REIMAGINING THE HUMANITIES IN THE DIGITAL AGE: TOOLS, METHODS, AND IMPACT

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Abstract: *The present paper explores the evolving landscape of **Digital Humanities (DH),** an interdisciplinary field that bridges the gap between traditional humanities disciplines and contemporary digital technologies. Tracing its development from a niche academic interest in 2014 to a central component of scholarly research and pedagogy by 2024, the article highlights the transformative impact of DH on the way we analyze, preserve, and communicate cultural knowledge. Key areas of focus include textual analysis, data visualization through GIS, digital archiving, and digital storytelling, with practical applications in both research and teaching. By integrating computational tools such as GIS, natural language processing, and AI-driven interfaces, Digital Humanities enables new forms of inquiry and fosters collaboration across disciplines. The paper also addresses the benefits, challenges, and future directions of the field, emphasizing its potential to enhance accessibility, interdisciplinarity, and innovation in humanistic scholarship.*

Keywords: *Digital Humanities; textual analysis; digital storytelling; data visualization; digital archiving; Higher Education*

1. Introduction

In the rapidly evolving academic and technological landscape of the 21st century, the field of Digital Humanities (DH) has emerged as a transformative force, reshaping how we engage with knowledge, research, and cultural heritage. Far from being a passing trend, Digital Humanities represents a profound shift, a merging of the analytical richness of traditional humanities disciplines with the innovation and scale of modern digital technologies. It invites scholars, educators, and students alike to explore new questions, uncover hidden patterns, and communicate insights in ways that were previously unimaginable.

From its modest, niche beginnings in 2014 to its widespread adoption and institutional integration by 2024, the field has witnessed exponential growth. What began as a curiosity—experiments in digitizing texts or visualizing historical data—has become a central pillar of academic inquiry,

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encompassing areas such as data visualization, textual analysis, digital preservation, and media storytelling. Today, DH is not only reshaping research practices but is also redefining teaching, interdisciplinarity, and the future of humanistic scholarship. In a way, it is hardly surprising that Digital Humanities has developed so rapidly and so forcefully in recent years, as technology has expanded explosively through applications and artificial intelligence, and the humanities have not been exempt from this informational revolution. What we are witnessing is, most likely, an adaptation of the humanities to the new demands of society and, above all, of research, where interdisciplinary studies are more prominent than ever before.

The intersection of the humanities and technology invites us to reflect upon a series of issues arising from this rather "unusual" encounter, as some might call it. What once meant holding a book in one's hands and experiencing contact with the author through characters and imagination now becomes, through technology, a possible engagement with the entire corpus of a writer's work. Many questions remain unanswered, yet the focus most often falls on how computational analysis can enrich and assist in uncovering new cultural dimensions within society.

The field of Digital Humanities (DH) has developed over the past two decades as a dynamic intersection of humanities scholarship and computational technologies. Early foundational works, such as those by Franco Moretti on distant reading, challenged traditional literary criticism by proposing data-driven methods to explore literary corpora (Moretti). Moretti's work marked a shift from close textual analysis to large-scale pattern recognition, laying the groundwork for new forms of inquiry in literary studies and beyond. Scholars such as Johanna Drucker and Matthew Kirschenbaum have further refined the theoretical underpinnings of DH, emphasizing not only the utility of digital tools but also the epistemological implications of digital methodologies. Kirschenbaum particularly interrogates the materiality of digital texts, highlighting the importance of preserving scholarly rigor amid technological innovation (Kirschenbaum).

The role of data visualization, as emphasized by Jänicke et al., has emerged as a key method within DH, enabling scholars to map, graph, and interpret complex cultural and historical datasets. These methods facilitate interdisciplinary collaboration, integrating fields such as geography (Sinton), anthropology, and environmental studies.

Text analysis and natural language processing (NLP) have expanded DH's reach, allowing scholars to conduct linguistic and thematic analysis on vast corpora using tools like Voyant, NLTK, and AntConc. These have been complemented by digital archiving and preservation platforms, such as Europeana and the Digital Public Library of America, which democratize access to cultural materials. Recent studies have also explored the pedagogical

applications of Digital Humanities. For example, Ginemo-Sanz and Rodgers and Dhonnchadha demonstrate the value of digital storytelling in ESP (English for Specific Purposes) courses, where students develop 21st-century skills through the integration of narrative, technical language, and media creation (Ginemo-Sanz; Rodgers and Dhonnchadha).

Despite its innovations, DH faces notable challenges, including issues of digital literacy, long-term project sustainability, and the digital divide. As Hall and others point out, the field must navigate tensions between humanistic inquiry and computational determinism, ensuring that critical thinking and cultural context remain central (Hall). As the field continues to evolve, the incorporation of AI, augmented reality, and big data analytics points toward a future in which digital humanities not only augment traditional scholarship but also redefine it. The increasing collaboration between technologists and humanists suggests that DH will remain a vital and adaptive space for interdisciplinary knowledge production.

2. Textual analysis

Textual analysis in Digital Humanities refers to the study of linguistic texts through a combination of computational methods and classical approaches in the humanities, often bringing forward new and unexpected perspectives. This approach seeks to extend the interpretation of the individual text, traditional close reading, by complementing it with distant reading, that is, the analysis of large corpora, a term refined and popularized by Franco Moretti.

Digital textual analysis is an interdisciplinary field positioned at the intersection of the humanities and information technology. Its central aim is the automatic and systematic examination of large-scale textual corpora through computational methods. Within this domain, a variety of analytical techniques have been developed, each contributing to a more nuanced understanding of different textual dimensions (Underwood).

At its core, digital textual analysis involves the use of digital tools and computational methods to study texts. The advantages of such approaches are numerous: from the capacity to process massive datasets to the ability to detect patterns, symbolic structures, or stylistic markers that might otherwise escape human interpretation. These methods are particularly effective in uncovering hidden structures, sentiments, authorship signatures, or thematic patterns, thereby complementing, rather than replacing, the traditional practice of close reading.

Quantitative analysis enabled by computational tools can be carried out at speeds and scales far beyond manual approaches, reducing the demand on human labor. However, this does not diminish the indispensable role of qualitative interpretation. Human expertise remains vital for contextualizing

results, supervising data quality, and synthesizing computational findings into meaningful scholarly insights.

The outcomes of digital textual analysis often take the form of visualizations, statistical distributions, topic models, or sentiment scores, all of which deepen the understanding of textual data. The most widely used methods include natural language processing (NLP), machine learning (ML), sentiment analysis, topic modeling, stylometry, and n-gram analysis. Their application varies according to the type of text and research question. For example, sentiment analysis has proven particularly useful for investigating political discourse and public rhetoric, while the study of large poetry corpora may benefit from topic modeling or stylometry to trace thematic evolutions or stylistic distinctiveness (Pang and Lee).

A wide range of tools supports these methodologies. Commonly used resources include Python libraries such as NLTK, spaCy, and Gensim, alongside platforms such as R, Voyant Tools, AntConc, and LIWC (Linguistic Inquiry and Word Count). Many specialized websites provide tutorials for these tools, though a basic knowledge of programming is often required. The scope of application is broad, encompassing literary studies, political communication, propaganda detection, and authorship attribution, and these approaches are now firmly established across disciplines such as Digital Humanities, Computational Linguistics, Sociology, and Communication Studies (Pennebaker et al.).

Among the most frequently applied techniques, tokenization serves as a foundational step by segmenting texts into meaningful units such as words or sentences, thereby enabling more advanced analysis. Part-of-speech (POS) tagging builds on this by assigning grammatical categories (e.g., noun, verb, adjective) to each token, allowing for the investigation of syntactic structures. Named entity recognition (NER), increasingly employed in media and discourse analysis, automatically identifies references to people, places, and organizations. Sentiment analysis, in turn, classifies the emotional polarity of a text - positive, negative, or neutral - making it especially relevant for the study of social media and public opinion.

To uncover underlying thematic structures, topic modeling (most often implemented through Latent Dirichlet Allocation, LDA) identifies recurring themes within large datasets. Word frequency and n-gram analysis further reveal lexical trends and linguistic patterns by highlighting common words or word combinations. In studies of authorship and stylistic variation, stylometry plays a central role by quantifying elements of writing style to differentiate among authors. Automatic text classification, relying on machine learning algorithms, enables the categorization of texts into predefined genres or types (e.g., academic articles, news reports). Finally, corpus linguistics provides a

systematic framework for investigating phenomena such as word frequency, collocation, and linguistic variation across large text collections.

Together, these methods constitute a robust analytical toolkit that significantly expands the ability of researchers to interrogate texts at scale. By integrating computational power with human interpretation, digital textual analysis opens new avenues for insight across both the humanities and the social sciences (Underwood; Jockers).

3. Digital Storytelling

Digital storytelling is a contemporary narrative method that combines traditional storytelling techniques with digital media resources (images, sound, video), providing an effective means of communicating experiences, ideas, or knowledge. This approach does not merely reproduce classical formats but instead leverages new technologies to enable rapid dissemination, increased accessibility, and both emotional and cognitive impact on audiences (Rieger et al.; Moradi et al.).

In the scholarly literature, digital storytelling is defined either as a creative process of capturing personal stories through the use of images and sound in a short digital clip of two to five minutes, typically integrating audio narration, photographs, video, and other multimedia elements (Lambert, qtd. in De Jager), or as the integration of digital components (text, images, audio) into a coherent narrative structure (Maragh-Bass et al.; Moradi et al.).

The fundamental elements of digital storytelling include: (a) a narrative structure consisting of beginning, middle, and end; (b) multimedia integration such as still photographs, video clips, sound, and text; (c) a personal or autobiographical voice that ensures authenticity; and (d) the potential for interactivity or audience engagement, where relevant, to intensify participation (Moradi et al.).

The creation of digital stories involves a systematic process: developing the idea, drafting the script, collecting media materials, performing digital editing, and distributing the final product. Studies highlight the importance of prior training in media and collaborative skills for participants, particularly in educational contexts (Moradi et al.).

Digital storytelling is widely employed in education, especially in language and literature teaching, as well as in the development of digital and communication skills (Moradi et al.; Yang and Wu). It has also been adopted in research as a qualitative or arts-based method, and in fields such as health promotion, social activism, and community projects aimed at amplifying the voices of marginalized groups (Rieger et al.). (See Appendix, Image 1, for a visualization of all categories.)

Documented benefits include enhanced motivation and engagement among participants, the development of critical thinking and creativity, and improved digital and communication skills (Moradi et al.; Yang and Wu). Furthermore, in applied research, digital storytelling fosters reflexivity, enables the exploration of emotions, and contributes to the strengthening of personal or community identity (Mazzoli Smith et al.; Maragh-Bass et al.).
Overall, digital storytelling emerges as a valuable interdisciplinary method in academic, educational, and cultural contexts due to its potential to transform the ways in which stories are constructed, transmitted, and received. Looking ahead, further experimental studies are needed to quantify its impact on learning and communication, to develop rigorous methodological frameworks for evaluation, and to explore the ethical dimensions of using technology in storytelling (Rieger et al.; Moradi et al.).

Figure 1. Digital storytelling categories (image created with the use of A.I)

4. Data Visualization through GIS

Data visualization invites the development of marketable skills that are relevant in a data-driven world. In the current academic and professional context, graduates are expected to be empowered digital citizens who can

constructively incorporate the theoretical foundations of disciplines into practical outcomes. The integration of various Digital Humanities tools has the advantage of reframing language learning as a form of inquiry that uses real data, real places and addresses a real audience. This "language-through-practice" approach aligns with the objective of higher education courses, including ESP, of tailoring language instruction to supercharge the 21st-century skills required in the graduates' respective field of work, through interdisciplinary collaboration and multimodal learning.

When engineering, nursing, tourism, arts or business English learners construct map-anchored narratives, the learning process shifts from the conventional instructional strategies that feature teachers as the main source of knowledge to a student-centered digital mapping that bridges language learning and data analysis. Sinton advocates for the benefits of teaching with GIS (Geographic Information System) across higher education to achieve goals such as "critical and creative thinking, quantitative literacy, information literacy, civic responsibility and engagement and intercultural knowledge […] through pedagogical formats such as problem-based and active learning, undergraduate research, first-year seminars, interdisciplinary courses" (8).

GIS has become a standard tool across the higher education sector. Through its cloud-based ArcGIS online platform, the Environmental Systems Research Institute (ESRI) has enabled GIS users to create and publish interactive maps for a wide range of academic purposes and audiences. Interactive maps are web-based applications through which story maps can be enriched with accompanying text, figures and multimedia. This act involves spatial analysis, defined as "the process by which we turn raw data into useful information, in pursuit of scientific discovery, or more effective decision making" (Longley et al. 317).

At its core, GIS investigates spatial patterns and processes across geographic scales, describing their form and evolution in time, explaining their drivers and projecting their likely trajectories. Accordingly, GIS functions in line with problem-solving methodology while technology serves as an instrument rather than the main learning outcome (see Bitting et al.). These maps are interactive, collaborative and hosted in cloud, meaning that they can undergo updates and can be accessed without installing special software or using a specific device. Therefore, they allow broad reach across institutions and educators. The interface is designed to be user-friendly and typically requires no coding. Nevertheless, despite being usually produced by reputable institutions and agencies, there is for the time being no requirement for external peer review to ensure the quality of the final product. This issue may be due to an alignment between using mapping in an educational context and gamification.

Student motivation is typically strengthened when students acknowledge both the relevance of their work that is informed by their personal outlook on data and the element of gamification which emphasizes exploration. Although Digital Humanities approaches that employ text analysis, visualization, mapping, coding or making annotations can require a variety of virtual reality modelling languages that take time to master, digital mapping platforms are arguably the most conducive to interdisciplinary projects they do not only host but also provide structure. GIS is utilized in different disciplines that range from humanities to environment and economics.

Project-based collaboration involves an interdisciplinary outlook that requires an integration of evidence, methods, and communication. Maps have the advantage of providing a shared multilayered spatial frame that can be read by multiple communities at once. If engineers see networks and constraints, public-health teams see exposure and access. While humanities scholars search for place and narrative, policy makers envisage options and trade-offs. The digital tools (geocoding, spatial analysis, story maps) double as translation layers between methods and disciplines so that project participants can move from models to decisions in a common transdisciplinary visual language.

According to recent trends and studies, mapping is particularly useful in communicating scientific concepts to non-expert audiences (see Groshans et al.). Indeed, mapping turns abstract relationships into patterns that people can literally see – their positioning, how they cluster, and how they change in time. The interactive aspect of GIS further strengthens comprehension by letting participants and viewers focus on personally relevant places. For instance, experiments with the epidemic and Covid-19 maps report that careful map design using color schemes (cool, warm, and mixed colors) and data presentation forms (choropleth maps, graduated symbol maps) increase clarity revolving around personal risk perception (Fang et al. 1158-81).

Narratives have a privileged position in human cognition so that when engaging the public with sciences, especially humanities and social sciences, audiences find stories or accounts easier to follow and more engaging when they are driven by maps that fuse narrative with spatial evidence (Dahlstrom 13614). Maps are readable by experts and lay audiences alike, bridging data analysis and public understanding. Furthermore, research on GIS in higher education has shown that the ability to synthesize multimodal evidence (e.g. texts, charts, images, layered maps), spatial reasoning and problem-solving skills are directly transferable to the job market.

On the one hand, the workflows and software of GIS have become part of the curriculum of many STEM degrees. Studies link GIS and mapping with gains in spatial reasoning, framing them as gateways to decision-makers in almost all industries (see Tian et al.). Researchers have even linked the

introduction of activities that employ GIS to achieving The United Nations Sustainable Development Goals, as a "viable tool for analysis, visualization and communication" (Kolvoord 23).

GIS can also contribute to the harmonization of higher education systems sought by the European Higher Education Area both in terms of supporting learner independence and in the pursuit of creating a curriculum that is sensitive to social conscience. Capstone projects such as web analysis maps, story dashboards, reproducible notebooks, provide a transition into the professional field. With ESP specifically, a GIS-inflected form of projects enhances motivation, professional communication and new literacies.

As a scaled depiction of the world, the map is employed as a supportive tool for social, scientific and technological contexts to be experienced outside the classroom. Activities designed for higher education courses in general, and ESP classes in particular, should mirror professional conditions (authenticity), incorporate deliberate spaces to interrogate and consolidate what has been learnt (reflection) and encourage participatory knowledge-building (collaboration) (Radović et al. 545-60). Using authentic materials, from policy briefs and technical reports to government datasets and historical documents exposes learners to the registers, visuals and norms of their future profession.

What GIS mediates is a shift from simple realistic texts to real data for problem-based projects that align language performance with professional reasoning. Specifically, mapping allows students to collect and align any data with location (history, art, anthropology, literary studies, political sciences, medicine, agriculture, environmental sciences etc. within the context of geography). Data can come from documents that trace mobility in human space, surveys, unstructured texts, semi-structured documents, semi-automatic annotation, collection metadata or even analog maps. The task is to turn authentic datasets into narratives through a process that orchestrates text, visuals and interaction.

On the other hand, many organizations and wide range of industries place a special emphasis on developing thriving global and local communities that are aware of the world's history, cultural diversity, social problems and environmental concerns. Project-based learning using GIS integrates new technologies into classroom practice and engages the civic spirit since the topics revolve around community concerns (see Santo et al.). As early as 2006, Harvard University opened a Center for Geographic Analysis with an "activity-based" component that spread across multiple data sets. Key projects include "Climate Data Analysis" that processed daily precipitation, temperature, and humidity estimates between 1999-2017 to track climate variables in relation to public health. The "Partisan segregation analysis" for 180 million U.S. voters using advanced geospatial data science was oriented towards political and social implications. Conversely, "Network Analysis on

Geospatial Big Data in Brazil" works with big geospatial datasets that contain millions of records to improve the calculation of the shortest drive distances in a cost and time-efficient manner, focusing on infrastructure (Harvard Center for Geographic Analysis, n.d.). Such ongoing projects demonstrate sustained educational efforts aligned with workforce demands that translate directly into professional roles.

Another recent, notable example that proves that GIS can be used in smaller-scale projects that could benefit both students and community comes from University of Life Science "King Mihai I" from Timișoara, Romania, that entailed the development of an interactive model of the university campus using the ArcGIS Story Maps platform (Olteanu et al. 196-99). It showcases the aforementioned dimensions of the implementation of GIS in higher education due to its engagement with the infrastructure of the university and its potential role to facilitate strategic future development. Specifically, it offers a detailed and accessible visual representation of the university's facilities and planning, integrating detailed geographic information and images. Through interactive maps and multimedia stories, users, including current or potential students, visitors or even members of the faculty, can virtually explore the campus, identify the precise locations of campus buildings, search for laboratories, libraries, green spaces, and other relevant points of interest. Though small, the project is relevant because it elicits the targeted 21st-century competences (critical thinking, information literacy, multimodal communication) while contributing to a "smart campus" initiative, showing through authentic outputs that classroom tasks can have institutional relevance.

On the whole, the use of GIS in Higher Education offers access to innovative technologies that operate with data processing and data analysis, highly demanded in the professional sector. Important outcomes of using these tools include the opportunity to do active research that motivates and facilitates their engagement with relevant social and professional issues in the greater context of a sustainability agenda. Thus, data and discourse become the organizing principles of learning. Its interdisciplinary dimension positions science and the humanities "in an irresolvable yet productive tension, so that the questions, issues and approaches specific to each are capable of generating new findings, insights and realizations in the other - to the point where both of their identities are brought into question" (Hall 802). Attention to accessibility also ensures that the outcomes of Digital Humanities projects that use GIS are widely shared and understood. Closely tied to GIS, that turns collections into map-anchored arguments, is another branch of Digital Humanities that concerns digital archiving and preservation.

5. Digital Archiving and Cultural Heritage Preservation

Digital archives in the Digital Humanities are curated, structured collections of digital materials designed to support research, teaching and public engagement. They may consist of digital copies of original documents (manuscripts, maps, audio/video materials), rich metadata, oral histories, web sources etc. that form a cultural record. Unlike simple files or folders, a digital archive is supposed to make the digital documents discoverable, interpretable and citable through discovery layers such as catalogs or interfaces which are supposed to align with the FAIR principles. A widely adopted benchmark for proper archival stewardship, the FAIR principles – making documents Findable, Accessible, Interoperable and Reusable – explicitly emphasize sustained accessibility through machine-action discovery and availability to be reused by users other than those who have created them (see Wilkinson et al.).

Digital archiving and data curation are determined by the suitability of digitization practices in terms of their ability to convey the qualities of the physical document. Preservation in digital format has exponentially improved in the last decades, reaching a level of detail that seemed impossible to achieve only a few years ago. There has been an upgrade in scanning resolution as well as in the level of attention paid to gathering detailed data about the physical characteristics of the original material – erased inscriptions, transparency, chemical composition of the ink, organic residues left on the paper (Gerlini). This technological surge correlates with a growing interest in cultural heritage preservation.

It is well known that the preservation of national heritage is indebted to the efforts of the Gallery, Library, Archive, and Museum (GLAM) sector. Nevertheless, oftentimes the heritage of archives and libraries has historically remained defenseless against destruction, loss or displacement due to war, politics, neglect, arson, theft, natural disasters and various other developments. Due to the existence of digital archives, cultural heritage can be preserved, published and enriched through a wide spectrum of digital means, from curated online libraries to fully functional 3D models that can be repurposed for broad public use.

The very notion of cultural heritage is lax in its definition. In time, by including marginalized or silenced groups, it "challenges its previous core function as a bedrock of monocultural nation-building projects, a continuation of elitist cultural canons, and as upholding Eurocentric cultural values" (Lähdesmäki et al. 1). The 2025 British Council report on Digital Cultural Heritage outlines five ways in which technology is changing and being changed by Digital Cultural Heritage: "leveraging immense environments", "decolonizing Artificial Intelligence (AI)", "enhancing archiving", "engaging

through user-generated content” and “decentralizing curation” (McKenna et al. 9).

In other words, digital archiving occasions the incorporation of innovative technologies, including AI, that facilitate public engagement with the archives. What is most interesting is that by harnessing the technology available in Digital Humanities, archiving is no longer a practice accessible to a select group of professionals but open to any neophyte or established scholar who would like to undertake the role of a cultural heritage practitioner. Decentralization implies that the curation process is the result of a personal decision process and that the content of the digitalized product may be highly subjective, with users choosing to include in the curation undertaking either highly recognizable elements or obscure, even intangible practices such as street dances or language. Sometimes, what may seem rather inconsequential at first may hold great significance. For example, the web atlas “Hotels and the Modern Subject: 1890-1940” (HOTEMS) of the Hellenic Foundation for Research and Innovation which explored, with the aid of GIS, hotels as key sites for modernity, representatives of mobility, cosmopolitanism and transnationalism in the Anglophone literature from the fin de siècle through early modernism.

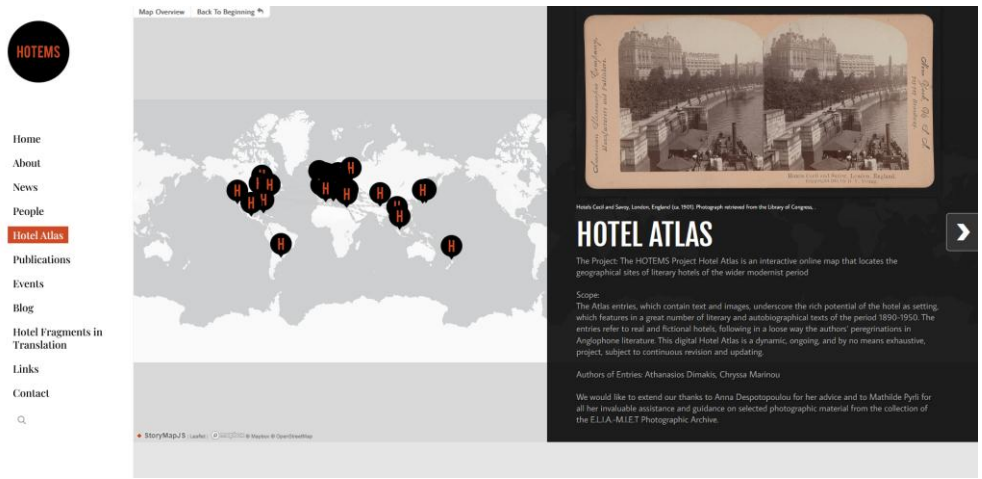

Figure 2. An example of a cartographic representation in a web map embedded within an atlas story map – “Hotels and the Modern Subject: 1890-1940”, Hellenic Foundation for Research and Innovation, 2020-2023 (https://hotems.enl.uoa.gr).

The products of digitalization have changed over the years but regardless of their form they remain, just like their physical counterparts, storage spaces for the memory of a country or what Pierre Nora referred to as *lieux de memoire*. From this perspective, Digital Humanities invite a plurality of voices and visions. Otherwise said, “the formation of a creative

multicultural linguistic personality interested in mutual enrichment and mutual understanding of the world nations and in preserving the values of global culture as a whole" (Getmanskaya 393). The general trend of cultural production is to make the idea of museums and archives more accessible while acknowledging that cultural heritage is not stable, but rather continuously reconstructed, renegotiated and coproduced. Digital archiving includes not only the traditional aspects of collecting data and information management, but also presentation and interpretation. In other words, what Bourdieu coined as cultural capital is reflected in the decisions that the curators of digitalized archives make in the larger socio-political context and market-driven principles. The positive outcome is that, through digitalization, cultural memory has become more democratized and community based. Mnemonically relevant cultural products from the fringes of the heritage sector that may have been overlooked or lost have the chance to be integrated into the culture heritage collections.

As data and image processing have become a routine, the technical parameters have also needed to adjust to the individual features of various collections. Content Management Systems (CMSs) have undergone a marked evolution since their first introduction in the 1960s, catering to the need to structure, move and update digital data. Internationally, CIDOC CRM (an international standard ISO ontology for the cultural heritage domain) and LIDO (an XML schema in the field of Digital Humanities to create and share metadata about cultural heritage objects) have been established as standards, with Dublin Core as the semantic format with its own cataloguing rules and procedure manuals (see Müller). Procedures involving digital archiving involve the stages of storing, network sharing and the presentation, visualization and interpretation of interactive content.

A dive into digital cultural heritage technology reveals a plethora of new key technologies used to preserve and engage with cultural heritage. A special role is held by 3D printing due to its capacity to create precise replicas of exhibits that are too fragile or valuable to display and support reconstruction of damaged or missing parts of cultural objects. A growing literature shows how 3D printing advances inclusive access and learning by providing access to tactile surrogates, even enabling audio-haptic interpretation for blind and low-vision visitors when paired with careful labeling and narration (Balletti & Ballarin 9). Although the use of 3D printing may spark questions about cultural appropriation, copyright and costs, a virtual counterpart of the original constitutes an innovative conservation solution that offers a pragmatic balance between access and conservation.

Artificial Intelligence and Extended Reality (XR) form a coupled access-and-stewardship layer in the Digital Humanities. XR adds an experiential layer that is especially powerful for collections that have a rich

spatial or material layer and is therefore used to stage "deep maps", remote VR tours, reconstructions, situated storytelling, teaching and training in which digitized texts, images and 3D assets are navigated as places and objects rather than isolated files. Correlated with the idea of engaging with textual cultural heritage materials, Optical Character Recognition (OCR) allows the conversion of scanned documents and images of printed text into a digital format that scholars may use to perform large-scale text mining, conduct computational analysis and create digital archives. Overall, both instances showcase that digital cultural heritage projects are primarily focused on audience engagement. Prioritizing the use of such emerging tools offers the opportunity to share meaningful, focused and easily navigable information through digital archives. It is therefore important that digital archiving projects for cultural heritage preservation should have a holistic approach and consider both the hard infrastructure (archival material, technological support) and the soft infrastructure (community engagement, local knowledge) for sustainable, long-term DH projects.

In terms of safeguarding, the multiple nodes embedded in blockchain technology serve preventive preservation by enhancing security and decentralization. Moreover, such technology is capable of hosting born-digital artefacts, like oral history audio files. A recent example of using digital archiving with blockchain is the Ukraine Ministry of Culture's "Meta Museum: History of War" (see Meta History: Museum of War, n.d.) which logs a chronology of the war since the invasion through a selection of social media posts and newsreels combined with art and web3 technologies. The integration of AI and Blockchain is still an emerging field but even in their initial stages of conception they are leaving a lasting impact on the way digital archiving and cultural preservation is approached in the Digital Humanities.

6. Conclusion

While this article has sought to examine textual analysis, digital storytelling, GIS-enabled digital visualization and digital archiving as four practices that frame Digital Humanities as a field of study, a set of research methods and a pedagogy, the foray into this robust area of scholarly activity is by no means complete, as there will always be a need to continuously scrutinize its methodological developments. The field of Digital Humanities is quickly evolving as software technologies keep advancing. It is, nevertheless, evident that even in its incipient phase DH has transformed the practice of humanities research and the way disciplines are taught and learned. Future work should extend beyond the descriptive articulation of the DH concepts employed here and engage more fully with their theoretical implications. Although this article has foregrounded the operational usefulness of distant and close reading,

digital storytelling, GIS, the use of FAIR principles in digital archiving, and established metadata frameworks such as CIDOC CRM, LIDO and Dublin Core, these constructs warrant a more rigorous critical interrogation. Subsequent research could therefore examine their epistemological assumptions, methodological constraints, and divergent interpretations within DH scholarship. Such an inquiry would not only deepen the conceptual grounding of the present study but also situate its findings more explicitly within ongoing theoretical debates in the field.

In textual analysis, carefully curated corpora, reproducible notebooks, analytical toolkits have turned close reading into replicable studies. Topic models, embeddings, stylometry and tagging augment rather than replace traditional interpretations of individual texts, offering patterns that scholars pursue back into context. Digital storytelling has been adopted in various fields of research as a qualitative method. It may be argued that "digital storytelling stands out as a multifaceted, integrated solution to our modern need for new pedagogical approaches" (Cojocaru 16). Empirical evaluations of the introduction of digital storytelling in higher education have shown that its interdisciplinary approach in the production of authentic projects that are in line with the professional sector has made it an effective tool for evaluating learning and developing competences. Data visualization through Geographic Information Systems has turned mapping into instrument and argument. The interdisciplinary, collaborative and multimodal approach to constructing map-anchored narratives across various disciplines succeeds in integrating transferable 21st-century skills aligned with workforce demands. Finally, digital archiving has offered cultural heritage preservation a durable stewardship through technical parameters that ensure intelligibility as software and interfaces change. In this paradigm shift, archives cease to be endpoints by becoming more accessible, inclusive, sustainable, community-driven and capable of impact within the preservation of complex cultural artefacts and beyond. Through its digital outcomes, the field of Digital Humanities bridges the gap between past and present, communities and institutions.

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