled Memory, Open Verification.

Abstract

As noted by Mouffe (2005) and Rancière (2004), the new millennium inaugurated a post-political phase where the idea of consensus replaced that of conflict: the political, understood in its agonistic dimension, is reduced to a series of administrative procedures, in which moments of tension and conflict lose their critical potential and are resolved through a technical and rational calculation.

One of the most common expressions with which the post-political phase of consensus has manifested itself, especially in the European context, is the idea of shared memory. In the last twenty years, the development of digital media has radically affected the way collective memory can be constructed, represented, narrated, and disseminated (Blom, 2016). While the intrinsic risks of the digital revolution have been widely discussed (in terms of fake news, historical revisionism, and in general post-truth), the possibility to understand and to approach historical documents and materials as living matter opens up new research trajectories and design approaches able to question the idea of shared memory, and to move closer to the image of entangled memory and *mnemography* (Feindt et al., 2014).

This paper analyses and discusses some projects and practices in the field of infographic design and counter-forensic that could lead to a conflictual or adversarial understanding of collective memory as a contested terrain.

1. Shared Memory and its Discontents

In the last decade of the 20th century, the fall of the Berlin Wall and the dissolution of the Soviet Union were hailed by many intellectuals and observers as signs of the “End of History”: history – understood in its conflictual dimension – would have ended and a new era of stability and prosperity, based on the model of liberal democracies, arisen. After thirty years of economic crises, war on terror, climate emergencies and pandemic, the image of the end of history seems to have faded away. Nevertheless, it inaugurated a post-political phase, where all the forms of political confrontation are oriented towards the idea of consensus. As noted by Rancière, “At the core of consensus is the dream of an administration of affairs in which all forms of symbolising the common, and thus all conflicts over that symbolisation, have been liquidated as ideological spectres” (2004, p. 4). What has been described – and praised – as a post-ideological era turns out to be a post-political phase, characterized by a general effort to subsume all the different perspectives and voices that compose the political debate into an “harmonious ensemble” (Mouffe, 2008, p. 8). This implicitly presumes the possibility and “availability of a universal consensus based on reason” (Mouffe, 2008), excluding, or at least reducing, moments of social conflict from all representation and symbolization. In this way, the political, understood in its agonistic dimension (Mouffe, 2005), is reduced to a series of administrative procedures, in which moments of tension and conflict lose their critical potential and are resolved through a technical and rational calculation.

One of the most common expressions with which the post-political phase of consensus has manifested itself, especially in the European context, is the idea of a shared or consensual memory. On the supra-national level, memory studies and politics of remembering “present conflict as something that is to be overcome through an increased Europeanization of memory”, but “such a teleological approach risks denying the inherent polyphony of memory, where different voices constantly interact in multiple conflictual sites” (Feindt et al., 2014, pp. 37-38). This is also true for the nation-state level, especially when we consider some historical episodes that later became symbols of the national identity. The celebrations that accompanied the centenary of Italy’s entry into the First World War, for example, can be read through the lens of consensus and shared memory. As noted by the Italian collective of writers Wu Ming,

What does shared mean? [...] The ambiguity of the term also makes the proposal ambiguous. In some cases ‘shared memory’ means: let us agree on what cannot be forgotten [...]. But someone else goes further: let us agree on memories, so not only what to remember, but also how to remember it, how to describe it. Were the six hundred thousand Italian dead in the First World War a useless massacre or blood sacrificed for the fatherland? Should the deserters who fell before the firing squad be counted and celebrated among the number of war victims? (Wu Ming, 2016)

Outside the Italian context, another attempt to remove conflicts and construct a shared memory is the “politics of forgetting” in modern Spain. With the pacification process ini-

tiated after the fall of the Franco regime, the official way of remembering those decades was transformed into “the shared memory of the civil war as a fratricidal tragedy for which responsibility was equally shared, a social memory summed up in the slogans ‘never again’ and ‘we were all guilty’” (Boyd, 2008, p. 135). Again, we are dealing with the removal of conflicts in the name of social pacification – in this case, within the field of collective memory.

2. Politics of Memory within a Post-Political Scenario

The link between the post-political phase of neoliberal democracies and the attempt to orient collective representations and narratives of the past towards the image of the shared memory, has been noted by different authors. Bull and Hansen build on Mouffe’s theory of agonism to describe a conflictual approach to collective memory. According to the authors, “An agonistic approach to the uses of the past will have to oppose or unsettle hegemonic ways of understanding as well as reveal the socio-political struggles characterizing the public sphere both in the past and in the present” (Bull & Hansen, 2020, p. 2). Thus, an agonistic mode of remembering conceives collective memory within the framework of the struggle for hegemony, a continuous opposition and competition between different actors, where conflict is recognized “as an ontological and fundamental characteristic of human society” (Bull & Hansen, 2020).

A conflictual mode of remembering is at the core of another proposal about collective memory. Feindt et al. (2014) have articulated the concepts of *entangled memory* and *mnemogra-*

*phy*¹ to oppose both the traditional image of collective memory as a monumental mirror-image of true events, and the teleological approach that tries to overcome conflicts in the name of a homogeneous and consensual *lieux de mémoire*. Rather, their point of departure is a constructivist and hermeneutic understanding of collective memory – it's an act of interpretation and social construction of the past, rather than a faithful and neutral transposition (Feindt et al., 2014, p. 28).

However, this process of construction always entails a collective and conflictual dimension, and thus a plurality of perspectives that share similar or identical orientations, or clash and compete to establish their own interpretation. To retrace and deconstruct the constructive process of collective memory doesn't mean to account for all the different perspectives expressed by isolated actors. It is rather a work of mapping the relations that entangle different actors and their interpretations according to shared agendas or conflictual agencies, beyond the hegemonic interpretation that succeeded in imposing its own version as the true memory of a particular past.² This is the idea behind the concept of *mnemography*, an investigation on the “history of interpretations” (Feindt et al., 2014, p. 31), where the plurality of perspectives

1 “[...] we stress the entangledness of memory, that is, its (inter-)relational character. [...] Eventually, the analysis of entangledness, the study of cross-references in acts of remembering, leads to mnemography, a dialogical practice between theory and empirical research” (Feindt et al., 2014, p. 27).

2 “In this discursive field of plurality, the actors' struggles for visibility and recognition organize and diminish the variety and influence of other interpretations. In these moments of conflict, the heterogeneous character of memory comes most visibly to the foreground. [...] Thus, when the contested field of memory has been narrowed through hegemonic closure, interpretations no longer need to display their social reference points. Dominant interpretations tend to eradicate their signs of being an action” (Feindt et al., 2014, p. 32).

and points of view is not oriented towards their consensual and universal synthesis, but it is conceived and articulated as a dynamic field of relations between actors and agencies. Within this project it is crucial to map the actors' positions, as well as the directions of the agencies: "Their analysis helps in understanding the conflictual and productive dimension of memory: on the one hand, actors compete against one another about their discursive positions; on the other hand, their interpretations are transmitted to following generations" (Feindt et al., 2014, pp. 32-33). Thus, the analysis of actors' positions and agencies enables the construction of a temporal, spatial and relational map of memory, since it allows to visualize the field of relations of the actors involved, and to define both their situated condition and their orientation in terms of mnemonic agencies.

3. The Digital and the Ephemeral

Mnemography and the image of a spatial and relational representation of memory become key concepts for every attempt to re-think the organization, representation, and transmission of knowledge regarding collective modes of remembering beyond the idea of consensus and shared memory. The implicit theoretical framework within which the concept of *mnemography* emerges, refers to a hermeneutical and constructivist understanding of the past, and in general of knowledge. In the same way, tools and practices linked to the mnemonic activity should be conceived beyond the concept of the spatial organizer (exemplified in the image of the traditional archive), since "the concept of container memory is also increasingly being challenged", especially in the digital world (Blom, 2016, p. 11).

Facing the critical issues of the shared memory and approaching memory studies from a constructivist and agonistic perspective, design practices engaged in the organization, representation, and transmission of collective modes of remembering find an important reference in the concept of entangled memory and the image of *mnemography*. These practices should become aware of the central role they play in the production and organization of visual forms of knowledge, beyond the simple image of the invisible and neutral translator. For this reason, a conflictual analysis of the role of design in memory studies can benefit from Drucker's humanistic approach to visual epistemology. Drucker's point of departure is the recognition of the constructed and interpretative nature of visual knowledge, which leads to the project of re-orienting design tools and practices towards the visualization of knowledge as partial, subjective, and situated (Drucker, 2009). Being always the product of a hermeneutical practice, knowledge is

thus located in a perceiving entity whose position, attitudes, and awareness are all constituted in a codependent relation with its environment. The system is always in flux, and thus has the complex heterogeneous character of a cultural field shot through with forces that are always ideological and historical. (Drucker, 2009, p. 20)

It is interesting to note how the image of the “cultural field” described by Drucker presents several similarities with the “discursive field of plurality” with which *mnemography* is confronted (Feindt et al., 2014, p. 32).

In both, the epistemic activity – being the production of collective memory or knowledge – emerges from an entangled relational system between different positions occupied by situated actors and defined by specific historical and ideological conditions. They both conceive the product of the epistemic activity as a plural and dynamic interpretation that strives to become the hegemonic narrative, rather than as an objective representation corresponding to a true reality or past. They both understand the construction of memory and knowledge as a social and political practice.

To fulfil this project, digital media are brought to the fore as critical tools, since, thanks to their properties, they are inclined to endorse the constructed nature of knowledge,³ but at the same time, from their first appearance, they run the risk of producing ideological narratives about their being instruments of active participation, completely immaterial, and characterized by an endogenous neutrality. Nevertheless, since digital media seem to overcome the “desire to fix and monumentalize memory in terms of space and place” (Blom, 2016, p. 12), they enhance the possibility to understand and to approach historical documents and materials as living matter.⁴ Although they are not a prerequisite for a design practice

3 Digital media can enhance a constructivist approach since they “not only make use of interactive and dynamic graphics [...] but also create spaces in which montage principles and editing techniques used in narrative come into play” (Drucker, 2014, p. 46). Furthermore, “The ability to resize, rescale, alter, or manipulate these documents provides possibilities that traditional paper-based documents simply don’t possess” (Drucker, 2009, p. 173).

4 This is true not only for digital media themselves, but also for traditional media: “One of the strongest impacts of digital media has been to provide ways to think about traditional work in new ways – to see print artifacts, for example, as interactive and intersubjective instruments rather than inert forms” (Drucker, 2009, p. 130).

oriented towards the image of *mnemography*, digital media play a crucial role in deconstructing “the very notion that memories are object-like entities that we keep safely stored away in some archival system whose stability, durability, and accessibility are always the critical point” (Blom, 2016, p. 11), and approaching a more dynamic and entangled understanding of collective memory. This consideration has been widely criticized because of the instability of digital media (the possibility of a continuous reconfiguration of artifacts), a direct attack to the authority and legitimacy of historical documents and materials. But “the crisis introduced into aesthetic discussions by digital media is not, as commonly reported, a crisis of the copy, of originality, or of authenticity or truth” (Drucker, 2009, p. 142). By intervening in the organization, representation and transmission of memory, digital media render collective memory into something ephemeral and fragile, whose meaning remains in a continuous fluctuation between construction and interpretation, and whose truthfulness is a result of a constant and situated act of verification. But this is not necessarily a problem if we agree on an idea of memory (especially collective memory) as something that *is in itself* ephemeral and fragile.

4. History Flow, or Knowledge as a Contested Terrain

The inherent possibility to visualize the constant battle between actors and agencies to establish a specific interpretation as the hegemonic representation, has been explored by Wattenberg and Viégas in *History Flow* (2003). Although the visualization technique was developed almost 20 years ago as a research software to investigate new forms of collaboration

within the web environment, it still remains one of the most interesting web interfaces in visualizing processes of knowledge production and its collective, conflictual and dynamic character.⁵

History Flow is a web application that allows visualizing discussions, debates, and the changes, thus the story hidden behind each entry on Wikipedia. Once published, the entries of an encyclopaedia are presented through a fixed and static layout. Exploiting the digital encyclopaedia's public and accessible database,⁶ Wattenberg and Viégas' application supplies a more complex visualization by which each change and argument that have taken place during the drafting of the page can be seen. *History Flow* visualizes both the macroscopic trend that marks the evolution of an encyclopaedia entry and the detail of each single change of every debate. Therefore, it becomes a tool of analysis particularly suited to detect some trends or patterns of behaviour, especially when the analysed entry is controversial. Here, *History Flow* allows to detect several acts of vandalism, where authors delete considerable parts of the contents or insert large paragraphs on topics not related to the entry in question. Another example is the "zig-zag pattern", which indicates what is called an "edit war" in

5 Although the project was focused on knowledge construction processes within Wikipedia, it can nevertheless address issues and questions related to memory studies and collective acts of remembering. Since the development of History Flow, other projects have dealt with the visualization of the constructed and contested nature of Wikipedia pages. See for instance Notabilia, a data visualization tool developed by Moritz Stefaner, Dario Taraborelli and Giovanni Luca Ciampaglia in 2010 and BackStory, an online visualization tool developed by Florian Kräutli in 2014.

6 Thus, Wattenberg and Viégas visualization exploits the properties of the digital environment, "those of accretion (and processing) of data, aggregation [...], real-time and time-based work, and community interactions in multi-authored environments" (2003, p. 173).

the Wikipedia community – a dispute between two authors, or groups, who alternately continue to edit the contents of the page. In some cases, the visualization enables to uncover an author as a bot designed to perform automated edits. As design researcher Peter Hall states, “In visualizing the changes to specific entries in Wikipedia, Wattenberg and Viégas zoom in on the disputes and controversies that surround topics that might otherwise seem long since settled. An encyclopaedia page becomes a contested terrain” (Hall, 2011, p. 184).

With *History Flow*, we are confronted again with a design practice and a visual epistemology approach close to a conflictual and agonistic understanding of how knowledge is produced. If we apply this practice and approach to the field of memory, we could imagine a visualization system able to produce a mnemonicographic representation of collective modes of remembering. In this respect, the image of the contested terrain (as produced and visualized by *History Flow*) overlaps with the “discursive field of plurality”, where memory is approached and analysed as a temporal, spatial and relational configuration with different actors and agencies meeting and clashing.

5. Forensic Architecture and the Open Verification Process

Another interesting reference point for this discussion is represented by Forensic Architecture.⁷ At the core of its counter-forensic practice we find questions about the social con-

⁷ Forensic Architecture is a multidisciplinary research group established in 2010 and led by architect Eyal Weizman. It applies architecture and design research to the investigation of state and corporate violence, especially within the context of built and urban environments. See: Weizman and Di Carlo, 2010; Bois, Feher, Foster, & Weizman, 2016; Weizman, 2017; Weizman, 2019.

struction of past events and the *open verification* (Weizman, 2019) of a historical fact – always related to forms of violence that occurred in contexts of conflicts and wars, and often committed by institutions or state agencies. In other words, its practice is deeply entangled with the notion of truth – or to be more precise, with the idea and the possibility of establishing a past and collective event as true. For this reason, the case of Forensic Architecture can be studied and analysed in relation to the question of memory, and its relation with the design practice.

Forensic Architecture calls into question a dramatic change in the notion of truth (and memory), and how this notion is addressed through design tools and methodologies. As stated by Weizman, Forensic Architecture practice is oriented towards

an alternative set of truth practices that can challenge both the dark epistemology of the present as well as traditional notions of truth production. It might be altogether necessary to employ the word ‘truth’ differently. In opposition to the single perspectival, *a priori*, sometimes transcendent conception of truth embodied by the Latin word *veritas* – which connotes the authority of an expert working within a well-established discipline – a term more suitable to our work and of the same root is *verification*.

Verification relates to truth not as a noun or as an essence, but as a practice, one that is contingent, collective, and poly-perspectival. (Weizman, 2019)

As with entangled memory,⁸ truth is not conceived as a “thing”, something that exists in itself and that can be found out there, but as a practice, a difficult, fragile, and collective process of construction.

If we apply this practice in the field of past events and their documentation and representation, “We move on from the notion of the archive into another form of arrangement – a more dynamic relation between images – that we refer to as the architectural-image complex” (Weizman, 2016, p. 124). Coherently with the image of memory as a contested terrain and that of *mnemography*, Forensic Architecture calls for the passage from a compiling mode of collection to a dynamic mode of network construction, where all the actors involved are not just listed and documented but are embedded into a relational arrangement. In this way, the archive, understood as one of the traditional devices of the collective memory, can be pursued and designed not as a static container where “things from the past” are collected and classified, but in the form of a productive space of conflicts, where fragments are re-assembled within a temporal, spatial and relational structure acquiring a position and an agency, and new meanings according to the relations with other elements and their (conflictual) dynamics.⁹

8 “Rather than claiming hermeneutic objectivity, or re-essentializing an idea of historical truth by a neopositivist approach to sources, *mnemography* has to contextualize its theoretical premises and methodological tools in their historical and political contingency” (Feindt et al., 2014, p. 41).

9 The image of collective memory as a field of action within which relational dynamics take place finds another important reference in Wolfgang Ernst’s thinking around the concept of the archive. As Blom recalls, “If archives used to be described in terms of principles of ordering, they are now, as Wolfgang Ernst has pointed out, better understood through concepts such as ‘fields’ and ‘dynamics’” (Blom, 2016, p. 12).

This leads to a design practice as an “architecture of memory” (Weizman, 2017, p. 44), where the investigation of a past event doesn’t mean its examination according to material and objective evidence and its mimetic re-presentation, but rather its multi-perspectival and collective verification and its reconstruction as a fragile and fragmented narrative. In this way, “architecture can also be a mode of research, the means of locating disparate bits of evidence and data and composing the relations between them in space” (Weizman, 2017, p. 58). This architectural mode of reconstructing past events is highly significant in the orientation of design practices towards the image of collective memory as a contested terrain, since it embeds in the constructivist production of mnemonic narratives a multi-perspective, relational, and conflictual approach.

Within this design approach another important novelty is represented by what can be described as a material turn: memory is not confined to the human world, but we are confronted with “a shift from the speech of humans to the communicative capacity and ‘agency’ of things” (Weizman, 2010, p. 125). This authorizes to speak of a material-oriented or ecological approach, both to memory and design practices (Boelen & Kaethler, 2020), where the actors involved in the construction and production of memories, testimonies, and narratives are human and non-human, but also living and non-living beings. In this sense, the relational mode that has been described in regard to the concept of entangled memory first, and to Drucker’s humanistic approach to data visualization then, through the practice of Forensic Architecture becomes an ecological approach. This shift towards the material memory is also

important within the process of open verification. The continuous confrontation with “the agency of things” is an attempt to avoid the “relativistic trap” – which is always around the corner when positivistic notions of truth, objectivity and neutrality are questioned. A constant dialogue and confrontation between different actors (people, artifacts, media) and their agencies is crucial for the construction of “a more vital and risky form of truth production, based on establishing an expanded assemblage of practices” and on the “meshing of multiple, subjective, located, and situated perspectives” (Weizman, 2019).

The open verification process described by Weizman and his associates constitutes an important reference for adversarial design approaches¹⁰ to collective memory and also for their understanding of memory and mnemonic construction as a performing act. As noted, at the basis of the concept of entangled memory lies the idea of collective memory not just as an act of remembering, but as a social action. With Forensic Architecture, this premise is pushed forward through the conceptual image of the *forum*. The term “forensic” is not just referring to the modern forensic science and investigative practice, but it addresses its Latin etymology as well, which indicates a relation with the forum, the public space where citizens gathered in order to discuss and where the rhetoric art were performed. “Forensics is thus as concerned with the materialization of the event as with the construction of a forum and the performance of the object within it” (Weizman, 2010, p. 126). If we transpose the idea of the forum in the practice

10 The term *adversarial design* is taken from Carl DiSalvo (2012).

of *mnemography*, collective memory emerges as the product of a plural act of construction not just through the interplay between material and human agencies, but also through their performance within a public forum. The construction of forums stands for the construction of a common territory upon which the conflictual dynamics of memory can emerge. In this sense, the forum addresses the adversarial character of collective memory – the fact that the social construction of collective memory emerges through conflictual dynamics among the actors are involved, and not as a rational process which naturally results in a consensual agreement.

Finally, the idea of open verification calls into question the “creation of a community of practice in which the production of an investigation is socialized”, as well as the

presentation of evidence [...] As such, the open process of the investigation establishes a social contract that includes all the participants in the uncanny assemblage of production and dissemination. Every case produced with open verification is thus not only evidence of what has happened, but also evidence of the social relations which made it possible. (Weizman, 2019)

By disrupting the hierarchical structure that traditionally guarantees the truthiness of a piece of information, the collectivization of the verification process enhances a multi-perspectival approach and the creation of a shared ground – rather than a shared mnemonic representation – upon which adversarial and conflictual modes of remembering produced by different actors can emerge and confront.

6. Conclusions

The aim of this article is to question collective modes of remembering moulded on the idea of consensus, and to orient design practices towards a conflictual understanding of memory. Drawing upon Mouffe's agonistic theory and its application within the field of memory studies, the idea of entangled memory and *mnemography* (Feindt et al., 2014) emerge as suitable concepts since they conceive modes of remembering as acts of social construction where a plurality of actors and agencies confront and compete in establishing a specific interpretation or construction of the past as the hegemonic mnemonic representation. These concepts have been then confronted with a humanistic approach to visual epistemology, in order to discuss the theoretical framework within which design tools and practices involved in the organization, representation and transmission of memory work, and to understand their consistency with an agonistic theory of collective memory. Eventually, the idea of visualizing collective memory as a contested terrain (borrowed by *History Flow*) and the concept of open verification for reconstructing and presenting past events (taken by Forensic Architecture), emerge as two solid points of references within the project of understanding past events as living matter, and the ways we remember them as conflictual and political acts of social construction. Although it remains a preliminary study, this first attempt to organize a theoretical and practical framework for design involved in memory studies reflects a broader process of change in the way visual knowledge is conceived and approached within the design field. The idea of contested terrain and the concept of open verification, inscribed within

an agonistic and conflictual understanding of social reality, might contribute to the discussion of the political dimension of design, and its role in facing questions and problems posed by the crisis of liberal democracies.

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Digital Design Interstices

A Space for Collective Counter-Memories

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Abstract

The paper explores the *design interstices* within consolidated media structures. These are spaces *occupied* for unprecedented use in case of emergency or dramatic events. The authors analyze some significant experiences developed on different levels, from initiatives by individual citizens to organizations such as the collective Bellingcat. These alternative uses of media contribute to the creation of what Michel Foucault called *counter-memory*: discourses parallel to the official ones that arise as forms of resistance from people who are marginalized by power.

Overall, the paper provides a detailed and insightful look at the possibilities offered by *digital design interstices* in the creation and preservation of collective memories.

1. Introduction

Our field of exploration fits within the constantly shifting plots of communication in digital ecosystems. In these environments, characterized by continuous production and exchange of data within regulated and established structures, it is possible to encounter communicative solutions not previously designed.

It could happen, for example, in the case of an emergency or dramatic event, when the need for fast design responses is fundamental for overcoming it. These situations, however, do not allow normal planning processes. Thus, users and organizations can find new possibilities, or fissures, between one or more digital tools to meet new communicative needs. We called these fissures *digital design interstices*.

Although the term is derived from city studies, it can also be traced in the fields of design and media theory. According to Mubi Brighenti (2013), the urban interstice, also called *in-between*, is a free space surrounded by other more institutionalized spaces that allow for the emergence of unforeseeable combinations and encounters. Similarly, de Certeau (2010) uses the term *tactics*, the social practice enacted by individuals who, while moving within predetermined spaces, follow alternative, different needs.

In the design field, the term *interstice* finds much in common with *diffuse design*: a design that solves everyday problems through the use and reinterpretation of the means at hand (Manzini, 2015). The same intuitive character also belongs to Bassi's (2007) concept of *anonymous design* and Scodeller's (2017) *spontaneous design*.

In the field of media theory, *digital design interstices* may fall under the broader definition of alternative media, which is essential both for their content and ability to generate non-standard methods of creation, production, and distribution (Atton, 2002). Along the same lines, Downing (2001) describes *radical media* as tools capable of expressing an alternative vision to hegemonic policies, priorities, and perspectives. Against this backdrop, this study set out to investigate the possibilities offered by *digital design interstices* in the production of alternative narratives, approaching the concept of counter-memory introduced by Foucault (1977).

This paper has been divided into three sections. The first one contextualizes the framework of *digital design interstice* and provides the background of the relationship between collective memory and digital communication tools (Halbwachs, 1949; Esposito, 2001). The following two sections analyze two groups of case studies. The first group analyzes the use of *digital design interstices* in the creation process of collective memories, while the second focuses on the preservation of collective memories.

2. Digital Design Interstices, Collective and Counter-Memories

The term interstice (or interstitial space) can be found mainly in the literature on urban spaces and indicates the in-between, leftover spaces, and the errors of urban design found within the city. These are spaces with less institutional power, often referred to as *in-betweens*, and less coveted since they have less economic value (Mubi Brighenti, 2013). In recent years, however, urban interstices have been attracting interest as active components of urban space as well as places of possibility.

These places of possibility can be likened to the concept of *tactics* found in Michel de Certeau's book *The Invention of the Everyday*. In his survey, the anthropologist classifies social behavior into two categories: *strategies* and *tactics*. While institutions are in the business of putting in place *strategies* to achieve goals that conform with the reproduction of a given system (the city, for example), the *common* human being, who moves within the same system, invents his every day through *tactics* of resistance, which follow different needs and attitudes.

Approaching the design field, the interstitial spaces and tactics of resistance described by de Certeau can be identified in that strand that, over the years, has been concerned with the study of uses, alternative design approaches, and everyday problem-solving by ordinary or anonymous users.

An example of this is *Diffuse design*, a term coined by Ezio Manzini (2015) that indicates the design instinct that unites everyone to achieve personal or common goals, which differs from expert design that belongs to those trained as designers. In his book *Design, When Everybody Designs: An Introduction to Design for Social Innovation*, Manzini describes the possible interaction between designers and non-designers to achieve social change. However, the focus on diffuse design has also been an object of study for other authors relevant to the Italian design field. Some examples include Alberto Bassi (2007) with the book *Design anonimo in Italia. Oggetti comuni e progetto incognito* [*Anonymous design in Italy. Common objects and unknown project*, AT], which catalogs a series of everyday objects with excellent design characteristics but without a “signature”, and later Dario Scodeller (2017) with

the book *Design Spontaneo. Tracce di progettualità diffusa* [*Spontaneous Design. Traces of diffused design*, AT]. From the combination of these references comes the term *digital design interstices*, which refers specifically to the digital world.

An online user, just as happens offline, turns into a designer, especially in times of need. The search for solutions, as in the case of de Certeau's common human being, who seeks his *tactics* to move within system *strategies*, is characterized by very short time frames and the use of the means available at that moment. Within the digital interstices, virtual cracks within which ordinary users engineer themselves to communicate by dodging technological constraints, it is possible to find alternative narratives to the dominant ones and, thus, the production of new collective memories.

To better understand the role of *digital design interstices* as spaces for collective counter-memories, it is helpful to introduce the studies about collective memory.

The sociologist Maurice Halbwachs (2001) argued that collective memory is shaped by the social groups to which an individual belongs. He saw memory as a social phenomenon, something that is created and maintained by groups of people. In his vision, collective memory differs from other types of memories¹ (cultural, historical, and individual) precisely because it arises and

1 To define his concept of collective memory, Halbwachs draws on Durkheim's concept of *collective representation*: memory is never just individual, because it is formed within society and recalled through social interaction. Recollection is not only stored in memory, it is not only an intact image of the past, but it is a clue, a trace of the past that must be interpreted in the present to give meaning to the present itself.

evolves through social interaction (Namer, 2001). Elena Esposito (2001) extends Halbwachs's work to the digital realm, arguing that digital communication tools can be used to create and maintain collective memories. In the digital world, social interaction is often dislocated in space and time. Considering the ephemeral nature and the large amount of digital information produced daily, it is inefficient to use the same cataloging criteria as archives and libraries in digital ecosystems. What is needed, rather, are systems to keep digital information always available: an "artificial perpetual use that allows for continuous re-reading and regeneration of information" (Esposito, 2001).


Before digital, the representative devices for preserving collective memory were books, libraries, and archives. The reader's action activates such devices: "The data contained in books and libraries are 'virtual information', which becomes real only when we search for it and are surprised by it" (Esposito, 2001, p. 224). By placing itself at a higher level than the content, the catalog becomes a tool that allows them to be ordered, recombined, and reused at different times with different intentions. These operations allow the connections between content and, thus, the possibility of producing non-predetermined information. Although a real *information overload*² characterizes today's digital world, the spread of digital technologies has, in some cases, facilitated the creation of connections between content. This potential, attributed as seen above to the catalog, added to the active role of

2 The term, popularized by Alvin Toffler in early 1970s, indicates the difficulty of being able to process too much information, especially if it is complex and contradictory.

users, can give rise to non-predetermined information and constitute a collective memory for the future.

The *Mnemonic.org* project (Fig. 1) is a great example focused on developing “accessible and long-term preservation strategies and open-source tools to archive at-risk digital information valuable to journalists and human rights defenders” (Mnemonic, n.d). Founded in 2014, the NGO has established four stand-alone public and explorable archives, preserving vulnerable digital information from Syria, Sudan, Yemen, and Ukraine. They hold over ten million documents uploaded online by citizens. They offer a fast response in collecting, verifying, preserving, and investigating digital information documenting human rights violations. Mnemonic helps preserve and build a digital memory through searchable verified databases to provide potential legal evidence. The collection made by Mnemonic leaves space for a different vision from the dominant one promoted by institutions and classical journalism. This vision comes close to the concept of counter-memory, often used by Foucault (1977) to define the processes of memory construction in socio-political contexts. Counter-memory is a form of resistance exercise, especially for those marginalized by power, and arises in opposition to the dominant discourse:

The dominant discourse of memory for Foucault typically forms a “top-down” perspective. The dominant discourse is suppressive and tends to subject all. Counter-memory, however, highlights the reversed perspective of “bottom-up”, representing the process during which different groups and individuals try to influence the existing knowledge. (Radzobe, 2019, p. 94)


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Figure 1. Mnemonic. A page from the Syrian archive, a large container that stores data on human rights violations in Syria. Retrieved from syrianarchive.org, 2022.

In the following sections, we observe how *digital design interstices* can become occupiable spaces in emergency situations for the creation of alternative narratives that, when adequately verified, organized, and aggregated, become key elements for the preservation of collective counter-memories.

3. Public Engagement and Self-Managed Practices: the Creation of Collective Counter-Memories

The user's role has recently changed from a passive consumer to an active multimedia content creator. With the spread of smartphones and portable devices, ordinary citizens, individuals, or groups interested in specific problems or events have the opportunity to become active subjects of journalism (*concerned citizens*). Consumers, now *prosumers*, become an active element of the narrative (Fuchs, 2010). This documentation practice is often a fundamental part of protest movements. Through the analysis of two case studies, *Public reviews on Google Maps and TripAdvisor for war news sharing* and *Air-drop's file sharing for the organization of protest movements*, we will observe how the creative use of some communication tools can support the informing of citizens involved in dramatic events that have taken place in two particular contexts. Each case study provides an overview of the event and analyzes, in particular, the ways in which *digital design interstices* are occupied to create collective counter-memories.

3.1. Public Reviews on Google Maps and TripAdvisor for War News Sharing

The first case study is the outcome created to circumvent Russia's censorship during the Ukraine invasion, which began on

February 24, 2022. It was carried out by the famous hacktivist group *Anonymous* through the use of public reviews on Google Maps and TripAdvisor (Fig. 2).



Figure 2. Anonymous. Short instructions for sharing war information on Google Maps. Retrieved from Twitter, February 2022 (screenshot by the authors).

Anonymous, founded in 2003, is a decentralized movement that works anonymously online to achieve a common goal, often involving hacking or other digital subversive activity. They are best known for different cyber-attacks against various companies and government institutions in the fight against injustice and powerful forces spread.

During the first days of the Russian invasion, they found a simple and effective way to inform the Russian population, subject to strong censorship. The initiative comes from the Twitter user @Konrad03249040, who, through a post on Twitter, invites other users to search for commercial activity on Google

Maps or TripAdvisor in Russian territory. Then, users write a public review to describe and show, using images, the destruction caused by the Russian invasion of Ukraine. This fast action allowed the Russian population to access information the government would otherwise have censored.

The request was widely accepted until, after a few days and thousands of reviews, a Google spokesperson made an announcement through the CNET website on March 2, 2022:

Due to a recent increase in contributed content on Google Maps related to the war in Ukraine, we've put additional protections in place to monitor and prevent content that violates our policies for Maps, including temporarily blocking new reviews, photos, and videos in the region. (Collins, 2022)

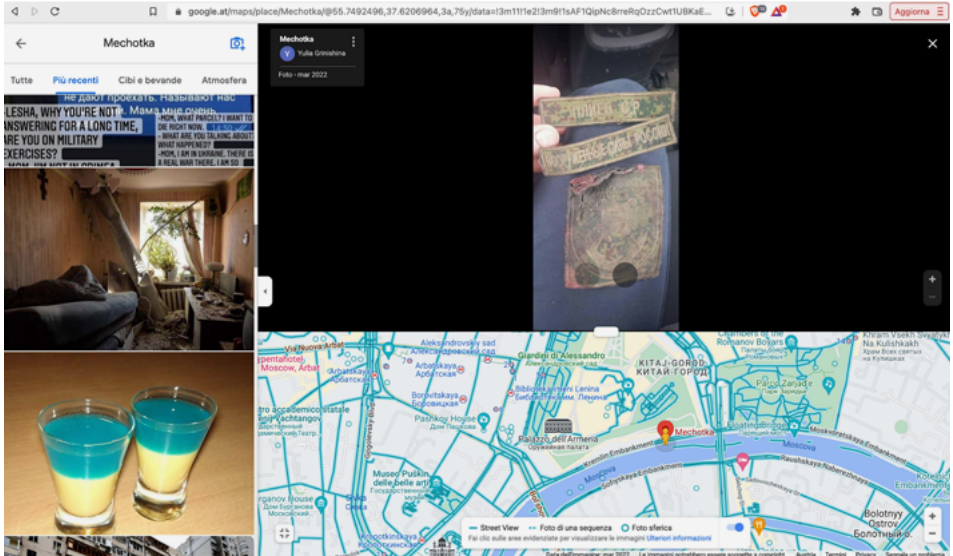


Figure 3. Google Maps. An example of a public review showing images of war. Retrieved from Google, March 2022 (screenshot by the authors).

Although active for only a few days, this communication system proved helpful in promptly informing Russian citizens of what was happening inside Ukrainian borders. What remains today as evidence of these actions are online and printed articles and a series of screenshots (Fig. 3).

3.2. Airdrop's file sharing for the organization of protest movements

In the second case study, the creation of collective counter-memory comes from Hong Kong and occurs through the use of Airdrop, normally used for file sharing, here used for internal organization and dissemination of the reasons for the protests. It will be highlighted how technology facilitated collective action and self-organization of the movement. The largest mobilization in Hong Kong's history took place in 2019. On March 15th, Carrie Lam, of the pro-Beijing party and Chief of the executive, proposed a bill that would allow extradition from Hong Kong (with an independent judiciary system) to mainland China (with a judiciary system subject to the Communist Party). The population of Hong Kong harshly criticized the bill because its promulgation would have created a judicial precedent for the Chinese judiciary system to replace the legal system of Hong Kong (Sala, 2022).

The first peaceful demonstrations of June 9th, 2020, led by the Frontline Civil Rights Human Rights activist group, took nearly two million people to the streets of Hong Kong. What is most interesting about this protest is the self-organization of the movement and the tools used to carry out collective protest actions.

Some online messaging platforms (WeChat, Telegram, Signal) are well-known and have already been used in various protest forms by previous movements. This is not the case for AirDrop. At the end of June 2019, the demonstrators began using AirDrop technology to anonymously send informational documents to passengers on public transport and in popular, busy places in Hong Kong.



Figure 4. Dummies Guide to confronting and war strategies by frontline protesters in Hong Kong. Retrieved by dimsumdaily.hk, June 2022.



Figure 5. Dummies Guide to confronting and war strategies by frontline protesters in Hong Kong. Retrieved by dimsumdaily.hk, June 2022.

The shared documents aim to inform as many people as possible about the reasons for the protest and how the movement was organized. The use of social media, furthermore, was instrumental in organizing the protests and sharing information about the movement with the world. The movement ultimately succeeded in forcing the city's government to withdraw the proposed extradition bill. Overall, the Hong Kong protests were a success in that they achieved their primary goal of stopping the extradition bill (Figs. 4 & 5).

In conclusion, the two cases studied show that, in the face of an emergency, some citizens feel the need to create and share information using available technologies to allow others to be aware of what is happening and, if necessary, to act. The communication systems built take advantage, creatively, of existing and available technologies. Data and content creation can be considered useful elements in creating a new collective counter-memory. This memory complements official narratives from institutions and official sources and offers a closer view of the direct experience of citizens.

4. From Self-Managed Practices to Organizations: the Preservation of Collective Counter-Memories

The case study analyzed in this section provides a more detailed example of the collective Bellingcat, a group of investigative journalists specializing in fact-checking and open-source intelligence. The collective exploits the content created by citizens and processes it by organizing, cross-referencing, and verifying it to create evidence. This example shows how, through these time-consuming and laborious processes, collective counter-memories created by users can be maintained.

4.1. Bellingcat. An Intelligence Agency for the People

The international collective Bellingcat is proving to be one of the benchmarks for online open-source investigation in recent years. Investigative materials are collected from social media, image and video-sharing platforms, and mapping tools to build evidence in cases of conflict or human rights violations. The numerous contents, mainly photos and videos, are uploaded online by citizens who experience or witness firsthand conflicts and crimes. Youtube, Instagram, Facebook, Twitter, and TikTok are the main platforms used, and together they form a fragmented scenario of information, generating a multitude of viewpoints around the same event. When taken individually, this content provides a partial, often confusing, and sometimes too brief view of the event to be considered real evidence.

While this fragmented content fuels the concept of information overload, online open-source investigation succeeds by overlaying and integrating data with each other to restore validity, understood as reliability and completeness. Eliot Higgins, founder of Bellingcat, in his book *We are Bellingcat: An intelligence agency for the people*, stresses the importance of this aspect:

I never attempted to tell a complete story, as a news reporter strives to do [...]. My focus became valid information. I cited all sources, making it clear where information derived from [...]. This approach developed into what would become a guiding principle at Bellingcat: the response to information chaos is transparency. (Higgins 2021, p. 13)

The online investigative community, formed today by people located all over the world, is primarily concerned with col-

lecting and archiving content. Each video/image is analyzed primarily using freely available online services and software. These are everyday tools that become, in this context, valuable allies in the validation of information and its subsequent integration. To name a few: Google Maps for geolocation; SunCalc, an application used by photographers to measure shadows, used by investigators to trace back the time of the event; and dozens of other software/applications to perform forensic analysis on images to rule out digital manipulation, for downloading content, maps for flight tracker, sites that can detect bots, services for protection from online tracking, etc. These tools are organized and available in the Bellingcat Online Investigation Toolkit to anyone who would like to join the community. This powerful collective tool can combat misinformation and preserve the evidentiary element for future judicial and historical analysis (Higgins, 2021).

Among other things, open-source investigators have so far managed geolocated battle zones in Libya, identified weapons around Syria, and recently uncovered a clandestine international arms-smuggling operation. During Russia's recent invasion of Ukraine, the collective mobilized very quickly to map incidents of civilian harm.

In the central Ukrainian city of Uman, a bloodied body lies lifeless in the street. It's February 24, and Russia's invasion of its neighbour has just begun. Debris is strewn across the road, and the windows of nearby cars have been shattered.

CCTV footage from a nearby shop shows a huge explosion took place here at just after 7 am local time.

A crater, clearly visible in social media video, appears to confirm a rocket was the cause of the explosion, taking the life of the individual lying motionless nearby. (Bellingcat, 2022)

Thus began the description of the latest investigation project carried out by Bellingcat with the support of the Global Authentication Project collective.³

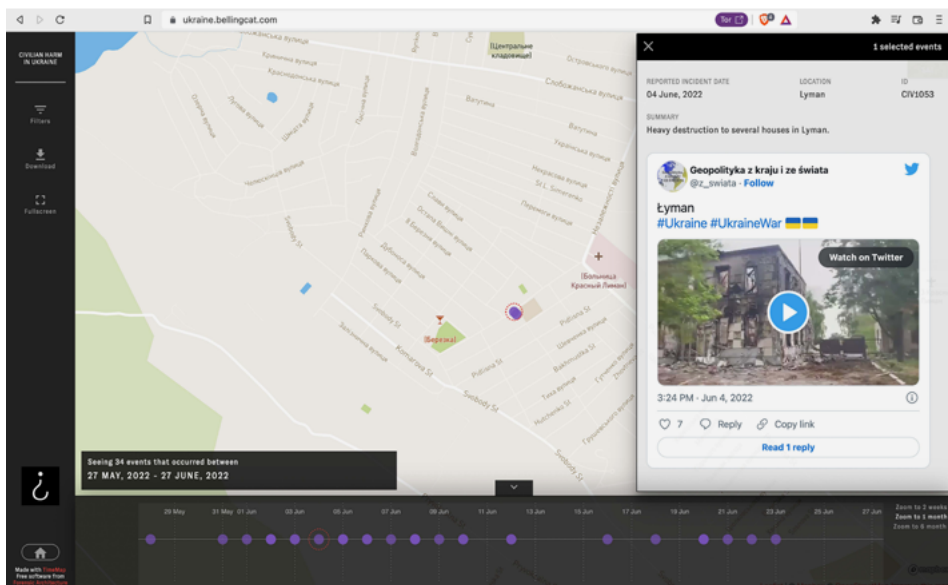
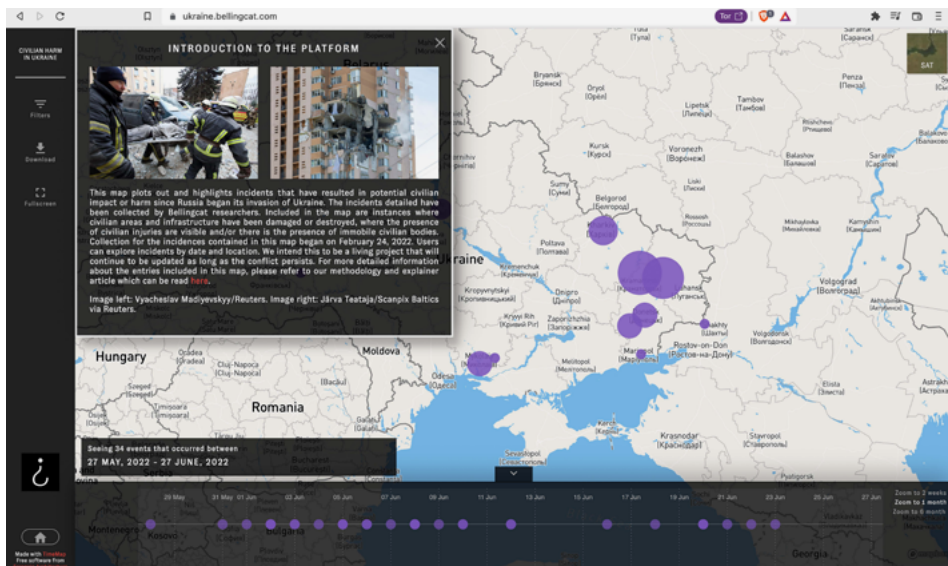
Russia's invasion of Ukraine has been called, by *The New Yorker*, the first *TikTok War* (Chayka, 2022) because of how it is documented, which was strongly linked to a social media aesthetic and the large amount of content uploaded online by users.

The methodology of the observed research, whose output is the creation of a constantly updated map, follows precise and orderly steps. First, all the testimonies collected online (Instagram posts, Tweets, Youtube videos) show from different perspectives civilian harm done during the period of the conflict, sometimes at the time of the impact and others at times after the event, are carefully verified and archived.

Then, due to their location in both geography and time on Ukrainian territory, the testimonies are placed on a map, available online, based on the open-source *TimeMap*⁴ software. The map is navigable in both space and time: a specific day or a range of time can be selected from the timeline.

3 The Global Authentication Project is a group of volunteers who verify sources and place, geographically and temporally, content founded online.

4 The open-source software, developed by the research group Forensic Architecture, allows to visualize geospatial events in an interactive platform.



Figures 6 & 7. Database collecting incidents in Ukraine that have resulted in potential harm to civilians. Retrieved from Bellingcat.com, June 2022.

By clicking one of the points on the map, it is possible to view one or more testimonies related to a particular civil damage. Testimonials are links to original sources, ephemeral by design: if a user decides to remove their content from the network or if it is censored, it will disappear from the map as well, although the objective description (summary) will remain (Figs. 6 & 7).

The testimonies are subjective visions that do not have the purpose of what Susan Sontag calls a “hunt for the most dramatic images [...] in a culture in which shock has become one of the most important criteria of value and incentives for consumption” (Sontag, 2021, p. 21), nor even an aesthetic quest, but only provide fragments of direct experiences. Through Bellingcat’s intervention, they become an objective proof of the facts and a way to create knowledge that will also be available in the future: they represent an example of how to preserve collective counter-memories.

5. Conclusions

This study is important in understanding the role of *design interstices* in digital media. The case studies presented offer a scenario that starts from relying on the now-assimilated simple act of sharing content in real-time and arrives at the systematic organization of that content to cope with emergencies or crises. Observing the narratives that arise from such possibilities makes it possible to discover a range of crucial contemporary phenomena in new ways.

An interesting question posed by Hanna Arendt (1992): “how to identify in the present what past is handed over to us for the future?” relates to what Withers writes in his review of

Higgins' book: "In the future historians are likely to spend less time in physical archives and more time analyzing online content" (Withers, 2022). The explorations of an example like Bellingcat offer a reflection on possible reconstructions of contemporary events to be studied in the future. Moreover, these findings suggest that *digital design interstices* offer a unique opportunity for the creation and preservation of counter-narratives that can challenge dominant ones and offer new perspectives on the present through verified, bottom-up observations.

The research finally emphasizes the importance of the combination of individual user engagement and the design of organized systems. The creation of memories and their preservation through the careful design of the organization and verification of content can turn what is usually referred to as digital pollution into accessible and collective counter-memories and could be a fruitful area for further research work.

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The City as Text

A Kilometric Scroll through the Memory of the Uprising in Chile, 2019

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Abstract

This article presents *The City as Text*'s project – a virtual memory archive from the social uprising in Chile 2019 – that responds to the urgency of preserving the memory engraved on the walls faced with the threat of being literally whitewashed.

A record over a single day, through the main street in the capital city where demonstrations took place, a few days before the government censored the messages written there. Through a hybrid process: an experiential walk complemented by a virtual work allowed the creation of a new kind of memory archive. An interface that invites people all over the world to revisit memory through the streets of Santiago.

At the same time, the work explores topics related to the ephemeral nature of public space; the polyphony of protests; the importance of design/technology allowing interfaces that can help people to experience, understand and study political processes, even if they are miles away. The web platform could not be translated just into data. When those codes – guided by design – invite people to take a virtual walk, the information becomes an experience. In this context, the prevailing need to record, share and make it accessible becomes a question of design.

The project also dignifies the role of design by documenting heritage in new formats.

The City as Text – as an alternative historical archive – is also an invitation to build a more conscious, connected, inclusive, and respectful future.



Figure 1. Photograph from the main avenue where demonstrations took place in Santiago, during October 2019. This picture was taken on the 23rd November, a month after the protests began. Source: @La Ciudad como Texto, 2019.

Art can use a powerful, albeit controversial, weapon: Beauty.
(Mouffe, 2017, p. 34)

The correspondence between politics and beauty reveals unusual modes of social transformation, mobilising ideas, provoking the regeneration of forms of resistance and giving protagonism to performativity in the political manifestations. (Ulibarri, 2017, p. 7)

1. Becoming Present through the Walls of Santiago

In his book *The End of the cognitive empire*, Boaventura de Sousa Santos says that “the sociology of absences is the cartography of the abyssal line.

It identifies the ways and means through which the abyssal line produces nonexistence, radical invisibility, and irrelevance” (de Sousa Santos, 2018, p. 25).

The present text argues that the multiple protests that have taken place around the world, and in particular the crisis in Chile in October 2019, constitute a fight against the urban *abyss* and *radical invisibility* in our cities. During the months of protests, Santiago’s public space becomes a platform for marches, performances, self-convoked councils, barricades, new forms of informal commerce, trenches, educational instances, dancing, protest, violence, and political resistance, among other forms of expression. For a while, citizens took over the streets to express their disagreements and desires. The abyssal zone that divided the city between *the haves and have-nots* became a space of consequent cultural dispute.

2. The Initial Explosion: 18th October 2019

On October 18th, 2019, Chile experienced what was referred to as the “Social Uprising”, one of the biggest political crises in its history. As Gastón Soubllette, an outstanding Chilean philosopher calls it: “A megacrisis”. It was an explosion of demands stemming from discontent that had dragged on after years of violations of citizens’ rights, triggered by a 30-pesos (€ ~0,033) increase in the price of metro fares in the capital city. The most transversal slogan was the concept of “dignity”, which means the struggle to achieve a dignified life for all Chileans where basic rights or services such as education, housing, health, and pensions would be guaranteed for all without distinction.



Figure 2. The image shows Plaza de la Dignidad (the heart of all protests in the capital) on 25th October 2019, the day when the most iconic protest of the social outbreak took place; more than 1.2 million people marched in Santiago and 3 million people across Chile left their homes to demonstrate peacefully. Source: ©Jorge Aguayo, 2019.

The high concentration of wealth and opportunities exclusively in privileged groups, adding to the corruption of the political class, indicates another situation in the country: the inequality that marks the daily life of its inhabitants. In October 2019, this situation was no longer sustainable, and citizens began to demand urgent and profound structural reforms in the pension, education and health systems in addition to hundreds of other demands, for example: the right to water after years of privatization of this natural resource in the country; the respect and consideration for the indigenous peoples; to try femicide cases within the justice system; and the failure to sign certain free trade and pharmaceutical agreements, to name but a few. A few days after the demonstrations began, the promises of almost thirty years made by the democratic government after the military dictatorship were seen as broken, and the “normality” that Chileans had come to live with, day after day, would no longer be accepted (Ureta Marín, 2021, p. 13). In this scenario, no person, institution, discipline, or corner of the country was isolated from the debate.

During demonstrations, the centre of Santiago became the receptacle of all kinds of graphic expressions against the aggravating abyssal exclusions of a society deeply rooted in the appropriation of human and natural resources (de Sousa Santos, 2018, p. 24). Day after day, citizens wrote demands on the walls of the streets, which became a kind of ‘graphic skin’ of a country in crisis. Kilometres of graffiti, texts, drawings, acronyms, dates, and icons took over the visual landscape of the streets in the form of the citizen textuality necessary to capture, interpret and incorporate into the repertoire of fu-

ture memories of this ephemeral present. With this need in mind, the designer Carola Ureta Marín created the project *The City as Text*, which sought to respond through design to the challenges of safeguarding these graphic interventions from the centre of the Chilean revolt in order to transform them into accessible material for consultation that would generate future analyses and studies.

The public space, understood in general terms as a place of meeting and transit, is inherently circumscribed by its ephemeral quality. This short-term condition responds to constant movement and changes that the city experiences minute by minute. Its variability depends on multiple factors such as vehicular traffic, pedestrian circulation, cyclists, dogs, pigeons, and weather variation, which modifies the streets' visibility. It is not only about movement but also the stillness of certain elements that make the city alter its continuous flow.

The protests in Chile in October modified the usual flow of the streets. Due to the mobilization, public space responded to that disturbance and shifted its traditional configuration. This phenomenon could be considered symptomatic of a society in a state of mutation, not to say "decomposition" (Care-ri, 2002, p. 19). The appropriation of public space implies changing the street's usual patterns; this appropriation did not respond to cognitive or strategic thinking.

On the contrary, as Sousa Santos explains, "The context of the struggle – the specific aims and social groups involved – provides noncognitive dimensions that condition how absent social groups and knowledge become present" (de Sousa Santos, 2018, p. 27).



Figure 3. Image of a traditional bus stop on the main avenue of the protest in Santiago, 23rd November, 2019. Source: ©La Ciudad como Texto, 2019.

The walls read like the collective story of the Chilean social abyss that accompanies the daily life of citizens; it is not a coherent political manifesto, but neither urban noise, as many would like to believe.

Graffiti can be important in understanding local conflicts, their dynamics, and the imaginaries that arise from social movements (Vogel et al., 2020). Beyond a criminological approach or an anthropological study of graffiti, recent literature takes graffiti as “an alternative, and dynamic commentary on everyday life in conflict-affected societies is thus an innovative way to tackle this knowledge gap and gain insights

into political, social and economic issues” (Vogel et al., 2020). The graffiti of the Chilean uprising constitutes a unique graphic language that reflects the local imaginary of this singular historical period. The walls represent the medium or canvas for a particular type of citizen writing proposed in this article. The script expands organically to bus stops, signs, pavements, fences, benches and even the ground.

This citizen textuality has the quality of being anonymous, collective, and popular, a writing that is an experience partially closed to traditional epistemological enquiries. In this sense, as researcher and designer Nicole Cristi points out, it dissolves individual boundaries to build a unique, polyphonic, and powerful identity, situated and overflowing in materiality and immateriality (Ureta Marín, 2020, p. 20).

3. Journeys through Urban and Textual Networks

The media historian Friedrich A. Kittler in his essay *The City is a Medium* points out that “what strikes the eye of the passerby as growth or entropy is technology, that is, information. Since cities no longer lie within the panopticon of the cathedral or castle and no longer enclosed by walls or fortifications, a network made up of intersecting networks dissects and connects the city – in particular its fringes, peripheries, and tangents” (Kittler, 2017, p. 138). The network of graffiti overlapped with the city nodes where multiple urban space networks were connected. The point of maximum intensity of graffiti occurred at the critical intersections where the most important networks of the city coupled, paradoxically the place where technologies of the city converge was – simultaneously – the social limit for most habitants of Santiago.

After October, the traces of graffiti on the capital's main avenue became the visual testimony of the point at which the paths of thousands of people who had taken the metro to work a day earlier became a new network of symbols that emerged to rewrite our understanding of the city.

Following this thinking, Francesco Careri states that “the territory is a medium through which one can read and write as a text” (Careri, 2002, p. 137). But how can we access this medium? How can we read the intensities that emerge in the city? Walking is conceived as a means of knowledge by the *Dada* and their *Surrealist Deambulations*. They state that “deambulation is a medium through which to enter into contact with the unconscious part of the territory” (Debord, 2007, p. 79). On the walls of Santiago, the writings are naturally erasing previous texts as messages are placed one on top of another. After the most intense civic appropriation of the streets, it was common to see people walking just to contemplate the effects of the social movement over a city that used to be familiar but is not anymore. Urban Deambulation became a form of reading the ephemeral – but historical – moment.

The concept of citizen writing implies changing the paradigm of looking at protests and public events as ephemeral experiences that only have a place in a moment and are forced into a regime of invisibility. Italo Calvino refers, in the book *Invisible Cities*, to the fact that “The city, however, does not tell its past, but contains it like the lines of a hand, written in the corners of the streets, the gratings of the windows, the banisters of the steps, the antennae of the lightning rods, the

poles of the flags, every segment marked in turn with scratches, indentations, scrolls” (Calvino, 1997, p. 9). Cities contain their memories and daily lives, which are supposed to be routine, but something that happens every day in the street is never exactly the same. Similarly, “Human beings generate lines wherever they go”, leaving traces by walking, understanding that a trace “is any enduring mark left in or on a solid surface by a continuous movement” (Ingold, 2016, p. 44).

How can we deal with these traces? How can we propose a memory artefact for these traces? Following the idea of Sousa Santos of an epistemology of the South, “whether an individual or a collective being besides dealing with other ways of knowing, does so while involved in a social and political struggle that precisely matters for not being a mere intellectual competition with one-self (self-reflexivity) or with others (academic rivalry among schools of thought)” (de Sousa Santos, 2018, p. 28). Graffiti becomes another way of knowing while, at the same time, it is a form of civic textuality that creates a liberated zone of meaning, where reading and writing walk around, and cognitive comprehension yields an experience of varying intensities.

4. The City as Text: a Manual and Digital Process

A few days before the government whitewashed the walls, a pair of Chilean artists, a designer and a photographer made an extensive record. Two point four kilometres of continuous façade of the Alameda (the main street where protests took place in the capital city) were captured on photographic film. The registration was carried out on 23rd November 2019 by

means of a walk through the central line of the avenue. During this period, the streets were closed due to relentless blockades by police forces, the smouldering remains of barricades and constant clouds of tear gas. How can we read and hear what the city walls are shouting when everything is in constant movement, change and vibration?

It was the above question that gave life to this alternative digital archive. Being able to stop and look at what was happening in the streets was impossible at the time due to the constant threat of police and systematic violation of human rights.



Figure 4. Technical record of the 2.4 km of the main avenue in Santiago. It specifies the streets registered, the kilometres documented, the equipment used, etc. Source: ©La Ciudad como Texto, 2020.

The urgency of protecting these messages forced the director of *The City as Text* project to conduct a study prior to the recording process to protect her and the photographer's safety. To do this, she established a technical sheet that included the exact route to be taken, the name of the streets, the kilometres recorded, the time it was to occur, and the camera and lens required, then also added the total number of photographs captured.

The recording officially began at 07:10 am (Fig. 4), and the capture of the first photograph was considered the starting point. The tour lasted around three hours, with the last image captured at 10:18 am, directly in front of the government palace. Around two hundred photographs were taken during the tour, documenting the south side of the Alameda as a summary of the social demands waiting to be heard on the north side, that is, by the government palace (Fig. 5).

The editing process of the recorded material took a few weeks, and the only treatment carried out was colour adjustment and reframing of some of the images. After digital processing by the photographer, all the images were printed in a 4x6-inch format. Finally, after an analogue montage process, more than a hundred images reconstructed the entire route. Ten 1.20 metres long pieces were created, translating into twelve metres of a continuous canvas representing the full-scale 2.4 kilometres. The work was carried out in Santiago de Chile in February and March 2020 (Fig. 6).

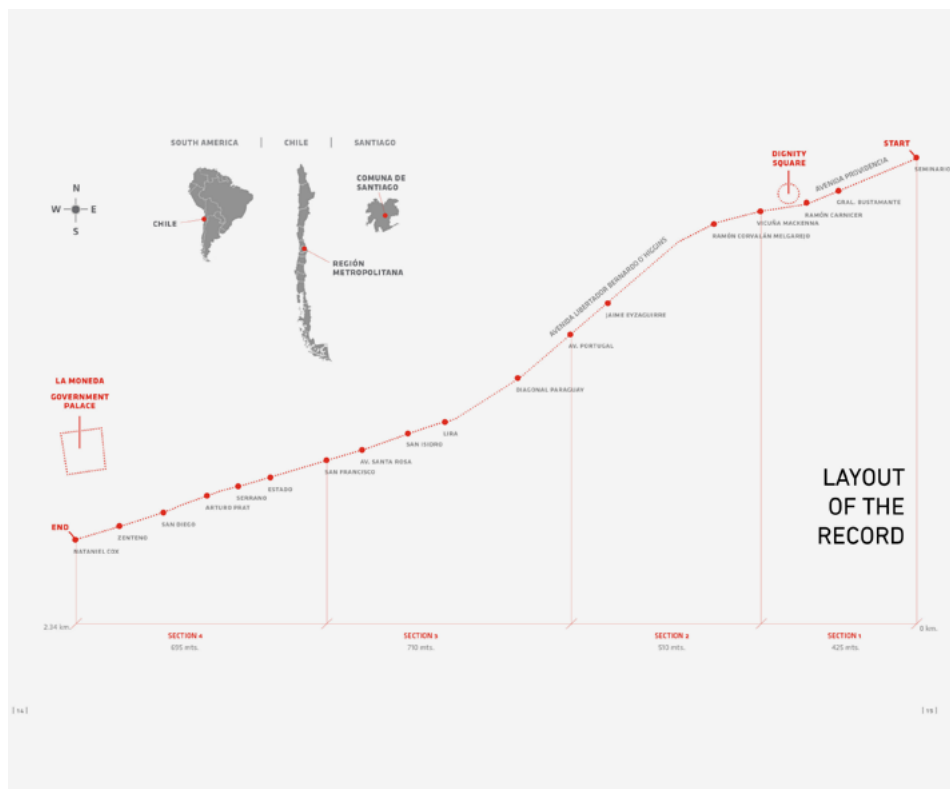


Figure 5. Schematic plan showing the documentation layout produced by the designer Carola Ureta Marín and the photographer Daniel Corvillón. Source: ©Carola Ureta Marín, 2020.



Figure 6. Manual route reconstruction process by superimposing 136 photographs to recreate 2.4 kilometres of Santiago's main avenue. Source: ©Carola Ureta Marín, 2020.

It is completely natural and common for city walls to be written on and for the messages themselves to erase the previous ones by overwriting or simply by the passage of time. What happened at this particular moment in Chile's history? We will call it censorship for the following reasons. This action carried out by the government in charge has two characteristics that distance it from the possibility of being called a palimpsest. These are the variables of time and planning. The palimpsest is produced by the natural passage of time, where texts are written on top of each other without premeditation, and for this reason, the old ones are erased by the appearance of new ones. What the government did less than 20 days after the protests began was a premeditated plan of erasure and executed on a specific night in the streets. Because of this, it qualifies as censorship.

Continuing with the explanation of the process, once the physical assembly of the route was finished, the digital work began by using the physical prototype as a framework. Different interfaces were developed in creating the web platform for hosting this huge archive: www.laciudadcomotexto.cl.

In essence, the website is an invitation to take a virtual tour of the 2.4 km recorded on the 36th day of the protests. A journey that begins at the epicentre of the citizen protests and proceeds along the southern side of the emblematic central axis of the city, ending across the street from the government palace. In this way, people from all over the world can live the experience of walking through those streets and imprint the memory of a particular moment in Chilean history. This material is free and open access and is presented as an input for various research and educational, artistic, and cultural works.

Using the hashtag #lamemorianoseborra (memory cannot be erased), *The City as Text* protects this memory, crystallizing a moment of the social outbreak. At a time of profound social, political, cultural, and even environmental changes, revisiting and remembering what has already happened can contribute to a better future and shed light on drafting a New Constitution.

This apparent new understanding of writing history by conceiving the city as a “medium” is not so different from the first books in history, the oral texts. *The City as Text* collects the oral expressions shouted in the streets and fixes them on the walls as if they were pages. Compared to conventional books, it changes its materiality. Instead of paper, it mainly uses concrete, and instead of ink, it is written with paint, posters, stencils, and chalk.



Figure 7. Digital process to create the web platform that allows people to take a virtual walk, through a long scroll. Source: ©Carola Ureta Marín, 2020.

This requires thinking about new materialities to write history, and it is precisely by imagining new possibilities that this work started to represent a new type of memory archive, perhaps. During the particular moment of the pandemic, when many countries of the world were in lockdown due to Covid-19, digital became essential. This online archive, therefore, not only documents history but also democratises access to information and, at the same time, can be seen as a way to roam the outside world despite the lockdown.

5. The Attempt to Erase the Present and Its Future Memory

After a month of continuous protests, the walls of Santiago's main street were filled with different messages written by citizens to express their wishes. Among the government's repressive measures was erasing them all without having managed to fulfil the citizens' demands, needs and desires. The process of whitewashing the walls was easily carried out at night due to the curfew imposed in the capital city before the pandemic made this restrictive measure natural. The imperative need to protect this historical memory before its censorship led to this photographic record. The phrases, labels, characters, graffiti, news, stencils, names, faces and illustrations on the walls serve as an alternative source of information to the official history expressed in the record and narrative of the press or academic articles, as citizens constantly construct it in the public space. The violation of citizens' rights – and even human rights – in this particular historical moment in Chile makes it ethically necessary to make this conflict visible, to record and document it (Fig. 8).



Figure 8. Act of censorship carried out by the government of President Sebastián Piñera, just three weeks after the protests began in Chile. Source: ©The City as Text, 2019.

A topic that it is essential to address is that the centre of Santiago during the mobilizations was highly mediatized. The enormous number of people participating periodically and sharing their experiences on social media urges a digital ethnography of the moment. Following the ideas of Nick Couldry and Andreas Hepp, we live in a deeply mediatized context, and therefore innumerable amounts of data were produced during the hectic days of October 2018. Some of this work of processing image data has been addressed by the group Forensic Architecture, specifically using live footage to manage the use of tear gas against citizens protesting (*Tear Gas in Plaza De La Dignidad*, 2019). This is a critical dimension in conceptualising the city as media (Kittler, 2017). There is a pending research agenda on the interdependence between graffiti interventions and the awareness of the future digital mediatization of these interventions.

6. Final Words

The project *The City as Text* tries to problematize the cartography of the abyssal line (de Sousa Santos, 2018), which became impossible to ignore after the October Social Uprising in Chile 2019. That line was expressed through the graffiti and graphic intervention in the city's centre and was under constant threat of being erased by the government. The reconstruction of the experience of walking the streets of Santiago in those hectic days is an impossible task. The project intended to explore the critical elements for the future readability of the intervened streets.

To achieve this goal, a new visual grammar of memory in the digital age was researched and implemented.

The temporal flow of the horizontal scroll and the overlapping images in the project website are just a few examples of the grammar of digital archiving for public memory and study.

Today the streets in Santiago are very different; activism and protests continue, but the dense visual language that characterised the uprising is long gone. However, the messages continue to resonate like an echo of social demands, even when they can no longer be seen. The ephemeral and vibrant memory of public space finds its fixation through the design of this interface and web platform, turning that past moment into a long-term memory.



Figure 9. The second printed edition of *The City as Text* documents two years of social protest. It includes more than fifty contributions that open up a dialogue on the social crisis from multiple disciplines. Source: ©Andrés Larraín, 2020.

Along with the website, books, prints and other instruments of readability that form part of *The City as Text* projects, we hope new initiatives emerge and test the limits of the visual grammar proposed. Only time will tell the project's usefulness in deepening the aesthetic and political understanding of these citizens writing during this relevant period of recent Chilean history (Fig. 9).

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Mapping Diversity

The Memory Street Names Celebrate

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Abstract

In his book *Digital Methods*, Richard Rogers enshrines the end of the “virtual” by pointing out how the online and physical worlds are intrinsically linked (2015). Indeed, 4.5 billion people tap into and pour their data into the Web daily, giving rise to a recursive system in which online and offline mutually reverberate and influence each other; the boundary between the two worlds has never been so blurred. After more than 30 years, the Web may also be likened to an extensive database, a memory that keeps track of the users’ actions and behaviour, a hyperobject to which we contribute and whose effects we experience (Morton, 2013). In this light, the Web evolved from a communication tool to a potential social research tool (Rogers, 2015).

In this context, the present paper introduces and analyses the case study *Mapping Diversity* (n.d.), a project that questions the gender gap in the toponymy of Italian cities. Toponymic issues are intrinsically linked to the values and memory celebrated by dedicating a street to a specific person. *Mapping Diversity* questions the memory that goes into celebrating toponymy, drawing on the memory made available by the Web in open data. It is, in turn, a digital commons that also contributes to the debate on the role of design in the social and digital spheres. It can support greater civic awareness and a better-informed discussion on complex and multifaceted issues toward a more inclusive and diverse society.

1. The Social Web

“The Internet is the single biggest creator of ignorance mankind has ever created, as well as the single biggest eliminator of that ignorance” (Johnson, 2012, p. 93). However obvious and seemingly simple, Clay Johnson’s statement reflects the fallout and responsibility that digital actions have, not only online. Indeed, the technology is not neutral, much less so when it is democratised (Strate, 2012).

An example might come from the advent of Web 2.0 (O’Reilly, 2009), which enabled any citizen with an Internet connection to produce online content: a process accelerated by the appearance of blogs, especially social networks. An epochal turning point that significantly impacts society and its defining phenomena is still in progress. For example, the movement that gave birth to the *Arab Spring* was strongly supported by social networks (Howard et al., 2011; Khondker, 2011).

Activists adopted Twitter, in particular, to coordinate and take collective actions and denounce abuses and crimes committed by the government. Analogously, the *Cambridge Analytica* scandal reveals how Facebook has been employed to manipulate American voters’ perceptions and subsequent electoral behaviours (Risso, 2018). The examples represent the two sides of the same coin. While they highlight how the fallout from the revolution introduced by Web 2.0 is not limited only to the digital world, they also point to the importance of widespread user awareness and civic consciousness.

Consciously mastering the technologies, one interacts with daily helps prevent persuasive or manipulative actions, which may have dangerous social consequences.

In light of this, we can say that the Internet is no longer a digital reverberation of one part of society; it is society itself if we consider that about 4.5 billion users interact online daily. Moreover, it is a constantly growing number, with much of the world's adult population producing and consuming data that impacts the world, sometimes even those who are not online. From this perspective, the Web evolved from a communication tool to a potential social research tool (Rogers, 2015) that might be assimilated into an extensive database, a memory that keeps track of the users' actions and behaviour, a *hyper-object* to which we contribute and whose effects we experience (Morton, 2013).

Not surprisingly, Sir Berners-Lee, founder of the Internet, returns to talk about his invention thirty years later: "We have to make sure that the web is serving humanity. Not just by keeping it free and open but making sure that the things people build in this permissionless space are helping democracy" (Berners-Lee, 2019). A warning, shared and growing, addressed to all who design on the Web, which we find in the words of Clay Johnson, as well as in those of so many other designers who call for greater responsibility and consciousness on the part of those who design online content (Montero, 2019; Lupton et al., 2021; Pater, 2016, 2021; D'ignazio & Klein, 2020; Cairo, 2019).

The need to realign the Web back to its original idea (Berners-Lee, 1992) by populating it with content to support collective growth, whether social, intellectual, or cultural, has never been more insistent. A call to which the project presented below goes to answer.

2. Digital Commons

If, as emerges from the previous section, we can consider the Web as part of society and no longer merely a repercussion of it, it follows that social issues, controversies and phenomena are also part of it. Just think, for example, of the phenomenon of *Digital Commons* (Dulong de Rosnay, & Stalder, 2020), derived from traditional *commons*: common goods available to a community that takes care of their maintenance (De Angelis, 2017). The digital version refers to those digital data or services that are available to a broad, no longer localized audience, which similarly cares for them, actively participating in their maintenance, creating new forms of reuse, or literacy and engagement of a broader audience (Dulong de Rosnay & Stalder, 2020). Wikipedia, the various forms of open source or open data, constitute contemporary examples of digital commons. Their role and policy have never been more central than in the last two years.

Indeed, the phenomenon of the digital commons represents one of the positive effects that Web 2.0 has introduced.

Thanks to shared and co-maintained nature, new forms of knowledge and awareness are originating, moving one more step toward the Web's original dream. Let us consider, for example, *Open Street Map* (OSM), an open and collaborative project to create geographic maps. Public and open data served as the starting point for projects such as *Sidewalks Width NYC*,¹ for instance, during the pandemic. The project is an online map of the width of New York City sidewalks to help citizens maintain proper physical spacing during their

1 <https://www.sidewalkwidths.nyc/>.

urban journeys. It has been published in an open-source format, allowing other forms of adoption and reuse, as in the case of the Italian version of *Sidewalk Widths Italy*² published by Napolitano, civic hacker, and coordinator of the *Digital Commons Lab* at the *Bruno Kessler Foundation* in Trento.

The case highlights the importance of open data and forms of open-source software within the Web 2.0 paradigm, digital commons that constitute the enzymes supporting active citizenship and a more democratic Web. At the same time, there also emerges the need to design forms of translation to enable a broader and often unknowledgeable audience to grasp the potential of the growing amount of open data at their disposal.

3. Designing Digital Commons

Designing digital commons means trying to extract meaningful sense out of the enormous amount of data produced daily by the behaviours of 4.5 billion online users. It also means contributing to ongoing debates and supporting forms of active citizenship by offering knowledge-based access points or tools to approach complex and multifaceted issues or take collective actions (Latour & Weibel, 2005). It is not only a matter of making geographic, quantitative, and qualitative data available to anyone for any use but, more importantly, of designing forms of translation that allow a broader and not specifically knowledgeable audience to take advantage of the data available to them.

2 <http://straba.us/sidewalkwidths/#8/41.458/12.706>.

Despite the increasing amount of open data available, there is also evidence that a large part of the European population has serious difficulties understanding statistics and graphic-visual information (Kankaraš et al., 2016; The Council of the European Union, 2020). Thus, a space opens where design can become an interpreter, transforming open data into digital commons, accessible forms of knowledge and memory. Hence, a context in which the case study presented below comes to life.

4. Toponymy as an Indicator of Social Inclusion

Among the various forms of memory that open data makes available, the case study presented in this contribution focuses on the street names of Italy's regional capitals made available by OSM.

Street names are not neutral: they do not merely describe the characters to whom the streets are dedicated but also the connected memory and values that a specific municipality goes to celebrate. From the 2021 Black Lives Matter protests (Atuire, 2020) to the South Tyrolean streets renaming operated by the fascist regime (Fait & Fattor, 2010; Lucarno, 2005), recent history is littered with episodes in which toponymy has been the subject of identity and ethnic tensions and clashes (Cohen & Kliot, 1992; Guyot & Seethal, 2007; Azaryahu & Kook, 2002; Mitchell & Alderman, 2014). In fact, values and memory infused in toponymy impact its citizens' perceptions and feelings of inclusion.

Among the various disputes related to toponymy, the ones connected to the gender gap are probably the most recent and cross-cutting among the various instances that animate the debate. Compared to colonial or historical legacies tied to

specific contexts or places, the gender gap resonates in all the cities where street names are dedicated to people. However, despite its broad diffusion, the projects tackling gender in toponymy are a few due to the recent sensitivities and care that impacted the debate only recently.

In Italy, for instance, only *Toponomastica Femminile*³ existed. Born on Facebook in January 2012, it was founded as an association in 2014 to restore voice and visibility to women who have contributed, in all fields, to improving society. By design, it presents itself as a website that makes available to readers lists of female characters to whom Italian streets are dedicated. However, no form of geolocation or interaction with visitors is provided.

Looking at the European landscape, we find *EqualStreetNames*⁴ which covers several streets in 47 cities, while *Las Calles de las Mujeres* (n.d.) by Geochicas focuses on Spain and Latin America. Finally, *Stretonomics* (n.d.) is the result of academic research by the *Bell Labs Social Dynamics*. The latter offers a comparative analysis of the cities of Paris, Vienna, London, and New York, visualizing occupation, gender, country of origin, and the historical period in which the protagonists to whom the streets are named lived (Fig. 1). Although the projects above make the gender gap in the toponymy immediately visible to an expert, they present a lack of contextual information describing the context or enabling readers to understand values and issues raised by what they are approaching.

3 <http://www.toponomasticafemminile.com>.

4 <https://equalstreetnames.org/>.

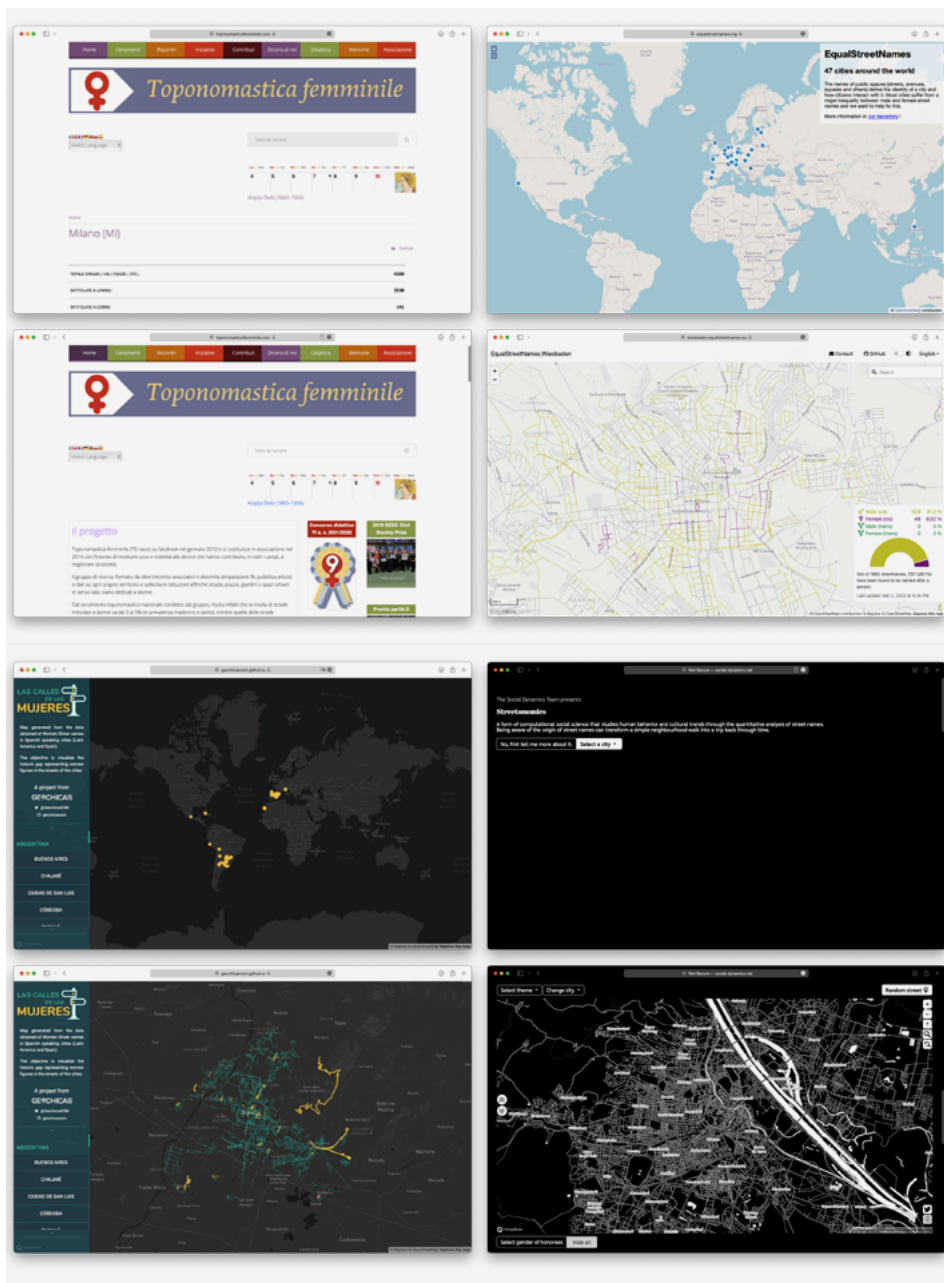


Figure 1. Toponomastica femminile, EqualStreetNames, Las Calles de las Mujeres, Streetonomics.

The impression is that most projects stop at mere data visualization, as opposed to the possibility of enhancing competencies and the consequent level of debate among a broader audience, also offering entry points and forms of visual and verbal translation about the gender gap within our cities.

5. Mapping Diversity

On the reflections arising from the analysis of the case studies above, *Mapping Diversity* a project of OBC Transeuropa (Caucaso, n.d.) and Sheldon.studio,⁵ in which the author of this paper also took part, came to life. The project was born with the specific goal of broadening the debate on the gender gap to all those concerned citizens in Italy. At the same time, it is an actual digital common to allow mayors, councillors, and citizens to look at their toponymy through a gender perspective, ultimately informing the processes of creating or renaming new streets.

For these reasons, the project consists of two sections: the first describes the phenomenon by visualizing and analysing data on the gender gap in toponymy in the 21 main regional capitals; the second focuses on the individual capitals, supporting visitors in understanding the infographic map related to the selected city.

6. The Methodology

The methodology adopted for the data collection focuses on the geographic location of streets and their type (course, ave-

⁵ <https://sheldon.studio>.

nue, etc.) provided by OSM, crossed with the data to which it is named (person, place, event, etc.) and the personal name if it is a person, provided by *WikiData*,⁶ the platform that shares all the information on *Wikipedia*.

This methodology presents some limitations due to the crowdsourced nature of *OSM* and *Wikidata*. For example, it may happen that not all streets have been reported on *OSM* or that the historical figure to whom the street is dedicated does not find correspondence in *Wikidata* because nobody has taken care of its online entry. For these reasons, the choice of cities analysed in the project limits to regional capitals precisely due to their greater data accuracy.

The methodology also includes the possibility of correcting errors or integrating new information from the project visitors. They can actively contribute to improving and maintaining the database. It happened, for instance, in the city of Bolzano, the Italian regional capital with the highest percentage of streets named after female figures (13.5%). Streets named after women turned out to be 23 and not 26, as revealed by the contributions of Bolzano citizens who contacted the working group to report discrepancies. As the example shows, in some specific cases, the support of the visitors was crucial in correcting some inaccuracies caused by the limitations of the methodology – the possibility of maintaining and taking care of the information frame of the project as a true digital common.

6 https://www.wikidata.org/wiki/Wikidata:Main_Page.

7. Narrative Strategy

Due to the complexity of the topics and the willingness to engage visitors in the debate, the project unfolds in two sections. The former, shaped as a long-form article, introduces the current discussion on the gender gap in the toponymy (Fig. 2). Then, it provides an overview across all the 21 Italian cities, together with some intersectional insights, allowing readers to discover who is the most diffused name in the Italian cities' streets, as well as their occupations. Finally, the page leads to the 21 city maps that open a new page.



Figure 2. Sheldon.studio and OBCT, Mappingdiversity.eu, the homepage, 2021.

The latter, shaped as a *data-scrollytelling* page (Seyser & Zeiller, 2018), presents the single cities' gender gap maps. The data are not just visualized: each city map narration relies on the so-called *Reverse Martini glass* story model. It is a narrative structure that opens with an initial author-driven part, which explains the data across the map and then allows exploring the data autonomously (Segel & Heer, 2010). The author-driven part accompanies visitors by enabling their understanding through a narrative guided by scrolling. While the city map sticks in the centre of the screen, the scrolling activity triggers the appearance of a series of visual and textual information that progressively support readers to understand the visualised data (Fig. 3).



Figure 3. Sheldon.studio and OBCT, Mappingdiversity.eu, some scrollytelling screenshots from the Bolzano city map, 2021.

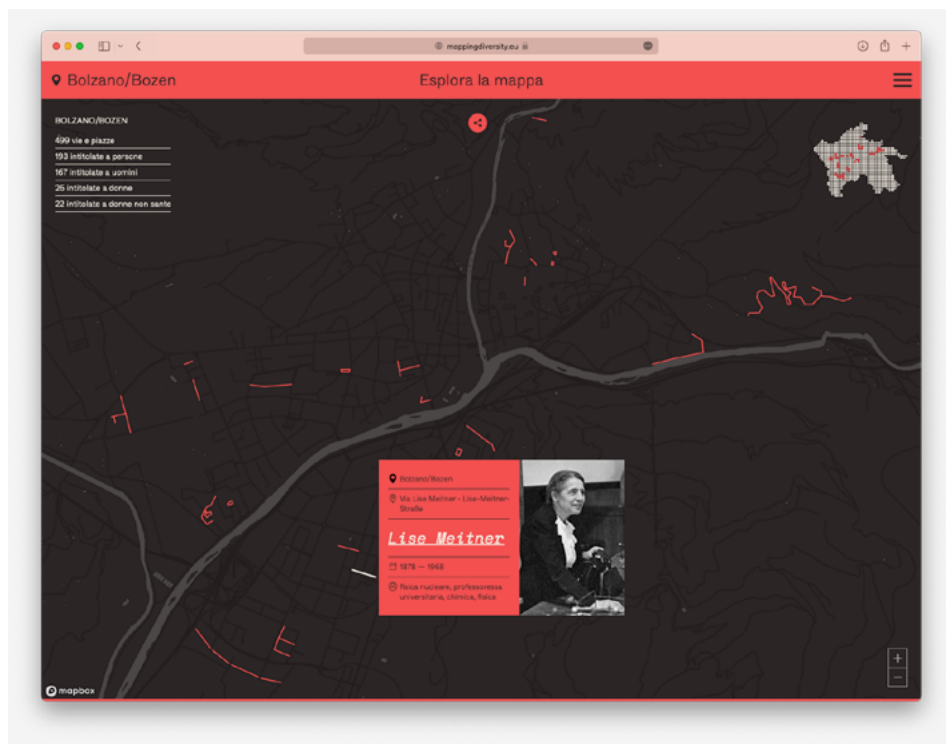


Figure 4. Sheldon.studio and OBCT, Mappingdiversity.eu, some scrollytelling screenshots from the Bolzano city map, 2021.

Indeed, each city's data-storytelling follows the same data storytelling pattern:

- “In <city name> there are <data> streets and squares”;
- “<data> of them are dedicated to people”;
- “<data> streets, so the <percentage> are dedicated to men”;
- “While only <data> are dedicated to women”;
- “Which shrink to <data> if we exclude religious people”;
- “Who were those women? Explore the map and share it!”

As previously mentioned, once the storytelling part ends, readers can explore the map hovering over the streets dedicated to women to discover who they were, how they looked, when they lived and their occupations. *Mapping Diversity* combines quantitative and qualitative data to return the human side behind the numbers toward a broader depiction of the complexity embedded in the issue (Fig. 4).

After the experience, visitors could share the toponymy gender gap of the city they are exploring on their social networks. Twenty-one informative thumbnails were generated showing names, maps, and data available to anyone, to pro-

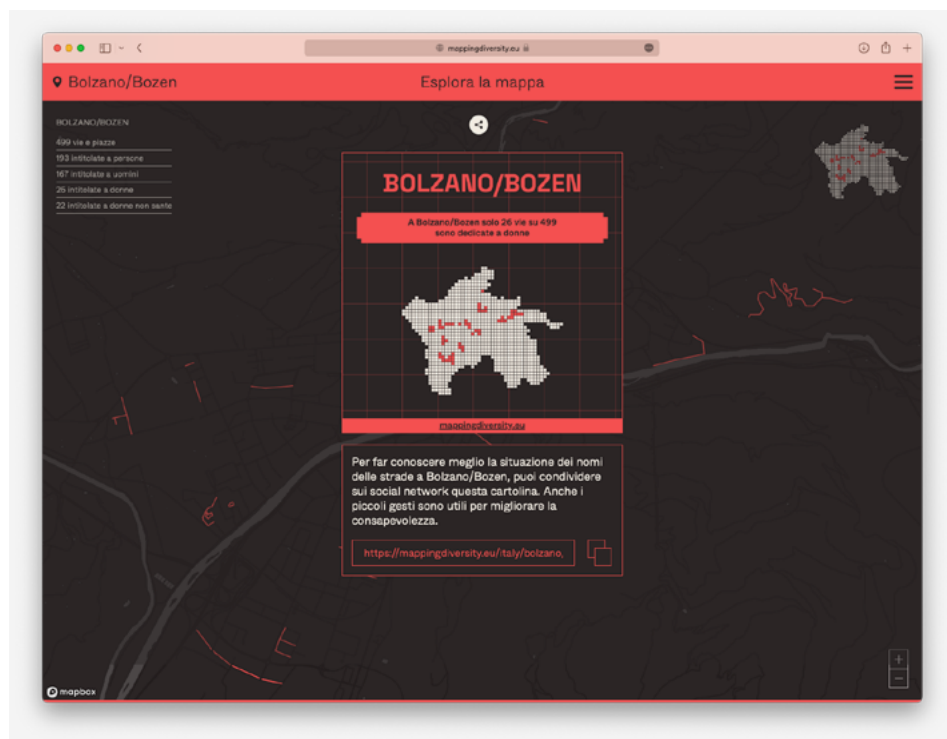


Figure 5. Sheldon.studio and OBCT, Mappingdiversity.eu, some scrollytelling screenshots from the Bolzano city map, 2021.

mote greater awareness of the gender gap and more inclusive development of cities through toponymy (Fig. 5).

8. Conclusion and Future Steps

Published in July 2021, the project has received significant media coverage. Three articles in national media (Infodata, 2021; *Quante sono le strade intitolate a donne in Italia*, 2021; Nicolosi, 2021) were published online, plus a printed front-page article on August 26, 2021, published in the edition of *La Repubblica*. The project also caught the interest of small, concerned communities, such as the feminist Instagram page *Le Flair* (2021) or the online design show *Caffe Design* (Caffè Design, 2021). At the same time, *Mapping Diversity* has been presented at several conferences and talks, including the closing plenary speech at the *EU open data days 2021* (EU Open Data Days - Publications Office of the EU, 2021) and rewarded with the *Glocal Data Journalism prize* (Saporiti, 2022). Thanks to the national mainstream media coverage, the project served accurate data to support local newspapers and online activist groups to promote their activity and raise greater awareness. Indeed, it was visited by about 26000 people from 100 different countries, despite the project's Italian language and national focus. Moreover, among the several spontaneous publications, it is interesting to notice that the project inspired new local projects such as *Barcelona no es un nombre de mujer* (Galeano, 2022).

Currently, the workgroup is scaling up *Mapping Diversity* to the European version, extending the same methodology to more than 70 cities and municipalities.

The process will completely redesign the website to offer more direct access to the cities maps. Furthermore, it implies that the current Italian long form will be moved to a country-related section. At the same time, the homepage will present a general introduction to the topic and an overview of the data on the European gender gap in toponymy, followed by links to the country-related maps. Design issues apart, the workgroup collaborates with European newsrooms to organize a networked media coverage to publish the new European-wide version. The strategy relies on cross-linking European cities maps to the local articles to foster a more granular and localized debate and to provide European citizens, journalists and newsrooms with an accurate digital common to support a greater awareness of more inclusive European cities.

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Design Experiences in Pandemic Times

Constructing and Enhancing the Memory of the Present in Museums

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Abstract

During the Coronavirus pandemic, museums were beset with serious difficulties. Forced to close for an indeterminate length of time, museum professionals and designers faced real challenges, which they addressed and used to seek to expand their offer, providing and implementing services to involve the public remotely. During the period under observation, museums, which have always guarded and enhanced the historicized heritage, extended to the present time their research into the tangible and intangible records of man and his environment and their acquisition, conservation, communication, and exhibition.

Through the critical analysis of case studies, this paper intends to examine the museum's role in constructing and enhancing memory tied to the present time – articulated in activities that refer to calls to action, curatorial projects, and the production of records – opening new scenarios for design. The configuration of a synthesis model made it possible to develop a matrix of elements that can be variably grouped to visualize the complexity and peculiarity of the actions undertaken by museums.

1. Museum and Memory of the Past¹

Museums have always been committed to enhancing cultural heritage and thereby play an essential role in constructing the memory of the past. The concept, which in the case of museums or *loci memoriae* coincides with their mission – “dedicated to remembering past struggles for justice and addressing their contemporary legacies” (International Coalition of Sites of Conscience, 2016) in different typologies of narration – may be extended and generalized to all typologies of museums. The consolidated association between memory, preservation and conservation makes museums the protectors and activators of humanity’s legacy (Nora, 1997; Black, 2011). Museums are the custodians of the past, committed to the construction and mediation of community identity (Davison, 2005) by defining and representing collective memory (Marini Clarelli, 2021).

The importance of the relation between memory and museum is, therefore, explicit and has been delineated and discussed over the years by the scientific community, providing a descriptive and experiential framework for this relation. Museologists, historians, philosophers, and researchers highlight how, for example, cultural institutions represent the way certain societies structure and organize their knowledge (Christillin & Greco, 2021) along cognizant principles and choices, facilitating its fruition and memorization (Mosser & Nysm, 1997).

1 The contribution is the result of a common reflection of the authors and the structure of the paper was conceived together. Nevertheless, the chapter “Museum and memory of the past” and the research of case studies has been developed by Margo Lengua. The chapter “Museum and memory of the present” was written by Alessandra Bosco, the chapter “Representative Case Studies” was written by Silvia Gasparotto; “Methodology” and “Discussion” were written by Alessandra Bosco and Silvia Gasparotto. Finally, the “Conclusions” were written by the three authors together.

The process of musealization is a key function in the construction of memory, transforming a specific cultural heritage into a record “testifying to the values of civilisation” (Ministero per i Beni e le Attività Culturali, 2004, p. 10). Based on choosing, interpreting, and attributing meaning, this process fully responds to the need for the decontextualization and loss that a phenomenon must undergo to be retrieved by consciousness (Assmann, 2001) to shape a memory.

Museums are directly involved in creating and transforming a cultural memory by developing narrations and selecting objects (Crane, 2000). The institutions build and facilitate access to memory, acting as mediators through practices and tools that can establish and activate the memory. In this context, cultural production contemplates the design and development of physical or digital artifacts (Parry, 2010; Smith Bautista, 2014; Sánchez Laws, 2015), such as exhibitions, editorial products, online portals, and applications, etc., which can include texts or visual and performative material.

2. Museum and Memory of the Present

The museum, an organism the nature and development of which are directly correlated with a historical, geographical, political, and social context which the institution interprets and disseminates (Mairesse, 2018; Pinna, 2000), transmits and promotes the cultural identity of a people by constructing a memory rooted in the tangible and intangible heritage of the past, which looks to the future. As a subject that is sensitive to the space-time condition, the languages, and tools on which it has always relied, in these past years, museums learned to become reactive to the changes and transforma-

tions brought on by the pandemic, responding quickly to emerging stimuli and needs (Agostino et al., 2021; Giannini & Bowen, 2022). To do so, the museum's function as an entity that "researches, collects, conserves, interprets and exhibits tangible and intangible heritage" (ICOM, 2022) was extended to include the present.

Historians, curators, and museum professionals have thus worked with determination and commitment to offer their own responses *onlife* (Floridi, 2014) to people who were uncertain and worried, forced by events to live in spaces that were often inadequate to support their daily lives. The context, which was static and disorienting yet simultaneously in full transformation, became an opportunity to consider new possibilities for intervention and assess a different perception on the part of users. This situation, together with the new emergency conditions, such as the closure for an indeterminate length of time of the spaces reserved for a large part of their activities, became a real challenge that museum professionals and designers addressed and used to seek to expand their offer, providing and implementing services that could involve the public remotely (ICOM, 2020a, 2020b, 2021; NEMO, 2020, 2021; Bosco et al., 2022).

Given the forced immobilization of the spaces traditionally dedicated to building the memory of the past by enhancing the heritage they conserve, museums extended their reach in pursuit of their public service mission towards expanded audiences and heritage that has never been enhanced by the institutions, intercepting the flow of information, emotions, and activities channelled by the emergency.

Working on informing and involving their communities and the citizens more in general, museums have supported information services, facilitated the sharing of content, and implemented and diversified cultural production while promoting and conveying a sense of belonging and social cohesion.

3. Methodology

Based on these premises, the research investigated the methods and practices adopted by museums during an exceptional period that forced changes in behaviour and routines.

A deeper examination of the actions they took and the projects they developed led to the definition of a series of parameters that oriented these processes with the intent to track common trends and different approaches.

The analysis, independently of the typology of heritage preserved and of geographical location, considered museums that began in the early months of 2020 – the time of widespread lockdowns – to rely on digital devices and technologies mediated by the Internet to help build and enhance the memory of the present. Common parameters that identified the projects under consideration in the paper are:

Topic: Covid-19 emergency

Promoter: Museum institutions

Goal: To build and enhance the memory of the present

Typology: Digital projects

Tool: Digital devices and technologies

Medium: Internet

Period: From early 2020

Having defined the shared parameters, we pursued the intent to represent the different approaches by configuring a model that considered some of the principal design variables that could make the different trends stand out within a single visualization.

Given the multi-dimensional nature of the cases, the model was not described as a linear narrative representation but was structured as a matrix of elements that can be grouped in different ways. The variables that characterized the projects under consideration are:

- Goals pursued by the museum
- Target audience the project is aimed at
- Actors involved
- Actions undertaken
- Typology of output

The phase of defining a model that could synthetically represent the methods and practices adopted by museums was supported by a critical reading and analysis of cases presented on the web pages of ICOM (s.d.), on the Google research engine, and delving deeper into the project *Museum digital initiatives during the Coronavirus Pandemic* developed by Chiara Zuan- ni (2020) at the University of Graz. The examination of the 8 case studies – considered to exemplify the different modes of building and to enhance the memory of the present – conducted on the basis of qualitative parameters and aimed at bringing out the potential of the projects developed by museums, further highlighted the plurality of the generated output as it underscores the goals pursued by the museum.

4. Representative Case Studies

The various activities undertaken by Cultural Heritage Professionals to differentiate and implement museum services with the purpose of manifesting their own desire to be present and the active role they continue to play in cultural promotion and production despite the forced closure can be classified into three categories. These are: bottom-up actions aimed at involving people through calls-to-action that gather private contributions and personal accounts; curatorial projects oriented towards information and the dissemination of authoritative and original points of view regarding current events and presented in online publications; the production of documents capable of bearing witness to the historical condition from the point of view independent of the museum institution, such as video or digital archives.

4.1. Call-to-Action

Within this category, the call-to-action “*Dear Galway...*” *Pandemic Project*² by the Galway City Museum invites the inhabitants of the Irish city to write a letter that illustrates their point of view of their experience of the pandemic and offers advice to future generations about how to deal with such a serious crisis (Fig. 1).

The letter can be sent by mail, e-mail, or uploaded directly by filling out a form on the website. A list of questions drafted by the museum provided an outline to help users reflect upon and describe their own experiences.

² Project link: <https://www.galwaycitymuseum.ie/blog/dear-galway-pandemic-project/?locale=en>.

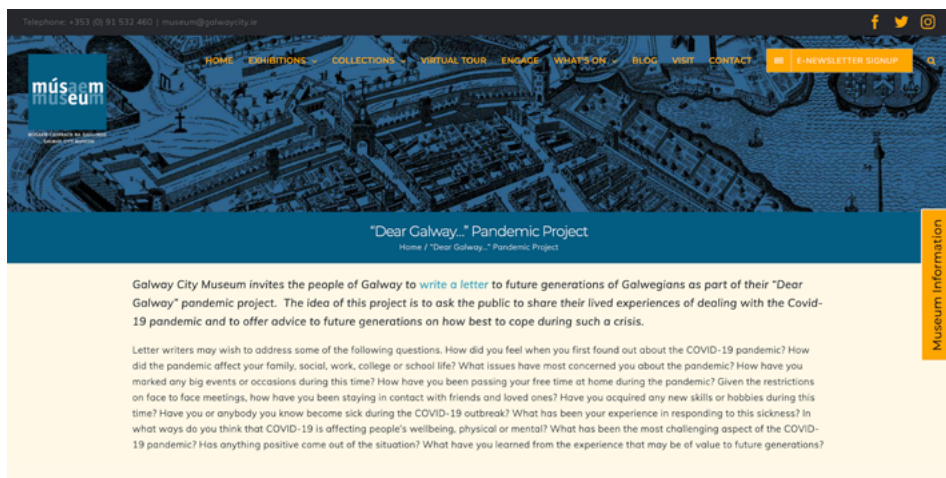


Figure 1. Galway City Museum, “Dear Galway...” Pandemic Project, project homepage, 2020. <https://www.galwaycitymuseum.ie>.

This operation clearly demonstrates the museum’s social role as an activator that can foster hope and social cohesion. Nevertheless, as of today, only a very few letters have been posted on the museum’s website.

A similar project aimed at narrating the change that took place in the home environment during the pandemic is the *Stay Home Collection Project*,³ promoted by the Museum of the Home in London.⁴ Here a collection of written stories and photographs, posted on the museum’s blog, describe how the spaces of one’s home and everyday objects acquired different meanings and functions during the lockdown.

3 Project link: <https://www.museumofthehome.org.uk/explore/stay-home-collecting-project/>.

4 This initiative is part of the more ample project “Documenting Homes” which since 2007 has archived experiences related to domestic life. The archive allows people to share images, audio, and their own accounts of past and present houses. It stores material from the year 1900 to the present day.

MUSEUM OF THE HOME

Visit us What's on Explore Join and support What we do Shop online

Stories of home Museum in action Our collections Stay Home collecting project Things to do

Stay Home collecting project

During these extraordinary times, our homes have never been more important.

We are documenting how our home lives are changing during the coronavirus pandemic. [Read some stories here](#)

This new national collecting project forms part of the Museum of the Home's extensive [Documenting Homes archive](#).

Share your experience >

What does home mean to you right now?

How are you using your home? Does your living room now have multiple uses as a work place, school or gym? If you have any outdoor space what are you using it for?

Are you leaving home to carry out your role as a key worker? Separated from your family or loved ones? Spending considerably more time with your flatmates or family?

Our homes have never been more important.

How to take part in Stay Home

Share your experience >

Figure 2. Museum of the Home, *Stay Home* collection project, project homepage, 2020. <https://www.museumofthehome.org.uk>.

In this case, the museum's website also establishes some guidelines: the users must answer seven questions and share five spontaneous snapshots (Fig. 2).

Collection of Crisis,⁵ promoted by the Werkbundarchiv – Museum der Dinge, also based on a call-to-action, invites users to choose the objects that best describe a crisis period – such as the coronavirus pandemic – to include in the museum collection, starting with questions such as: “But what role do things in particular play in the context of memory culture?” or “Which objects can illustrate a time of crisis like the present one?” The museum invites people to pretend to be curators and gathers the various contributions in a photo gallery of objects online (Fig. 3).

Finally, in *Let's Face It. Mask Design Competition*,⁶ the Museum of Craft and Design in San Francisco launched an international competition to design masks on May 11, 2020. The competition, aimed at collecting custom-designed artistic models, sought to bring people closer to the device that, from that moment on, would become a daily instrument. The call-to-action involved professionals and citizens ages four and up. Of the 363 projects submitted by 17 countries and later published in a gallery online, the three winning projects stand out because, by combining innovative elements in the production, form, and meaning, they merge health and safety issues with social and cultural values (Fig. 4).

5 Project link: <https://www.museumderdinge.org/collection/collection-crisis>.

6 Project link: <https://sfmcd.org/exhibitions/letsfaceit/>.

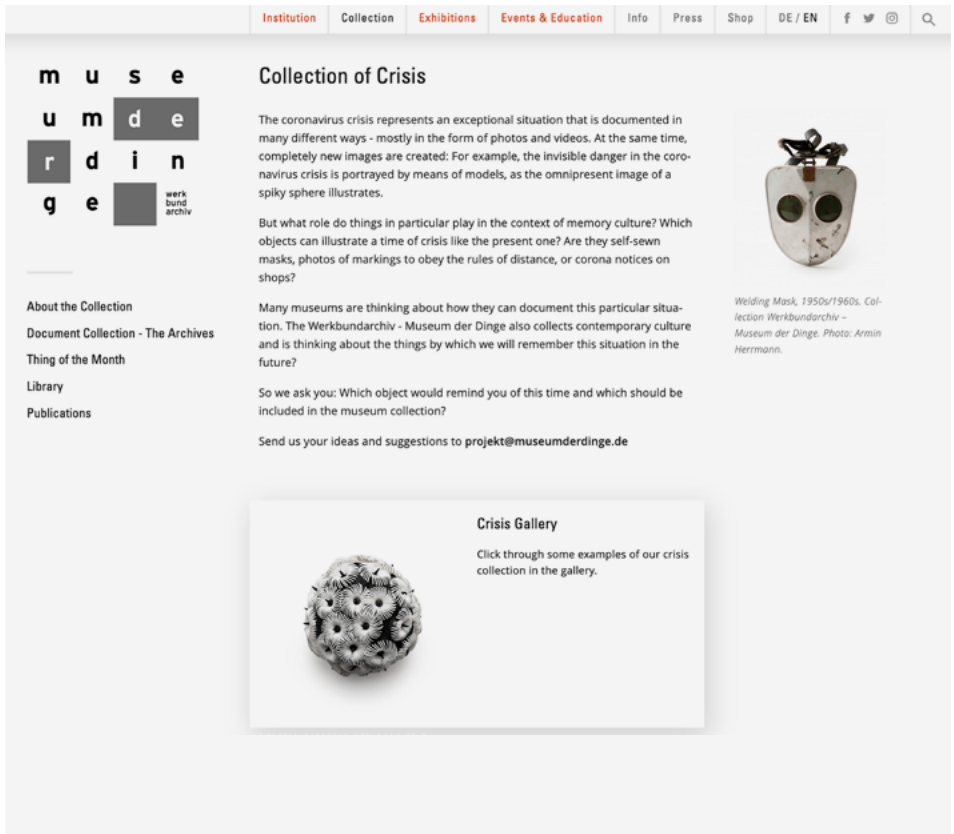


Figure 3. Werkbundarchiv - Museum der Dinge, *Collection of Crisis*, 2020. <https://www.museumder-dinge.org>.

LET'S FACE IT

Virtual Exhibition

On May 11, 2020, the Museum of Craft and Design launched *Let's Face It*, an international mask design competition. We received 363 entries from 17 countries, with participants ranging from 4 years old and up. Thank you to everyone who participated. Check out the winners below and keep scrolling to see all the entries in our [Global Community Gallery](#).

"The masks were wildly creative bespoke creations that employed humor, intricate craft, digital design, fashion, uncommon and recycled materials, and social and political meaning to test what a mask can be. The winners were projects that combined multiple elements of craft, form, and meaning to create masks that will provide health and safety while promoting other societal and cultural value in this time where we are at risk of losing so much of who we are. In times of distress like these, it is more important than ever for arts and cultural institutions like MCD to continue to create the space and promote ideas that can shape our collective optimism and the future. The winners of this competition are a varied and inspiring demonstration that this is our charge." -MCD *Let's Face It* jurors Marcel Wilson and JoAnn Edwards

For every mask submitted, MCD will donate a functional mask to the [San Francisco Marin Food Bank](#). We are thrilled to donate 363 masks to our neighbors at the food bank and know they will be distributed to those in need.



1st Place

Patsy Pitts
California, USA

I created this mask to show how during the Covid-19 pandemic, our masks have become our faces, the first image we present to the public. The design of this mask is meant to convey a refined yet bombastic personality. This is an avant-garde piece made from fabric orchids with a clear plastic faceplate. It is functional and prevents germ transmission.



2nd Place

Karen Krieger
Pennsylvania, USA

"Life Support" is a paper mask constructed and stitched from the ACLU pocket version of the US Constitution, archival paper substructure, and embroidery floss.



3rd Place

Sabin Lab
New York, USA

This 3D-printed mask design acts as a fabric fitter to turn any material – fabric, felt, paper towel – into a viable face mask. The cuts in the design create a flexible "living hinge" that allows the 3D-printed material to take on double curvature for a secure, comfortable, and custom fit to the face. The mask is broken into parts that snap together in order to fit a standard 3D printer. Anyone with a printer can rapidly produce these custom-fitted masks in under two hours, allowing an informal network of makers to augment gaps in the supply line in times of crisis.

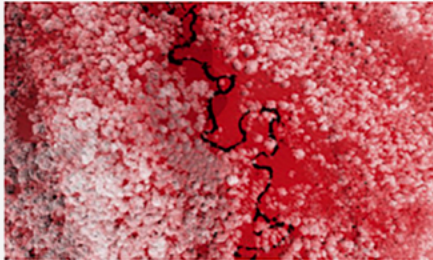
Figure 4. Museum of Craft and Design, *Let's Face It*. Mask design competition, project homepage with competition winners, 2020. <https://www.sfmcd.org>.

Design Culture and the Coronavirus

This series of weekly newsletters was sent between March and July 2020, while Het Nieuwe Instituut's buildings were closed. Design culture and the coronavirus pandemic are the common thread in these newsletters, which feature a thematic selection of web content, online programming and projects from the field.

A design assignment was linked to this series of newsletters. Every week, Het Nieuwe Instituut invited a different designer to create a cover for the web magazine, based on a format by Moniker, in response to the question: What's occupying you now?

see the web covers here



HET NIEUWE INSTITUUT ONLINE/OFFLINE #16
On the Surface: Timber and Plastic

On the surface, timber, plastics and other materials have become essential for preventing contagion with Covid-19. Yet their industries continue to aggravate the degradation of ecosystems, closely intertwined with the rise of pandemics to begin with. This newsletter brings to the surface a selection of design projects that respond to the changing role of material industries in current social and ecological crises.



HET NIEUWE INSTITUUT ONLINE #8

Flowers seduce us, flowers astonish us. They are often ascribed a romantic or ritual meaning and may even have medicinal properties. Yet millions of flowers have been destroyed every day since the start of the coronavirus pandemic. Because of Covid-19, the Dutch flower industry, which generates billions in turnover, is experiencing a drastic decrease in the worldwide demand for flowers. This is affecting the whole chain, from the grower and the auction to the designers, including the florist.

Figure 5. Het Nieuwe Instituut, *Design cultures and coronavirus*, project homepage, 2020. <https://now.hetnieuweinstituut.nl>.

4.2. Curatorial Projects

Many curatorial museum projects offer the community a space for reflection about design as a tool of innovation and a challenge to the pandemic.

This type of action is well represented by the editorial project *Design cultures and coronavirus*,⁷ a series of newsletters released weekly between March and July 2020 and later published on the website by the Het Nieuwe Instituut in Rotterdam – a cultural centre that includes, among others, the Museum for Architecture, Design, and Digital Culture – that talk about the changes caused by the virus through reflections on the design culture. The series, in short, well-conceived texts and collections of recent or past design objects, adopts a curatorial approach to address themes such as: the use of antibacterial or easily disinfected materials, the change in the use of public and private spaces or the repercussions caused by forced social distancing (Fig. 5).

Pandemic Object, the online editorial project of the Victoria & Albert Museum, which began in May 2020 and was extended through September 2021, reflects on the change in the meaning of actions, habits, and everyday objects. The articles describe how the routine use of daily objects and spaces can vary because of certain upheavals, referring not only to everyday objects but also to those in the museum collection, thereby expressing a historical point of view. In times of crisis, an identifying symbol such as the *kefiah* is used to make masks, and the window for many becomes the only place for

7 Project link: <https://now.hetnieuweinstituut.nl/en/design-culture-and-coronavirus>.

socializing: a threshold that divides private life from public life, or the thermometer which becomes an instrument of social control (Fig. 6).

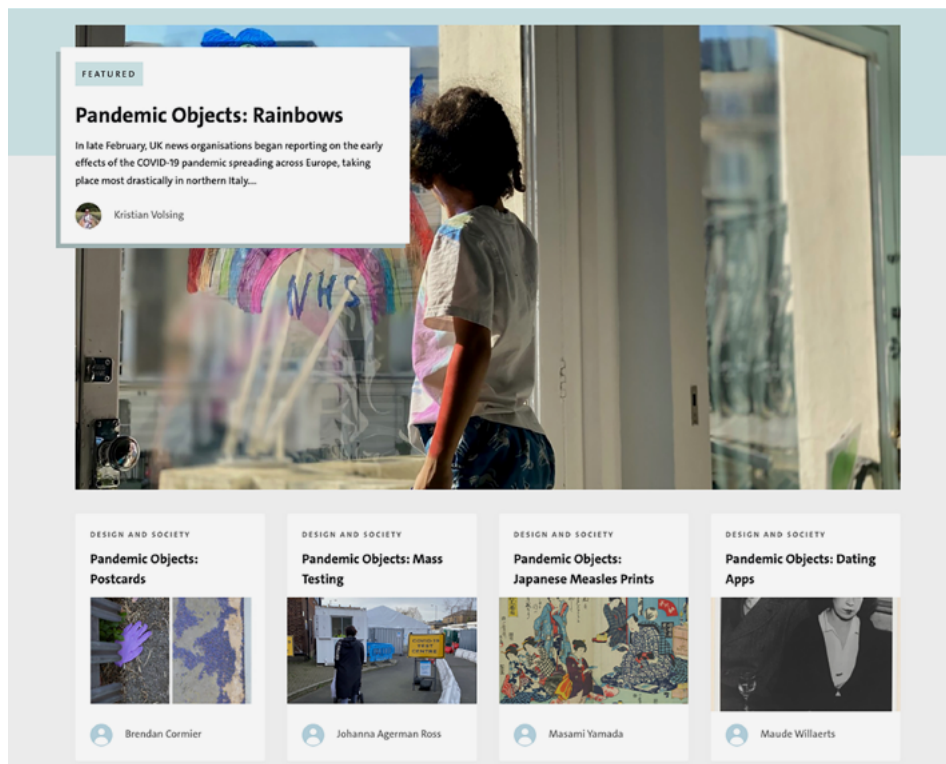


Figure 6. Victoria & Albert Museum, *Pandemic Object*, screenshot of the blog page, 2020. <https://www.vam.ac.uk>.

4.3. The Production of Records

Curated by the recently graduated Fleur Elkerton and Anna Talley for the Royal College of Art and the Victoria & Albert Museum in London and founded in April 2020, *Design in Quarantine* (Elkerton & Talley, 2020) gathers the many design responses to the Coronavirus pandemic in an online open-

source platform, building an archive that is updated in real-time (Fig. 7). The goal of the curators, who are independent of the museum context, was to provide a resource that could help the “historians of the future” narrate and investigate what design actions were imagined and enacted by designers in response to the global pandemic: posters, infographics, custom-designed or “hacked” furniture, new uses for spaces or technologies were just some of the projects that were gathered and catalogued through descriptive texts and images in an archive also conceived on the basis of the emergency.⁸

A second independent point of view was expressed by the designer and director Alexander Humbert who, between March and June 2020, made a short film inside the Musée des Arts Décoratifs in Paris, which was closed due to the emergency. The film *Les Impatients* (Humbert, 2020) posted on YouTube, documents this period. The empty spaces of the museum, the objects covered in dust or in white cloths, and the suspended atmosphere constitute the new everyday life of the only three people who have access to the building, impatient to return to normality: the assistant to the head of security, the head of the collections department and the director of the Museum. In this case, it is not the artifact that carries memory but the short film that builds a record that can bring the experience back to life (Fig. 8).

8 As the curators explain: “The closure of museums, libraries, and archives has forced a shift upon traditional design history research methodologies and forms of archiving. Inspired by the technique of rapid-response curation in museums, the digital collection of this archive is a real-time example of changing research methods in light of recent events” (Elkerton & Talley, 2020).

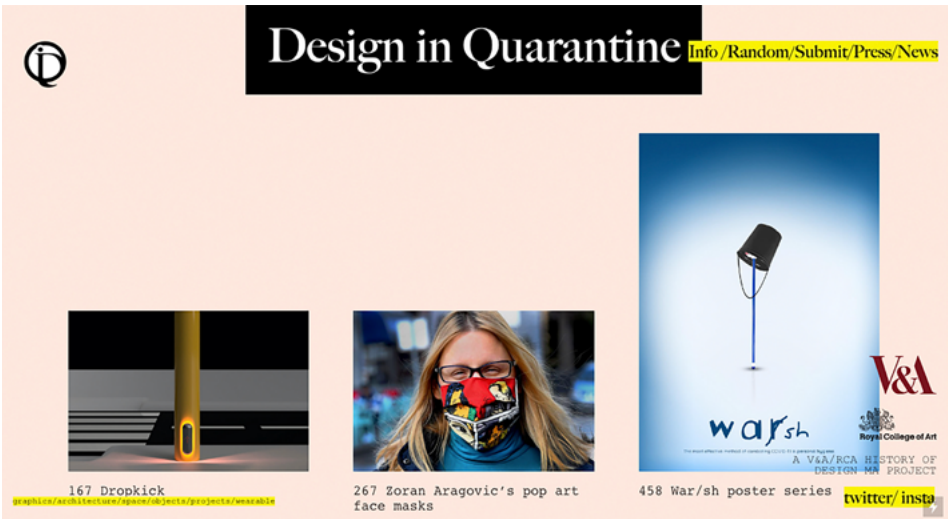


Figure 7. Fleur Elkerton & Anna Talley, *Design in Quarantine*, the Archive homepage, Royal College of Art and Victoria & Albert Museum, 2020. <https://designinquarantine.com>.

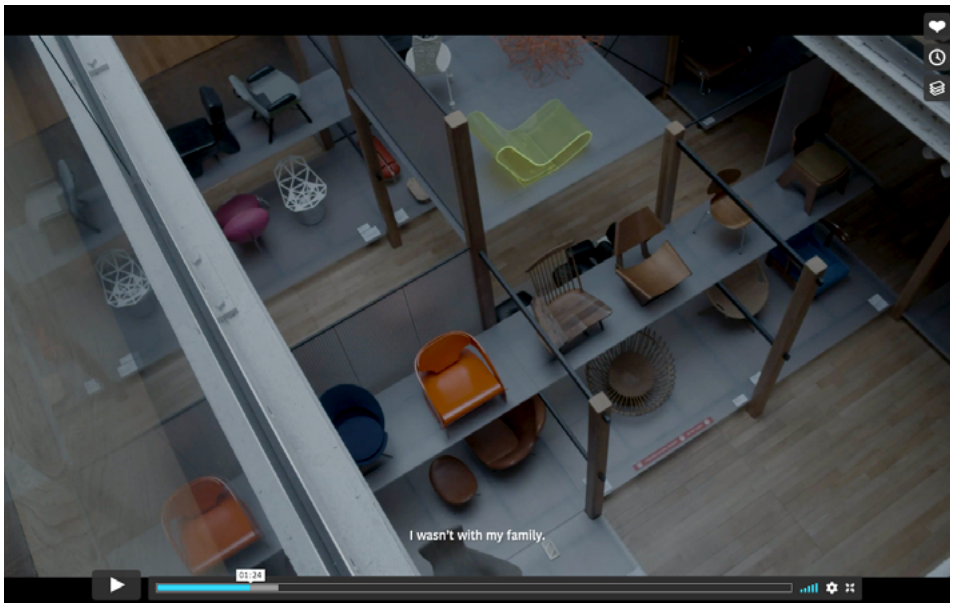


Figure 8. Alexandre Humbert, *Les Impatients*, still image, Musée des Arts Décoratifs, 2020. Courtesy Alexandre Humbert.

5. Discussion

The creation and enhancement of the memory of the present time by museums during the pandemic was supported and enabled by healthcare, social and economic factors and was facilitated by the spread of easy-to-use technological media, which became the preferred channels for transmitting all the activities related to the information, social and educational spheres. Based on the analysis of the case studies, we outlined a synthesis model (Fig. 9) that made it possible to develop a matrix of elements, which can be variably grouped to visualize the complexity and peculiarity of the actions undertaken by museums. The organization of the model consists of two parts: if the goal and the target are defined on the basis of a reflection initiated by the museum, the sole promoter of the activity, the actors, the actions, and the output are directly interrelated with the project.

The matrix constitutes a framework to track and visualize the design practices developed for the emergency in various ways. The projects, grouped in categories – call to action, curatorial projects, and record production – are identified by colour. A visual path, which articulates the matrix elements in various ways, can highlight each project's interlocutors, focus, and process by developing a coloured track. The matrix can support a visualization of the peculiarities of each case study (9a), feature more than one track to highlight the processes of a category of a project (9b), or represent the set of cases with a more abstract synthesis (9c).

There are many possible readings of the model, which vary based on the element that is considered the trigger for the narration.

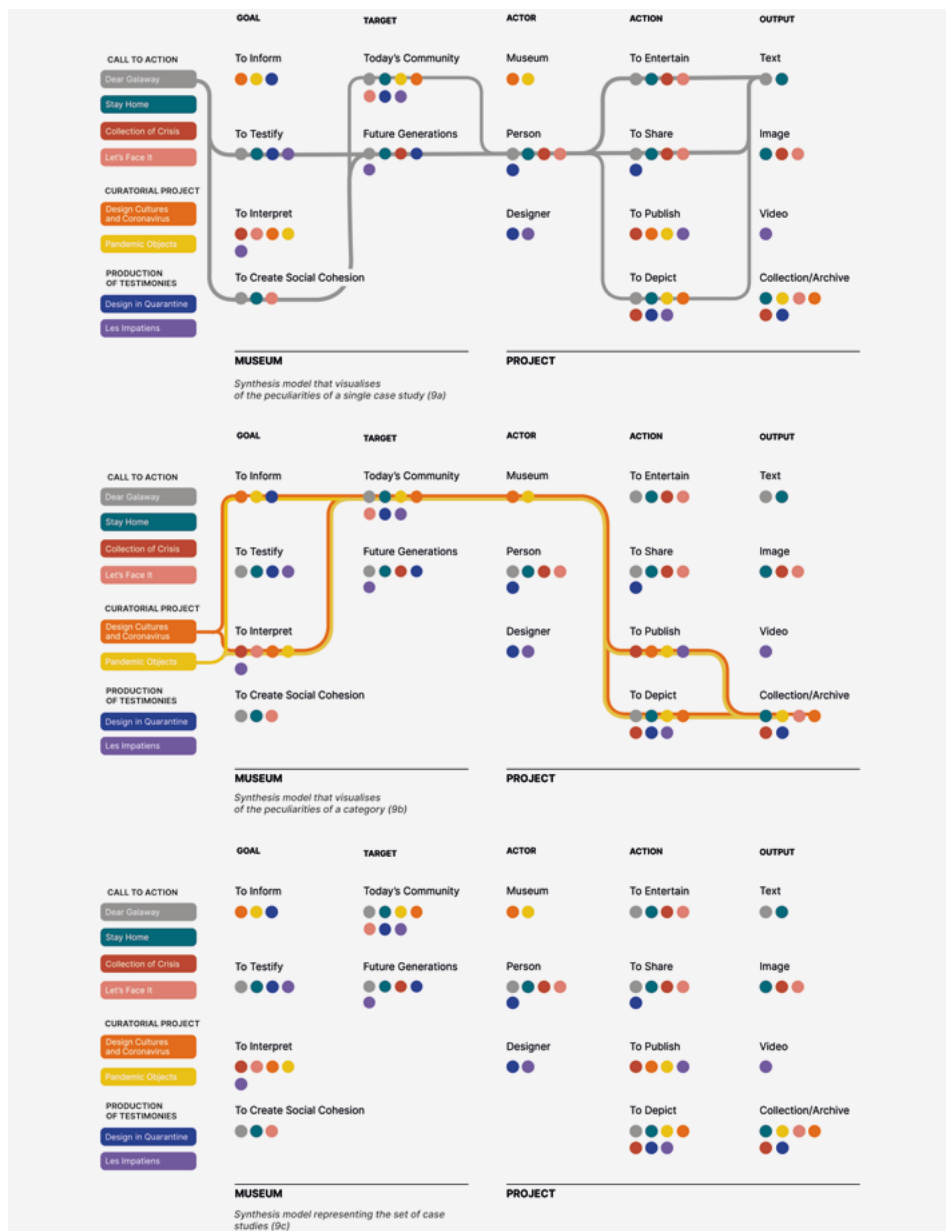


Figure 9. Silvia Gasparotto, Synthesis model. Synthesis model that visualizes the peculiarities of a single case study (9a); synthesis model that visualizes the peculiarities of a category (9b); synthesis model representing the set of case studies (9c), 2022. Credits Silvia Gasparotto.

By identifying the three main guiding elements of the narration as the actor, the action, and the objective, it becomes clear that the projects developed by the museum are aimed at providing information and interpreting reality to reassure today's community. They are disseminated by means of the representation of their content and its publication within collections and archives. In this sense, *Design cultures and coronavirus* and *Pandemic object* intend to inform people by presenting fields to reflect on the present. In periodical newsletters and articles, museums present critical points of view that also include the narration of the heritage they preserve. The projects in which common people provided the main contributions focused on interpreting reality, producing contributions that bear witness to this time for future generations, and creating social cohesion. The actions associated with them are primarily entertaining people and sharing content online.

Representative examples can be *Collection of Crisis*, which launches a call to action as an expedient to make people think about crisis periods and the objects that can represent them, proposing a way to interact with its public, despite the forced closure; *Let's Face It*, which aims to involve individuals in making custom-designed artistic masks, entertaining them and at the same time prompting them to get to know and to think about this device. Finally, *Stay at Home* and *Dear Galway...* are initiatives that sit astride today and tomorrow: on the one hand, they seek to gather the records of the present to allow people to share remotely; on the other, they seek to publish personal accounts, to become a precious resource for future generations.

The projects in which the designers are actors are finalized towards the production of output in different formats and are dedicated to bearing witness to a historical condition that can be shared with today's community and interpreted by tomorrow's. Representation and publication, in this case, are the actions that activate the process. *Design in Quarantine* gathers and systematizes within a digital archive account of how design operated during the pandemic to transmit to future generations the design opportunities provided by such a complex time. In the story of the present time, *Les Impatients* offers an account that narrates the historical period inviting individuals to watch a short film in which the museum is the protagonist. Reading the model can also bring to light even more explicit indications: the most frequently sought goals are to interpret and bear witness to the emergency conditions; the projects are addressed primarily to the community that experienced that moment, which is often asked to provide a personal contribution. Even though museums and designers are considered more authoritative, in this specific case, the curatorial approach gives way to a bottom-up collection of stories. The action most frequently promoted in this context is the representation of this time, followed by sharing online. The output that guarantees a clear and lasting representation of the projects is the collection and the archive organized online.

6. Conclusions

The reflections prompted by the critical analysis of the case studies, their parametrization, and the consequent visual and textual synthesis provided in the discussion confirmed how

the actions proposed by museums, even during times of emergency, derive from the museum's primary functions.

By working on the research, collection, conservation, interpretation, and exhibition (i.e., the restitution) of tangible and intangible records, addressing and actively involving expanded audiences and communities, and reflecting on the contemporary, museums have pursued education as well as entertainment, sharing information and knowledge. Confirming their mission as defined by ICOM (2022):

A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing.

Thanks to digital, institutions have been able to document the present time by gathering sets of contributions, sometimes from the bottom up, that could represent the experience of a local and global community.

The emergency led museums to consider new design contexts and to understand the need to train and include professional figures who could develop their content and practices with their skills and attitudes.

The immediacy of the digital tools they use has made it possible to represent the condition in real-time. Usability and clarity have characterized the interfaces of digital products oriented prevalently towards sharing and information.

Within this framework, design has inevitably prioritized the emergency dimension, relegating the individual expression of authorship to second place and preferring to use creative and design thinking to support society as a whole.

The project of shared archives, video/storytelling, and the collection of bottom-up objects and stories build memories that originate directly in the present time. The representation and interpretation of events during the emergency trace courses of knowledge and relations that raise questions and launch new design challenges.

In pursuing goals such as “building records” – “creating social cohesion” and in promoting actions such as “representing the contemporary condition” – “entertaining audiences”, museums can identify possible paradigms to program actions in non-emergency future settings as well.

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DESIGN HERITAGE AND VISUAL MEMORIES

The Importance of Printed Ephemera in New Type Making Between Historical Research and Reuse of Tangible Heritage

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Abstract

The contribution aims to highlight the relationship between typographic *ephemera* and new movable type making. *Ephemera* are a fundamental component in the constitution of a more conscious history of graphic design oriented towards the actual impact of design in society. Moreover, type specimens and catalogs represent essential primary sources for the study of the history of typography. In parallel, the phenomenon of the letterpress resurgence is being witnessed worldwide, with the necessity to protect, integrate and replace historical material as a direct consequence. This has led to the need to make new type sets through the combination of traditional and new technologies. Although few academic researchers have already addressed the subject, there is a need for systematization of the autonomous tests carried out by various letterpress-related individuals and entities, some of which are presented as case studies. In this regard, it has been possible to divide contemporary type production into three categories: *compensation*, *remaking* and *materialization*. In order to take place, what has been defined as the *remaking* of type sets needs to start with the design of the printed letter and thus from the availability of printed *ephemera*. Consequently, the study of primary sources pertaining to the history of typography becomes basic to make new movable type, while the need for new type sets stimulates the search for reliable and historically accurate primary sources.

1. The Role of Ephemera in Graphic Design Historiography

In recent years, it has been possible to observe a renewal of research approaches to the graphic design history discipline. Some of the insights arising from the first confrontations of what was considered a “movement” (Meggs, 1985, p. 2) or a “proto-discipline” (Blauvelt, 1994, p. 206) have found an active application in studies that challenged models taken from the history of art, architecture, and industrial design, considering them incorrectly borrowed (Kinross, 1985; Aynsley, 1987; Blauvelt, 1994). Several approaches were considered with the intention of questioning the idea of the “hero” designer, usually male, believed to be capable of independently bringing innovation worthy of being counted in the historical narrative and consequently studied from a biographical point of view; instead, adopting a more feminist (de Smet, 2009) or open to the social (Wilkins, 1992) perspective, the focus was on relationships with clients, the importance of work teams and the consequences of design in society and everyday life. This has enabled a framing of history from a female outlook (Lupton et al., 2021; Fanni et al., 2021) or from certain minorities’ angles (Carey, 2011; Chastanet, 2007), including geographies (Shebab, 2020) or questioning others, revealing neglected areas (Farias, 2014; Fornari et al., 2021). This shift in perspective has allowed us to question the canon of graphic design (Scotford, 1991), a list of designers and artifacts that was established too quickly (Dilnot, 1984) and that, for a long time, slowed down or prevented more in-depth researches on various topics of graphic design history; with the development of design history in the postmodern era and thanks to the contribution of the digital humanities, it has been possi-

ble to rethink what it means to document history and make it accessible (Lzicar & Unger, 2017).

In this context, more attention has been paid to the recovery and study of *ephemera* (Twyman, 2008), printed matter for everyday usage that was destined to be tossed immediately after its use, that in some cases may have been preserved due to various vicissitudes. A variety of actors have played a decisive role in this preservation: collecting, with its focus on materials from the past related to the most diverse fields; but also archives not directly connected to the world of graphic design, and the affective relation of private individuals with certain objects, often linked to family history or geographical affiliation. The *ephemera* are the perfect exemplification of the connection between design and everyday life of a given period, constituting an inseparable bond with an approach to social history necessary to overcome the designer-hero view. Besides, as early as 1992, Bridget Wilkins observed that

We should not allow a preoccupation with financial and aesthetic value to blind us to the historical value of all graphic *ephemera*. A wartime ration book has as much to tell us about communication design, people's daily experience, and society in the Second World War – in other words, graphic design history – as a poster by Abram Games. (Wilkins, 1992)

A greater consideration of the everyday objects of graphic design than the masterpieces that have found a place in museums is, for example, the basic assumption of *Graphic design. Reproduction and representation since 1800*, published by Paul

Jobling and David Crowley in 1996. This was prompted by the need to “directly contributing to the development of a more democratic and commercial identity for graphic design” (Jobling & Crowley, 1996, p. 4) and, despite some criticism of the approach considered too close to that of social history (Margolin, 1997), the volume is still regarded as one of the most authoritative histories of graphic design.

2. Type Specimen and Catalogs

Typography is a peculiar area of graphic design in which the use of printed *ephemera* as a primary historical source is particularly significant. In fact, any proper graphic artifact possesses a typographic component, a peculiarity that makes it potentially useful for historical research in the field of typography. Therefore, common objects such as posters, tickets, and cards are artifacts that can also be investigated under this aspect. However, a specific category of *ephemera* is necessary to define the evolution of design, production, and distribution of typefaces. These are type catalogs, specimens, and other advertising material printed by type manufacturers and foundries to publicize and consequently sell their products. It is possible to find the first forms of attention to the subject already in the early 20th century, thanks to the historical research of some printers of the time, including Stanley Morison in England and Daniel Updike in the United States. Over time, specific archives dealing with preservation and enhancement have sprung up and now play a major role in the study of the history of typography. These archives can either be run by universities, as in the case of The Centre for Ephemera Studies, kept at the University of Reading; or can

be private centers, as in the case of Letterform Archive (San Francisco) and St Bride Library (London), which, in addition to providing access to the actual physical archives, make digitization and worldwide availability one of their primary objectives (Fig. 1).

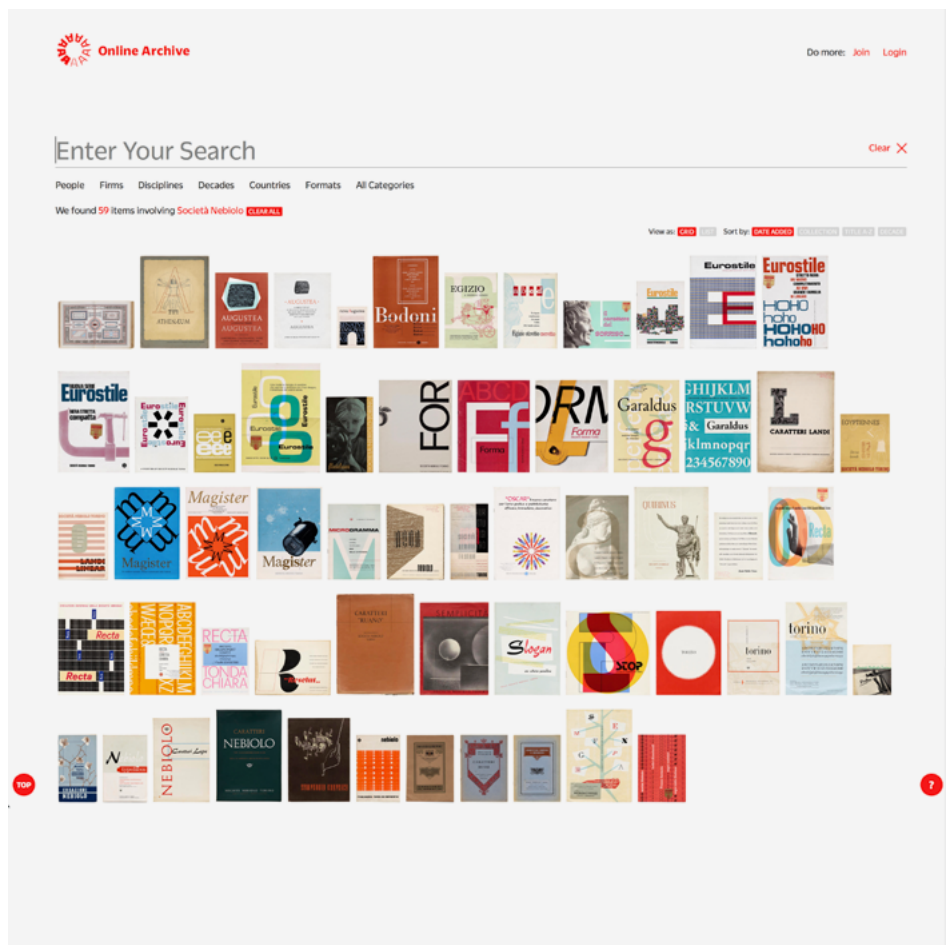


Figure 1. Letterform Archive, overview of the Nebiolo Company *ephemera* in the online archive (Letterform Archive).

In the case of Letterform Archive, a part of the physical collection was digitized by means of high-resolution photographic processes (Harper, 2020), and converged in a specific online archive, hosted on the nonprofit centers' website and freely accessible. This digitization process is constantly being updated, and custom imaging of objects in the collection can be requested. On the other hand, the St Bride Library carried out a project that led to the digitization of – currently – 155 specimens dated before 1831. These scans have been incorporated into the larger Internet Archive project and are freely available. Also, high-quality scans of the specimens can be requested directly from the library.

The use of *ephemera* as an indispensable starting point for the development of the history of typography can also be observed in the recent publication *Type specimens. A visual history of type-setting and printing* (Griffin, 2022), whose purpose is to provide an authoritative alternative to the plethora of images of specimens available on the web but lacking contextual indications.

In addition to containing technical and commercial information – such as how to purchase type sets and available sizes – and possible design applications of the typeface, in most cases, specimens and catalogs printed by type producers show the design of available glyphs of the presented alphabet. This specificity makes these *ephemera* indispensable in the study of the evolution of typographic forms. Type catalogs, in particular, which are sometimes dated or, in any case, easier to place in time because of the typefaces they contain, represent a precise snapshot of the production of a specific foundry or wood type manufacturer at a given time (Figs. 2 & 3).



Figure 2. Xilografia Milanese, wood type catalogue, cover (Tallone Editore).



Figure 3. Xilografia di Verona, wood type catalogue, inside page (Associazione Centro Studi Grafici).

They are bound volumes, more or less thick, that were printed several years apart. Except in the case of display artifacts used exclusively by sales representatives of the companies, these were distributed to the various printers, who replaced the obsolete versions with up-to-date ones, which is why only a limited number of samples have survived.

Comparison between versions of the same type catalog, different catalogs from the same company, and between coeval catalogs from diverse manufacturers can provide various results, including the survival and disappearance of certain typefaces – linked to commercial fortunes and thus to changing tastes over time – and evidence of the copying of alphabets between different companies, both nationally and internationally (Rattin & Ricci, 1997).

It is important to emphasize that a large amount of the typefaces designed between the 19th and 20th centuries did not survive the transition to photocomposition first and then to digital: in fact, companies often based their choices on popular tastes, choosing the best-sellers of the time and neglecting many beautiful typefaces that therefore do not exist as fonts (Walters, 2019).

Among the various type catalogs, a special variety are those printed to display wood type sets. These large display typefaces were mainly used to print posters. Sometimes the same typefaces available in the lead were adapted for wooden versions, but special letterforms were often designed for this typology. For this reason, and because of the difference in customers – not all printers used to print posters – wood type was displayed in separate type catalogs.

In Italy, there were various wood type producers (Clough, 2014). In addition to Nebiolo, the main Italian foundry of the 20th century, which also had a wood type department, a number of minor wood type manufacturers existed too: their production of display typefaces sometimes included designs with very distinctive features. The study of this specific area of the history of Italian typography requires in-depth research conducted with a systematic approach. One of the authors is currently mapping and indexing the known catalogs of wood types produced in Italy. This research, conducted among foundations, archives and private collections, may serve as a starting point for future historical studies, as well as a primary source for the reuse of specific typefaces in terms of digital revivals or new type making for letterpress printing.

3. The Resurgence of Letterpress

Since the last decade of the 20th century, it has been possible to notice the diffusion of practices concerning preserving and valorising the tangible and intangible heritage inherent to movable type printing. This phenomenon, known as the “resurgence of letterpress printing” (Williamson, 2013), has rapidly spread throughout the world, leading various individuals and entities to deal with the tools of the movable type printing process. While some of them, having inherited the family business, work in complete continuity with the past, most are approaching letterpress as neophytes. For the recovery of specific knowledge concerning this craft, it was, therefore, necessary for them to make use of various sources (mainly written and oral) in order to acquire a cultural awareness of the relative heritage, in addition to technical notions about the operation and the maintenance of the equipment. In fact, it should be noted that although an industrial dimension characterized movable type printing – for five hundred years, it has been the main means of disseminating knowledge – some of the passages involving the design and the printing set-up phases had purely artisanal characteristics.

Letterpress printers have been facing some problems arising from the poor state of preservation of industrial archaeology findings that are at least fifty years old and, therefore, not always perfectly preserved. These working tools – type, presses and all the necessary printing equipment – have become increasingly difficult to obtain, and their price is progressively rising (Shaoquiang, 2021, p. 169). The letterpress revival phenomenon has also developed in Italy (Berra, 2011; Passerini,

2014), and the issues have been no exception. If the lack of vintage proof-presses (small presses used precisely to obtain proofs before proceeding to print the entire run) is being compensated by the design, the dissemination of models and the assembly of self-made proof-presses (Beckloff, 2022), other, more varied kinds of equipment have required other measures. In particular, one of the most common issues is related to wood type sets, which may have survived with a scarce number of specific characters – ruined over time or carved out by printers in order to obtain other, more useful letters – or even without certain glyphs. Such conditions severely impair the usability of the entire set. It must be emphasized that some of this material – particularly the older or, the less widespread one – has not reached the present day in physical form (movable type) but only through printed *ephemera* (prints, specimens, and type catalogs), making it impossible to use original letterforms, sometimes peculiar to a specific style or era, in modern letterpress projects.

Currently, the revival of letterpress is considered one of the most interesting phenomena in contemporary graphic design (Meggs & Purvis, 2016) and keeps growing in popularity (Wolske, 2021) for reasons related both to the process and the final artifact (Vendetti, 2019). The creation of practices and models that can compensate for issues related to the historicity of the tools is, therefore, a concrete objective for anyone willing to use this printing technique. Finally, it is important to stress how letterpress has been placed at the center of various academic research, which has focused on the use of digital technologies, essential in terms of accessibility and preservation,

in a broad sense, of artifacts that could be part of a virtual archive of the printing process (Bonini Lessing et al., 2019a); or which have investigated its didactic and educational side, combining analogue and digital in an inseparable way, linking the forms of the past, the practices of the present, and the legacy for the future (Amado et al., 2022).

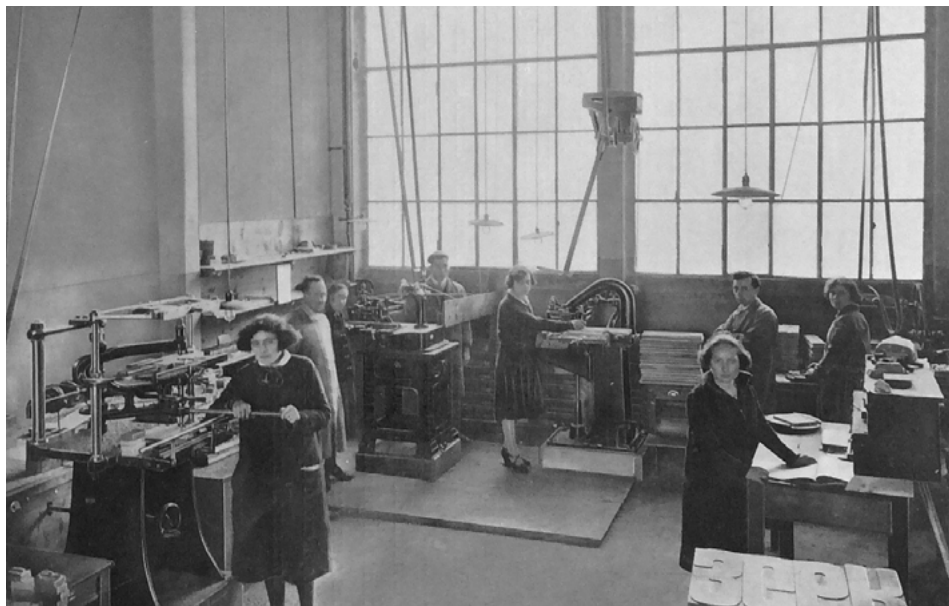
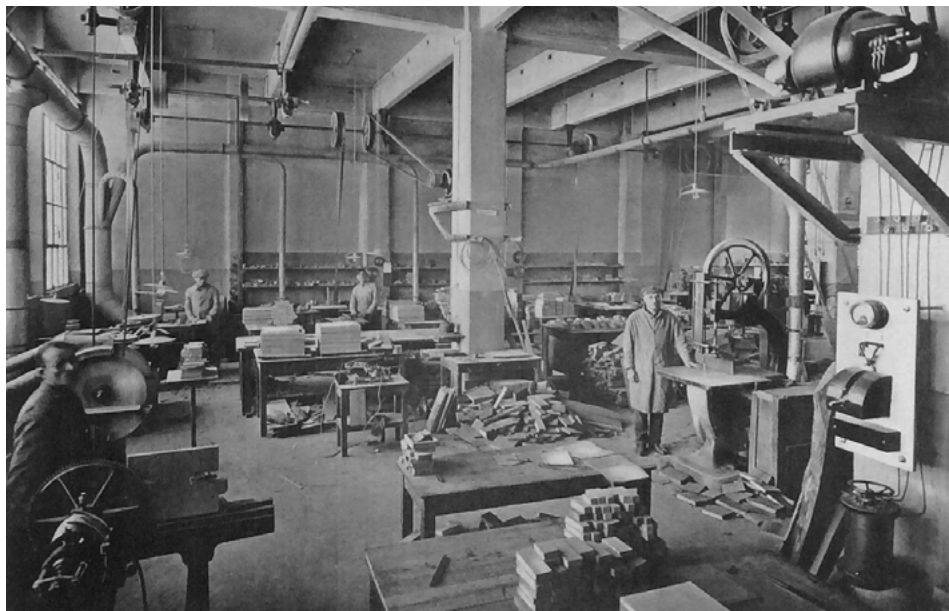
4. The Historical Production of Display Type

The process of movable type printing has remained essentially unchanged over the centuries: one of the aspects that have undergone the greatest change has been the introduction of different materials and technologies to produce type. Economical and practical needs drove this shift: as an example, producing a lead type of a size suitable for posters – above approximately 72 points – was not sustainable due to the substantial weight and high cost of production, in addition to the fact that uneven cooling caused large lead type to distort (Clough, 2014). For this reason, from the 19th century, wood type began to be produced, at first carved by hand – similar to what was done for xylographic images – and later through production progressively geared towards the industrial model (Kelly, 2018, p. 1).

The mass production process for display type, in use until the 20th century, involved the usage of a pantograph router in combination with wooden or cardboard patterns, which made it possible to reproduce the typeface design by milling wood blocks (Kelly, 2016). Such a process was introduced in the United States in 1827 by Darius Wells and perfected by William Leavenworth in 1834 (Kelly, 2016): there the raw material used was mostly sugar maple, as it was resistant to pressure of the

printing presses and easily milled, and therefore ideal for type up to 5 inches in size (Heller, 2017). The sugar maple, cut down in winter while the log was frozen, was then sawn into end grain slabs and cured for about two years. A mechanical device brought the cured slabs to the exact typographic height. Then the process entailed a treatment with pumice and linseed oil applied by hand and coats of wood lacquer or varnish alternated with light sandings to create a smooth surface with a protective patina. The polished slabs were sawed in individual blocks of the intended dimension, removing irregularities such as knots or hardwood. After engraving with a pantograph router and removing extra wood with a precision printer's saw, pieces of type produced in such a way needed a final hand-finishing at the trimming table: skilled carvers filed down any inaccuracy and used knives to make the sharp corners and other details (Kelly, 2016). Long grain pine wood was employed for large display typefaces, which was less compact and durable but cheaper (Heller, 2017).

Similarly, in Italy, wood type was at first carved by hand with the aid of stencils (Tallone, 2022), and from the second part of the 19th century on, mass-produced using patterns and pantograph routers (Balossi, 1928). The use of cured pear wood treated with boiled linseed oil has also been documented (Clough, 2014). The Nebiolo company in Turin, Italy's most important type and press manufacturer of the 20th century, boasted in an article of their house organ that pear wood was cured for as long as five years, which made the material compact and less susceptible to changes in temperature and humidity (Balossi, 1928) (Figs. 4 & 5).



Figures 4 & 5. Wood type department of the Nebiolo Company, type manufacturing, in *Archivio Tipografico*, 32(267-268), 1928 (Tipoteca Italiana Fondazione).

The introduction of plastic represents the latest advancement in the field of movable type production. Occurring in the mid-20th century, it made it possible to overcome the need for finishing with shellac or linseed oil: plastic type was less prone to wear than their wooden counterparts (Kühne, 2020) and were immune to woodworm attack. Among the plastic materials, *Plakadur* was a particularly suitable polymer, discovered in the 1950s and used for producing synthetic types. In some cases, after being milled, plastic type was duplicated through the use of molds in which the melted material was cast. According to recent studies by Dafi Kühne (Beckwith, 2020; Kühne, 2020), plastic did not replace wood due to higher production costs and the toxicity of the process.

5. Strategies for New Type Making

Since there is no longer a production industry to support letterpress, and since type is subject to wear and tear even through regular use, the need to find new solutions for those who have rediscovered this printing technique both as a form of visual expression and as an educational function has arisen. Since characters are made of perishable and scratchable materials, it is not uncommon to find damaged or unusable letters, sometimes even missing. Therefore, the relationship between letterpress and the use of new production possibilities was investigated to enable the valorization of typography's historical and cultural heritage through its use.

Based on the most frequent issues, three possible strategies to make new movable type have been discerned: the *compensation* of characters in incomplete historical sets; the *remaking*

of entire type sets that survive as extremely rare examples or exclusively in the form of printed *ephemera*; and, finally, the materialization of digitally designed typefaces for letterpress use. The first two categories constitute a direct operation to safeguard the typographic cultural heritage, while the third represents both a search for new forms of expression for visual communication and an operation for the update of historical typefaces through the design of new contemporary glyphs. Based on these strategies, three possible design processes were identified: Analog to Analog (AA); Digital to Analog (DA); Analog to Digital to Analog (ADA). These approaches are applicable to different type making strategies according to the analog or virtual origin of the input, depending on whether they start from a physical model, a printed primary source, an existing digital font, or have no basis at all.

It is evident that for the processes starting from Analog, and remaking in particular, it is necessary to make use of authoritative primary sources. In this context, the study and accessibility of printed *ephemera* become prerequisites for historically accurate type making. Through a series of digital processes that have yet to be systematized, which turn a printed surface back into a three-dimensional object, it is, therefore, possible to make pieces of design from the past tangible again. For this operation, the accuracy in the choice of the starting reference is basic in terms of historical correctness. Furthermore, the research and study of such primary sources increases the possibility of rediscovering forgotten typefaces.

Printed *ephemera* can also play an important role in the compensation of rare type sets if similar ones are not available

or difficult to find, thus employing the ADA process. In fact, censusing and publishing operations of historical type sets in the collections of museums and other specific entities are still uncommon. These data are seldom systematized; therefore, starting from printed *ephemera* may be more accessible. In the case of ADA compensation, accuracy in the choice of historical source also becomes particularly crucial in order not to commit gross errors – for example, in Italy, it is well known that many typefaces were copies of others from competing manufacturers or foundries, with the addition of a few details to differentiate specific letters and avoid legal problems (Rattin & Ricci, 1997). Specimens and type catalogs can therefore be considered the best primary sources for rediscovering forgotten typefaces and for carrying out in a historically correct way any operations related to contemporary type production.

6. Experimentations in Progress

Various letterpress-related individuals and entities are currently carrying out experimentations concerning the mixing of traditional methods and digital technologies – CNC milling, laser cutting, and 3D printing – in new movable type making (Bonini Lessing et al., 2019b; Caccamo & Vendetti, 2019). The technical issues to be addressed are different, and concern, on the one hand, the physical properties of the object – height tolerance, resistance to printing pressure, material response to external agents such as moisture and the passage of time, perfect uniformity of the printing surface – and, on the other hand, issues relating to the precision in transferring the letter design to the physical character, with regard to small type, serifs and acute angles.



Figure 6. McKellier Wood Type, compensation of an incomplete historical set (Mark McKellier).

The tolerance of the typographic height is a particularly important aspect that depends on the function of printing presses, which have an accuracy of a tenth of a millimeter.

In England, McKellier Wood Type has long been active on the compensation side, offering printers a service of replacement letters in case of damaged or missing glyphs (Figs. 6 & 7). Typically, the integration of sets is done by duplicating existing but scarce characters, reconstructing the design from printed primary sources, or in the lack of these, relying on the rest of the alphabet to achieve a realistic version of the missing letters (ADA or DA approach). For this kind of operation, the client is asked to supply a printed specimen of the type set or physical characters.



McKellier uses end grain hardwood from English sycamore and beech or Canadian maple. The surface is treated with shellac and hand-finished to a traditional smooth printing surface. Wood type is manufactured with a combination of CNC routers and traditional hand woodworking tools (McKellier, 2022).

An example of remaking is the *Typemods* project, led by the recently established LetterIsland, founded in the Canary Islands by Matthias Beck. *Typemods* is a modular typographic system based on a printed specimen of Esteban Trochut's *Figuras Geometricas*, designed in Spain in the 1930s (ADA approach). This block system allows printers to generate infinite combinations, making it a suitable resource for educational purposes (Figs. 8 & 9). It is produced both as a digital version and as wood type. The exact typographic height is obtained through a combination of a CNC router and a roller sander with different sandpaper grades, achieving a perfectly smooth surface. The wood is then varnished with shellac and polished with oil and pumice powder. From a single wood block thus processed, all the modules of the typographic system are milled using a CNC machine. Subsequently, the individual modules are cut using a traditional printer's saw (Beck, 2021).

Ryan Molloy, a lecturer at Eastern Michigan University, works on font materialization, producing original designs for visual communication. The new type sets and modular geometric elements – produced in end grain maple with shellac printing surface – are digitally designed and explore new formal possibilities within the limits of the technologies and materials involved, generating innovative results for letterpress printing (Fig. 10).



Figure 8. LetterIsland, *Typemods*, remaking: a modular typographic system inspired by Spanish typefaces from the 1930s, manufactured using a CNC milling machine (Matthias Beck).



Figure 9. LetterIsland, *Typemods*, stencil alphabet consisting of modular geometric elements (Matthias Beck).



Figure 10. Ryan Molloy, materialization: digitally designed typefaces for letterpress, produced with a CNC milling machine (Hamilton Wood Type and Printing Museum).

The technologies employed are a CNC router and a laser cutting and engraving machine (DA approach). The latest experiments involve the creation of glyphs of non-Latin alphabets (Molloy, 2022). Finally, Molloy has held several workshops and online conferences dedicated to printers to spread specific knowledge about wood type making experiments. One of these, organized as part of the Letterpress United festival (Scotucci & Vendetti, 2021; Wolske, 2021), brought together Molloy, McKellier and Dafi Kühne on the topic of contemporary type production (Letterpress United, 2020).

7. Future Scenarios and Conclusions

At present, the authors are carrying out experimentations concerning new type making. In particular, starting from selected catalogs of wood type produced in Italy, they are proceeding with the compensation and remaking of a number of

sets. The aim is to generate an increase of knowledge in the specific field and find solutions to be exploited for practical purposes. Indeed, the main expected outcome is the proposal of scientifically valid procedures and operational models for new type making, in the form of guidelines, aiming to systematize and validate current experiments, often carried out autonomously. The identified target group to which the results are to be addressed are scholars researching in the field of typography, the letterpress community, and graphic designers. The experimentations, which are in their early stage, yield some indications on the accessibility of memory that need to be dwelt upon.

The first indication concerns the digitalization of *ephemera*. The emerging standard, although depending on the nature of the artifact, involves the use of high-resolution cameras, as witnessed by the experience of Letterform Archive (Harper, 2020). Consequently, an indication for institutions wishing to pursue research in this field is to equip themselves with suitable instrumentation. However, digitalisations related to primary sources are only some of the files generated during the process of contemporary type production: vector images, three-dimensional models, and scans of prints are all outputs needed to reconstruct specific type sets. This information, in addition to the specific settings of the machines during the various stages, represents potentially fundamental knowledge for preserving, systematizing, and disseminating the tangible and intangible heritage linked to the history of typography. For these reasons, it is preferable that this information should be released under an open-source license (Russo, 2022).

A better combination of physical and virtual archives could lead, in a post-digital era, not only to the survival of letterpress printing (Hugill-Fontanell, 2022) – which will experience a gradual disappearance or unusability of historical materials – but also to its contemporary adaptation in terms of technologies and visual artifacts. In this sense, the choices regarding typologies, platforms, technological tools, and the possibility of establishing connections will be the discriminating factors that will allow or not such digital archives to survive (Dalla Mura, 2016).

Moreover, remaking appears to be a fundamental strategy to preserve the material heritage of letterpress printing, allowing the reuse of type sets otherwise destined for oblivion. This operation triggers a virtuous circle, whereby those involved in new type making carry out historical research with the aim of using authoritative primary sources.

In conclusion, the operations inherent to the contemporary production of movable type give substance to the relationship between present and past concrete and should be considered as an example of memory preservation not only in a digital way but, above all, in a tangible form. Such design processes stand as valid methods to transmit cultural heritage to future generations.

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Poster World

Bespoke AI Meets Curator Expertise for Public Engagement

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Abstract

Though museums are digitising their archives, online consultations remain low. New forms of engagement bring these digital memories to life and can support museums in maintaining and developing digital resources. Artificial Intelligence presents opportunities to showcase this rich heritage, but it also raises issues of transparency and cultural relevance. We explored these questions through a collaboration with Zürich's Museum für Gestaltung on its unique poster collection. We looked at how calculating similarities between digitised documents could create new user experiences with emotional and cognitive impact. Throughout the project, designers worked with engineers to investigate bespoke algorithms and graphic representations of their outputs. After an initial state of the art and preliminary tests, we developed three scenarios for a museum installation. Investigating three hypotheses, we evaluated the prototype scenarios with user experience psychology protocols. Our results show the value of combining artificial intelligence with curator expertise, the impact of similarities extracted by mathematical modelling and the importance of how they are visualised. We also found no significant difference between the perception of novices and experts in our results. This fosters a strategy for museums which brings different audiences together. The final installation, which combines elements from all three scenarios, opened to the public at the Museum in February 2022.

1. Introduction

Museums digitise their collections to increase visibility, accessibility and use for academic research. The latest study performed by the Network of European Museum Organisations (NEMO, 2020) reported a digitisation rate of 43.6%. This leads to huge and rich databases of digital memories. However, despite promising perspectives (Anike & Chinelo, 2017), visits to museum archive websites remain low, particularly in comparison to other cultural institutions such as libraries (Nauta et al., 2017). Furthermore, these sites' complex navigation and indexing reduces accessibility to the wider public (Machidon et al., 2020). It is, therefore, critical to raise the interest of large audiences through new forms of engagement to make value out of this digitised heritage. This could not only bring effective engagement between museums and society but also help to confront the current challenges and threats to digitisation (Pandey & Kumar, 2020).

Creative applications of artificial intelligence (AI) present exciting opportunities to bring heritage to new audiences. This can be seen in examples such as Microsoft's *AI for Cultural Heritage program* and the Horizon Europe-funded *Saint George on a Bike* project. We identified three key challenges and opportunities for using AI for cultural heritage.

Firstly, new forms of interaction with AI confront questions of responsibility and transparency (Pisoni et al., 2021). These can be complex to manage; for example, information transparency can also lead to information complexity. Therefore, information, visualisation and interactions must be controlled in order to moderate user understanding and engagement (Ribes, Henchoz, et al., 2021).

Secondly, many digital archive experiences that use AI present the largest possible amount of content. This can be seen in examples such as the *t-SNE Map Experiment* by Google Arts & Culture. This shows the collection's richness and uses AI's ability to generate new insights from massive databases. However, we hypothesise that this can overload visitors and reduce their capacity to see clear narratives from the experience. Traditional exhibitions, which showcase a limited number of elements through curatorial direction, are well-versed in creating a clear statement which relates the heritage to cultural, historical and social contexts. They also allow different aspects of the museum collection to be brought out at different moments, allowing a regular stream of new narratives for visitors.

Finally, AI and associated techniques have the capacity to adapt museum content to individuals, which is often seen as something positive (Pisoni et al., 2021). However, other work stresses the benefits of museum sociality, where different audiences, from novices to experts, can meet and engage together (Jafari et al., 2013).

In light of these observations, how can we make the most of AI's potential to engage the public with digital museum archives while maintaining a curator's critical input? What new forms of interaction are required? How do we gain cultural relevance and transparency while using mathematical modelling? And how does it remain a social experience?

1.1. From Design Research to an Implemented Solution

We explored these challenges through a design research project in collaboration with the *Museum für Gestaltung* in Zürich. Working with the museum's poster collection, the

objective was to design and deliver an installation for the museum that would enhance the public's cognitive understanding and emotional connection with the archive. From the outset, we investigated AI and related technologies as a way to open design perspectives. Our team of designers, engineers and psychologists also looked to provide a new approach addressing transparency and cultural relevance in this context.

1.2. The Poster Collection

The museum's poster collection is one of the largest in the world, with more than 360,000 items, of which 52,000 are digitised. At its core, the poster is a visual communication medium reproduced in mass to promote products, services, people or ideas (Muller-Brockmann et al., 2004). Posters are complex graphical objects which can combine photography, fonts, illustrations, colours, composition grids and other visual elements in a single image. Creative combinations of these elements give posters a particular visual salience (Wilson et al., 2015), allowing them to communicate a memorable message rapidly. The posters in the *Museum für Gestaltung's* collection can be considered for their capacity to reflect the society of their time. For our work, we had access to the full digitised poster database as well as to 35 books of the Poster Collection series produced by the museum.

2. Creative Directions

Combining initial desk research, observations and discussions with curators and designers, we grounded the design of our installation on the following four directions. The first was to display a sample of the collection instead of the whole

archive. This sample had to be defined by the curator to provide a coherent ensemble of articles related to a topic. This approach would also allow the museum to change the content on a regular basis. The first curated sample consists of around 2000 posters from the Swiss collection between 1907 and 2021. The intention was that this would also be an appealing theme related to the Swiss imaginary for novice visitors.

The second direction was to highlight poster features by presenting a small number of visually or historically similar posters together. Using AI to do this would create a strong visual impact to engage visitors whilst also revealing the elements that make up the poster's visual saliency. This was inspired by previous works, including the museum's books and the project *Poster N°524* (Boomgaard & Kleerebezem, 2013), in which the authors deconstructed a poster series by isolating and reconstructing specific characteristics.

The third idea looked at expressing poster features. To reduce the potential complexity created through transparent AI, we decided that each feature should be expressed graphically instead of with text or numbers. To build more culturally relevant associations, we also wanted to investigate how algorithms could be trained with relatively small amounts of curated content (such as poster books) as opposed to large open-source databases. The challenge was how to isolate the potentially intertwined poster features and the lack of an annotated database.

The fourth creative direction was to show the relationship between individual posters and the selected collection. We aimed to display a focused poster view, highlighting a small number of similar posters at full size and a collection view, showing the selected subset of posters as an ensemble (Kutay, 2016).

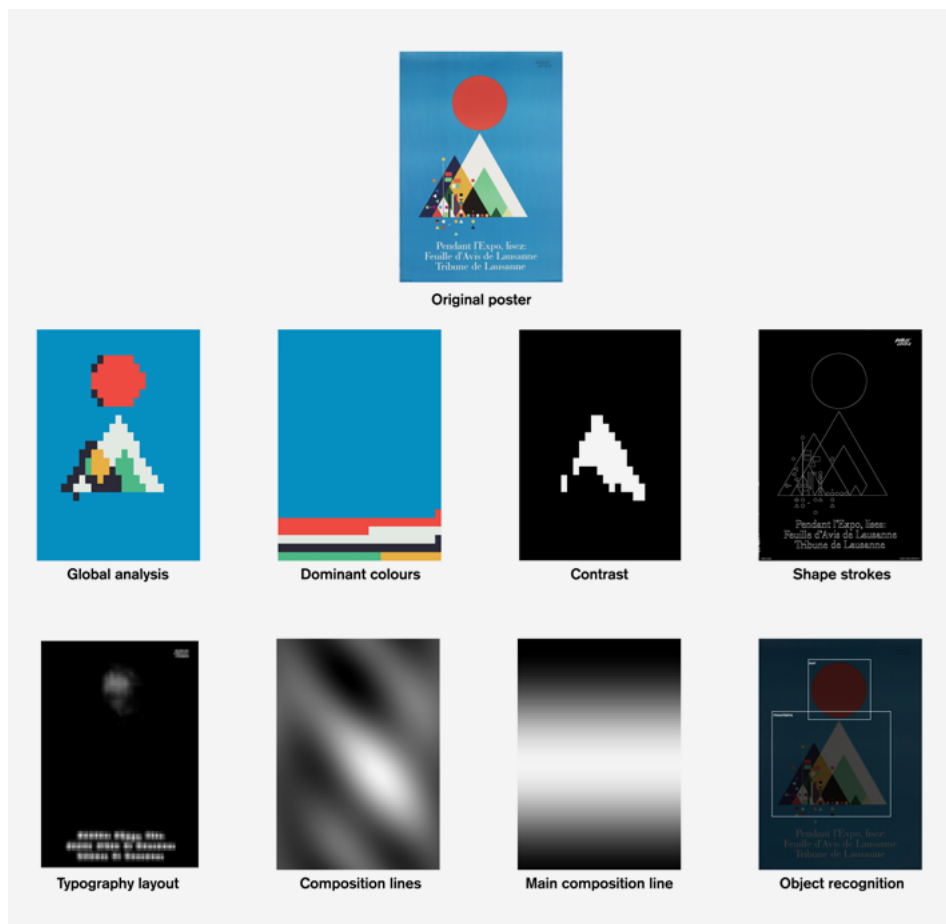


Figure 1. Graphical representations of analysed poster features.

3. AI Investigations

These challenges led to engineering investigations throughout the project. The first was to develop algorithms to extract poster features that could manage the medium's complexity, then transform the extracted features into graphical representations, and finally showcase these results in both a poster and collection view.

Dominant colours, shape strokes, contrast, and composition lines (Fig. 1) were extracted using existing image processing algorithms, i.e., k-means clustering, the Canny edge detector, the minimum cross entropy thresholding algorithm and the fast fourier transform, respectively. We tuned these algorithms to the specificity of the medium, and for each of them, we used the algorithm's outcomes as a graphical representation. A ResNet-18 (He et al., 2016), an 18-layer neural network for image classification, was applied to each outcome. This was implemented in combination with a 2D t-SNE (Van der Maaten & Hinton, 2008), an algorithm for visualising high-dimensional data sets to create the collection view. To facilitate user understanding between the collection to poster view, we used the t-SNE 2D coordinates to calculate similarities.

For object recognition, we used YOLO (Redmon & Farhadi, 2018) on the raw poster image in combination with a 2D t-SNE for the poster view and collection view. We displayed bounding box images of the detected objects to represent this feature graphically.

For a global poster analysis, we used the museum's whole digitised poster collection to train a convolutional autoencoder (an artificial neural network used to learn efficient codings of unlabeled data). The graphical representation is a low-resolution version of the image with only dominant colours.

The Character-Region Awareness For Text detection algorithm (CRAFT) was used for the typography layout feature. The character region map, an output of CRAFT, was used as the visual representation. As for the image processing algorithm outputs, a ResNet-18 was applied in combination with a 2D t-SNE for the poster and collection views.

Finally, we developed an AI framework to create a narrative from the museum's curated poster books to reach more culturally relevant outcomes. We started by clustering objects and then generated narrative series. The model was validated via user tests with professional graphic designers (Ribes, Bernasconi, et al., 2021).

4. Low-Fidelity Experiences

We performed preliminary user tests with 14 participants and low-fidelity prototypes to further our design directions. We wanted to define the number of associated posters to show at once in the poster view and to determine how to express the features. The results showed that presenting three posters together balanced diversity with a clear perception of a common feature. We also compared three features driving poster association: one with an obvious feature (colour), a second with a shared theme, while the third was random. Though users ranked the obvious feature first, the theme second and the random association last, the results showed low differences. This supported the idea of presenting posters through associations but also showed that non-explicit associations can remain attractive to visitors. Combining these results with the AI investigations, we established a list of features to be integrated into the next prototypes. This list was also based on the literature and tested with graphic design experts. These were global analysis, dominant colours, maximum contrast, shape strokes, composition lines and main composition line, typography layout and object recognition. In addition, we used metadata on the designer, client and keywords from the museum's database to add contextual information for each poster.

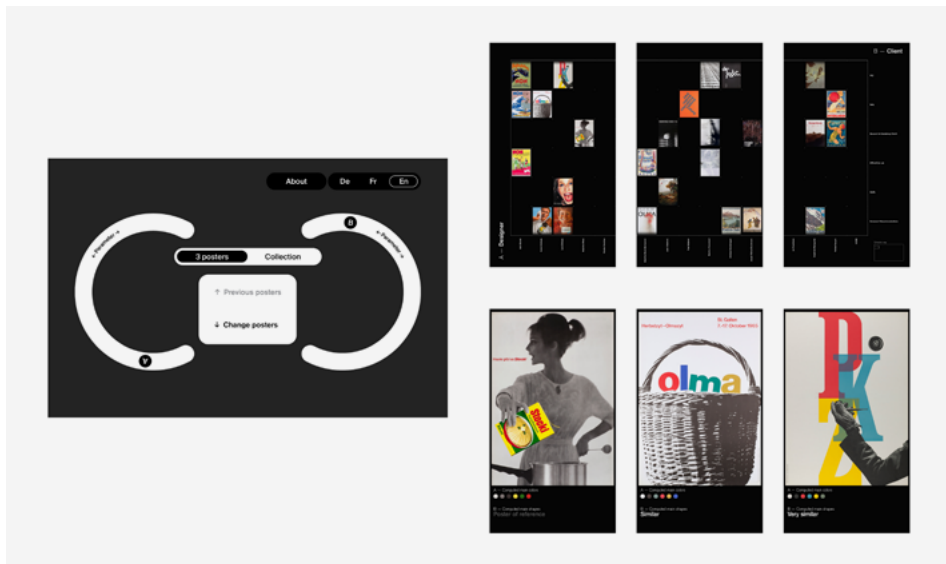


Figure 2. Scenario 1: controller with two feature selection (red), collection view axed on two selected features (green), poster view with association based on two selected features and highlight on similarities (blue).

5. Three Scenarios

We built three different scenarios, each relating to a specific hypothesis to test. Each had a collection and poster view. Scenario 1 (Fig. 2) allowed the users to organise the collection on a 2D graph by choosing two features (one for each axis). Once the user had selected the two features, all the posters were automatically sorted. The user could switch from this collection view to the poster view, where the computer randomly took one poster and associated two others based on similarities to the two selected features.

Scenario 2 (Fig. 3) was dedicated to explicit visualisations of the features. The user could select one feature and then see the posters either in their original appearance or in a new rendering that expressed the feature. This could be done either in the collection view (organised by global analysis) or in the poster view.

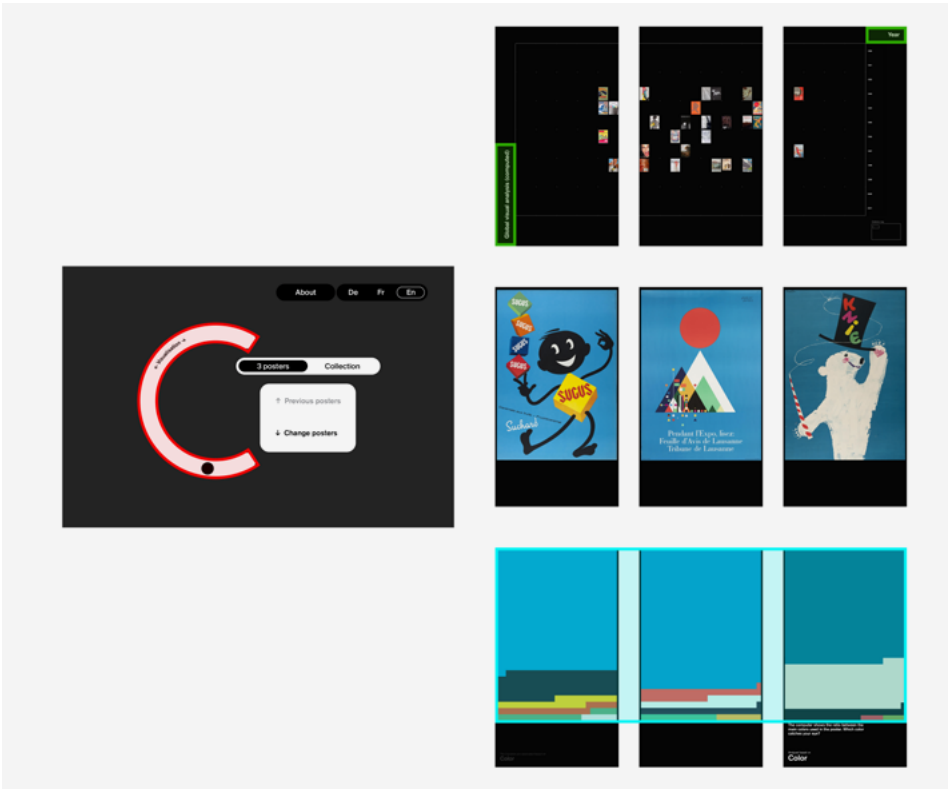


Figure 3. Scenario 2: controller with one feature selection (red), collection view axed on global analysis (fixed) (green), poster view with association based on the selected feature, feature analysis view (blue).

When switching to the poster view, the computer took one poster and associated two others via a similarity calculation. Scenario 3 (Fig. 4) allowed users to select a poster in the collection freely. This started in the collection view with the posters displayed on a 2D graph according to their similarity along two features, one that could be selected by the user and the second that was fixed (the year). The user selected one poster, and the system automatically moved to the poster view and showed the two most similar posters according to the selected feature.

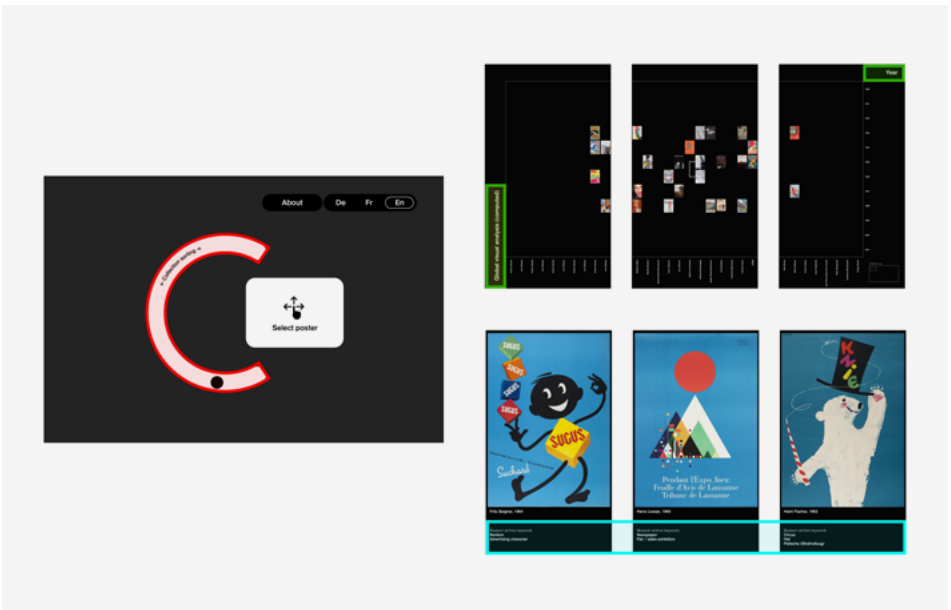


Figure 4. Scenario 3: controller with one feature selection (red), collection view axed on the selected feature and the year (fixed)(green), poster view with association based on the selected feature (blue).

Our aim was to compare these scenarios and combine learnings into a final, permanent installation for the museum. We, therefore, used the same physical set-up, as well as compatible screens and interfaces.

The set design used a supernormal strategy for design research (Henchoz & Mirande, 2014). This relates to the idea of extracting the *essence of normality* beyond the functional approach (Fukasawa & Morrison, 2007). We used three vertical screens which matched the scale of the physical posters. We placed them close together so that they could form a single surface to present the collection view. Screens were mounted on black steel structures inspired by standard Swiss poster supports. These stand on a circular platform covered in gravel, echoing the urban outdoor context (Fig. 5).



Figure 5. 3D render of the scenography: a supernatural concept with a relationship to posters on the street. The circular form fosters interaction around the installation.

It also acts as a social place for visitors and allows the technical elements to be hidden. The interface was a standard tablet partially covered by a metallic plate to emphasise the interactive zones and guide the fingers. To accommodate the three different scenarios, we designed interchangeable variations of the metal plate to cover the tablet.

6. User Tests

The objective of our user tests was to use the three scenarios to test different variables. We used scenario 1 to analyse the impact of feature association on poster perception. Scenario 2 allowed us to evaluate the effect of feature graphic representations. Scenario 3 was designed to explore the relationship between the poster view and the collection view.

All three scenarios implemented our last creative direction, having both a collection and a focused poster view. We also investigated the overall experience and compared data from design experts and novices.

61 people participated (male = 28, female = 30, 2 = non-binary, 1 = don't want to disclose). The youngest was 18 years old, and the oldest was 72 ($M = 37$, $SD = 12$). 67% of the participants had a profession linked to design, and 33% had a profession not linked to design.

To measure the emotional impact of the installation, we assessed if the installation was perceived as attractive, interesting and easy to understand through questions with a 1-7 Likert scale. To measure user experience, the UEQ-S, a common and valid 8-parameter version of the User Experience Questionnaire (UEQ), was applied (Schrepp et al., 2017). Perception of the graphic representation of features was measured qualitatively with questions regarding satisfaction with the given freedom to interact with the poster collection, the amount of available information, and the proposed associations. We evaluated if feature associations were better understood after the interaction and, therefore, if the installation had a cognitive effect on the test participants. Finally, we employed the widely used Net Promoter Score (NPS) to measure overall satisfaction.

The set-up included a 1:1 prototype of the installation and a computer for the questionnaires (Fig. 6). All participants tried the three scenarios in a randomised order. The test started with the installation displaying three posters.



Figure 6. Room set up for testing the three scenarios.

Feedback was asked about initial perception and understanding of specific features before any interaction. Participants were then invited to play with the three scenarios, one at a time, with a questionnaire between each interaction. During the interactions, they were left alone, within a limit of 7 minutes. Finally, a summary questionnaire was filled out to evaluate the overall impact after interactions.

7. Results

7.1. General User Experience

The Net Promoter Score showed that 97% of the participants would recommend the installation to a friend. Evaluation of the UEQ-S revealed that all three scenarios are classified as *above average*.

7.2. Emotional Impact

At first glance, the installation seems attractive ($M = 5.13$, $SD = 1.27$) and interesting ($M = 5.21$, $SD = 1.05$) but not complex ($M = 2.43$, $SD = 1.49$). There were no significant differences between novices and experts for interest, attraction or complexity (all > 0.05). In terms of positive qualitative statements, the scenography design comes first (21), followed by its interactive nature (18). The only negative qualitative comment reaching more than three answers was that it looks ordinary (7).

There are high scores for interest, both before ($M = 5.22$, $SD = 1.03$) and after ($M = 5.52$, $SD = 1.3$) the interaction. Scenario 1 ($M = 5.68$, $SD = 1.11$) keeps the highest score in terms of interest compared to scenario 2 ($M = 5.15$, $SD = 1.37$) and 3 ($M = 5.28$, $SD = 1.02$). A chi-square test revealed that participants think that scenario 2 (feature graphic representations) is the most inventive (52%) compared to scenarios 1 (27%) and 3 (21%) (Chi-square(2) = 11.01, $p = .004$).

20 out of 61 qualitative user statements show that the visualisation of scenario 2 was positive. Freedom of interaction was mentioned 13 times positively for scenario 1 and 12 times for scenario 3. However, people said they missed the option to select a poster in scenarios 1 and 2, and some were not content with the given information on scenario 2.

Overall, participants were more satisfied with scenario 2 (mean rank = 33.21) over scenario 3 (mean rank = 32.76) and scenario 1 (mean rank = 26.66), though the difference is not significant ($H(2) = 1.67$, $p = .44$). The qualitative statements

also show that the graphic representation of the features in scenario 2 is perceived positively, reaching the highest number of positive mentions (21).

7.3. Cognitive Impact

When looking at poster associations before using the installation, 89% of participants correctly named the colour association, 15% identified the typography layout, and 20% identified the composition line 20%. This systematically but marginally increases after using the installation, reaching 92% for colour, 18% for typography layout and 26% for composition line. Additionally, 74% of the participants subjectively felt that they improved their understanding of posters after experiencing the installation.

8. Reflections

From the results of both our preliminary and final tests, we see that poster association by features induces a strong impact, marked by a perception of coherence among users. This could be due to several aspects. First, in line with our first creative direction, as the content was defined by a museum curator on a specific theme, there was an inherent unity of the collection subset. Additionally, the poster features were selected from a design expertise point of view, based on the identity of the considered posters, combining different types of metadata and analysis.

The graphic representations of the associated features also appear to be essential, as users often are not able to identify them explicitly (unless obvious, like colour). These graphic representations have an emotional impact, as they received

the biggest number of positive statements. Scenario 2 is especially praised as innovative, though people are interested to know more about the feature than was given. This can explain why the objective cognitive gain remains low, which suggests further work to improve their understandability. Nevertheless, the overall preference goes for scenario 2 based on feature graphic representation, followed by scenario 3, focusing on poster selection, while scenario 1 gets a lower rating. Freedom of choice and interaction are praised in scenarios 1 and 3. The interest in choosing an object from the collection was also supported qualitatively. However, scenario 1, which involves choosing two features, led to some complexity. We keep here the fact that the final installation should allow the selection of a poster as well as one feature to streamline the user experience.

Thanks to the continuous dialogue between engineers, curators and designers, we developed a set of algorithms dedicated to posters and this installation. A special effort was made to make the action of the algorithms understandable and valued by the users (they were overall most satisfied with the scenario focused on graphic representation). This project opens paths for *culturally relevant AI*. The algorithmic decisions are more understandable, and specialising AI models can generate effective associations when trained only with museum content. Our work has shown that these associations can, despite a small data set, generate sequences in which users perceive a narrative value.

The inspiration of supernormality, which is extensively explored by our lab (Henchoz & Mirande, 2014), seems relevant

for this installation: it can foster a direct connection with the content, preserve attractiveness and induce a sentiment of simplicity. Some user statements quoted the installation as normal in the list of negative statements. But the recommendation rate of 97% indicates that it did not affect the installation attraction.

Finally, we found no significant differences between the perception of experts and novices. Rather than clustering audiences and developing adaptive experiences, which is a trend in AI (Pisoni et al., 2021), we can design experiences that bring different people together around the same installation and content. It improves the cost and efficiency of content creation and supports social behaviour.



Figure 7. The interface. Photo credit: Daniela & Tonatiuh / EPFL+ECAL Lab, 2022.

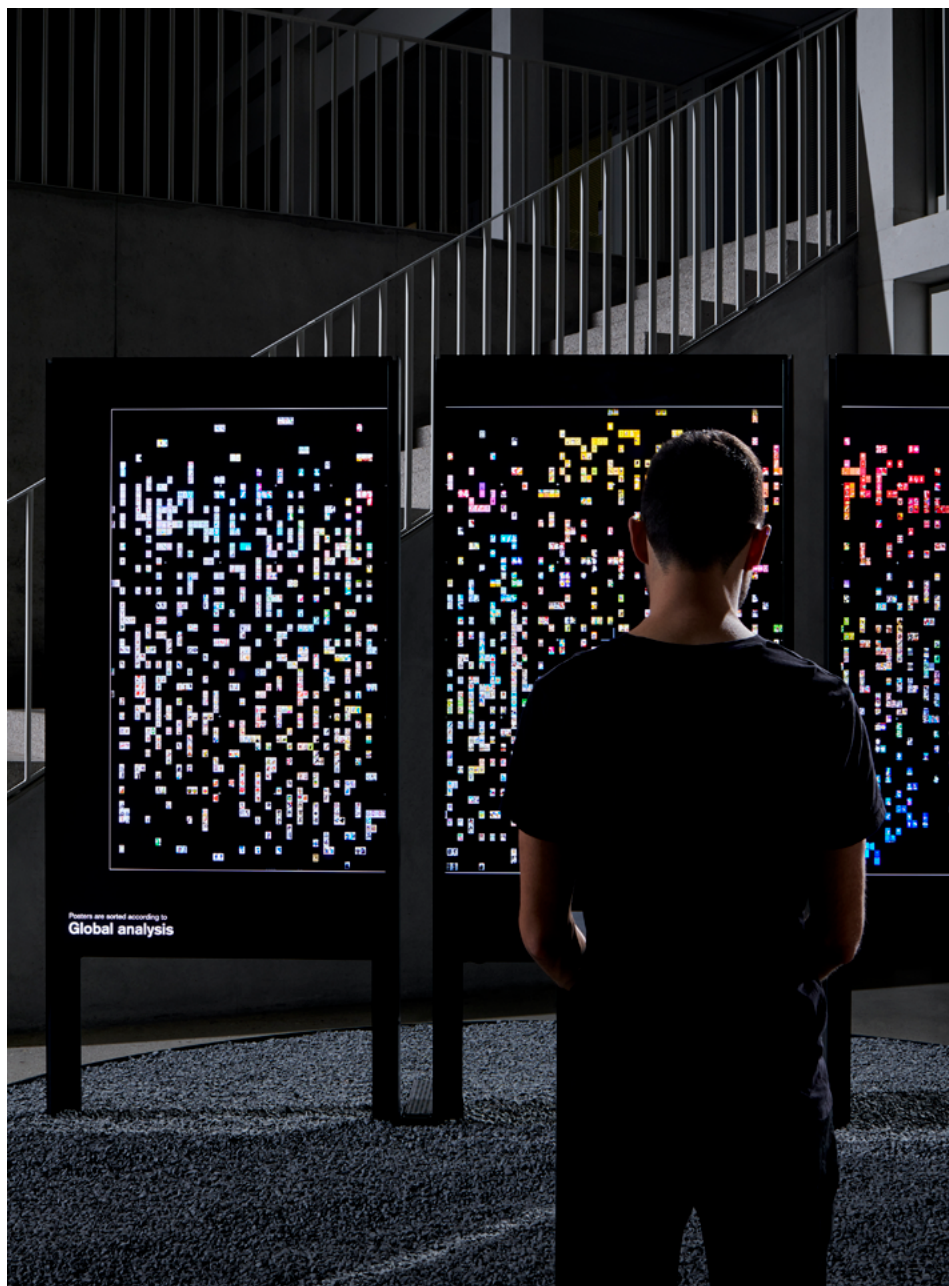


Figure 8. The collection view. Photo credit: Daniela & Tonatiuh / EPFL+ECAL Lab, 2022.



Figure 9. The poster view. Photo credit: Daniela & Tonatiuh / EPFL+ECAL Lab, 2022.



Figure 10. The feature graphic representation view for the composition lines. Photo credit: Daniela & Tonatiuh / EPFL+ECAL Lab, 2022.

9. Poster World – The Final Installation

Using these learnings, we created the final installation, *Poster World*, for the *Museum für Gestaltung*. A standby mode shows a succession of posters linked by different features, making the association process more visible. When a user touches the interface (Fig. 7), the screens flip into the collection view (Fig. 8). Posters are arranged in a 2D space according to a single feature. Users can change this feature, causing the poster collection to move into a new configuration. If the user selects one poster, it appears on a 1:1 scale on the central screen. Two others follow it on either side, which the system has chosen as the most similar according to the selected feature (Fig. 9). Then, the feature can be revealed by a specific graphic representation for the three displayed posters (Fig. 10). Animations were introduced to make all of the interactions, visual transition and narrative more explicit. The installation's physical structure evolved into a full museal device.

10. Conclusion

Though museums are increasingly digitising their archives, interaction with virtual content remains low beyond expert communities. Therefore, this project looked at how AI could be used to create new and engaging user experiences with digitised heritage for wider audiences. We ran an integrated design research process that combined curator skills with technological performance and design insight. Though some decisions were directed by technical feasibility, this creative collaboration led to an installation that offers attractiveness and cognitive impact both to novices and experts. In light of this, further developing the system's algorithms, according to

technical developments and user feedback, could open up new directions for future engagement. In terms of impact for the museum, the installation's emotional resonance and the ability for content to be renewed in the future suggest long-term effectiveness.

To confirm this proposition and widen the installation's potential, evaluations of the final set-up in the context of the museum, as well as with other poster content, or even other media, could be conducted. Nonetheless, this project's process, installation and existing results contribute to a sustainable valorisation of digitised archives that brings social benefit through dialogue between diverse audiences.

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The Italian Government Interface

From the Spoils System to the Guidelines

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Abstract

In 1998, the year Macromedia Flash went mainstream and in which internet users were about 3.6% of the world population, the web presence of the Italian Government began. In the evolution of the Government website, a first period from 1998 to 2014 can be identified, which sees the site as an integral part of that spoils system that has often accompanied the numerous changes of the political majority in Italy and the related Governments in office. We can then identify a second period, from 2015 to today, which begins with the publication of the Design Guidelines for PA Websites that sees instead the establishment of some general principles of interface design based on the usability and accessibility of the contents. These principles have allowed the Government website to become a *super partes* communication structure, independent from the political expression of the Government in office and part of a digital transformation strategy that sees the introduction, for the first time in Italy, of a centralized governance based on technical skills.

Thanks to documentary material and direct testimonies, the contribution intends to highlight both the evolution of the Government website from a political communication tool to an institutional communication site and the very idea of institutional communication in Italy in relation to the growing digitization and the need for an active online presence.

1. Introduction¹

From its proclamation to today, the presidents of the Council of Ministers of the Italian Republic have been thirty and have presided over a total of sixty-seven Governments. Among the peculiarities that characterize the history of the most recent Italian Governments, we can include the Government's online presence starting from the first initiative undertaken in 1997 by the Prodi Government to communicate Palazzo Chigi to the outside through the internet and the *World Wide Web*.

Starting from this first experience, following the evolution of the Government website allows us to highlight the development of the very idea of institutional communication in Italy in relation to the growing digitization and the need for an active online presence. It helps us in this investigation that the fifteen versions of the Italian Government website (or at least of its homepages) that followed each other over time from 1997 to 2021, before the site actually in operation, have fortunately not been lost, but as official documents to all intents and purposes,² they are archived and can be consulted in a special section of the Palazzo Chigi website named *Siti archeologici* (*Archaeological Sites*).³

A qualitative research methodology was chosen in writing the paper in order to integrate the documentary material with semi-structured interviews with two of the managers who, at

1 Disclaimer: one of the authors, Gianni Sinni, took part in the 2015 Italian government website redesign project.

2 With the law n. 59 of 1997, the full legal recognition of digital documentation is confirmed.

3 <https://www.sitiarcheologici.palazzochigi.it/index.html?page=1>.

different times, have personally followed the project: Claudio Caprara,⁴ journalist and Head of the Palazzo Chigi website for the D'Alema Government from 1997 to 2000, and Roberta Maggio⁵ responsible for online communication with the Letta, Renzi and Gentiloni Governments, from 2014 to 2018.

2. The First Website

The first website of the Presidency of the Council, created and managed externally by the Italian Journalistic Agency (AGI), was presented to the public for the first time in September 1997. As Claudio Caprara and Lucio Picci describe, it was configured as the typical *showcase site*, the result of a journalistic conception of the web and not at all integrated with the “concrete work of the building” (Caprara & Picci, 2001). Created by the Prodi Government with the coordination of the then Undersecretary of the Prime Minister and Head of the Information and Publishing area, Arturo Parisi, those first web pages, with the images mounted on the classic gray background of the early days of HTML (Fig. 1), represented, however, a significant technological advance considering that in 1998 the only wired part of Palazzo Chigi – the large four-storey historic Government building – were the three rooms of the Prime Minister’s secretariat. Executives and officials could access the Internet only using generally obsolete modems, and for the majority of employees, the *network* had, at most, as we recall with undisguised irony, a fishing significance (Caprara & Picci, 2001).

4 Interview to Claudio Caprara, 20/5/2022, videocall.

5 Interview to Roberta Maggio, 5/5/2022, videocall.



Figure 1. Prodi Government and D'Alema Government (1997 - August 1999).

In 1996, in fact, for the general public, the internet was still an unknown quantity. The arrival of Windows 95 and Microsoft's Internet Explorer was progressively making the web more accessible, and more people wanted to get involved in websites, starting to experiment with its possibilities (Ford & Wiedemann, 2019, p. 30). In 1997 Macromedia released Flash, a software that allowed users to create vector graphics and animations, overcoming the limits of the HTML and experimenting with the expressive and narrative potential of the web. These are also the years in which the first reflections on web design are formulated. Giovanni Anceschi (1997), in the first review on Italian web design, underlined the maturing of a "rhetorical or rather directorial awareness" and the shift of attention from the technical structure to look and feel and multisensory quality. While Erik Spiekermann (1999) highlighted its narrative capacity: "a good website has to tell a compelling story, lest it bore any but the hardcore information seekers".

In Italy, it was in the months following the fall of the Prodi Government (October 1998), with the inauguration of the D'Alema Government (21 October 1998 - 22 December 1999), that a process of organization and definition of the project for the Government website was started (Caprara & Picci, 2001). Claudio Caprara says that although all ministries perceived the internet as an opportunity, there was a complete lack of awareness of its potential: the network in Italy was still very limited and concerned a few thousand users. The intuition, in some ways pioneering, was to get out of the logic of the *showcase site*, that is, a site that has the purpose of presenting

information without involving the public, characteristic of the first online phase of public administration in a period between 1997 and 2003 (Lovari, 2013).

A journalistic editorial staff was defined, and the offices of the Presidency were invited to participate with the aim of later bringing the various ministries to use the website as a tool to make daily political activity transparent and accessible.

These are the years of the first reforms of a communication revolution in the country aimed at building and strengthening – albeit slowly and not without ambiguity – an efficient model of bidirectional public communication between PA and citizens, with a view to greater participation and transparency. Law no. 150/00, approved in 2000 and relating to the “Discipline of information and communication activities of public administrations”, recognizes the essential role of the communicative function of administrations as a cornerstone of the democratic system and still represents the main regulatory reference on Italian public communication today (Papini, 2014, pp. 32-34).

The programmatic speech with which D'Alema had gained the Parliament's confidence became the core of the web initiative. The addition of referral links to the Government's proposals then had the purpose of making it possible to trace the parliamentary legislative path, thus offering “a possibility of control over what was objectively the work that was being produced inside Palazzo Chigi”.

From a technological point of view, the Presidency of the Council and its IT department were not ready for the imple-

mentation of the site, which, therefore, through a public tender, was entrusted to the Matrix company, the same company that in 1996 had launched the web directory Virgilio (Bergamini, 1997, pp. 92-93). The infrastructure management was not without its criticalities mainly because the new activity had to be inserted within an organizational structure so settled over time that Caprara defined it as “geological”. The management of the contents of the site was entrusted to an internal editorial staff made up of editors from different offices.⁶

The dynamics described by Caprara outline some elements that will characterize the communication model of the Government website for many years: an intense relationship between politics and communication to support the President in achieving his political goals. However, the uncertainty about the duration of the Government needed to allow it to work on the initial ambition to create a platform independent of political governance. The site’s primary objective was more aimed at promoting the Prime Minister as a politician than communicating Palazzo Chigi as an institution. This connotation of the Government site, together with another peculiarity of the Italian political system – the frequency with which Governments have succeeded in the various legislatures (15 Governments in the last 7 legislatures) – will affect, as we will see, all the future developments of the website.

6 Other ministries opted for different choices as in the case of the Ministry of Justice which had entrusted Cineca with the creation of its website (Bergamini, 1997, pp. 140-141; Galli & Nannini, 2004, pp. 148-149).

However, the time available and the precariousness of the politics are not the only factors that Caprara underlines as critical: the rigidity of the structure, the impermeability to change and innovation of the public administration,⁷ a fragmented majority of Government, the inadequacy of resources and the structure available made the operation, in Caprara's words, *a monstrous effort*, but also of great satisfaction because it allowed the Italian Government to be the first in the world to join the W3C (World Wide Web Consortium).

The site never went fully operational but remained at a work-in-progress level. A great deal of work was done on legislative monitoring. Once online, the idea of having a useful tool for the very work of the Prime Minister and officials was understood and embraced with greater availability.

From the interface point of view, the deliberately journalistic slant gives the site the formal and content characteristics – a three-column grid, names, interviews, and photographic images with a reportage slant – aimed at increasing the credibility of the Government, promoting the idea of a *palace* of power close to the citizens. In the header, the photos of the clerks (real employees of Palazzo Chigi) depicted, in a literal form, the idea of welcome and transparency that inspired the site (Fig. 2).

7 In the essay by Claudio Caprara and Lucio Picci (2001) the authors tell a particularly representative anecdote in this sense: within the project it was proposed to include the electronic press review, but the operation was stopped by the officials involved who literally pulled the plug from the machines because they feared losing their comfortable professional condition.

Presidenza
del Consiglio dei Ministri

24 Settembre 1999

IN COPERTINA

2000: La finanziaria dello sviluppo
La presentazione completa di slides grafiche

Barometro di immagine del governo
Interviste inviate per posta rilevate nel periodo giugno-luglio 1999

La riforma dell'Amministrazione
La riforma dell'amministrazione centrale e la riorganizzazione della Presidenza del Consiglio

Kosovo: la storia in 79 giorni
Cronologia degli avvenimenti militari e diplomatici della NATO.

Patto Sociale
per lo sviluppo e l'occupazione

Sessione di verifica del Patto Sociale per lo sviluppo e l'occupazione
20 settembre 1999
Il monitoraggio dell'attuazione

Servizi Online

- Comunicati stampa
- Provvedimenti
- Interventi
- Agenda
- Eventi
- Fotografie
- Info

NEWS

- Consiglio dei Ministri - Comunicato n. 61
- Incontro D'Alema - Comitato Intermagistratura
- Incontro D'Alema - Cossutta
- Statuto Finmeccanica S.p.A.
- Il ministro Bellillo: "positiva l'intesa con la regione Calabria"

Affari Regionali

- Funzione Pubblica
- Politiche Comunitarie
- Solidarietà sociale
- Rapporti con il Parlamento
- Riforme Istituzionali
- Pari Opportunità

Rapporti con il sistema delle autonomie

- Informatica, statistica e telematica
- Affari Economici
- Informazione ed Editoria
- Servizi Tecnici
- Italiani nel Mondo
- Biblioteca Chigiana
- Sito Internet

Coordinamento dell'attività di governo

- Comitato per la Bioetica
- Biosicurezza e biotecnologie
- Missione Arcobaleno
- Forum Società dell'Informazione
- Comitato anno 2000
- Giubileo 2000
- Masterplan

Figure 2. D'Alema Government - D'Alema II Government (September 1999 - March 2000).

3. The Spoils System Era

Due to the connotation strictly linked to the political communication of the head of the *pro tempore* Government, the subsequent versions of the site maintained a temporary nature linked to the life of the Government and became, in effect, an integral part of a communication model suitable for the *spoils system*.⁸ So for many years – until 2015 – the bell ceremony, the traditional rite of passage of power, also marked the start of a new interface project and the organization of the contents of the Government website. The initial maintenance of the previous graphic version (with a curious dualism that characterizes many Governments, Figs. 3 & 5) was justified only by the development time needed to make the new project operational. The rapid succession of Governments has also affected the technological aspect. Given that the update of the IT structure could have taken longer than the duration of the Government itself, no one has ever taken charge of it.

By maintaining the static structure of the site over the years, with pages created manually with Dreamweaver⁹ even when the CMS, the Content Management Systems, had become widespread, the opportunities for dynamic content management and the offer of services were severely limited.

8 The spoils system is the political practice, born in the US, which provides that senior executives of the public administration are appointed by the incumbent Government and are replaced as this changes. In Italy, the Prime Minister must appoint all the new Heads of the Presidency of the Council, in accordance with the provisions of Law no. 400. The appointments also include trusted collaborators who make up the staff, including the heads of the press office and the secretariat.

9 Dreamweaver is a software produced since 1997 by Macromedia (later acquired by Adobe in 2005).



Figure 3. D'Alema II Government - Amato II Government (March 2000 - October 2000).

Governo Italiano
Presidenza del Consiglio dei Ministri

8 Giugno 2001

Le dimissioni del Governo

All'interno il testo del comunicato stampa.

Dal Consiglio dei Ministri un decreto sulla liberalizzazione dei servizi pubblici
Roma, 24 maggio 2001
Esaminati dal Consiglio dei Ministri anche regolamenti e disposizioni legislative in materia di edilizia.
Disposizioni ai Ministri per il passaggio di consegne al nuovo governo.

Quote di ingresso in Italia per il 2001 per i cittadini stranieri non comunitari
Roma, 20 maggio 2001
Pubblicato nella Gazzetta Ufficiale del 17 maggio il decreto che stabilisce le quote dei flussi di ingresso dei lavoratori extracomunitari nel territorio dello Stato per l'anno 2001.

Guida alla redazione di testi normativi
Roma, 14 maggio 2001
Pubblicata sulla Gazzetta Ufficiale la circolare della PCM che indica le regole per la redazione di testi normativi e legislativi da parte delle amministrazioni.

Il Museo della navigazione a Pisa
Roma, 14 maggio 2001
Dal ritrovamento di alcune navi di epoca romana alla creazione del Museo della navigazione.

Fermoimmagine
Roma
15/5/2001
Foto di Palazzo Chigi

ELEZIONI 2001

Speciale
> Guida alle norme

Speciale
> Sicurezza

Speciale
> L'Italia del 2000

Speciale
> Immigrazione

Speciale
> Stato dell'ambiente

Newsletter > Archivio
29 maggio 2001

NEWSLETTER N. 29

Nel numero di questa settimana, tra l'altro:

- Il 2 giugno torna ad essere festa scolastica
- Le azioni contro il divario tecnologico
- La patente informatica europea valida per i concorsi
- Stranieri: come fare domanda per il permesso di soggiorno
- Contributi per l'acquisto di veicoli ecologici

G8

W3C Member

Figure 4. Amato II Government (October 2000 - May 2001).

Governo Italiano
Presidenza del Consiglio dei Ministri

Home Page Personalizza Cerca

11 Dicembre 2002

Ue: Vertice di Copenhagen

Il Presidente del Consiglio parteciperà giovedì 12 e venerdì 13 dicembre al Consiglio Europeo di Copenhagen.

► [Approfondimento](#)

Consiglio dei Ministri n.84
Roma, 11 dicembre 2002
E' iniziata la riunione del Consiglio dei Ministri.

Berlusconi incontra il Presidente dello Stato di Israele
Roma, 11 dicembre 2002
Il Presidente del Consiglio ha incontrato a Palazzo Chigi, il Presidente dello Stato d'Israele, Moshe Katsav.

Berlusconi riceve Primo Ministro Repubblica Ellenica
Roma, 6 dicembre 2002
Il Presidente del Consiglio ha incontrato a Palazzo Chigi il Primo Ministro della Repubblica Ellenica Costas Simitis.

► [Audiovideo della conferenza stampa](#)

Consiglio dei Ministri n. 83
Roma, 6 dicembre 2002
Nel comunicato stampa i provvedimenti adottati dall'Esecutivo.

Devoluzione: prima approvazione al Senato
Roma, 5 dicembre 2002
L'Assemblea del Senato della Repubblica ha approvato il disegno di legge costituzionale di modificazione dell'art. 117 Cost. che passa all'esame della Camera dei Deputati.

Incontro Berlusconi - Miller
Roma, 5 dicembre 2002
Il Presidente del Consiglio ha incontrato a Palazzo Chigi il Primo Ministro della Repubblica di Polonia, Leszek Miller.

Incontro Berlusconi - Toledo
Roma, 4 dicembre 2002
Il Presidente del Consiglio Silvio Berlusconi ha incontrato a Palazzo Chigi il Presidente della Repubblica del Perù, S.E. Alejandro Toledo.

► [Audiovideo della conferenza stampa](#)

Grandi opere: Berlusconi, un sogno ormai a portata di mano
Roma, 4 dicembre 2002
"Abbiamo steso un programma per monitorare lo stato dell'avanzamento dei progetti e della realizzazione delle grandi opere. Ci sono idee chiarissime, quello che avevamo presentato durante la campagna elettorale e tutte le opere procedono secondo un percorso preciso, scadenza con i sistemi più avanzati".
Il Presidente del Consiglio, dopo aver incontrato il ministro Lunardi si è mostrato ottimista sullo stato delle grandi opere ed ha aggiunto che "quel

Entra nel nuovo sito

Da mercoledì 11 dicembre sarà on line esclusivamente la nuova versione di governo.it

Italia.gov.it

Oci sei, Oti fai.
IO VOGLIO ESSERCI

telePA
Conferenza Unificata

Conferenza Stato Regioni

Newsletter Archivio
10 dicembre 2002

NEWSLETTER N. 102

Nel numero di questa settimana:

- Governo.it: on-line nuovo sito
- Governo.it: il motore di ricerca
- Governo.it: l'accessibilità
- Governo.it: "Titania"

Per ricevere la newsletter inserite il vostro indirizzo e-mail

Figure 5. Berlusconi II Government (June 2001 - December 2002).

The political staff was replaced at each passage of Government, while the internal editorial structure, which had gained specific experience in the field, remained steadily in business, being assigned a substantially professional and *super partes* task. With the D'Amato II Government, after a few months necessary for the IT transition, on October 31, 2000, the new site was released, abandoning the testimonial image of the clerk of the previous version in exchange for a more institutional Council Chamber and acquiring the title typographically composed of "Italian Government / Presidency of the Council of Ministers", which from then on will feature on all subsequent versions. The grid is also modified by adding the navigation column on the left (Fig. 4).

With the 2001 elections, the majority returned to the center-right coalition, and Silvio Berlusconi rose to the Government for his second term. It will take over a year and a half before the new graphic design of the website will be released on 11 December 2002. Several elements characterize this version that will accompany the Government until the end of the XIV Legislature. The fixed grid of the page (620 pixels) is abandoned to opt for a fluid layout, while the header becomes a real logo with the tricolor inscription "Italian Government" combined with the emblem of the Republic (the *Stellone*). The wording "Presidency of the Council of Ministers" hints at the calligraphic cursive of the traditional printed letterheads of the ministries (Fig. 6) (Sinni, 2016). It was a particularly intense period for public online communication. In 2002, we can say that by now, almost all administrations, at each central or peripheral level, have their website (Lovari, 2013, p. 97).



Figure 6. Berlusconi II and III Governments (December 2002 - May 2006).

The Berlusconi Government approved important measures regarding the quality of the online presence of the public administration. Among these, the most significant is the *Legge Stanca*, Law no. 4/2004 on *Provisions to facilitate the access of disabled people to IT tools*, which introduced in Italy the legislation, still in force, relating to the accessibility of web-sites for public administrations.

In 2006 the new legislature began under the second Prodi Government and with the maintenance of the Berlusconi web template until May 2007, when an updated version was published bearing the name of *Portal of the Italian Government*.



Figure 7. Prodi II Government (May 2007 - May 2008).

The new version restores the fixed grid and replaces the head with a flag in the wind (Fig. 7). However, it will be a very short-lived layout. The premature fall of the Prodi Government and the return to power of Silvio Berlusconi will lead to the immediate replacement of the website with a version that graphically

refers to the experience of 2002-2006, stabilizing the Government's tricolor logo in a real header. Of note is the presence on the homepage of the oval emblem of the Prime Minister wanted by Berlusconi in the image and likeness of the American presidential seal. Furthermore, the section "Archaeological sites" appears for the first time in this adaptation, documenting the previous versions of the Government site.

In 2010, over 40,000 sites owned by public administrations were registered, and it is to these that, following a Minister for Public Administration and Innovation Directive,¹⁰ the *Guidelines for websites of public administrations* are addressed to "suggest to PA criteria and tools for the reduction of obsolete public websites and the improvement of active ones"¹¹. Since 2012, the Working Group for Usability (GLU) has also been established at the Department of the Civil Service¹² to develop and distribute a protocol (called eGLU) that was affordable for all editors to identify the critical issues of the web interfaces of the public administration.

The 2008 graphic layout will remain in place without substantial changes until November 2015, well beyond the end of the Berlusconi Government, having not had the subsequent Monti Governments (November 2011-April 2013) (Fig. 8) and Letta (April 2013-February 2014) the time (and perhaps not even the will) to make a redesign of the site.

¹⁰ Directive n. 8 of November 26, 2009.

¹¹ https://www.promopa.it/images/pdf/linee_guida_sitiwebpa.pdf.

¹² <https://www.funzionepubblica.gov.it/mission>.

Governo italiano
Presidenza del Consiglio dei Ministri

Primo Piano

Consiglio dei Ministri n.79
Si è svolta, a Palazzo Chigi, la riunione del Consiglio dei Ministri. Nel comunicato i provvedimenti adottati.
Comunicato stampa

Notizie [archivio](#)

- Palazzo Chigi, incontro Monti-López (Nicaragua)
- Monti si rallegra con Letta
- Riunione NATO ministri aff. esteri, dichiarazioni di Monti
- Antonio Maccanico, cordoncino del Presidente Monti
- Consiglio dei Ministri n. 78 del 22 aprile

Novità dalla Presidenza [archivio](#)

- Convocazione Conferenza Stato-città ed autonomie locali
- Logo ufficiale delle commemorazioni della Grande Guerra
- Area Jonica, Tavolo a Palazzo Chigi
- Publicati i decreti per il Bicentenario di Giuseppe Verdi
- Nona edizione del premio Giacomo Matteotti

Notizie dai Ministri [archivio](#)

Multimedia [archivio](#)

- Expo 2015, nutrire il pianeta energia per la vita
28/03/2013 - Lo spot televisivo della campagna di comunicazione
- Incontro Monti-Kerry
28/02/2013 - Dichiarazioni alla stampa dopo l'incontro a Palazzo Chigi
- "Bandi di idee": valorizzazione e sviluppo territoriale
25/01/2013 - Conferenza stampa del Ministro Barca a Palazzo Chigi
- ILVA di Taranto
18/01/2013 - Riunione a Palazzo Chigi tra Governo, Amm. locali, Confindustria e Organizzazioni Sindacali

In evidenza

Dialogo con il Cittadino
Uno spazio dedicato al dialogo, con le domande e le risposte sui temi di maggiore interesse per il cittadino. Vai alla sezione

IL GOVERNO E I GIOVANI
La sezione illustra le misure concrete adottate finora dal Governo a favore delle giovani generazioni. Vai alla sezione

SPENDING REVIEW
La sezione illustra le misure adottate dal Governo per la riduzione della spesa pubblica. Vai alla sezione

TAV Torino Lione
Il punto sull'opera, con informazioni e documenti aggiornati sullo stato di avanzamento dei lavori, le questioni tecniche, le decisioni del governo. Approfondimento

consultazione pubblica
NUOVA DISCIPLINA IN MATERIA DI IMPATTO DELLA REGOLAZIONE

TRASPARENZA VALUTAZIONE MERITO

INDIRIZZI PEC

NORMATIVA

Link Elenco Siti tematici Siti archeologici Concorsi Bandi di gara Come fare per Visite guidate Privacy Note legali

Figure 8. Monti Government (November 2011 - April 2013).

In this period, the arrival of institutional communication on social platforms should be noted, starting with Twitter, introduced under Mario Monti's Presidency, to which Youtube, Flickr, Storify and Slideshare were added with the Government of Enrico Letta.

4. The Introduction of the Guidelines

The turning point in the transformation of the Government website from a political communication tool to an institutional communication site was in 2014 when on February 21, Matteo Renzi formed the new executive branch. This step was the theme of the interview conducted with Roberta Maggio, former head of new media of the Democratic Party, who arrived at Palazzo Chigi at the end of 2014 as head of the Government's web communication.

With a technological system not updated for almost sixteen years, a geological era from a digital point of view, it was immediately clear that it would not be possible to continue updating the site only at the interface level as had been done until then. A radical change was necessary, starting with the management structure, which, without a CMS, was completely inadequate to meet the editorial needs and, above all, to satisfy the expectations of an increasingly demanding public.

In 2014, internet users reached around 42.3% of the world's population, and online sites were close to one billion (Ford & Wiedemann, 2019, p. 495). In Italy, according to the ISTAT report *Citizens and new technologies*,¹³ the share of families who

13 https://www.istat.it/it/files//2014/12/Cittadini_e_nuove_tecnologie_anno-2014.pdf.

had access to the internet from home and a broadband connection was constantly growing (64% and 62.7%, respectively), while the users who accessed public administration sites to obtain information were 29.8%. The goal was, therefore, to design a government site that “lived in the present” and that, in addition to technological and software updates, could effectively apply the principles of usability and accessibility with a responsive approach to web design. There was also the need to transform the language: in the post-communication era, a bureaucratic model that has its legitimacy in the dimension of *doing* was no longer sustainable, and that left a residual space for dialogue with society (Papini, 2014, pp.13-14). It was, therefore, necessary to undermine the idea that the communication of institutions must necessarily be distant, obscure and monotonous, turning the attention instead to those relational skills useful for seeking hybrid spaces of interaction in which the citizen is no longer considered as a passive subject and uncritically hospitality (Ducci, 2017, pp.14 and 51; Papini, 2014, p.14).

The urgent need to renew the Government website, Roberta Maggio recalls, found essential support in the AgID, Agenzia per l'Italia Digitale (Agency for Digital Italy), given that the online communication of Italian public administrations suffered in many cases from the same problems. In 2015, the Government launched the Italia Login project on the Innovation Advisor Paolo Barberis initiative, which, within the Italian digital agenda, indicated the path to make digital services to citizens finally efficient and usable. Italia Login envisaged a substantial paradigm shift in the administration-citizen relationship from

a citizen-centered perspective: “we must bring all the relationships between the citizen and the public administration and between companies and the state” (Barberis, 2015).

The first result of the Italia Login project was the development of the *Design Guidelines for PA Websites*¹⁴ to define the design perimeter that should, hopefully, characterize the interface and user experience of the public websites of the Italian administration. The alpha version of the 2015 Guidelines presented an *open* identity system based on a limited number of elements to allow for a wide range of variations. The visual identity elements consisted of an institutional color, blue #0066cc, a typeface, the Titillium Web, the layout grids based on the *Bootstrap* framework (Sinni, 2015, 2016) – to which further sections were then added on accessibility and usability, on info-architecture and the editing of contents.

Thanks to this convergence of interests between AgID and the Presidency of the Council, the project of the Government site had the opportunity to make a qualitative leap by becoming the pilot project of the Guidelines and a perfect viaticum for the latter, which were thus applied in the first instance to the most representative site of the public administration. Almost nothing was maintained of the previous site: accessibility, transparency, inclusion, and usability were the reference points of the project and Dreamweaver was definitively abandoned as a web editor in favor of an open-source content

14 The current version of the Guidelines, 2020.1, can be consulted at <https://docs.italia.it/italia/designers-italia/design-linee-guida-docs/it/stabile/index.html>.

management software such as Drupal,¹⁵ which is very widespread in the public administration. In the initial phase, a grouping of two external companies, Lcd¹⁶ and Manafactory,¹⁷ took care of applying the Guidelines and the site development, which will introduce the modular logic typical of design systems.

The internal editorial staff of about six people had the heavy task of manually migrating the contents from the old to the new website. In addition to the technical effort to bring an obsolete system into the present, Roberta Maggio states that the real difficulty was to convey the idea that the new Government site project should no longer be part of the spoils system but rather become a communication tool at the service of the institution and independent from the *pro tempore* political governance. Continues Maggio, the Prime Minister himself – who had always shown a particular familiarity in using the web and social media – was particularly convinced of this approach. Integrating the main social networks within the platform was necessary to increase, simplify and diversify the access points to the new Government site. This naturally required a radical transformation, also in operational terms, of the editorial staff itself, which was required to constantly update various multimedia contents, possible only with a suitable management tool.

15 Drupal is a free and open-source CMS (Web Content Management System) written in PHP and distributed under the GNU General Public License.

16 <https://lcd.it/portfolio/italia/>.

17 <http://manafactory.it/projects/governo-it/>.

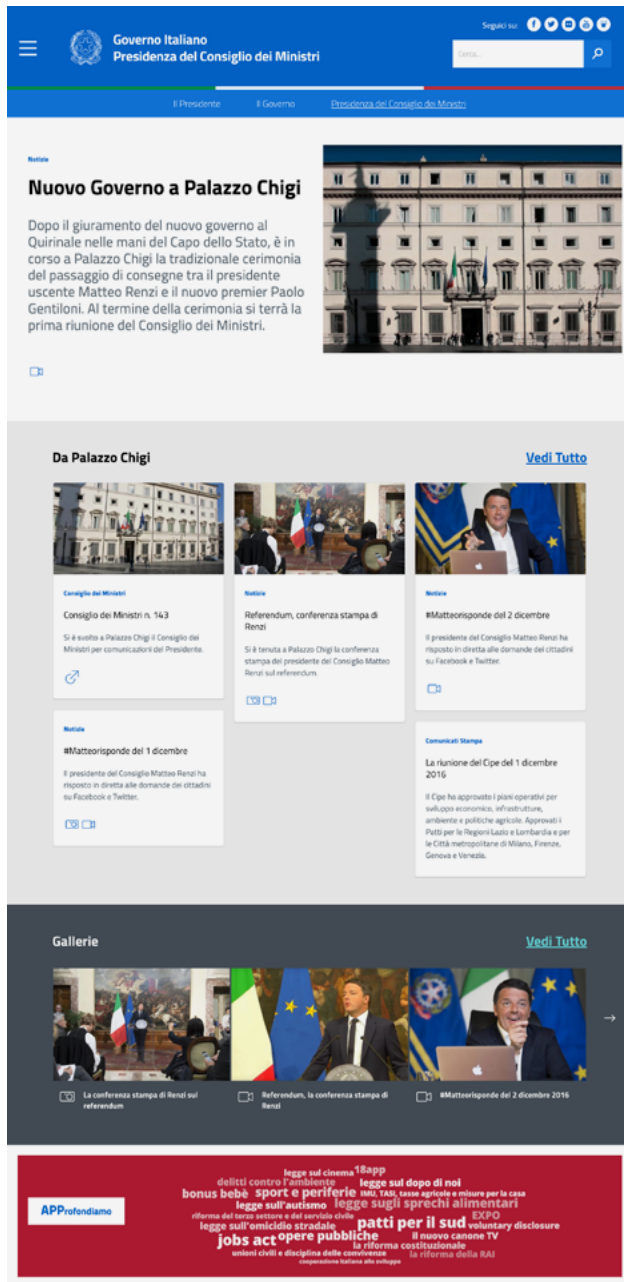


Figure 9. Renzi Government (February 2014 - December 2016).



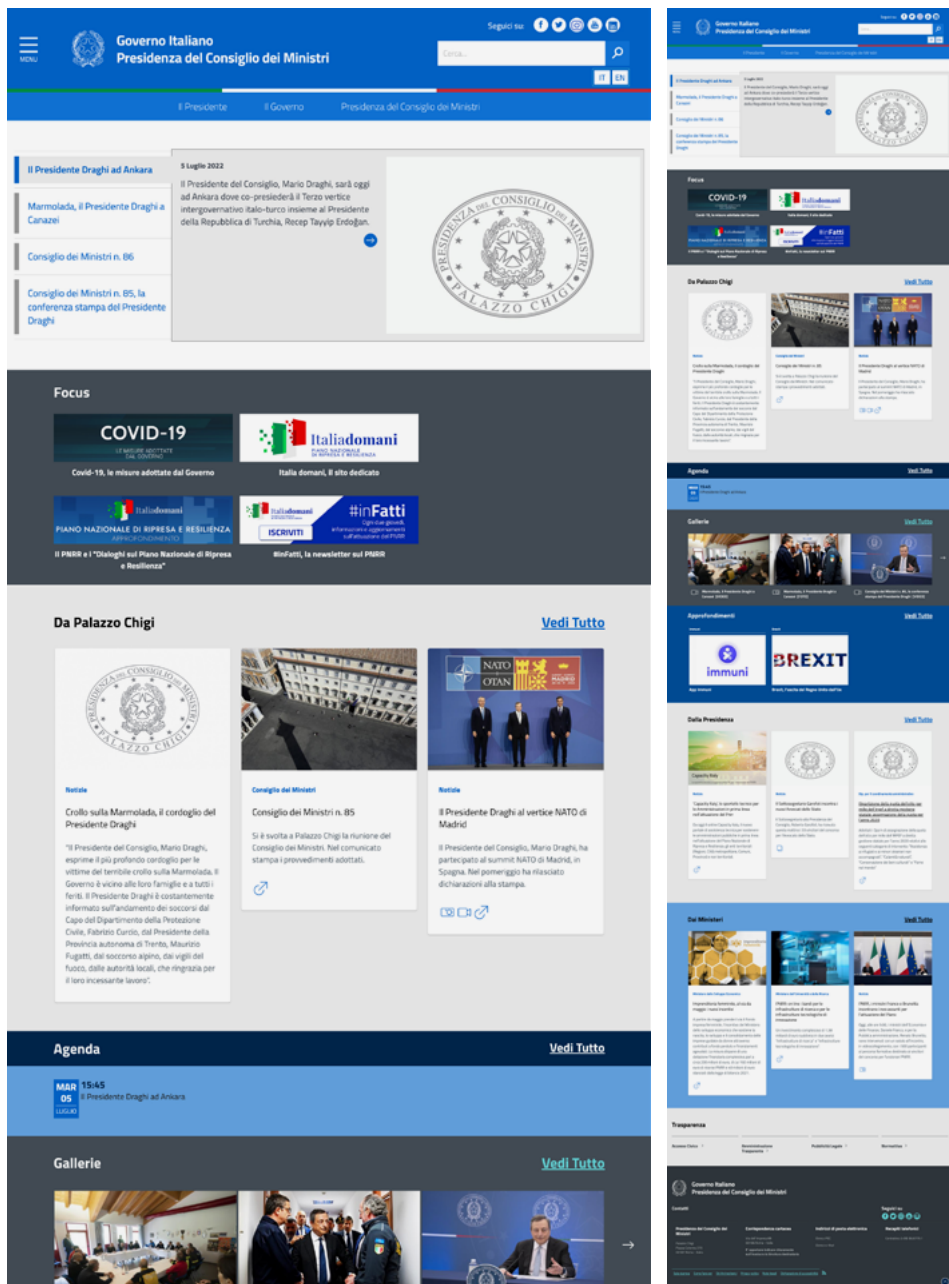


Figure 10. The current website of the Italian Government Presidency of the Council of Ministers (July 2022).

Renzi himself asked the working group to speed up the times to present the project during the first *Italian Digital Day*, which was held on November 21 at the Reggia di Venaria in Turin. According to Roberta Maggio, the effort to meet the deadline paid off from the point of view of communication because it placed the project for the Government site within a national digitization project.

The result that Roberta Maggio is most satisfied with is the fact that the Government website, as she jokingly says, “has set a trend like Jennifer Aniston’s haircut”. After taking the responsibility of starting a pilot project (Fig. 9) – concludes Maggio – seeing that today the model and the guidelines defined at that time are still in use (Fig. 10), it means that it was the right time and way to start a structural transformation of the digital communication of the Public Administration.

The websites of the PA, at a ministerial, regional, and municipal level, that have adhered to the Guidelines have grown exponentially over time, giving substance to a design ecosystem for public sites. It is an ecosystem that has allowed the Palazzo Chigi website to be considered a *super partes* space for public institutional communication and thus remaining stable in the general setting in all successive Governments – Gentiloni, Conte, Conte II and Draghi.

5. Conclusions

In the evolution of the Government website (Fig. 11), we can therefore identify a first period that goes from 1998 to 2014, which sees the site as an integral part of that spoils system that has often accompanied the numerous changes of the po-

litical majority in Italy and the related Governments in office. This policy precariousness prevented the continuous implementation of the “creation of the conditions so that certain technological and work process innovations could take place, and then proceed gradually with the introduction of new systems, involving and making the staff of the PA” (Ducci, 2017, p. 108). In this sense, the analysis of the evolution of the Government website shows how the need to build a design culture capable of sedimenting results and building adequate policies in terms of methods, skills, languages and tools of public communication has, in fact, emerged with considerable delay both with respect to technological progress and other European realities such as the English project gov.uk started in 2011.

It is only in a second period that began with the publication of the “Design Guidelines for PA Websites”, in 2015, that the affirmation of some general principles of interface design based on the usability and accessibility of the contents will allow to make the Government website a *super partes* communication structure, independent from the political expression of the Government in office and part of a digital transformation strategy. In this regard, it may be interesting to note that it was precisely the introduction of a systemic approach typical of communication design that was the decisive element in *institutionalizing* the government website by removing it from the logic of political narrative. At the end of 2016, Diego Piacentini, then Amazon Vice President, was appointed as Extraordinary Commissioner to “support the simplification of the relationship between the Public Administration, citizens and business” (Piacentini, 2016) and the Digital Transforma-

tion Team was specifically created for entrusted, among other things, with the development of the Guidelines.

The activity of the Digital Transformation Team was divided into several phases: as a reference point for the working methodology and technical skills, inspiring other administrations towards agile, contemporary, and inexpensive structures and operating methods; developing a series of digital platforms¹⁸ that act as an open sharing place (Piacentini, 2016).

Therefore, from 2014 onwards, we are witnessing the progressive construction of a shared and effective design culture that persists regardless of the political expression of the Government in office, avoiding that individual administrations have to “reinvent the wheel” each time (Fabbri, 2019, p. 86).

At the end of 2019, the commissioner structure merged into the Department for Digital Transformation of the Presidency of the Council with an institutional formalization of its activities and, with the recent increase in the workforce, the releases of new components, kits and models have multiplied constituting a vast repertoire of reference for the web of the Italian public administration.

18 These include Docs Italia, Developers Italia, Designers Italia and Forum Italia which respond to the need to build spaces for collaboration and sharing of transversal knowledge but also to measure the efficiency of platforms through the analysis of feedback received from users and inform citizens of the activities that take place inside.

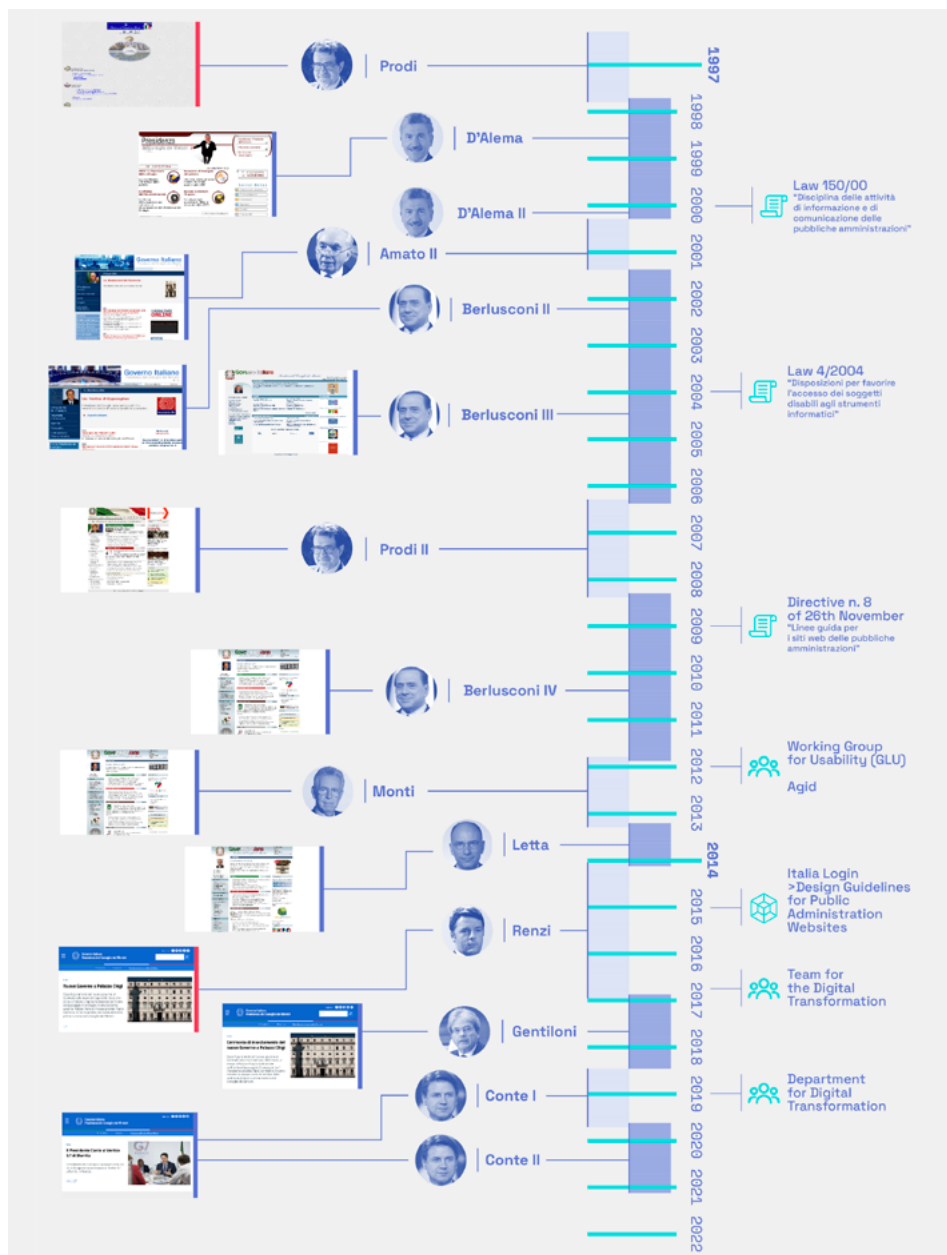


Figure 11. Ilaria Ruggeri, Gianni Sinni. The evolution of the Italian Government Interface from the first website in 1997 to 2021.

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DIGITIZED & DIGITAL-NATIVE MEMORIES

Are Memories an Interaction Design Problem?

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Abstract

Digital transformation fosters the acceleration of the flow of information in relation to the instantaneous nature and speed of digital tools and poses a reflection on the construction of personal memory through the use of the content on digital media. They do not allow us to consolidate the memory and are neither designed around man's intrinsic need for forgetting. The lack of permanence of objects and the increasing process of emptying one's personal space generated by the inevitable digitization of contents shows how this detachment from material reality negatively affects our relationship with our memories. This research aims to understand how interaction design and cognition are tightly connected in memory-related interaction projects: on the one hand, by considering how poorly designed interfaces conspire against memory, and on the other hand, how memory processes themselves are adapting to the transformation imposed by new digital information tools.

1. Introduction

The transformation of information processes is changing in relation to the fact that the cycle of transformation of the media from analog to digital hypothesized by Nicholas Negroponte in the last century (1995) and extensively analyzed by Paul Virilio in his book *La bombe informatique* (Virilio, 1998), is taking place. In this transformation, strong accelerations in the information flow occur in relation to the instantaneousness and rapidity of digital tools that abolish the distances (Bauman, 2000). This change poses a reflection on how personal memories are built, recalled, and elaborated through the fruition of contents on digital media. Tomás Maldonado has already extensively dealt with the topic of the relationship between memory and knowledge (2005), highlighting the critical issues concerning the use of digital tools and their influence on human long-term memory in a context in which the pervasiveness of social and online tools was still at an emerging stage.

The research topic of how humans construct their memory processes is a very broad scientific field and the subject of multiple disciplines. This analysis aims to highlight how the radical change brought about by the new digital tools is reducing the time it takes to access content and, consequently, man's ability to store and organize his knowledge, which emerges from the flow of information we consume daily through the media. For example, the use of Instagram as a “memory tool” has been recently investigated in relation to the instantaneity of photo sharing (Caliandro & Graham, 2020), meaning the considered selection of images to be shared and its remembrative role in our lives.

The results show the trend to select the “best possible” photographs, but conversely, there is a notable reluctance to post intimate (especially family) images to the platform.

The increasing complexity of information systems that have evolved into many types of media has evidently diversified the range of tools, which from simple content providers have become on-demand tools and means of personal interaction. If we once owned books, movies, records, paintings, or other forms of communication, today, we are accustomed to using, renting, or downloading information and content from the web (Rifkin, 2000). Our mind uses different forms to access the information stored in our memory and helps itself by unintentionally building retrieval cues and concept maps to connect the information. Building personal maps also induce ourselves to build representations of individual experiences. As recently investigated in social science (Shannon, 2022), Facebook and Instagram posted family leisure images and narratives are intended to communicate non-normative definitions of family and clarify the family’s ‘real’ identity. These representations help individuals resist the typical idealization of family life and offer authentic representations of family leisure.

The bookshelves in our homes and space themselves are access systems to our own information (Maldonado, 2005; Casati, 2013) and are physical maps that help visualize and find information: the books in it are extensions of the mind itself (Casati, 2013). This concept called ‘extended mind’ is recognized in the literature as a natural form of extending our ability to reorganize our memory (Clark & Chalmers, 1998).

Conversely, the practice of photo sharing on social media, i.e., Instagram, is changing the way people think about visual remembering. Digital photography, together with maintaining memories of the past, diffuses the sharing of visual narratives practice with the creation of “networked archives” of both personal and collective memories (Serafinelli, 2020).

As the artifacts change, the retrieval cues change as well. Far from being those tangible elements and visual traces we leave on which we anchor memory processes, the digital systems we use today becomes complex and unable to structure memory. In this contribution, we want to investigate how models of interaction with digital tools can be investigated, rethought, and designed according to strategies of content fruition that can support the stratification of personal memory, evoke memories (Hassenzhal, 2005), and increase our ability to remember. Short-term memory built on the storage of a few elements in the case of digital media is confronted with a considerable flow of information, and the process by which this becomes long-term memory is critically evolving because the possibility of reviewing and reflecting on the content is challenged (Bagnara & Pozzi, 2012).

The memorization process is based on the fact that an element is repeated and, above all, acquires value in being revised. The taste for reviewing (Morpurgo, 1985), consolidated by the domination of the photographic image for almost a century, comes into crisis with the proliferation of public and personal digital visual information, and the fragmentation of attention brought by mobile devices also increases these issues (Oulasvirta, 2005).

The time people have devoted to this process of learning and appreciating their experience is gradually becoming more and more limited and bounded by the features of the artifacts. With respect to these considerations by Maldonado and Flusser, it is also important to emphasize how the difference between ‘network time’ and ‘real time’ (Virilio, 1998; Thackara, 2005) and the awareness that the digital dimension may bear no relation to the real flow of events (Rushkoff, 2012) opens up a necessary reflection on how the gradual loss of moments of personal reflection (Bagnara & Pozzi, 2012) does not help to build one’s own relationship with memory. In this article, the relationship between memory, reflection, and interaction design has been investigated with Norman and Nielsen’s principles for the design of digital artifacts in mind (Nielsen, 1994; Norman, 1988). In particular, the visibility, mapping, control, consistency, recall, and time heuristics have guided the authors in approaching good and bad design examples and verifying the quality of the memory experience. Memories are remembered thanks to the memory spaces allowing to store traces of significant moments. Quality memory experiences also contribute to raise awareness about visual pollution’s importance (Evecen & Gudekli, 2019). As the number of shared images increases, people need to start to be concerned about leaving a digital visual trace.

2. Interfaces and Interaction Design for Memory

This research aims to understand how interaction design and cognition are tightly connected in interaction design for memory: on the one hand, by considering how bad interfaces conspire against memory and, on the other hand, how mem-

ory processes themselves are adapting to the transformation imposed by new digital information tools.

In most cases, social networks provide a model of interaction with content that takes the form of a long timeline that ideally begins with the date of the user's first registration. Such a continuous scrolling model of information affects memory organization, clustering, and management (Zannoni, 2018). The social network flow of information has many similarities with a continuous television broadcast, with the exception that its fruition starts from the last content posted and goes backward in time until the user is willing to explore the content.

The impossibility of organizing content and being able to fix it with bookmarks that can be more or less organized into lists is the contemporary limitation of most of the modern tools we use on a daily basis. The linearity proposed by a blog or a timeline of posts on a social network does not correspond to a traditional reading model for a few simple principles, such as for example: their sequence is predominantly backward because they always foster reading from the most recent content. In that way, readers are never aware of where the flow of content begins because they always see a limited part of it, the most recent one. In fact, our mind cannot linearly map information and memories as the timelines interface models are proposing. They do not allow for the consolidation of memory and, above all, in agreement with Liam Bannon (2006) and Victor Mayer-Schönberger (2009), they are not designed on the basis of the intrinsic human needs for remembering and forgetting.

However, the concept of linear visualization of information does not represent the problem in itself because we have al-

ways lived with the sequential structure of our libraries (Casati, 2013; Ferrari, 2014), but it is the interactive, instantaneous nature of digital technologies that impacts and undermines the strategies humans enact toward reality (Virilio, 1998). Differently from the book, which represents knowledge in itself and constitutes a physical retrieval cue for its contents, the hypertext has completely innovated the structure of access to information, making it necessary for users to construct non-linear concept maps involving logical choices in which the tree of information is far from reaching completeness and does not help to construct a unitary vision.

2.1. Bad Interfaces

What is the explanation of this possible crisis that, in addition to transform the way we use content, not necessarily for the worse, is bringing transformations to the processes of personal and collective memory (Zannoni & Formia, 2018)?

If we take inspiration from Clark and Chalmers' concept of the extended mind and try to extend it to digital artifacts. In that case, we are faced with the need to allow people to construct concept maps of their memories thanks to these new intangible objects that need a device to be enjoyed due to their digital nature. Today, our images are taken and stored in a huge continuous camera roll that we can organize into albums, but people hardly do so. The two prevailing operating systems for smartphone devices have gained the upper hand in the management of this content and dictate the rules in management logic. Third-party competitors are nowhere near able to meet this challenge and disappear little by little, such as Flickr and other forerunners of online cataloging systems.

From 2017 onwards, Apple and Android online systems began to build algorithms based on the metadata contained in images to create a logical organization for this flow of information. Periodically this artificial intelligence re-proposes images chosen over time, but the logics behind are not typically clear to users: this process, called “cued recall”, acts by constructing engagements to resurface past episodes (Fawns, 2022), e.g., they create fictitious albums that correspond to places and temporal moments indicated by tags and metadata but fail to interpret the content from a semantic point of view, and remains sterile and cold if compared to the life emotions they could represent.

Photos content interpretation mechanisms have drastically improved, see Google Lens for example, and the same for online archives search systems able to analyse the content of images (Ben-Yair, 2021), but we are still far from imagining a scenario in which this intelligent interpretation might results truly valuable for constructing a structured personal memory. Another recent study on the impact of interface type on long-term memory showed that browsing sequential images within galleries does not facilitate the reminiscence of memories (Broekhuijsen et al., 2017; Axtell et al., 2022).

Considering the general audience of such intelligent services, these people are unlikely to bridge these digital contents to physical artifacts such as prints or photo albums. Although there are many solutions on the market, printed copies of photo memories are no longer as widespread as they once were.

In the past, there were very interesting tools that developed shared memory processes, one of which was the [del.icio.us](#)

platform, which made it possible with a very simple action to create bookmarks of web pages by organizing and disseminating them in one's own community. Del.icio.us counted about 5.3 million users before being sold to Yahoo, and 180 million bookmarks get lost after many changes in company ownership: a full heritage of collective memory and the representation of the interests of individuals who shared contents and forms of memory of facts and events in the network. The loss of this content was not a form of oblivion of web information but an example of the bad design of a system. Indeed, every individual should have the right to preserve their data and to be able to store, export, and reorganize them in different memories. But the policy of open and user-owned data does not always match with the web companies' policies. If one day Meta will decide to close down Facebook, what has been our online social life for over twenty years would vanish. The relevance of Facebook Photo Memories as memory artifacts has been discussed in relation to novel memory scenarios (Schwarz, 2014).

If social networks can be considered primitive interfaces for viewing content and building an organization of one's interests so that they constitute memory for people, what could the most suitable tools for supporting individual and collective memory be?

At present, personal data management systems are proprietary, and personal archives do not migrate between one platform and another in case of acquisition. There are open platforms based on textual tags markup systems which are often hostile to ordinary users.

We are probably at the beginning of a change in the management of personal data, and this, in the long run, will be a possible problem in which large archives of knowledge will exist on the net. However, due to the obsolescence of systems, many personal memories will also vanish several times in an individual's lifetime. However, this information, even if in some home or networked storage that is properly preserved, will, in any case, be submerged under an exponential amount of data.

2.2. Digital Artefacts and Memory

As already described by Sebastiano Bagnara (2006) at the beginning of the popularization of digital technologies, the gap between the availability and supply of information and the human capacity to process it has exponentially widened.

One of the key mechanisms in memory is filtering, which allows some memories to be deliberately retained and others to be deleted. The ability to filter information is inherent to a mature mind; children and adolescents have not yet had sufficient time to build an intelligent, personal cognitive filter. The Net Generation, i.e., those born at the turn of the year 2000, who have lived almost their entire childhood and adolescence with the availability of the Net, exhibit memory navigation styles that are driven by the relative intensity of the information they are exposed to rather than by their own personal interest or choice.

As analysed by Maldonado, the increasing process of emptying one's personal space generated by the inevitable digitization of content led to the lack of permanence of things and enforced detachment from our memory (2005). It is also plausible to argue that the act of delegating human memory

to machines exponentially expands the amount of accessible data but at the expense of man's ability to construct a real memory (Flusser, 1990).

We are surrounded by ambivalent technologies that if, on the one hand, relieve us of the burden of remembering because they allow us to retrieve memories, especially visual ones. On the other hand, force us to remember and lead us to distrust external memory aids. In fact, in recent research on the role of human factors in cybersecurity (Pollini et al., 2022), the authors noted how memories of a visual nature are commonly shared in professional activities through taking and exchanging clippings, screenshots, photographs, videos sent in conversations and groups via messaging and online collaboration apps, e.g., Whatsapp and Slack.

The immediacy of visual memory in these forms has overtaken the importance of textual exchange in personal and professional communications. In this scenario, the visual recognition of content, e.g., photos of shifts between colleagues, or images of project boards, plays a dominant role. The main *hook* for memory retrieval becomes the conversation and people taking part in the dialogue. There are working tools, such as the search function, searching for content in the conversation, or the filters for the types of media exchanged in the conversation, which are also connected to the conversation.

In contrast to the growing confidence we have in exchanging visual memories, we are now witnessing situations where a new capacity for remembering is required. For instance, the mnemonic keys to access systems: current authentication mechanisms in computer systems, especially those related to

valuable data in the professional sphere, such as two-factor authentication, the use of customizable queries for information retrieval, PIN codes in payment systems, eight to sixteen character passwords... all of which are asking for a mnemonic demand also combined with not leaving any digital traces.

New memory aids are wide spreading in the cybersecurity sector; they are automated software, such as Google's Authenticator, which generates random codes to be used for the 2FA verification method in approximately 30 seconds time intervals. These are random codes that are automatically generated by the app without the need to use the data connection that is coupled with personal accounts. There the main issue for users is to understand the model of the system and completely rely on it.

Both memory-enhancing systems, through multi-media social sharing, and memory loading technologies, like those for data protection and cybersecurity, are not explicitly designed for memory, nor with a human-centred design mindset focusing on extending and reinforcing cognition and memory.

2.3. Digital Artefacts and Oblivion

In dealing with technologies that require us to commit to memory, such as the security systems described above, memory can represent a real burden, an unnecessary weight due to the accumulation of access keys, credentials, and contact numbers that, although in disuse, linger in our memory. As Bagnara (2006, p. 195) states, "one has a distinct feeling that it would be better to 'clean out' our memory".

But our memory is also made up of and fed by the memories

that digital systems and social networks offer us here. Unlimited retention of personal information on the web might not only affect individual forgetting needs. However, it may harm individuals by keeping shared and collective memories alive, such as youthful indiscretions on employees or low credit scores that may haunt individuals for a lifetime. Currently, Europe revives the “right to erasure” as the first step towards a forgetting web: a “right to be forgotten” (Mayer-Schönberger, 2009).

Ideally, online services should “intelligently” support users with the oblivion of disclosed personal information.

As Liam J. Bannon states, “forgetting is not some unfortunate limitation of the human, but is rather a necessary mental activity that helps us later the incoming sensory flood and thus allows us to act in the world” (2006, p. 7). In particular, the cognitive processes responsible for forgetting are decay (i.e., forgetting implies not using knowledge for a long time) and interference (i.e., newly required knowledge interferes or inhibits already possessed knowledge).

Interference is what we continuously experience with the real-time overflow of contents and data and what we retain in memory is mainly represented by our reflective activity (Bagnara & Pozzi, 2012): what we think more deeply about and elaborate into personal concepts is what we remember and recover well. And cases where remembering everything had detrimental effects on a person’s cognition are also well documented, both in the pianistic work of Alexander Luria (1968) on memory and in the more recent Viktor Mayer-Schönberger *Delete* (2009). The positive impact of forgetting has been recognized in organizations as well, be it intentional or unintentional (Bagnara et al., 2004).

We might state with Sebastiano Bagnara and Simone Pozzi (2012, p. 1109) that

We are facing the paradoxical situation where we need to voluntarily “erase” skills and competencies in which we invested time and effort. We need to forget in order to achieve the optimal flow with the new technologies, in order to be able to quickly learn new skills. Our memory lives in a fast-moving present, where technologies do not give us any indication to consciously choose what to remember and what to forget.

The paradox is true that we might lose memories of contents we invested more attention and effort into. We might involuntarily keep other memories because they have been better described with web metadata, and search engines might efficacy retrieve them. Personal choice and control over memory and learning depend not only on our will but also on the opportunities for action and reflection we find in life and work contexts: if the artifacts we use are designed to support memory or oblivion.

Design for oblivion has been investigated in relation to intelligent oblivion mechanisms, able to discern different degrees of information importance, embed decision support for meaningful data deletion, and possibly commence forgetting automatically (Novotny & Spiekermann, 2014), and in relation to socio-technical systems, where work is conceived as an activity taking place within a system where knowledge is distributed (Hutchins, 1995) among four main components: the worker, the cognitive artifacts, the community of practice, and the end-users (Bagnara et al., 2004).

3. Discussion: Design for a Memory of Quality

From the above considerations, we want to propose formulating design guidelines that take into account the following critical issues: firstly, many people suffer from digital tools and let the systems manage their digital content, and secondly, the proper features of the devices that do not allow the personal elaboration of information.

In fact, algorithms of the systems that facilitate the process of remembering an event act as surrogates for our memory but are not yet sufficiently refined and qualitatively relevant to be truly integrated with our memory evocation processes. The second critical issue is that digital devices such as smartphones have a very small interface that does not allow much information to be displayed simultaneously. The physical limits smartphones have, prevent the human eye from being able to get an overview of the whole information “at a glance”. In the example of the library of books, we can visually perceive a multitude of information at the same time, recall many memories and integrate them within our cultural background in a few moments. These ‘visual cues’ and ‘physical cues’ are the elements of a visual mapping system that people construct for themselves in their personal spaces. They represent retrieval cues from the physical environment but are widely studied in the social environment (community of practice and customers) and, more interestingly for us, in cognitive artifacts. In interface design, visual cues might be removed to erect barriers to block no more useful knowledge (Bowker, 2000) or might be emphasized to provide the users with opportunities to organize the information personally. These actions, together with similar modifications in the physical environment, would need to

be configured, either to cancel or enforce the cues to recall, but always on purpose, in order to design for decay or active organization of memories (Bagnara et al., 2004).

These information structures can be elaborated into conceptual maps that help people to recall personal knowledge and experiences in long-term memory. Any of the interactive tools on our devices have been designed with an immersive, interactive, engaging, and constructive approach in mind, apart from the operating system desktop that was conceived in the 1970s at the Xerox Palo Alto Research Center (PARC) and still remains an effective and efficient metaphor which proposes a set of unifying concepts used by graphical user interfaces to help users interact more easily with the computer.

In summary, we can consider that in order to be able to develop memory processes, the human being must be able to perform the following actions: to manipulate content in a natural way, to export, i.e., to be able to share, to plan and manage the information about one's own time, to organize and find hierarchies between the individual elements, and finally to materialize and trace larger information systems back to individual visualizations.

With this in mind, in proposing some principles for outlining guidelines for action, we referred to Jakob Nielsen's heuristics and Donald Norman's principles for the design of digital artifacts.

To summarize, in designing systems to suit the human action of constructing and evoking memory regarding our analysis, we would like to propose these six heuristics:

1. **Visibility** – The information must always be within people's reach and be enjoyed through overviews and not in linear form.
2. **Enhance the mapping** – Facilitate the association of visual cues to personal content.
3. **Natural and free control** – Make it as direct and immediate as possible to organize the elements between them, allowing them to be freely differentiated visually, and giving great relevance to the images.
4. **Consistency and hierarchies** – Give people the possibility to build hierarchies and coherent organizations of their information.
5. **No dependence on algorithms** – Develop memory recall aid systems that can facilitate choices but do not imply a passive use of the automatic process by users.
6. **Time** – Give people back the ability to spend time organizing their content through tools that facilitate this process.

These principles would represent a guidance framework for interaction design processes involving personal memories and allowing people to become the main actors in this process again.

4. Conclusion

Through the analysis of the current context of use, the aim of this contribution was to consider critical issues and opportunities in several interface designs to access one's own digital content. In order to tackle the challenges that memories bring to interaction design, it is necessary to open a real debate about the limits of the tools we are used to adopting, the

faster and faster processes in the fruition of information, and how they are incompatible with personal reflection.

In order to shape and validate quality memory interface design guidelines, experimental research is required with the possibility to investigate and document this area of design, leading to the application of the heuristics proposed in this contribution. A short-term goal could be to define a set of rules and checklists for designers to assess digital tools and services massively used to construct their memories through intentional and unintentional content management practices.

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Hyper-Sensing Creative Acts

The Role of Design in Transmitting Intangible Cultural Heritage through Digital Tools

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Abstract

Craft objects represent material culture, artisans' heterogeneous know-how shaped into tangible artefacts as results of *creative acts*, evidence of an "intimate connection between hand and head". Craftspeople are alive custodians of Intangible Cultural Heritage (ICH), conceived as embodied knowledge about practices, representations, living expressions, and skills inherited from the past and belonging to specific, situated communities. Due to sociocultural, economic, and technological barriers, the Fashion sector counts few attempts to preserve and transmit ICH to posterity.

Digital technologies could preserve, revive, transmit and valorize ICH's *creative acts* through their data, information, and knowledge encoding. Digital tools for data mining coupled with design ethnography could be powerful means to analyse, record, and archive analogue creative and productive processes. Through literature review, the paper aims to reflect on the relationship between craftsmanship, digital technologies, and ICH, firstly by identifying their applicative crafts sectors and secondly highlighting limits and opportunities of digital tools and procedures for crafts ICH representation (encode, document, analyse, preserve, and archive embodied knowledge) and presentation (translate data into engaging narratives toward ICH's dissemination and spreading). Resulting guidelines highlight the role of design toward sustainable development in preserving cultural diversity and identity against the fashion industry's mass production and growing globalisation.

1. Introduction

1.1. Intangible Cultural Heritage (ICH) of Craftsmanship's Creative Acts

Literature (Skublewska-Paszowska et al., 2022) shows a sense of urgency and a new research focus directed at safeguarding and promoting tangible, intangible and mixed cultural heritage. Craft objects represent material culture, artisans' heterogeneous know-how shaped into tangible artefacts, the results of the *creative acts* (KWF Cologne, 2011), and the physical embodied evidence of an "intimate connection between hand and head" (Sennett, 2009, p.9). Intangible Cultural Heritage (ICH) refers to social and cultural practices and processes rooted in traditional and local cultures, including oral traditions, customs, language, music, and craftsmanship (UNESCO, 2003). Craftspeople are the alive custodians of ICH, conceived as practices, representations, living expressions, and skills inherited from the past and belonging to specific, situated communities (UNESCO, 2003).

ICH craft-related practices and creative acts are *embodied knowledge* often handed down through personal exchanges and oral mentoring between craftspeople and apprentices through a process of human knowledge transmission (UNESCO, 2003). The risk of disappearance of traditional crafts techniques, tacit knowledge, and embodied skills in creative acts is very high because it relies on the implicit practices of knowledge transfer of experienced craftspeople to novices through inductive and on-the-job learning. The small number of remaining experts, old in age and passing on their knowledge mainly in the familiar entourage and the limited number of educated young pro-

professionals interested in artisanal jobs contribute to the risk of loss of cultural transmission of ICH in craftsmanship sectors. Craftsmanship's disappearance is increased by the impossibility of adapting to the competition of mass production at lower costs due to the delocalization of manufacturing to places where hand labour is low-priced. Therefore, even though artisans are valued for their talent, they find detrimental conditions to keep traditional craftsmanship alive in a technology-driven world. However, the promotion of the awareness of ICH helps maintain cultural diversity and preserve non-physical creative acts in the threat of globalisation.

1.2. Transmission of Fashion Craftsmanship ICH toward Cultural Sustainability

Fashion, luxury, and applied arts & crafts fields are CCIs as they are globally recognized for their excellence and competitive value in leveraging *creative acts* and producing cultural content embedded into practices and artefacts (Bertola et al., 2016; European Commission, 2016), thus entailing the preservation, safeguarding, and transmission of ICH. Indeed, the European cultural and technical know-how of craftsmanship in the fashion sector has a worldwide reputation. In particular, the EU textile and clothing sector employs 1.5 million people and produces a turnover of €162 billion, being clothing manufacturing the main contributor to the total production (Euratex, 2020), while the leather accessories and related goods sector comprises about 36K enterprises and generates a turnover of €48 billion, employing around 435K people.

As the fashion craftsmanship sector is a significant asset for economic, cultural, social, and environmental sustainability,

entrepreneurship and education are essential topics for CCIs to preserve ICH (European Commission, 2019) and boost the economy. Safeguard attempts should focus on reviving the processes of the craft toward enhanced aesthetics and quality of creative processes and attracting the younger generation to artisanry processes. This can contribute to sustainable development in maintaining cultural diversity and identity against mass production and growing globalisation (Cominelli & Greffe, 2012), both encouraging old and new artisans' generations to produce craft, providing livelihoods to the crafts communities, and perpetuating creativity, thus impacting economics and social wellbeing.

1.3. Digital Technologies for Craftmanship's ICH Representation and Presentation

Digitization and digitalization have the ambition to be effective tools to safeguard ICH by representing (encoding, documenting, analysing, preserving) and presenting (transmitting, communicating, and disseminating) (Partarakis et al., 2020b) the tacit, intangible, embodied craftsmanship knowledge. Digital technologies can ensure the materialisation of ICH in digital memories using digital and augmented ethnographic approaches.

Basic technologies aiding ethnographic research toward the digitization of ICH use audio recording, still photography, and video filming allowing the capture, recording, and storing of actions, activities, processes, contexts, environments, and atmospheres where craftsmanship takes place.

The use of digital tools for data mining (depth sensors and cameras, haptic devices, and sensorised wearables) combined with design ethnography could be a powerful means to ana-

lyse, record, and digitise analogue craft creative and productive processes, particularly regarding the “complexity of micro gestures used in crafting traditions” (Flanagan & Fraietta, 2019; Cheng et al., 2015), along with the creation of a deep and embodied knowledge (Frankjaer & Dalsgaard, 2018).

An *augmented* ethnographic approach (Churchill et al., 2010; Nicholas et al., 2022) could help digitise more data to extract more information about ICH and archive, present and preserve the intangible knowledge related to crafts’ creative acts. These digital technologies are low-fidelity sensors (O’Sullivan & Igoe, 2004) used to monitor and analyse activities, behaviours, and the implicit bodily knowledge of craftspeople during their working activities or to capture the tools’ perspective of routine processes (Churchill et al., 2005). More sophisticated sensors such as cameras, mobile eye-tracking devices, or head-worn augmented reality (AR) systems are used to capture body-mind implications while performing certain activities. In addition to this, the augmented computational and technological capabilities of 3D reconstruction and visualisation and augmented narrative through virtual, augmented, and mixed reality (VR, AR, MR) (Konstantakis & Caridakis, 2020) not only allow to document and encode practices but are also fundamental to guide the making practices for educational transmission and other dissemination scopes (Nicholas et al., 2022).

2. Methodology

The methodology of this study consists of a systematic literature review in the craftsmanship, design, socio-technical, and Human-Computer Interaction (HCI) disciplines. It has been developed through the following path:

- Development of the study aims and research questions definition.
- Development of the desk research query on academic publication databases and digital research engines.
- Definition of research criteria concerning databases and keywords.
- Selection of publications and case studies and application of inclusion/exclusion criteria.
- Data extraction and contents analysis.

2.1. Aim of the Study

The paper aims to reflect on the relationship between analogue craftsmanship, digital technologies, and ICH to discuss the role of design in:

- Applying digital technologies, tools, and procedures for crafts ICH representation: encode, document, analyze, preserve, and archive embodied knowledge about crafts' creative acts within traditional craft environments.
- Applying digital technologies, tools, and procedures for crafts ICH presentation: translate data into engaging narratives toward dissemination and spreading of ICH to the broader public.
- A particular focus on the use of digital technologies in ICH of fashion craftsmanship aims to understand the emerging opportunities and limitations for future research on the role of design in preserving and transmitting fashion craftsmanship embodied knowledge.

2.2. Literature Review

The literature review was conducted between February 2022 and June 2022, using the primary academic publication databases (WoS, Scopus, Elsevier, Science Direct) and digital research engines (Google and Google Scholar) to reach both resources from the most prestigious academic databases, and case studies, publications, and grey literature on the topic. The structure of the first research query undertakes the following keywords: (*intangible cultural heritage* or *non-physical heritage*) and (*craftsmanship* or *crafts* or *artisanship*) and (*digital*). Subsequent research also included (*gesture* or *augmented ethnography*) to specify better the focus of the studies related to creative acts. Finally, specific research also included the terms (*fashion*, *textile*, or *clothing*) to address the studies related to fashion and apparel craftsmanship.

The selection and screening phase regarded the abstract analysis and the articles' conclusions to understand how much they fit the research. This screening identified 21 articles and papers and four projects as case studies (Fig. 1). Classification followed the criteria of (i) year of publication, craft sector, gestures tracked, focus area between presentation and representation, used technologies highlighting limitations, and opportunities. In addition, technological implementations have been qualitatively analysed in the results section. Resources were included if focusing on craftsmanship ICH mediated by digital technologies published or released between 2012 and 2022 only.

The research has been conducted to identify:

- The main craftsmanship sectors involved in the representation and presentation of ICH creative acts using digital technologies.
- The technologies adopted, related outputs, opportunities, and limitations for representing ICH creative acts.
- The technologies adopted, related outputs, opportunities, and limitations for presenting ICH creative acts.

3. Results

3.1. Identified Craftsmanship Sectors

Literature review outcomes prove a growing interest in the representation and presentation of ICH in the context of crafts practices started in 2014 and peaked in 2019-2022 during what Fox Miller (2017) defined as the “third-wave craft movement”.

Skublewska-Paszkowska et al. (2022) also demonstrated that craftsmanship ICH mediated by technologies is a growing research context. Indeed, the development of advanced digital tools has allowed reflections on the possibilities of preserving knowledge and skills used to produce various traditional crafts practices through their translations in digital data and their transmission to the wider public through immersive digital techniques. The analysed craftsmanship studies concern various types of traditional know-how and haptic skills (Fox Miller, 2017) in the form of finger dexterity, hand gestures, broader body movements, human activities, and resulting manufacturing processes.

PAPERS	Authors	Year	Craft sectors	Focus area
Technoculture of Handcraft: Fine Gesture Recognition for Haute Couture Skills Preservation and Transfer in Italy	Marfia et al.	2012	Footwear	Representation
Reframing Haute Couture Handcraftship: How to Preserve Artisans' Abilities with Gesture Recognition	Marfia et al.	2012	Footwear	Representation
Capture, modeling, and recognition of expert technical gestures in wheel-throwing art of pottery	Manitsaris et al.	2014	Pottery	Representation + Presentation
Survey on 3D hand gesture recognition	Cheng et al.	2015	N.D.	Representation
Using Mixed Reality and Natural Interaction in Cultural Heritage Applications	Brondi et al.	2016	Print making	Representation + Presentation
The contemporary geographies of craft-based manufacturing	Fox Miller	2017	N.D.	N.D.
A Multimodal Approach for the Safeguarding and Transmission of Intangible Cultural Heritage: The Case of i-Treasures	Dumitroupulos et al.	2018	Pottery	Representation + Presentation
Tracing the intangible	Flanagan & Fraietta	2019	Embroidery	Representation + Presentation
What is needed to digitize knowledge on Heritage Crafts?	Zabulis et al.	2019	Silk fabric weaving	Representation
Towards a Professional Gesture Recognition with RGB-D from Smartphone	Moñivar et al.	2019	Silk fabric weaving	Representation
ToolY: An Approach for the Combination of Motion Capture and 3D Reconstruction to Present Tool Usage in 3D Environments	Stefanidi et al.	2020	N.D.	Presentation
An approach to the creation and presentation of reference gesture datasets, for the preservation of traditional crafts	Partarakis et al.	2020	Silk fabric weaving	Representation
Transforming Heritage Crafts to Engaging Digital Experiences	Partarakis et al.	2020	N.D.	Presentation
The Application of Digital Technology in the Protection of Intangible Cultural Heritage — Taking Beijing Palace Carpets as an Example	Baitao	2021	Chinese Carpets	Representation + Presentation
Modelling craftspeople for cultural heritage: a case study	Cadi Yazli et al.	2022	Glassblowing	Presentation
Digitisation of traditional craft processes	Zabulis et al.	2022	N.D.	Presentation
Multimodal Narratives for the Presentation of Silk Heritage in the Museum	Hauser et al.	2022	Silk fabric weaving	Presentation
Mixed-Reality Demonstration and Training of Glassblowing	Carre et al.	2022	Glass blowing	Representation + Presentation
3D technologies for intangible cultural heritage preservation—literature review for selected databases	Skubewska Paszkowska et al.	2022	(broader) Crafts, Art, Architecture, Sport	N.D.
Digitizing Intangible Cultural Heritage Embodied: State of the art	Hou et al.	2022	N.D.	Representation + Presentation
Augmented: Design and ethnography in/of an architecture, computer science, and textile, and textile research-creative collective.	Nicholas et al.	2022	Embroidery	Representation + Presentation
CASE STUDIES	Authors	Year	Craft Sector	Focus Area
XYZ Sensomotoric Interplay of Glass and Body	Wint Design Lab	2021	Glass Blowing	Representation + Presentation
“Artefacts” serie	Sougwen Chung	2019	Painting	Representation + Presentation
Kaargari-hand blockprinting artisans' movement track	Rashmi Bidasaria	2020	Print Making	Representation + Presentation
Cyberknitics	Ezra Lamb	2016	Knitting	Representation + Presentation

Figure 1. Casciani-Vandi, 2022.

The sectors emerging from the literature regard:

- *Pottery and wheel-throwing*, from the projects i-Treasures (Dimitropoulos et al., 2018) and ArtiMuse (Manitsaris et al., 2014). Both studies offer a methodological framework for capturing, recognizing and modelling expert technical gestures through human-computer interfaces.
- *Glass-blowing hands gesture tracking* used to model and animate a digital avatar for a thematic museum exhibition by Cadi Yazli et al. (2022). On the other hand, Carre et al. (2022) present a process of reverse engineering aimed at the visual and semantic representation and presentation of a historical glass conserved in a museum for educational and preservation purposes. More than this, the project Tacit Dialogues (2021) shows an ongoing, multidisciplinary research focused on the performative qualities of glass-blowing tracked via environmental sensors and sensorized tools whose data are decoded into acoustic patterns enabling the auditive monitoring of the glass maker's movement (Wint Design Lab, 2021).
- *Jacquard weaving techniques* for silk fabric production, explored by Zabulis et al. (2019), Partarakis et al. (2020a), and Cadi Yazli et al. (2022) in the context of the Mingei project. The studies started from the assumption that existing datasets refer only to generic gestures and activities, but no datasets for specific craft practices are available in open access. The authors propose an approach for understanding and articulating human motion recordings into multimodal datasets and VR demonstrations of actions and activities relevant to non-experts in the domain of 3D motion digitization.

- *Embroidery*, with the experiment from Flanagan and Fraietta (2019), aimed at reviving the Chinese Shui ethnic minority horse-tail technique to translate the data maps into visual and sonic experiences for students to promote cultural sustainability. Nicholas et al. (2022) explore how design and ethnography could merge to study bead-weaving stitch types while capturing, modelling and presenting them through immersive tools.
- *Footwear crafting*, presented by Marfia et al. (2012), focused on the analysis and digitization of the manufacturing process of haute-couture footwear. The papers focus on the technologies used for movement tracking and do not clarify how the emerging outputs from the research were used. Missing information may stem from non-disclosure agreements between the authors and the company implied in the research.
- *Printmaking* on textiles (Brondi et al., 2016) focuses on ways of capturing and interpreting the specific and different movements of artisans to be replicated as graphic patterns into textiles using the Jacquard techniques (Bidasaria, 2019).
- Other less explored sectors related to crafts techniques concern Chinese carpet making (Baitao 2022), knitting (Lambchurc, 2016), and painting (Chung, 2019).

3.2. Technologies for Representation of ICH Craftsmanship Creative Acts

The analysis shows that researchers primarily focus on crafts representation areas that mainly concern documentation, reconstruction and protection of crafts embedded knowledge.

Hence “[...] instead of targeting solely result-driven examinations, the ideal usage of such data should facilitate a new model of computation conveying the open-ended information embedded in the bodily practices” (Hou et al., 2022, p. 3).

In this regard, Motion Capture (MoCap) technologies – categorised into mechanical, magnetic, and optical capture, leveraging systems that are camera-based, sensor-based, or a hybrid of both – result to be the most popular in ICH archiving, allowing data collection to be neutral, simultaneous, thereby fostering a perceivable human presence in the virtual cultural heritage environments (Chalmers et al., 2021).

Other authors propose technological applications defined by the typology of body gestures to record, usually differentiating them into coarse and fine (Marfia et al., 2012; Cheng et al., 2015; Partarakis et al., 2020a).

Coarse gestures concern repeated, low-precision actions that involve the whole body (e.g., moving an object from one end to another of a lab), quickly tracked through MoCap marker-less sensors or inertial motion sensors continuously and in real-time (i.e., Wii) (Manitsaris et al., 2014), but also by simple visual tracking technologies able to recognize the movement from video recordings.

Hands perform actions that involve fine gestures in all those cases where a high degree of precision is required (Marfia et al., 2012), and both hands and finger movements need to be recognized. Even though not robust to occlusions, marker-based sensors are the most performative for fine-grained gestures, using optical markers and active computer vision, which require expensive commercial systems (Manitsaris et al., 2014).

Cheng et al. (2015) introduced a subdivision of the core 3D fine gestures recognition approaches mainly focusing on finger movements: (i) 3D hand modelling based on the estimation of the articulated hand poses and motions, (ii) static hand gestures recognition usually capturing the palm and finger postures, (iii) hand trajectory gesture recognition containing both trajectory and static gestures also recognized leveraging the Kinect skeleton system and finally (iv) continuous hand gesture recognition aimed at detecting when a gesture starts and when it ends from hand motion trajectories.

Other complementary approaches emerged from ArtiMuse Project (Manitsaris et al., 2014), implying the use of wireless inertial sensors and statistical modelling implemented into a human-computer interface, or the application introduced by the project Mingei called Animation Studio, enabling visualisation, editing, and semantic annotation of pertinent data acquired by MoCap (Partarakis et al., 2020a).

3.3. Technologies for the Presentation of ICH Craftsmanship Creative Acts

Papers related to technologies for the presentation of ICH craftsmanship creative acts are a minority. According to Partarakis et al. (2020b), presentation address the need to exploit and decode representation to promote cultural sustainability, “conserve cultural resources, contribute to their accurate interpretation, provide essential and authentic experiences [...]” (Partarakis et al., 2020b). ICH’s traditional curatorial approaches increasingly integrate interdisciplinary, data-driven, and multimodal perspectives (Hou et al., 2022), advancing

technical innovations beyond object-centred display through digital technologies' opportunities.

Therefore, representation applications assume an *informational* connotation, developing virtual platforms/portals to connect MoCap-derived data to other culture-intensive heterogeneous contents, defining the archive context as a more "analytical, semantic, and interlinked entity accessing communities' digitised environments" (Hou et al., 2022). To this end, Zabulis et al. (2022) and Stefanidi et al. (2021) developed a multiple-user system platform where craft representations can be collaboratively authored, shared, displayed, and digitally preserved in standardized formats while Carre et al. (2022) introduced the Motion Vocabulary as a tool for transmitting and explaining gestural skills data to wider audiences.

Another presentation practice dimension is related to *storytelling*, whose applications are allowed by technologies belonging to the reality-virtuality continuum (Milgram et al., 1994), i.e., the process described by Cadi Yazli et al. (2022), to design digital humans to virtually represent craft workers for an XR museum exhibition. Storytelling may be implemented through augmentations of the craft workspace with virtual characters acting as guides, VR environments that provide immersive storytelling experiences, and dissemination through online virtual storytelling applications, as for the VR demonstrations related to silk weaving (Partarakis et al., 2020b) translating motion retargeting to Virtual Humans, or VR technology generating the gamified experience of carpet weaving (Baitao, 2022). Other storytelling experiments about the presentation of crafts gestures could also converge in contemporary art,

exploiting the freedom and cutting-edge explorative dimension that only artistic practices can enable.

This is the case of *XYZ | Sensomotoric Interplay of Glass and Body* by Wint Design Lab (2021) and *Cyberknitics* by Ezra Lamb (2016), offering visual and sound reinterpretations of the individual movement of the artist to the physical resonance with-in respectively a glass-blown piece or a knitting activity. In tandem, the artist Sougwen Chung (2019), through the series *Artefact* explores artistic co-creation through improvisational drawing collaboration with a collaborative robot trained on the artist's movement when drawing. The project of Rashmi Bidasaria (2020) parallels the gestures of hand block printing with Jacquard weaving, translating through digital recordings the analogue movements and gestures of craftspeople's stamps into graphic patterns automatically woven.

Educational applications aim to teach future professionals or robotic machines through cultural heritage skill learning experiences. First-person acquaintance applications to basic skills can be implemented through MR, which could allow the manipulation of virtual and physical objects and tools. To this end, Flanagan and Fraietta (2019) introduced their study on Japanese horse-tail embroidery to Guiyang students to carry their cultural traditions while innovating them with creativity and contemporary insights. Moreover, they propose an interactive media museum interface for a growing repository through encoding traditional crafts practices.

Brondi et al. (2016) introduced a virtual environment where users can freely explore the space around the artisan and

overlap their own hands with the encoded hands of the artisan to learn how to perform some of the actions needed during the work of weavers. Manitsaris et al. (2014) reported the establishment of sonic and optical feedback to the learner through a digital presentation, driving him/her to correct his/her gestural errors. More conservatively, after having captured and modelled crafts gestures through HoloLens and 3D modelling software, Nicholas et al. (2022) reintroduced them to the physical environment through a community-based bead-weaving workshop to empower refugee and immigrant women from different parts of Africa and the Middle East, toward cultural and social sustainability.

4. Discussion and Conclusions

Based on the analysis, the fashion industry has not yet implemented systematic research attempts to safeguard its cultural heritage, despite being the sector's most remarkable peculiarity in sociocultural, semiotic, and industrial development terms. In a craft-based sector like fashion, the growth of craft production models results in the diffusion of economic power (Fox Miller, 2017), as craft producers increasingly compete with large-scale mass producers that globalization has favoured during the last decade. In this context, technological advances could play a significant role in enabling the revival of small-scale craft manufacturing towards cultural sustainability. A design-driven approach based on ethnography could therefore have the power to integrate these scattered experiments within the fashion system to enable the development of products/systems with high narrative content, local knowledge, and identity as a stimulus for innovation (Vacca, 2012).

Conversely, any attempt to transmit and communicate fashion craftsmanship ICH has always clashed with a conservative industry that is reluctant to the widespread dissemination of the craftsmanship and know-how contained within a high-fashion product. In addition, technologies bring the fear of ICH being copyrighted or patented by outsiders of the local communities and owners of the crafts' creative acts, increasing the secretive and closed attitude toward technologies, even if adopted to safeguard ICH practices and knowledge (George, 2010).

The issue of openness of digital data against data protection of the fashion sector is an argument of critical reflection considering that the digitalization of ICH eases data replication, conversion, manipulation, and recombination, and thereby supports the democratic cultural remix of information and products (Brennen & Kreiss, 2016), but also needs to have a disciplined way to convey information, meanings, and memories, to avoid impoverishment of local knowledge against mass globalisation and cultural appropriation.

To do so, an interdisciplinary, collaborative, and systemic environment is required at the onset and during activities related to the presentation of fashion craftsmanship ICH. Indeed, engineering expertise (e.g., robotics, mechatronics, mechanical and electrical engineering, and computer science) should be coupled with social sciences and humanities (e.g., sociology, socio-technical studies, digital humanities, history, anthropology, and cultural studies) to exploit technologies for sociocultural production. In this context, design is conceived as “a creative and proactive attitude to filter, transfer

and connect different bodies of knowledge to shape innovative solutions” (Banerjee & Ceri, 2015), being a crucial lever in mediating among the aforementioned interdisciplinary fields. This collaboration could contribute to select technologies and computational methods to extrapolate and digitalize tacit knowledge embedded in artisans’ “bodily skills, technical knowledge of tools and techniques, trained sensory capacities, knowledge of materials, and stylistic preferences” (Giaccardi & Redström, 2020) and to support data interpretation through critical and historical comparisons with contextual data related to the political, social, cultural environment where fashion craftsmanship ICH are situated.

Digital technologies still show limitations in replicating and replacing the highly specialised perceptual and manipulation skills and the creative abilities of fashion craftspeople (Frey & Osborne, 2013). This recorded and archived gestural data from “creative acts” do not directly translate and give access to cognitive information that links crafts people’s hands and heads.

Besides, the technological limitations in data collection can be mediated through an interpretation at the presentation stage using useful technologies and storytelling skills to narrate the experience in a holistic, thick, and complex manner. To date, ICH presentation projects offer a vertical and specific viewpoint of creative acts, often reproducing a single aspect in highly interactive modes of fruition that present limited connections with the socio/historical/cultural contexts. The creative acts are also often presented by abstracting the data from its context as synaesthetic outputs. Here, the data

abstraction and act reinterpretation process are not usually unfolded but are used within performative artistic disciplines, and data visualisation approaches, even though they do not imply the restitution and preservation of cultural heritage. On the contrary, some examples of ICH presentation use digital platforms in the format of digital archives that allow the complex replication of data related to the historical and sociocultural contexts where creative acts occur but often lose effectiveness and offer a passive user experience.

The resulting guidelines consider the related challenges of the fashion craftsmanship sector and focus on the role of design as both an encoder and decoder of the inner knowledge lying in culture-intensive artefacts.

In particular, *design in the role of data sense-making* can:

- *Take on challenges related to data manipulation* among different technologies and platforms while still guaranteeing safeguard of the know-how peculiar to the fashion industry through protection policies (i.e., non-fungible-token). This will ensure the preservation and encourage the transmission of the ICH's "creative acts" in the fashion and high-end goods market.
- *Encode ICH knowledge to promote interdisciplinary education* through capacity-building materials and educational toolkits delivered to different actors such as students, craftspeople, and start-uppers to favour long-term resilience and economic and creative capacity of the fashion crafts economy. Didactic purposes should embrace the

need to narrate crafts processes to interpret data holistically, not only through gestural encoding but also concerning historical-critical contextualization. This will upskill craftspeople toward international competitiveness and job creation while reviving traditional enterprises with augmented and hybridised capacities that could attract young professional talents and boost entrepreneurship.

Moreover, *design in the role of hyper-sensorial experiences elucidator* can:

- *Build an integrated media architecture* through interactive storytelling, embodied museology, and gamified engagement (Hou, 2022) that focus on how different ways of digitising and digitalizing creative acts could impact the presentation and representation of fashion craftsmanship ICH as well as multiply the narrative levels of cultural experiences.
- *Manage the inclusion of virtual tactile experiences* through haptic devices and low-technology haptic visuality films to provide tactile feedback to a hand or finger in virtual reality and hyper-sense encoded data for memory elicitation. Haptic interfaces for human-computer interaction, virtual reality, and human-robot interaction could improve the sense of touch that is essential for an industry like fashion, providing “perceptual cues in the form of forces, displacements, electrical, thermal, or other signals delivered to the skin and body” (Zhu et al., 2022).

Therefore, *design becomes the creative encoder of new narratives and meanings from data*, representing the intangible

side of creative acts in non-linear and philological ways through interpretation and synaesthetic conversions to reveal and unveil covered data in new forms. In addition, *design keeps the role of the decoder of new fruition and interaction modalities with ICH* through emerging media technologies, favouring a complete representation of sociocultural, manufacturing and tech-related dimensions lying tacitly behind culture-intensive practices.

Ultimately, *design favours “cultural sustainability”* (Brown & Vacca, 2022) as the lever to preserve communities’ representative material cultures and to strengthen craftsmanship’s role in expressing traditional culture. Cultural sustainability will be fostered by using past knowledge to create new trajectories that can provide interdisciplinary ecosystems with insights and directions needed for building a cultural and sustainable future.

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The Invented Mnemotopes Archive

Design Digital Practices for the Memory of Places

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Mnemotopes, Memory of Places, Archives, Communication Design, Territory.

Abstract

Today, the digitization of memory is a crucial issue. As institutional mnestic repositories, archives are deeply involved in digitalization processes and must reconfigure their theoretical paradigms to keep memory active. They must find new horizons of meaning in technology and design practices. In these processes, the resource problem is evident: only in a few cases can a complete digitization of preserved documents be carried out. GLAMs are limited to partial virtual migration to allow read-only and remote access. Considering the impossibility of a full analog-to-digital conversion, it is necessary to reflect on the fact that it is not enough to think about the proliferation of information but about the quality of the translation strategies. In this context, *invented digital archives* emerge, where documents are thematically juxtaposed to generate new interpretative discourses. In between, digital design practices can extrovert territory by recognizing the archive of *mnemotopes*: a dense network of spatialized memories and cultural objects of territorial interpretation.

The paper presents two case studies in which design, especially communication design, leads to a digital mnemotopic representation that aims to stabilize these compound realities on the territory. Through a conscious reappropriation of personal memory and its territorial context, individual mnemotopes enter digitally into processes of collectivization, not as sites of mummification but of idea generation.

1. Renewing Archives

Today, more than ever, the digitalization of memory is a crucial issue. If memory is left to its own devices, there is a risk that it will be reduced to mere protection against the fragmentary nature of the past. It is no longer enough to preserve the original: it is a matter of mnemonic dissemination, wide access, and an increasingly osmotic relationship with the community. In recent decades, therefore, the experiences of digital transposition by institutions have multiplied to create autonomous and identifiable spaces in the vast digital world and not lose the possibility of entering the web, making the knowledge of memory repositories more permeable. In this context, the archives remain privileged places of preservation and transmission of memory, whose work passes through several phases: collection, selection, preservation, and restitution. Materials are gathered to counteract the dreaded oblivion, selected to prevent the drift of a disposophobic civilization, conserved, and, above all, made accessible to anyone who wishes to consult them. Restitution thus represents a crucial moment in which memory has the chance to be revisited by the project of the future (Bertella et al., 2017), in which an effective confrontation between the past and the experiences that inhabit contemporaneity can transpire. Through these processes, preserved documents participate in the present and contribute to reviving the sense of belonging to a community. They become activators of proximity and create a dense network of relationships between the past, individual identities, and collectivities.

Despite the stability, permanence, and security offered by these institutional repositories and critical knowledge infrastruc-

tures, today, there is a need to reconfigure the main theoretical paradigms dedicated to the subject of archives (Frezza, 2008) to recover memories and expose them to the external context without falling into sterile simplifications. Archives, in their systematic sense, are no longer sufficient to meet the massive communication needs of today. The content has also changed over time: the preservation angle has expanded beyond the analog text boundary to include digital media content. The term *media archive* refers to repositories of textual; audio; visual, especially photographic, but also illustrative; audiovisual, especially film and television, and online circulating products (Frezza, 2008, p. 7). Digital archives have very different characteristics from those composed of traditional media: they can contain enormous amounts of data and allow instant retrieval of information. It is not the statute of archives that is changing but their conceptual landscape, which is becoming more open and accessible to new forms of communication.

Suppose archives want to be able to renew themselves and not only preserve and produce knowledge. In that case, they cannot remain indifferent to radical changes in the production and dissemination of data: they must find new horizons of meaning in technology and the design of tools and artifacts.

With the advent of the digital, the static character inherent in the concept of the archive must give way to the speed of transmission characteristic of the intangibility of the data it contains.

The difficulties posed by this new way of preservation are numerous: on the one hand, the infinite possibility of reproducing a document that undermines intellectual property, and

the problem of authenticity and fidelity of the digital file to the original. This last aspect is determinant in the visual domain because a scan always produces something different from the source material, and changes can occur in terms of light, color, and contrasts (Curti, 2021, p. 48). Second, the places of digital memory require a different conception of space; there are no longer shelves and folders but databases and cloud storage. Third, there is the issue of digital media obsolescence. Although the physical deterioration of archival materials is seen as an actual problem, there is less talk about the inaccessibility of digital files due to rapidly changing technologies or the lack of essential metadata that makes files lost without reference and thus in an infinite binary encoding. These operations also highlight the problem of resources and feasibility: there are few cases in which a complete digitization of the preserved documents can be carried out. Not only archives but also GLAMs (galleries, libraries, archives, and museums) are confined to partial digital migration to allow read-only and remote access. Digitization processes are very time-consuming and costly in terms of economic resources and labor hours. Specialized technical skills and appropriate equipment are needed. In many cases, it is only possible to scan and put online a very small portion of the preserved documents, resulting in immobile and aphasic collections in today's international and hyper-networked environment. Considering the impossibility of a full analog-to-digital conversion of documents, it is necessary to reflect on the fact that it is not enough to think about the proliferation of digital information but about the quality of translation strategies (Vitali, 2004, p. 118) to design precise plans for the transmission of cultural memory.

In this context, in some cases, we go beyond simple text transcription and make a selection, usually thematic, aimed at underlining the relevant or most particular parts of the deposits that function as real systems of memory representation. In this way, a network of *invented digital archives* is created (Vitali, 2004): clusters of documents and cultural texts juxtaposed to generate a new interpretative discourse that aims at avoiding reproduction and adapting the mnestic content to the nature of the web, revealing it in a critical way to traditional document sources.

2. The Mnemotopes

In the digital world, instantaneous communication condenses distances to the point where they are annulled, and space tends to dematerialize, favoring relationships that are symbolic rather than physical (Vitali, 2004, p. 202). In the context of preserving digital memory, we can then ask what the role of memory of the place is? How can we digitally consider a memory that consists of territorial experiences and steps of specifically localized narratives? How can we translate physical memories that relate to concrete and esperable places?

The relationship between memory and places is a social issue linked to the constitution of communities and the recognition of their identity within the territory. Spatial narratives make us recognize ourselves as part of a whole and invest us in the responsibility of memory.

The expression of the spontaneity of memory and its connection with places are the *milieux de mémoire*, natural mnestic habitats (Dickinson et al., 2010), authentic environments of memory that are continuously experienced and do not create

a break between the past and the present (Kalinowski, 2021, p. 11). However, *milieux* are only one of the multiple expressions of the relationship between places and memory, and mnestic geography has historically been represented in various forms.

A real turning point in this theoretical framework is the emergence of the so-called *Memory Studies*, based on an aggregative research perspective associated with the publication of the homonym international journal in 2008, which considers memory as an integrated system combining the physiological dimension with the sociocultural one. The interest in these topics also led to the creation of the Memory Studies Association, including academic institutions, research centres such as *Konstanz Geschichte und Gedachtnis* founded in 2009 by Aleida Assmann, and independent institutions working for the valorization of local memories. Memory Studies are particularly interested in all those apparatuses in which memory is stratified and which may favour its transmission: places undoubtedly play a significant role, and defining their relationship with memory is crucial. Astrid Erll, founder of the Frankfurt Memory Studies Platform (FMSP), in her essay *Travelling Memory* (2011, pp. 4-5), identified three waves of memory studies closely related to the evolution of this relational idea linking territory and memory. The first, between the 1920s and 1930s, saw the central work on collective memory by sociologist Maurice Halbwachs (1950), who considered memory within various social frameworks, including place, supporting the spatialization of memory as essential for social stability and continuity. The second, in the 1980s and 1990s, extends from Pierre Nora's work (1984-1992) on *lieux de memoire*, composite sites where

collective memory takes root, to Jan Assmann's conceptualization of *cultural memory* (1992). The third started in the 2000s and is characterised by a focus on transnational, postcolonial, and multidirectional approaches with a specific emphasis on mnemonic displacement. During these phases, more precisely between the second and the third, we can observe the idea of a *place of memory* condensing a plethora of cultural phenomena and the multiplication of its terminological variations: *Sites of Memory* (Winter, 2010), *Nodes of Memory* (Rothberg, 2010), *Backgrounds of Memory* (Erll & Nünning, 2010), *Historical Places* (Azaryahu & Foote, 2008), etc.

Among these synonyms and variations on the theme, some novel terms stand out by assuming their own conceptual independence, and a peculiar compound word emerges, an almost-neologism, a term that in its apparent dual being “should be fairly transparent” (Purdy, 2002, p. 94): the *mnemotope*, or more classically, *mnemo-topos*. It has been used sporadically in different fields of knowledge and, in 1992, was mentioned in Jan Assmann's most famous work, *Cultural memory and early civilization. Writing, remembrance and political imagination* (pp. 44-45). Taking the example of the Holy Land in Palestine, Assmann describes the mnemotope as a topographical text, a physical and memorable place of a certain amplitude, that acquiring stories and testimonies through the centuries becomes a privileged medium of cultural memory.

Recent studies attempted to overcome the indeterminacy of the concept by focusing on *what a mnemotope is not* expand-

ing its meaning. Jan Van Rookhuijzen (2020), one of the few scholars who have commented on the choice of mnemotopic terminology focusing on Herodotus' ancient Greece topography, affirms that mnemotopes are not objects, monuments, or landscapes. However, these categories are closely associated with them (p. 19). Mnemotopes can take any form; they can be man-made structures, natural landmarks, and even empty spaces (p. 7). We can distinguish *mnemotopes with trauma*, complex entities maintaining the controversial sides of the past (e.g., war mnemotopes), and *mnemotopes without trauma* (e.g., birthplaces of famous people, literary mnemotopes, cinematographic locations), mnestic realities that are not voted to commemoration, mainly related to creative memory (Fig. 1). In addition to these macro-categories, we can talk about individual and collective mnemotopes. Individual mnemotopes, so rich in textures and atmospheres, are very fragile and exposed to the passage of time. To remain stable, they need to be communicated, and they can be institutionally recognized through forms of externalisation of memory (e.g., monuments, memorials).

Today the mnemotopes can be considered as plural objects of territorial interpretation, mnestic devices that go beyond the perpetuation of the past and contribute to its active reconstruction; they anchor the territory and create a fertile tension that can generate movements in space in search of our origins or those of our ancestors, and act like triggers of experience. These realities, when recognized, form a dense and profound network of memory sites that can be understood through digital practices.

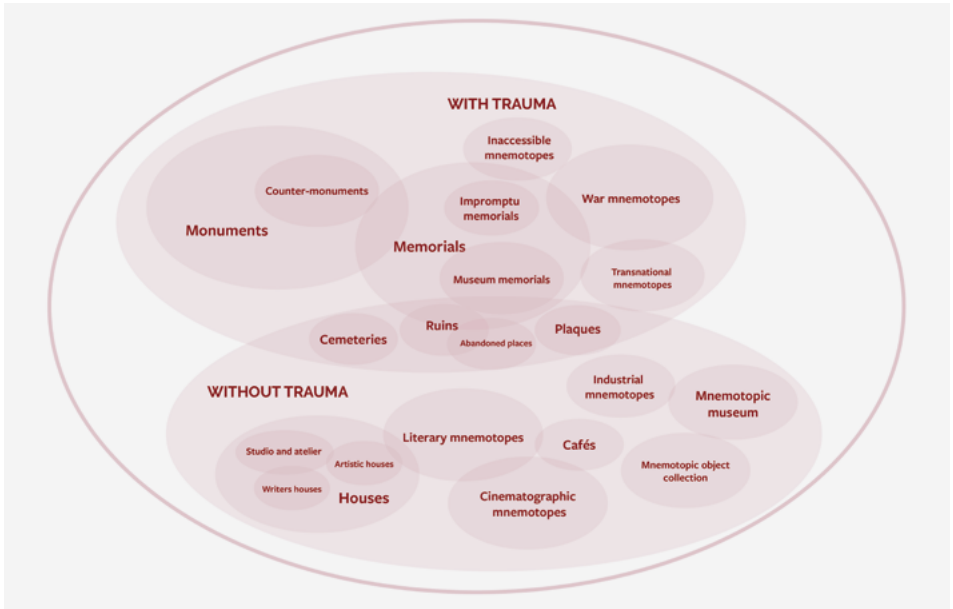


Figure 1. C. Galasso, 2020, Mnemotopic taxonomy.

3. Mnemotopes and Design

The reinterpretation of the connection between place and memory under a *mnemotopic perspective* allows for novel translations of past and present phenomena. “A mnemotope, [...], is dynamic and continuously reworked according to the discursive frameworks guiding processes of remediation” (Brunow, 2019, p. 20), and, just as memory, is not only an “instrument for exploring the past but rather a medium” (Benjamin, 1999). Thus, a remediated mnemotope, referring “not so much to what one might cautiously call the ‘actual event’, but instead to a canon of existent medial constructions, to the narratives, images and myths circulating in a memory culture” (Erl, 2011, pp. 111-112), can offer original meanings and new interpretations of topographic reality.

In this regard, digital design practices can help extrovert the territory and its past. Even if the specific term mnemotope has not yet appeared in design studies or works, we can find a theoretical association between the mnemotopic frame of reference and the Communication Design for the Territory. This discipline has adopted the idea of a stratified territory as its own specific dimension. Between the territorial layers (e.g., physical, perceptual, narrative), the mnesic is fundamental: it contains the traces of the past, the archival documents, and the spatial information about historical events. Since the mnemotopic archive is an essential part of the territories, it already belongs to this layer. We can operate a *lexical transfer* of the mnemotope by carrying the term, usually used in other fields of knowledge (e.g., memory studies), to design, recognizing it not only at the theoretical level but also showing its possible applications in communicative systems.

This way, the mnemotope becomes a *performative concept* integrated into design processes and artifacts as an active part of project development.

The paper presents two case studies in which the concept of mnemotope plays the leading role and is accompanied by a conscious reappropriation of spatial memory. Emphasis will be given to individual mnemotopes, as these are often not perceived as true memory sites and are therefore imbued with obvious communicative urgency.

Individual mnemotopes, when digitally translated and extended, can enter processes of collectivization as sites not of mummification but of generation of ideas and innovative digital communicative solutions.

3.1. Mnemosphere Project

Mnemosphere is a research project launched in 2020 and funded by the MiniFARB grant from the Design Department of Politecnico di Milano. As the approach of *Mnemosphere* is based on a synergetic collaboration between different fields of knowledge, the project is carried out by a research team composed of PhD students and research fellows with diverse academic backgrounds. In this context, the term *mnemosphere* was expressly formulated for the study to lexically condense the interdisciplinary approach that aims to investigate how the memory of places can be designed through experiential spaces. The research proposes a dialogue between communication design and exhibition design, with particular attention to the issues of emotions, colour perception and the design of temporary spaces and services. Following the creation of a mnemospheric glossary based on three main themes (Memory of places, Atmosphere of spaces, Atlas of emotions), a public call to action was launched, the *Mnemosphere Open Call for Images*, which took place online between mid-January and the end of March 2021. The open call consisted of a short questionnaire related to a possible definition of the neologism *Mnemosphere* and the uploading of a maximum of three images per participant, with no restrictions in terms of format (e.g., photos, illustrations, paintings, etc.). The idea was to use a tool typically belonging to the visual arts sphere, the open call, and apply it in the field of design, triggering a process of hybridization between different disciplines. The *Mnemosphere Open Call* ended with more than 200 participants from around the world participating and uploading 423 different images (Fig. 2) that capture the unexplored visual essence of the *Mnemosphere*.



Figure 2. Mnemosphere Research Team, 2021, *Mnemosphere Project*, Open Call for Images results.

After collecting all the images, a multimodal approach was developed to organise the verbal responses and the related visual contributions. After the first phase of content organisation culminated in the realisation of an ID card for every image (Fig. 3), the research moved to the operational analysis phase. About half of the visually uploaded images showed a close relationship to the memory of places. In other cases, the textual apparatus provided by the survey confirmed the mnemonic framework of the contribution. Based on these findings, the research team organised an in-person workshop to analyse and select the images from a mnemotopic perspective. Relying on the main mnemotopic categories, four thematic clusters were formed, and their images were selected based on the text presented in the questionnaire: Physical environments, spontaneous mnemotopes associated with images of anonymous places charged with intimate narratives (e.g., wild natural landscapes, generic urban contexts, and

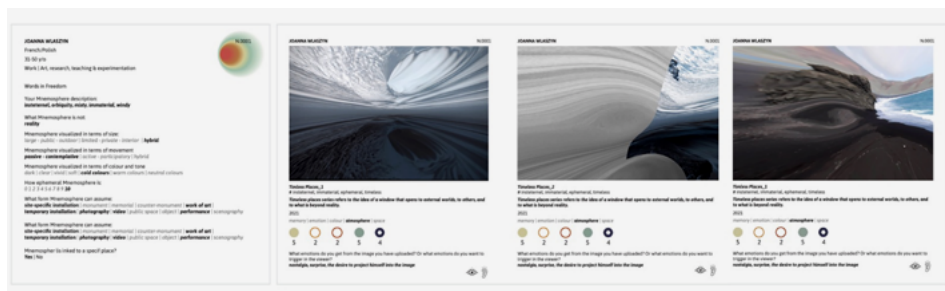


Figure 4. Mnemosphere Research Team, 2021, *Mnemosphere Project*, digital mnemospheric tables related to the mnemotopes emerged in the Open Call for Images.

domestic or private interiors); Individual memory, intimate and personal mnemotopes in which faces, bodies, animals, portraits, and moments of people appear; Collective memory, mnemotopes associated with trauma, places of memory, and commemorative sites (e.g., memorials, monuments, ruins, cemeteries); Abstract dimension, images constructed with different artistic techniques, intended to highlight the emotional impact of external mnemonic places. In the four digital mnemospheric tables (Fig. 4), the physical permanence of the mnemotopes is strongly present in its most diverse manifestations (e.g., urban views, green spaces, and private homes); the human and emotional presence is also evident as a manifestation of individual mnemonic places. Beyond the variations on the theme, the narrative capacity of the mnemotopic images and their connection with the physical aspects of reality remain stable even in the most abstract iconography, generating a new visual participatory archive of the mnemospheres.

3.2. Mnemo Photo Project

Given the ancient relationship between images, memories, and places classically associated with the *ars memoriae* (Yates, 1966), Western culture has no shortage of visual/textual translations of this intersection, where the autobiographical element appears essential. The book *Un paese* is one of the most significant results of mnemotopic verbo-visual representation. It was conceived in 1952 by Paul Strand, an American photographer, and Cesare Zavattini, an Italian screenwriter, and published in April 1955. The result of the encounter between the two authors is the synthesis of 88 photographs with essential and lively textual descriptions of people and places

associated with Zavattini's rural birthplace, the small town of Luzzara. Through the joint remediation, Luzzara abandons its status as an individual Zavattini's mnemotope and embarks on the path of collective mnestic recognition.



Figure 5. C. Galasso, 2022, *Mnemo Photo*, example of mnemotopic phototextual report.

Inspired by this pioneering work, *Mnemo Photo* is a photography project that explores the potential of individual mnemotopes. Personal stories rarely have meaning for the whole community because they are too general, too ordinary, or too specific (Turri, 1998, p. 141). For this reason, the project aims to mediate the convergence between person, memory, and place to allow the bridge between autobiography and topography. It is based on the *mnemotopic phototextual report* (Fig. 5), a specific

design tool developed for the communication of mnemotopes combining three elements: the reports from case study research (Yin, 2018); the phototextual model that offers the union of the visual and verbal apparatus, creating a kind of fusion, a *third object* in the mind of the viewer/reader (Chiocchetti, 2019); the travelogue, a narrative genre that is part of the broader field of travel literature, collecting fictions describing a journey to a foreign place. The report is thus divided into three sub-parts (Cometa & Coglitore, 2016): Header – *inscription*, informative apparatus that acts as the title of the entire report; Textual apparatus – *subscription*, commentary level of the report consisting of the Description, basic information about the mnemotope, and the Mnemotopic remediation, autobiographical mnemotopic storytelling; Photographic apparatus – *pictura*, visual level of the phototext with two original pictures for each place.

Following the specific structure of this report, the participants of the projects were asked to fill out a digital form indicating some information about one of their personal mnemotopes: title; coordinates or address of the place; physical description of the place to be identified; personal memories associated with the mnemotope. After collecting the locations indicated by the participants, I built a digital map (Fig. 6) to establish the routes for taking the photos. Each location was photographed based on descriptions and memories (Fig. 7), reflecting the atmospheric and colour suggestions expressed by the participants. The photographs were then printed on a rigid support and returned to the mnemotopic owners. At that point, I took a staged photograph with the subject holding the printed photograph in his/her hands.

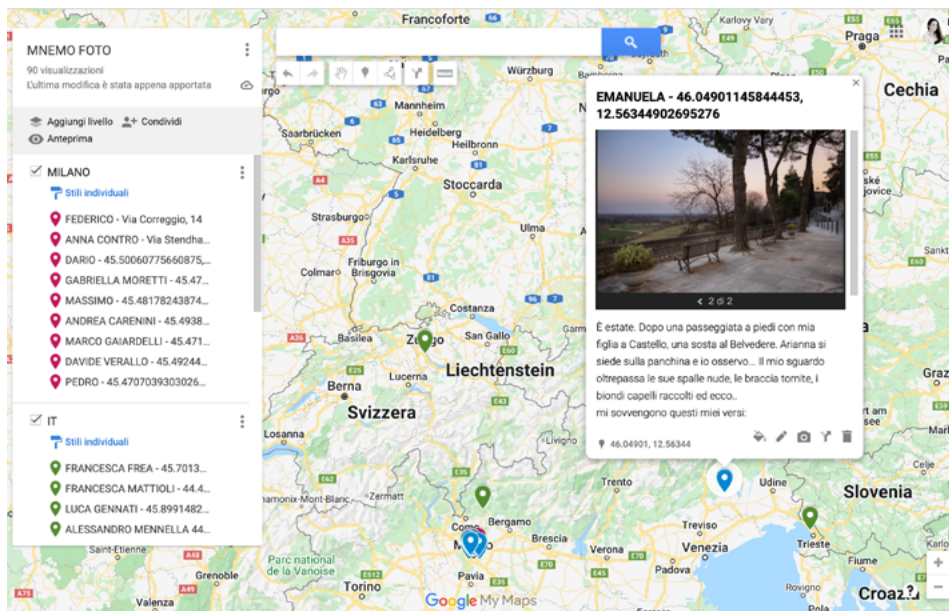


Figure 6. C. Galasso, 2021, *Mnemo Photo*, map of the geolocalized photo places.



Figure 7. C. Galasso, 2021, *Mnemo Photo*, example of photograph realized on individual mnemotopes.



Figure 8. C. Galasso, 2022, *Mnemo Photo*, example of meta-portrait.

I decided to make the portraits inside the houses of the subjects (Fig. 8), and not in front of a neutral background, to create a meta-portrait in the encounter between the internal individual mnemotope – the place of residence – and the external individual mnemotope – the place of memory externalised and spatialized. The individual mnemotopes, communicated through the three-part report (Fig. 9), photographed, and returned to the owner, enter in the portrait form a new path of fruition and shared perception, which brings them closer to collective realities. Personal memories linked to precise geolocalized sites, our personal mnemotopic archives, through the phototextual digital model, become remediated narratives that expose themselves to communitarian recognition and contribute to the reconstruction of proximity in a *synchoric* perspective of sharing and awareness of permanence on the same territory.



Figure 9. C. Galasso, 2022, *Mnemo Photo*, example of photo textual individual report.

4. Conclusions

In conclusion, the invented mnemotopes archive can emerge digitally on the territory through design practices, as the proposed case studies show. In *Mnemosphere Project*, the realities visualised by the online Open Call and mnemotopically filtered through the tables became an alternative mnemospheric archive highlighting the importance of place image in representing personal memories. In the *Mnemo Photo Project*, the mnemotope becomes the generative tool of a phototextual operation that succeeds in digitally mapping the presence of individual memories on the territory as a foundational part of our being on earth. Making the mnemotopic network emerge, then, is not necessarily to rediscover the real geography of

places, their physical status, but rather to acknowledge their living symbolic presence as containers of meaningful memories that can rise, remediated, to the surface, stabilise, and persist digitally in the communities future.

Therefore, I believe we can see a form of mnemotopic communication design surfacing that borrows the mnemotope from the Memory Studies as a referent term to represent the relationship between memory and place; that recognizes the mnemotope as a physical territorial feature of varying scale and scope, replete with potentially expressive narratives; that identifies the mnemotope as a performative concept active from the project point of view; that aims to translate mnemotopic specificities into complex communicative systems consisting of different devices (e.g., open call), using different communicative languages, and including different interpretive practices (e.g., phototext). Thus, the mnemotopes archive within communication design can be an alternative interpretive criterion that not only informs current projects but can also act on the narrative of the past, proposing a resematization and resignification of memory places and producing other invented digital archives (e.g., mnemospheric visual archive, phototextual map of personal mnemotopes). This kind of process can also offer a novel reading of itineraries in the territory (e.g., memory tourism routes) but also set in motion other interdisciplinary dynamics for the future. Designing mnemotopes is a mnesic enhancing process that recognizes the memory of places and its territorial permanence in the contemporary era.

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Exploring Futures of Infinite Data Storage through Speculative Design

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Keywords

Research through Design, Forgetting, Digital Storage, Duality of Memory, Ephemeral.

Abstract

Forgetting is often described as an undesirable sin of our memory, depicted as a completely uncontrollable action. If one desires to forget, it is to erase unimportant or unpleasant information. Moreover, the general mental model of memory suggests that we first remember and lastly forget. Thus, the linear memory model suggests a one-way dynamic from remembering to forgetting. This mental model of memory has been projected into the digital space design, where one remembers by acquiring data and forgets by deleting it.

However, the advent of infinite data storage scenarios provides new opportunities to re-establish how we forget and remember using data repositories. I discuss a possible paradigm shift: how forgetting a memory can help remembering in longer terms by presenting a speculative design artefact, the *Horcrux Ear*. It was created using Research through Design approach that develops a new understanding of these processes' temporality and spatial dimension of memory.

This paper aims to contribute to the debate over the relationship between forgetting and remembering, its role in the infinite data scenario, and the relationship between human and computer memory. Further, it illustrates the circumstances in which: 1. Forgetting important memories is a desirable action; 2. Forgetting is a controllable action; 3. Forgetting is data creation rather than data deletion; 4. Forgetting is a means to remembering rather than the last step in the linear memory model.

1. Introduction

The characterisation of perfect memory through digital storage has substantially influenced the perception of the potential relationship between human and computer memory. For example, in 1945, Vannevar Bush described a hypothetical device called *Memex*. Its properties to compress all personal information into one device inspired the *MyLifeBits* project, in which Gordon Bell used a wearable camera to capture records of his daily life, creating a lifetime store of *everything* (Bell & Gemmel, 2009).

Whilst remembering is seen as a virtue in contrast to the vice of forgetfulness, the perception remains that forgetting comes readily while remembering needs effort. This valorisation of the effort to remember has shaped our world and informed our actions for hundreds of years. *Ars Memorativa*, or art of memory, are mnemonic techniques that help in remembering and recalling information, were known and developed in the last millennium BC (Yates, 1966). The desirability of the prospect of an infinite data storage scenario has become prevalent as our computers' memory capacity has expanded, coupled with the ability to upload our ever-growing collection of digital possessions to the *cloud*. Computer server farms, or data centers, worldwide are numbered in millions. With these technological advancements, the aforementioned virtue and vice are starting to change their places as it arguably becomes easier to remember than forget. However, as Samuel Beckett (1965) noted in his book on the work of Proust: "The man with a good memory does not remember anything because he does not forget anything" (p. 29) or as Gabriel Josipovici (2020) rephrased it:

“only he who forgets remembers” (p. 23). The most famous example of these words in literature was the case of *Journalist S.*, the subject of neuropsychologist Alexander Luria’s study. *Journalist S.* happened to remember everything; he was able to memorise long chains of numbers, poems in foreign languages and complex mathematical formulas after hearing them only once. However, his abilities, or what one may call a gift, were a burden. He could not make sense of the world (Luria, 1969). The art of forgetting has not been developed. It seems that in the scenario of infinite data storage, similarly to *Journalist S.*, we are doomed to remember everything.

It can be argued that the notion of an infinite data storage scenario solidifies the notion that the human mind is seen as a lesser version, a smaller capacity box than the memory of our computing devices. This is why research on forgetting related to our digital possessions has emerged in opposition to this trend. However, in many cases, these discussions about the importance of forgetting are still consistent with the idea that infinite data storage is associated with remembering, as forgetting equals deletion of data, and remembering equals possession of data.

This is not necessarily the only way to examine the relationship between human and digital memories. Along with an overview of different assumptions about remembering and forgetting related to data storage, this paper offers a new conceptualisation, using infinite data storage as an axiomatic future scenario. It further introduces the speculative artefact called the *Horcrux Ear*, which concretises these new concepts.

2. Research Approaches

2.1. Research through Design

Frayling introduced the term *Research through Design* (RtD) in his 1993/4 article concerning the difference between art, design, and research. However, RtD has emerged as an approach in the Human-Computer Interaction field (Auger, 2013; Zimmerman et al., 2007) and design leading to the debate around its application in research. Commercial design and RtD projects both practice design but differ in their goals (Frayling, 1994). The former's goal is the design itself, and the latter's is knowledge produced when making an artefact which embodies the understanding (Godin & Zahedi, 2014). This dynamic is visible within the term itself, *Research-through-Design*.

The design is not the goal of this method, just as collecting data is not the researcher's end goal in any other field. Collecting data is the means to understanding. Publishing the data without its understanding is not acceptable in many disciplines. Similarly, presenting a design artefact is not the point of RtD's interest but the knowledge created through the process, that is, research.

However, contentious questions arise from RtD's goal and its reliance on design (Godin & Zahedi, 2014): Is the conceptual work in design an achievement? Does it add to the scientific work, or is the knowledge produced insufficient? As Gaver (2012) notes, the Philosophy of Science and Technology Studies (STS) grounds the nature of theory in science. Many fields have acknowledged theoretical work as it explains the phenomena and extends knowledge.

Nonetheless, continuous pressure exists to create and apply actionable metrics to the RtD methodology and its conceptual contributions (Zimmerman & Forlizzi, 2008; Gaver, 2012).

However, design often deals with *wicked problems* (Rittel & Webber, 1974; Gaver, 2012); problems that are complex and the breadth of their consequences may be unknown. In such cases, RtD proves to be a valuable tool as it can “continually and creatively challenge status quo thinking” (Gaver, 2012, p. 48). Therefore, RtD does not provide predictability (Godin & Zahedi, 2014) and “[t]here can be no expectations that two designers, given the same problem, or even given the same problem framing, will produce identical or even similar artefacts” (Zimmerman et al., 2007, p. 499).

The future of infinite data storage is a *wicked problem*, which calls for approaches like RtD that can help unravel the conceptual understanding of this proposition. Thus, the *Horcrux Ear* is the data I am presenting. The reflective understanding it enables relating to human memory is an epistemic contribution to the design field and the broader understanding of the infinite data storage scenario.

2.2. Speculative Design

Speculations on memory devices in the settings of infinite data storage are not new and can be seen in past and present cultural artefacts. For example, in 1904, Kurd Lasswitz introduced the concept of the *Universal Library*. This library would collect everything, all books that have been written but also books that will be written, might be written, and their counterfeits; thus, infinity turns out to be nonsensical.

A more recent example is the episode of the first season of the Netflix series *Black Mirror*, called *The Entire History of You*, which focuses more on the technological aspect of new memory developments (Armstrong et al., 2011). The memory device called grain is an implant that enables people to record every moment of their lives from the perspective they see. The story explores how this technological development could change how people interact with each other. For example, the protagonist does not trust his wife nor rely on her words that she is not having an affair. On the contrary, the grain enables him to find the truth himself.

These speculative works do not explore the full range of memory technologies that could be developed. They present predominantly dystopian scenarios of technological advances rather than considering more broadly how infinite data storage could impact human memory per se. Speculative Design does not seek to create dystopian or utopian scenarios, but rather its goal is to offer an *Utopian* world (Atwood, 2013) in which many more scenarios can emerge, depending on the usage of the artefact in place. Moreover, Speculative Design does not intend to offer solutions or predict the future. But rather facilitate an inclusive conversation about possible futures and how they might be created (Stead et al., 2018).

The speculations mentioned above are examples of Speculative Fiction rather than Speculative Design. Speculative Fiction is story-driven, whereas Speculative Design is artefact-driven. Whilst examples of the Speculative Designs focused on memory challenges in the infinite data storage

scenario are scarce, some are related to remembering. For instance, Noortman et al. (2019) introduced the design fiction probe *Hawkeye*, in which users could play a role of a caregiver of a person with dementia. A similar design fiction project, *For Good Times and Bad Times*, focused on care recipients. Researchers used pastiche scenarios to evaluate potential users' opinions on well-being health technologies for older users (Ahmadpour, 2019). Although both projects consider the future of memory support technology, neither considers the future of infinite data storage and how digital memory will interact with human memory, themes explored in the design of the *Horcrux Ear*.

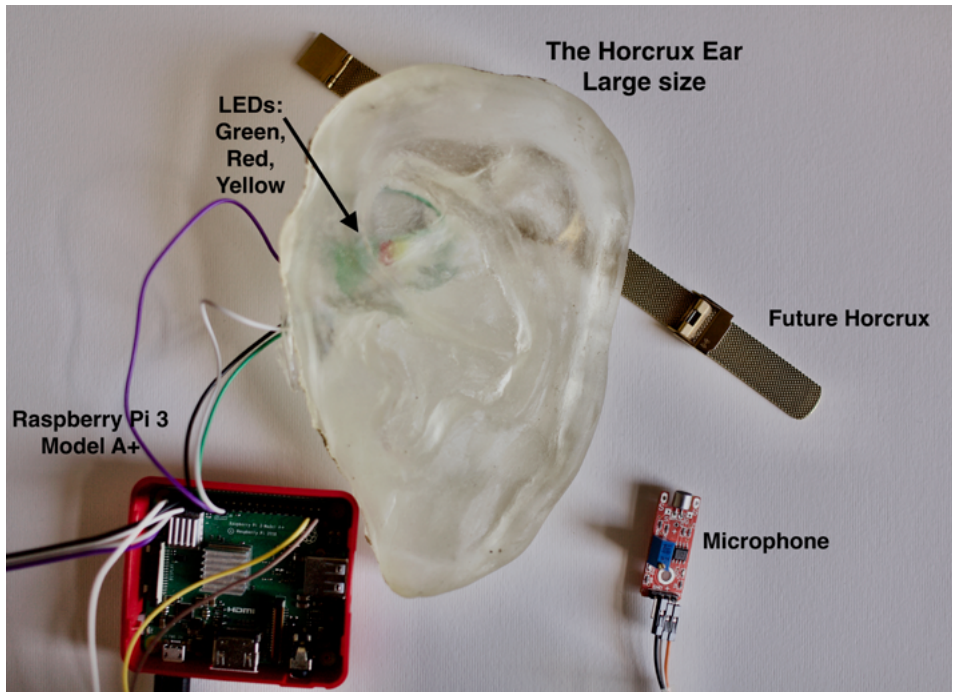
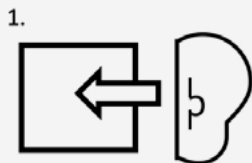


Figure 1. Agnieszka Dutkowska-Zuk, the *Horcrux Ear*, the *Wizard of Oz* prototype of the *Horcrux Ear* model, 2022.

HOW TO USE DIY HORCRUX EAR®



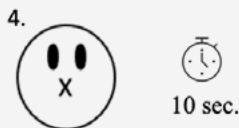
Hold your DIY Horcrux Ear® as close as you can to the object you want to make a horcrux of. Be careful to not cover the microphone located in the entrance of the ear canal.



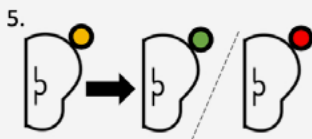
Start talking. Orange lamp indicates that the Horcrux Ear is listening to you.



When you have completed your message say: "Horcrux completed"

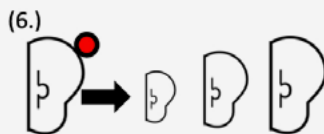


and wait around 10 seconds in silence.



After around 10 seconds, light will change to green or red .

If it changes to green, the horcrux has been completed successfully.



If you used a secret not suitable for the size of your ear, the light will turn red. You need to use your ear for a different secret. Find different sizes on diyhorcruxear.co.uk

DIYhorcruxear®.co.uk

Figure 2. Agnieszka Dutkowska-Zuk, the *Horcrux Ear*, one of the pages of the *Horcrux Ear* manual with instructions on how to use it and record the message, 2021.

3. The Horcrux Ear

In the book series *Harry Potter* written by J.K. Rowling (2014), the main antagonist Lord Voldemort (also known as *You-Know-Who* or *He-Who-Must-Not-Be-Named*), splits his soul into different objects, named Horcruxes, to make himself harder to destroy. Rowling's work partially inspired this speculation dubbed *Horcrux Ears* which create Horcruxes out of ordinary, everyday objects (Fig. 1). In this case, the part of somebody's soul stored would be a secret which can be recorded and stored in the chosen item with the help of the *Horcrux Ear* (Fig. 2). There may be many reasons somebody would like to store a secret: perhaps they are afraid to forget all the essential details, but they cannot talk about them, and they cannot, or do not want to, refresh their memory every day. They may want to say it to somebody and be heard, but they may be afraid to share it with another person. Moreover, they may only want to store it where it is networked via a computer.

The *Horcrux Ear* acts as middleware between the user and an item. A User's Manual accompanies the *Horcrux Ears*, which explains how to record a personal secret and what can be recorded. There are three sizes to choose from (Fig. 3). The variation in size differentiates kinds of secrets, ranging from those that do not significantly impact someone's life to more profound, perhaps complicated secrets (Fig. 4). It is important to note that while there are instructions on what constitutes small, medium, and large secrets, they are connected to the perception of that secret rather than its content. In their nature, secrets are highly personal.



Figure 3. Agnieszka Dutkowska-Zuk, the *Horcrux Ear*, three different sizes of the *Horcrux Ear* correspond to the heaviness of secrets told, 2022.

The *Horcrux Ear* is an interesting representation of a memory device because it is not made to enhance remembering, like many projects in the Human-Computer Interaction space (e.g. van Erve et al., 2011). On the contrary, it is created for meaningful forgetting. Since people are encouraged to record secrets, these messages already carry significance for users. However, they are stored to forget rather than to remember, as they are not created to be readily used or recollected. They are made to stay safe and forgotten for a considerable period. One can use the *Horcrux Lips* (a device that decodes messages from *Horcruxes*) if they are the author of that secret, they have special permission from the author of the secret, or it has been at least 30 years since the author died to access a small secret, at least 50 for a medium secret and 70 for a large one.

SECRETS GUIDELINES

Different secrets are suitable for different sizes of DIY Horcrux Ear. From very small secrets to unbearably heavy ones, we offer our customers a range of 3 sizes, to meet everybody's needs.

Please, read our guidelines to choose a proper size to your secrets. We encourage you to use your common sense as well.



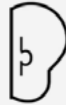
SMALL

The consequences of revealing the secret would not be life changing for you;
White lies



MEDIUM

Information that 1-10 people know, outside of your family;
Information you would not tell your neighbour;
You might have said it once or twice when you were intoxicated*



LARGE

Information that is related to your family history that is not talked about in public/outside of your family;
Information you would not tell your best friend;
Information you avoid thinking about;
Information that no one who lives and may be interested in this information knows about it except you;
Information that is stuck at the back of your head;
Information that shapes your reality and/or your person and your behaviour

* Related to adult users. If you think you have a problem, please contact <https://www.nhs.uk/live-well/healthy-body/drug-addiction-getting-help/>

Figure 4. Agnieszka Dutkowska-Zuk, the *Horcrux Ear*, one of the pages of the *Horcrux Ear* manual with instructions on choosing the appropriate *Ear* size, 2021.

This encompasses Elsdén's and Kirk's recognition of the current problematic short-term perspective toward data with little consideration as to what happens to data in the long term (2014). In the following sections, I will reflect on how the *Horcrux Ear* offers new insights into our relationship with remembering and forgetting in the context of digital storage.

4. Forgetting Important Memories is a Desirable Action, but not for the Sake of Remembering Other Things Better

Similarly, in *Journalist S.*'s case, the *perfect memory* problem of our digital storage lies in its perfection. It is apparent that forgetting, or deletion, needs to be reintroduced to the design of our external memory, as Bannon (2006) posits, as *a feature not a bug*. Bannon believes that by:

neglecting the duality of memory, in terms of the dual activities of remembering and forgetting, we are unnecessarily limiting our options, in terms of the shape of the design space that is open before us concerning the ways in which technology might play useful roles in our future human and social world. (p. 4)

Indeed, designer Tony Fry (2020) would call it an example of *defuturing*, which stems from the fact that “we do not understand how the values, knowledge, worlds and things we create go on designing after we have designed and made them” (p. 10). In his essay, Bannon makes a crucial statement about the misleading metaphor that equates the human mind to an information-processing machine. It is essential to recognise that these two are not analogous to each other, nor is computer memory an extension of our mind, as the situated cogni-

tive framework would suggest (Clark, 2010). The number of psychological theories about our memory shows its complex nature; the human mind is not simply a box to which we add information. As psychologist Sir Frederick Bartlett (1977) observed, memory is about constructing and reconstructing information rather than their exact reproduction.

By the same token, Sellen and Whittaker (2010) critiqued the usage of lifelogging devices for total capture, as in Bell's previously discussed project, which mimicked Bush's *Memex*. As Bannon (2006) reflects: "perhaps we should re-consider this fetishisation of recording for recording's sake, along with the use of novel sensor networks to collect and collate huge quantities of information about people's activities" (p. 10). In other words, the focus should be on the user, instead of their data. In Brewer's et al. (2017) words, "there is a need to draw on what is known about human memory to create tools that cater for different types of remembering" (p. 3). Bannon (2006) argues that the misleading metaphor of the human mind being akin to an information-processing device gives prominence to the passive model of memory rather than an active model of remembering and forgetting. This is the genuine risk of, and for, forgetting: applying one metaphor of human memory to design our external digital memory further restricts our way of thinking about human memory.

The *Horcrux Ear* embraces the idea of forgetting essential memories but not for remembering other things better by clearing space for other memories. In traditional settings, in which deletion has a function of forgetting in the digital environment,

deleting often works as weeding out unwanted and unimportant content, further enhancing these digital memories that are about to stay. In contrast, the *Horcrux Ear* enables users to take up space for forgetting without the motivation of remembering other memories more clearly, or without the unnecessary noise. The curation of the memories does not happen on the level of remembering, i.e. there is no decision-making process on what needs to be remembered and what needs to stay. It is solely about the specific memory that the user wants to forget. Thus, the curation process is separated from other memories because the focus is on the creation of the *Horcrux*.

5. Forgetting can be a Controllable Action, not through Erasure, but through the Mindful Creation of Digital Input

The Seven Sins of Memory by Daniel L. Schacter (2001) describes our problems with memory. Only one out of these sins is not related to proper access to the original information. Six out of seven issues related to forgetting outnumber those related to remembering. These sins are not a product of our engagement and effort, and we have no or minimal choice over them. For example, the sin of *absent-mindedness*, which explains our problems with locating our keys before we leave the house, does not require any action; we do not pay attention by default. As with other sins, it comes without our intentional effort. After all, that is why Schacter called these *sins*, as they all come easily.

As outlined in the previous sections, researchers are on the quest to reintroduce forgetting into the design of digital devices, even though they treat it as the *fragility of the human mind* (Bannon, 2006).

Intentional forgetting has been an emergent field in Artificial Intelligence (AI) research (Beierle & Timm, 2019). However, if AI starts to *forget* and delete in place of the user, our relationship with forgetting remains uncontrollable and black-boxed. Forgetting does not become a virtue; it remains a vice, as we will decide not to put effort into this action. As Andy Clark (1997) noted: “our brains make the world smart so that we can be dumb in peace!” (p. 180).

Creating the *Horcrux* through the *Horcrux Ear* requires effort from the user in finding words, or sounds, for the secret he would like to forget, choosing the appropriate size of the Ear, and creating data to forget, which is further explained in the next section. Most importantly, the user controls how long that secret is forgotten and who can retrieve it. This process gives the user power over the forgotten memory.

6. Forgetting is Data Creation rather than Data Deletion

The most important contribution of the *Horcrux Ear* is the new representation of forgetting. The common narrative concludes that digital possessions entail remembering, and their deletion entails forgetting (Sas & Whittaker, 2013; Mayer-Schönberger, 2009). Evident in the title of the book *Delete: the Virtue of forgetting in the Digital Age*, in which Viktor Mayer-Schönberger links removing data with forgetting. The comparison seems obvious: we get frustrated more often about the things we forget rather than remember. We are all familiar with the annoyance of the *absent-minded* sin of our memory (Schacter, 2001) by trying to recall where we left our keys before leaving our house and the stress when we cannot recall a person’s name who was just introduced to us.

The link between these bothersome moments and the deletion of information from our external repositories seems evident. We are similarly frustrated (if not more!) when something accidentally gets deleted from our computers, and we cannot retrieve it. In contrast, additional files on our external memories do not bother us. The evolution of our external repositories is dictated by the apparent need to store more, *just in case*. Thus, the conclusion is simple: deleting is the equivalent of forgetting.

This representation provides a limited view of how a digital repository can support human memory. One can look at digital storage as a tool rather than a specular reflection of our organic memory. For example, the contacts folder on my mobile phone is full of numbers I would never say I remember. In fact, my contact folder is an extremely convenient way of forgetting. As Sellen et al. (2007) found, digital possessions can support recall but do not necessarily support remembering. Professor Viktor Mayer-Schönberger (2009), the author of the book *Delete*, calls for forgetting in the digital world, but his calls are not entirely about actual forgetting. He does not oppose total remembering of the owner of digital possessions, like in the case of Luria's patient. He opposes the unwanted recall, usage of information by third parties, and the threat of not being absolved.

Moreover, the infinite data storage affordances allow for hiding information. After all, the saying *to find a needle in a haystack* does not come out of nowhere. However, this is a premise that believers in the total memory metaphor may find doubtful. When smart devices are connected, they are considered part of what Kevin Ashton dubbed the Internet of

Things (IoT) in 1999. They are constantly connected to the Internet and continuously feed it with data (Skene, 2019). Thus, a search engine could find the history of anything with a quick look and clever use of terms typed. However, digital items do not have to be connected to the cloud and thus do not have to be IoT. People may ask themselves a question in the future: Why is everything connected to the Internet? People may want to have the right to decide whether their personal belongings are connected or not. Moreover, if each object could have its data storage but were not connected to the Internet, its data would be unique to this item.

In the case of the *Horcrux Ear*, real-world objects could work as unique, personal storage of secrets that can be kept safe and under the control of its user.

7. Forgetting is a Means to Remembering rather than the Last Step in the Linear Memory Model

In his essay, Bannon (2006) calls for creating *ephemeral technologies* or *ephemeral forgetting technologies*. Such technologies would oppose the current trend of archiving and storing our data. Bannon gives an example of self-destructing tapes, depicted in spy movies, which destroy the message after listening. Indeed, the infinite data storage scenario presages the world in which we capture everything, so we also capture it all the time. The ephemerality of our digital input is a pressing issue. In the Human-Computer Interaction field, Sellen et al. (2009) call this transformation of data hoarding *the end of ephemeral*, whereby the capture of past events will stay with us for longer than the experiences themselves.

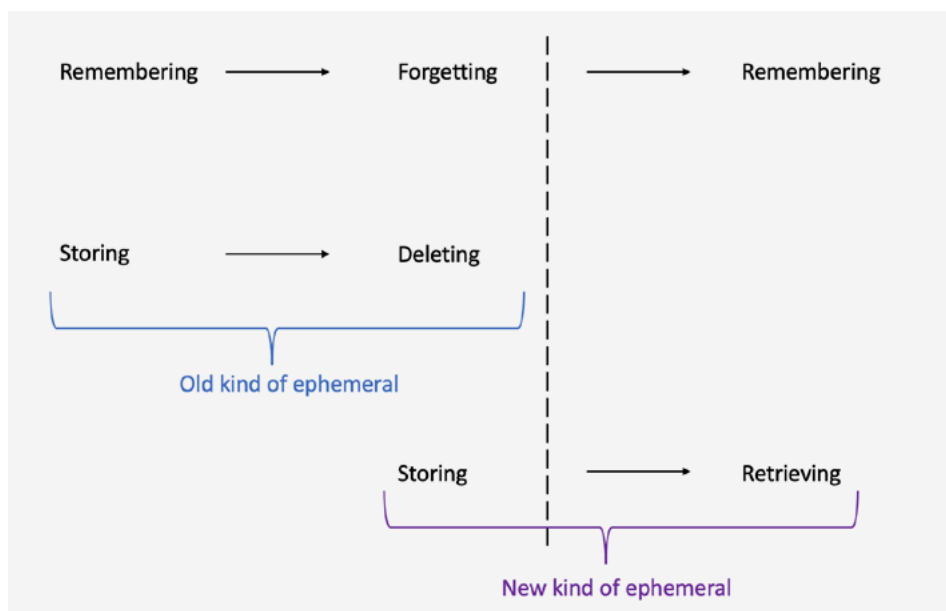


Figure 5. Agnieszka Dutkowska-Zuk, the new kind of ephemerality, mapping the old and new kinds of ephemerality onto the simplified linear memory model, 2022.

Thus, the ephemerality of individual experience would not come to an end, but the ephemerality of the event will need to be designed. The main question around the ephemerality of our data is when different data should be accessed and what data we could meaningfully create for the future. This suggests that ephemeral technologies would not correspond to what Bannon imagined. As outlined in the previous sections, forgetting can manifest itself in the creation of digital input. Thus, later retrieval would correspond to recall or remembrance. This means that the ephemerality of the event would only last for a while, but as long as it is not retrieved. This is not an *old kind* of ephemerality to which Bannon referred, but a *new kind* of ephemerality (Fig. 5).

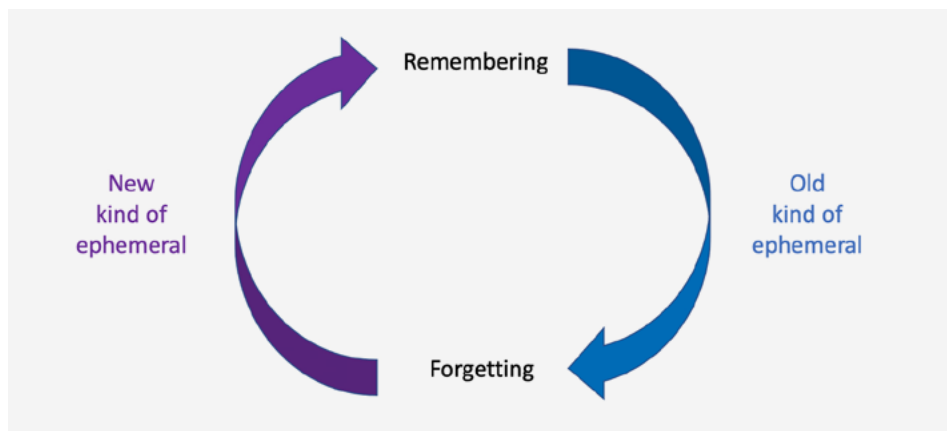


Figure 6. Agnieszka Dutkowska-Zuk, the new kind of ephemerality, the representation of the new non-linear dynamic between remembering and forgetting through the notions of the old and new kind of ephemerality, 2022.

This *new kind of ephemerality* further explains the shift, which shows that forgetting does not entail the end of the memories' life cycle in the digital storage. In fact, forgetting helps in future remembering through the new kind of ephemeral characteristic of the forgotten digital input (Fig. 6).

Some secrets have an expiration date – something embarrassing or dangerous to say today may not be in the future. On the contrary, they could be a piece of valuable information in a blurry history. The *Horcrux Ear* is an attempt to design a *new kind of ephemeral*. Secrets are safely stored for a specific period; thus, their ephemerality does not last forever. The forgotten messages, recorded on *Horcruxes*, can be potentially retrieved in the future. Therefore, forgetting is not the last step in the linear memory model, ending the given information's life. In this case, forgetting can be the guardian of the memory by keeping it safe and sound until it is time to be remembered again.

8. Discussion and Conclusions

Infinite data storage can have many consequences for our memory. Researchers' and thinkers' concerns about how one forgets in such a scenario are sensible and need to be addressed. However, these concerns are based only on one metaphor of human memory: forgetting is a deletion of data and remembering is their storing. Moreover, the dystopian visions of this scenario give an outlook to only one side of the spectrum of challenges and consequences humans may face. The conflated nature of human memory, and the wide range of possible worlds that the future consists of, unravel different relationships between human and digital memory. The artefact presented in this paper, the *Horcrux Ear*, suggests a new perspective on forgetting, which infinite digital data storage could facilitate. This perspective offers four main characteristics of forgetting, which have never worked together in one scenario of forgetting:

1. Forgetting important memories is a desirable action.
2. Forgetting can be a controllable action.
3. Forgetting is data creation rather than data deletion.
4. Forgetting is a means to remembering.

Whilst three (1, 2 and 4) of these new characteristics of forgetting have already been explored by other scholars, they were all based on the idea that forgetting is the erasure of data. This idea is opposite to the third feature from the list above. The *Horcrux Ear* incorporates all these points into one possible scenario of meaningful forgetting, creating a *new kind of ephemeral technology*. It illustrates that forgetting a memory can be a key to remembering it in the future.

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She is co-founder of Studio Taller, a graphic and communication design studio based in Rimini. Since 2018 she has been collaborating as a volunteer and professional consultant for "Il Palloncino Rosso", a social promotion association with which she works on projects for social innovation and cultural promotion, creating exhibitions of regional interest, publications and participatory projects related to the conscious reuse of abandoned buildings.

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Currently she is Teaching Assistant in the Type Design course, both in the English and Italian curricula, at the DCVM master's degree, at Sapienza.

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Andrea Vendetti

After graduating from Sapienza University of Rome with a thesis on the clandestine presses of the Italian Resistance, and after a study period at ENSAD in Paris, he graduated from ISIA in Urbino with a thesis on the historiography of graphic design. He is in the final year of his PhD in Design at Sapienza University of Rome: his research consists of a survey on primary sources for the study of the history of wooden typefaces in Italy.

He teaches Graphic design and History of printing and publishing at Rufa. He works as a graphic designer with archives and associations and is the co-founder of Slab, a letterpress studio in Rome. Slab is a workshop where teaching and research are carried out to safeguard Italian typographic culture, and where workshops, exhibitions and conferences are held. Andrea Vendetti has been an AIAP national councillor since 2022.

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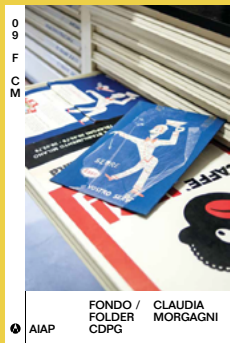
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