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Archival technologies from Lyotard's philosophical perspective: mediation, truth and power

Tecnologías archivísticas desde la perspectiva filosófica de Lyotard': mediación, verdad y poder

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ABSTRACT:

The aim is to reflect on the topic of archival technologies based on the philosophical thinking of Jean-François Lyotard (1924-1988) with a focus on the Lyotardian Theory of Knowledge and the inhuman nature of automating mediation of access to archival documents, data and information. It explores broader philosophical debates about the nature of truth, memory, power and technology. It situates mediation spaces for digital objects in different types of data, information and knowledge interventions. It concludes that the accumulation of goods in capitalism is central and the so-called 'archival technologies' exemplify Lyotard's theses about the dependence of this regime on these technologies classified in three groups: the first concerns durability, the second include the set of equipment, tools and materials for archival practices and the third deals with technological systems or devices for data mediation, information mediation, digital heritage mediation, cultural mediation and knowledge mediation.

KEYWORDS: Archival technology; Mediation automation; Jean-François Lyotard; Archival Science; Knowledge.

RESUMEN:

El objetivo es reflexionar sobre el tema de las tecnologías archivísticas a partir del pensamiento de Jean-François Lyotard (1924-1988), centrándose en la Teoría Lyotardiana del Conocimiento y la naturaleza

inhumana de la automatización de la mediación en el acceso a los documentos de archivo y sus componentes más pequeños (datos e información). Explora debates filosóficos más amplios sobre la naturaleza de la verdad, la memoria, el poder y la tecnología. Sitúa los espacios de mediación para objetos digitales en diferentes tipos de intervenciones de datos, información y conocimiento. Concluye que la acumulación de bienes en el capitalismo es central y que las llamadas «tecnologías archivísticas» ejemplifican las tesis de Lyotard sobre la dependencia de este régimen de estas tecnologías. Se presentan tres grupos de tecnologías archivísticas: el primero se centra en la durabilidad, el segundo en el ámbito de los equipos, herramientas y materiales para las prácticas archivísticas, y el tercero en los sistemas o dispositivos tecnológicos para la mediación de datos, la mediación de la información, la mediación del patrimonio digital, la mediación cultural y la mediación del conocimiento.

PALABRAS CLAVE: Tecnología archivística; Automatización de la mediación; Jean-François Lyotard; Archivística; Conocimiento.

INTRODUCTION

Is the destiny of humanity – resulting from decisions based on information consigned by archival technologies, which automate human mediation in contemporary times – predominantly determined by the human, or by the inhuman enunciated by Lyotard (1991)? Which of the two entities is the main actor of activities that suggest a determining factor in ensuring that the human coexists with the informationally inhuman independently? Such issues are not minor, as today these technologies are applied in the creation, registration, classification, organization, management, preservation, access, pluralization and use of documents and intelligent digital systems (artificial intelligence), they have semi-automatically determined the destination of people without them knowing at least the fundamentals for the technological functioning of the devices that affect them.

This info-technological determination occurs daily. For instance, a user with credentials register in an official repression system that someone is a terrorist, a dangerous spy or a criminal, sealing that person's fate, regardless of whether this is true or not. The same applies to healthcare systems, because when data is entered deliberately incorrectly or through human error, information in the medical record can lead to the patient's death. This is also valid in the case of authors or artists who, when they do not use technologies to record the provenance of their works, as discussed by Magaldi and Aldabalde (2021), could have their cultural rights attacked, questioned, suffer theft, losses in the information system or be attacked with adulteration of their works, among other possibilities.

The debates proposed by Jean-Françoise Lyotard (1924-1988) in his works are pertinent in today's society. Regarding technologies, what is highlighted in Lyotard (1989, p.77-78):

> [...] technology was not invented by us humans. Exactly the opposite. As anthropologists and biologists admit, even the simplest life forms, infusoria (small algae synthesized by light at the edges of tide pools a few million years ago) are already technical devices. Any material system is technological if it edits useful information for its survival, if it memorizes and processes this

> information and makes inferences based on the regulatory effect of behavior, that is, if it intervenes and impacts its environment in a way that, at least, ensures its perpetuation. A human being is no different in nature from an object of this type. Their equipment for absorbing data is not exceptional compared to other living beings. What is true is that this human being is omnivorous when dealing with information because he has a more differentiated regulatory system (codes and processing rules) and a greater storage capacity for his memory than that of other living beings. Above all: it is equipped with a symbolic system that is arbitrary (in semantics and syntax) allowing it to be less dependent on an immediate environment and also "recursive" (Hofstadter), allowing it to take into account (above and beyond the raw data) the way it processes that data. That is, himself. Therefore, from processing as information your own rules, in turn, and infer other ways of processing information. A human, in short, is a living organization that is not only complex, but, so to speak, mediate. He may understand himself as a means (as in medicine) or as an organ (as in goal-directed activity) or as an object [...]. It can even abstract itself from itself and take into account only its processing rules, as in logic and mathematics.

This is relevant, because in Lyotard's Theory of Knowledge, information is at the center and is the object of human and inhuman mediators (computer algorithms, for example), as part of a logic in which truth ceases to have value, as the sale of knowledge becomes the real meaning of the production of human knowledge to satisfy the inhuman entity of capital (Lyotard, 2009).

Thus, Lyotard's philosophical thinking, which has been used of inhuman devices, increasingly linked to consumer and communication behaviors, to the point of altering the meaning of knowledge, failing to pursue the truth and then seek satisfaction caused by the information that is useful to capital, denoting as Lyotard's thesis exemplification the case of archival technologies.

The idea that the digital revolution seems irreversible and that human destiny is, to a large extent, tied to the informational inhumane raises the following question: Can the information society outlined in Lyotard emancipate its desires and projects from the present to the future without knowing the functioning of technologies that preserve the basis on which the truth about the past can be established, ignoring the trajectory of the informational inhumanity that impacts humans disproportionately?

It is argued here that the understanding of archival technologies is essential to enable the emancipation of people under the yoke of ignorance about the technological artifacts used in the means of production to create, record, classify, organize, use, make accessible, hide, eliminate and maintain the information sources used to judge, decide, convince and justify acts that determine the individual and collective destinies of humans, which in turn impact other living beings and the planet.

In this sense, archival technologies can exemplify what the Lyotardian Theory of Knowledge (Lyotard, 2009) enunciated-discussed about the relationship between techno-science and performativity, because archival technologies are a concrete case and part of the archival knowledge that application is still a technical derived from 'positive knowledge' (Lyotard, 2009) that, depending on interest, can both facilitate access to information and the preservation of objects of activation of memory, as well as reinforcing social inequalities and the control of knowledge, among other things discussed below. This

work does not intend to exhaust the topic of archival technologies from Lyotard's philosophical perspective, so theoretical concepts linked to the theme of this study will be listed, aiming to reflect and provoke a new horizon of research in this scope.

PRELIMINARY DISCUSSION AND CONTEXT: AN MEDIATED TRUTH?

Can truth be confused with information or with an infoproduct (informational product)? If the nature of truth is a classic theme for philosophy, then Lyotard (2009) revisits this and places it in a context in which truth is artificially produced by a set of information, computers and mediators (human and inhuman) that make use of discourse about truth for the purpose of capital gain. Thus, the author's point of view consider the truth as a dependent part of the means of capitalist production and how information is mediated as an object of input in the production process, so the truth being something peripheral, since above all, knowledge is at the service of discourses about the performance and effectiveness of organizations that aim at profit or capital accumulation. In the Lyotardian Theory of Knowledge (Lyotard, 2009), truth does not validate knowledge anymore and performativity is responsible for legitimizing knowledge and shaping the discourse around the optimization, effectiveness and efficiency of a given know-how to maximize the results considered relevant to capital.

Is there no place for truth in Lyotard's postmodern information society? Fake News will be a constant part of the power mechanisms that make the gears of companies and bourgeois states? Now, from a realistic point of view of truth, the archives produced before the emergence of this new paradigm are sources of evidence, records of facts, human or animal activities, natural phenomena, and other documented events, which can serve as a material basis to substantiate the truth linked to facts and not just discourse. This seems to be deontologically pertinent to the researcher who seeks the truth from the record, that is, considers the archive as part of reality. Reality, in turn, is seen as the universal source given that the objective or real universe remains regardless of how it is described or represented. Thus, thoughts and descriptions do not immediately alter reality, but mediate it. A practitioner of a science committed to the true truth, can discern the false statement from the true statement, when compared with what is directly observed in reality, verifiable by anyone who repeats the method with the same materials. Archival sources are the material from which true statements can be produced, considering their evidentiary status and the qualities inherent to this material.

This problematic diagnosis concerns the (inter)national scientific community and potentially any subject concerned with the sources of truth. This, can be understood as a relational property, that is, the truth about the occurrence or non-occurrence of something, relating to the conformity and congruence

of what was formulated with the reality found in the archives as part of the real world to be a universal objective basis for proof of scientific discoveries.

Lyotard's approach considers that truth, even if produced through archives, can also be influenced by multiple perspectives and interpretations, depending on the desires involved. This awareness that the truth can be manipulated appears in the work *"The Postmodern Condition"*, when the author argues that the great so-called 'metanarratives', including humanism, which then legitimized the truth and lost their credibility.

In Brazil today, it seems that the majority of documents and information sources are produced in systems designed to meet immediate demands that bypass scientific development, because they are purely immediate, without planning, and aim only to present an idea of modernization of the State without technologies designed to manage information in the long term or archival technologies. In this case, marketing takes precedence over the truth, as selling the image that the State is modernizing and speeding up operations generates increased satisfaction of desires through the consumption of immediate, quick and easy solutions, regardless of whether the act of using the poorly engineered system can lead to the erasure of the truth and the transformation of files or documents into digital waste due to their poor quality and disrespect for international standards (ISO/TC 46/SC 11) or national (National Archives Council).

When entering the term "archival technologies" through the UNESCO Digital Library search engine (Unesco, 2024), 1507 items are found. It is worth noting that the majority of authors of recovered works are or are in the United States, Canada, Germany, the United Kingdom, France and Italy.

If from Lyotard's (2009) point of view, colonizing countries form global units that are part of the history of imperialism in the West, this is confirmed not by mere coincidence, as these are the ones that hold the monopoly on knowledge of archival technology and its application in industrial productivity, see the predominance of manufacturers, distributors of equipment and materials of this technology with material archival properties on the websites archivalmethods.com (2024), achival.com (2024) and preservationequipaments.com (2024). This happens because the countries listed can be considered developed from a technological point of view, at the same time that countries explored without such technologies are weakened in their sovereignty and possibility of resisting the colonizing project.

In this way, imperialist countries have been associated with economic success, national sovereignty, legal security, resources for their research and development agencies stem from this history, while Brazil, as a colony, does not manufacture digital storage units with archival properties, which could mean that Brazil imports all these products from abroad or simply hands over digital heritage and evidence of the achievements of public and private management for destruction – or both could occur:

import of strategic archival technologies, abandonment of evidence of activities (administrative, research, among others) and erosion of digital heritage (local, regional and national).

Lyotard's thought allows us to affirm that bourgeois states are dependent on informational technologies, so that the truth has no more relevance when the intention is to disseminate and propagandize, through a massive attack or release of digital information via the Internet, some content with a specific object that brings results to financial, political, economic or cultural capital. In this direction, considering Lyotard (1991), most of the bigs techs serves as suppliers of inhuman and dehumanizing solutions to disseminate hate networks, as is known via WikiLeaks addressed at wikileaks.org/intolerancenetwork, and are available to the intelligence services of the United States or other imperialist countries. Hate campaigns can become popular based on fake news and change in perception about time, according to Lyotard (1991), about temporality, so that the means of communication, equipment and devices can be used to capture the attention of humans and attack human mediators with violent lies, turning information into a weapon.

Taking this into account, it is assumed that the researcher committed to truth needs to know whether such a document records reliable data or not, and, therefore, whether it has requirements and technologies that preserve the archival qualities of authenticity, reliability, integrity, trustworthiness, credibility, immutability, admissibility, privacy and stability and completeness. On the other hand, the lack of understanding of archival technologies impacts those who do science or produce knowledge without the objective of truth, but according to Lyotard (2009), they aim to improve earnings performance, increase performance and increase the effectiveness of things under capitalist logic. If, on the one hand, archival technologies can be used to increase institutional effectiveness, on the other hand, this can mean more power and control on the part of enterprises and the bourgeois State. In fact, research and development of archival technologies can result in digital products such as software or equipment with high market value. On the other hand, archival technologies can be placed, based on the mediation paradigm, at the service of improving collective health, public education, cultural democracy, the inclusion of marginalized communities, the enjoyment of human rights (cultural, political, civil and social), information security, social awareness of issues of social justice, and, in short, an increase in the standard of living conditions of the people.

Considering this, such technologies are of interest to both researchers and consumers, sponsors or not, subject to the capitalist logic of knowledge production as the knowledge produced is bought, sold and/or brings profit to the knowledge producer's financier.. This in turn does not make archival technology useless for classical knowledge seekers of truth or those who adhere to the Lyotardian project as a form of resistance to the so-called 'post-modern' condition. Thus, both in search of knowledge that

uses archival documents as proof of truth, and those interested in data to prove the effectiveness or competitive differential of a knowledge to be sold, it would be up to the researcher to search the archives for evidence to test his hypothesis or data that indicate gains from its increase.

The main consideration, a priori, to be highlighted is that in Brazil, Archival Science (Duranti, 1995) called 'Archivology' in this same country, seems to face challenges in achieving the change in level suggested by Lyotard (2009), that is, from positive science to becoming the knowledge of other knowledge, defining its place in life with freedom, self-foundation and self-management. This is because in the Brazilian case, Archivology is in a country that has not broken with the colonial status, so that it is still dependent on the technologies of the aforementioned imperialist countries. Thus, Archiveology did not consolidate itself as a positive science, as happened with Aerospace Engineering, with the policy developed at the Technological Institute of Aeronautics.

Therefore, Archivology does not become techno-science in the Brazilian case. In fact, the field is still unaware of archival research methods and there is not even a work dedicated to the topic in Portuguese-language literature. So, to take a step forward in this change of level, it is worth assuming that Archival Science exists, in technologically developed countries, approached by Duranti and Franks (2015) still positivist, and this means, at least for Lyotard (2009, p.24) "[...] that it easily finds its application to techniques relating to men and materials, and that it lends itself to becoming an indispensable productive force for the system."

In practical terms, there is a need for a policy linked to the research agenda to be followed so that Archival Science becomes 'indispensable productive force for the system' (Lyotard, 2009, p.24) as occurs in countries that experts develop international archival standards (ISOs) with impact power for all business environments in the world, see ISO/TC 46/SC 11 (Archives/records management).

Based on Lyotard's (2009, p.62) assertion that "positive science and the people are nothing other than their brute forms, the The nation-state itself cannot validly express the people, except through the mediation of speculative knowledge." in the Encyclopedia of Archival Science (Duranti; Franks, 2015).

For Lyotard (1989), in an erratic way, philosophers have rejected technical questions and sought questions that are impossible to answer, or considered as unresolved by themselves, when they could re-bring to light questions formulated by technical sciences, approaching them beyond the instrumental objectives originally applied to them. In agreement with the author, it is considered pertinent to describe the understanding of the development of archival knowledge as technical knowledge in Brazil.

It is understood here that Archivology is just one part of the knowledge of Archival Science, just like Freda (2008) explains. Given this, it is clear that in Brazil it is important to study the other parts of this science, so here we chose to question the part of knowledge designated by the term 'archival

technology' present in Lodolini (2015). Although the context of archival technologies in Brazil is still something new, when compared to countries with the same gross domestic product, when they emerged in the 19th century, see Casanova (1928), the Brazilian consensus on a core of technology due to archival knowledge, occurs from the 21st century, particularly after 2010, when there is an effort to implement and adhere to these reliable digital archival repositories considered here as archival technology. Added to this, there is also the use of a digital dissemination system for collections based on databases. From Sundqvist (2017) we can affirm that the access to archival information and archives depends on mediation by artifacts, such as information systems, with the quality of mediation being relevant so that information and documents are not lost, that is, they are capable of being recovered by users who need to search for them using research instruments technologically produced and mediated.

This technology was addressed by Luz (2020), but without social consideration. Here we seek to produce a reference to the beginning of a corpus of knowledge in archival technology to respond to the demands of society and the digital State (Silva and Ribeiro, 2024) classified here as an inhuman State based on Lyotard (1989; 1991). It is worth highlighting that the topic of archival technologies has never been approached as proposed here, that is, including digital artefactual mediation and Lyotardian thesis.

Additionally, there are few works in Archival Technology (Jimena, 2024), authors and teachers in ´Tecnología Archivística´ in universities in the Mercosur area (Tecnológico de Antioquia, 2010; Universidad Nacional de Asunción, 2003; among others), the Venice State Archives which offers courses in ´Tecnologia archivistica´ in addition to other authors whose research themes are implicitly addressed in the literature of authors such as Marciano et. Al (2018) seeks to consolidate the Computational Archival Science.

Linked to the archival technology field are Adam Green (1991), Michel Cook (1986), Perez et al. (2011), UNESCO/UBC (2012), James Lowry (2013) and others. It is worth pointing out that this author created the Archival Technologies Lab (Queens College in New York). In this laboratory, the understanding is that archival technologies are techniques, know-how, processes, machines, devices, used by, for and against document producers or those who have the right of access in order to register, fix and transmit information for the future. Such a description is still general and requires more precision. Also noteworthy is the work of Peter Van Garderen, world leader in blockchain and NFT projects, who outlined, from a diachronic perspective the author explain the archival technologies in the history of humanity here: vangarderen.net/posts/archives-technology-and-innovation.html.

Magaldi and Aldabalde (2021) indicate, NFTs are associated with technical and philosophical problems. In this sense, Lyotard (1979) can contribute to discussing the limits of language representation. This applies today in the jobs that are invisibly found in the daily lives of more than a billion search engine

users around the world. More precisely, to the digital artist who depends on a new skill to perform his craft, that is, using a *prompt* of inserting words into an intelligent system for making art.

The problem of language in Lyotard (1979) now refers to the limit to the human user and the inhuman machine, whose algorithmic mediation is the responsibility of the programmer who represents instructions through the script. The actuality of the author's thought is shown to the extent that the human unconscious as a definer of art/τὲχνη(techne-technique) remains insufficiently, poorly or poorly understood: "[...] art is unconscious of itself, and forgets the object [...] Current unconsciousness is that shadow that light is to itself, anonymity [...] virtual unconsciousness does not reside in the core of the act, but in its immediate surroundings, unconsciousness is the other where here it is applied and obstructed by its existence." (Lyotard, 1979, p.47). The author points out that the discovery of the unconscious opens doors to the representation of objects through images and their discursive effects, and that, some Jungian, in the act of representing something an image can express unconscious symbols as an unreadable code or cipher of what remains continuous in the collective unconscious.

ARCHIVAL TECHNOLOGY AS EXAMPLE OF LYOTARD'S THESIS: DATA MEDIATION

The emphasis here is not on adherence to Lyotard's project (2009), but on the descriptive approach with prescriptive statements added to reflections as part of the intellectual effort to understand the construction of a corpus of knowledge of a positive science, which has not yet been consolidated within the brazilian internal market in all its latent power, at the same time in the exposure of archival knowledge and its trajectory, exemplify the Lyotardian Theory of Knowledge, as can be learned below.

In Brazil, archival knowledge gained autonomy from the 1970s, when the first bachelor's degrees were created. In parallel, in the field of History, the Archival discipline was taught by Jaime Antunes, general director of the National Archives for 23 years (1992-2016) in the History course at the State University of Rio de Janeiro. In the research sub-line, within Historiography and Documentation, Ana Maria de Almeida Camargo (1945-2023) and Heloísa Liberalli Bellotto (1935-2023) worked in Archivistics, so that they are in the History Department of the University of São Paulo: Introduction to Archivology. This could have been expanded to other universities and History courses. It turns out that the Archival and Archival disciplines have not yet been recognized as an essential part of the training of historians or other classes of researchers in the country, which seems to be a mistake in a period of information war with deep fake and new modes of recording, with not only the narrative being the object to be analyzed, but also the layers of materiality in the evidence of cybercrimes with political objectives – see the incrimination of bad faith (crime against justice) or destabilization of governments. Thus, the

historian or researcher must take into account what Lyotard (2009, p. 9) records: "the basis (Grundpfeiler) of production and wealth (...) becomes intelligence", so that [...] the knowledge, became a force of immediate production", writes Marx". Now, since archives as by-products are not immediately appropriable, Cardin (2015) points out that archivists (holders of the know-how), it is necessary to develop skills for their respective mediation.

The author emphasizes that mediation requires an attitude favorable to the circulation of records and their parts (data and information), for appropriation. This includes not only access to the document, but also accessibility to information mediating spaces and values linked to contemporary issues such as respect for privacy (Cardin, 2015).

For Deschamps (2019), digital mediation is related to acting in an empirical way with a theoretical basis between the public and digital information, so that the archivist is a mediator. Mediation defines the acts that can be a document or pre-existing information for the access/accessibility of users and audiences, including adapting the service to the demand, meeting an informational need. From Deschamps (2019) it is possible to affirm that digital mediation requires technological devices to mediate the relationship between users and informational uses, including navigability, integration, collective informational needs, users' personal objectives, and the ways in which information can be appropriated.

Currently, the functioning of the archive as a custodian entity, discussed in Aldabalde and Cid (2020), is constituted by accessibility, and this depends on mediation, which, to a large extent, is linked to different technologies (digital, construction, materials, among others). The so-called 'archival technologies' emerge within the scope of the archive as an entity. Therefore, the object of this study is the sub-area of archival knowledge called 'archival technology' and the work of Lodolini (2015), published based on several authors around the world, is selected as the main reference.

It is worth noting that public archives are today the main custodian institutions for archival documents. However, they are not the only institutions responsible for archives, and thus, there are other areas of legal protection, such as archives of museums, large libraries and other entities. Thus, the topic of 'archival technology' is not of exclusive interest to archives and encompasses institutions of protection, access/accessibility and enjoyment of rights associated with archival documents in museum institutions, libraries, memory centers, house-museum galleries and others.

In this scope, the archivist is the professional legally qualified to manage archives and their documents, thus, it is assumed that they should be the main agent in rescuing the so-called 'archival technology' (Lodolini, 2015), as a field of study and action in reality with the contemporary challenges typical of a capital that seeks to replace human mediation through the 'industrial revolution 5.0' criticized by Santana and Jankowitsch (2023).

By assuming that the current challenges are associated with a hypercapitalism that uses distributed digital technologies and others to control the political regime that abandoned republicanism by adopting a global oligarchy, the thought of Lyotard (2009) seems relevant to look at the impact of information technologies on archival technology, on Archival Science and even on Information Science. This is because all this knowledge becomes part of the production chain of a reordered global society, which revolves around information without commitment to the truth produced by knowledge intended for commercialization, and not to achieve the truth or scientific truth.

Based on Lyotard (1991), an Inhuman State emerges and Silva and Ribeiro (2024) claim that there is a Digital State and that Information Science can reveal mediation processes. It turns out that, nowadays, there is still no Brazilian archival system integrated into a reliable Brazilian digital archival repository, with all the requirements recommended by the Brazilian National Council on Archives. The idea of a digital archival repository is derived from the concept of permanent archive. If in archives, according to Bellotto (2007), there are a lot of possibilities for cultural activities, then in reality, nowadays, a digital archival repository corresponds to the technical reserve of digital electronic documents. Thus, there is still a space and time for human mediation of archival culture.

Based on Lyotard (2009), it can be understood that the very operation of archiving knowledge in repositories linked to databases for large companies committed almost exclusively to their profits already puts itself in the wake of the occurrence of social judgments, so that the data-knowledge-information trinomial is considered valuable for pecuniary values and usefulness to the market. One of the most significant achievements of those who study archives and archival science has been the systematization and implementation of methods that meet international standards and recordkeeping.

Now, in order for Archivology, as a subarea of Information Science in Brazil, to change levels as Lyotard (2009) suggests, it must first reach the level of positive science and this can be done by valuing its techniques and technologies. In the Brazilian case, the State finds itself lacking in labor, infrastructure, material, equipment and archival technologies, so that there is an opportunity for great growth in the area – see that the standards of compliance and fiscal responsibility tend to increase with the political-directive possibilities that are currently on the horizon. There has also been exponential growth in the production of electronic documents with insufficient archival control technologies to meet the listed archival qualities. So the administrations create a major problem that can only be solved by experts in the field, especially when it comes to electronic documents of permanent value.

Without physical, environmental, legal, economic and political protections, records (digital or not) are in danger of destruction, on a large scale, putting all records of what was carried out and documented at continuous risk. As a result, the loss of documents implies harm to the rights and decisions associated

with them, which means fraud both for individual subjects and for communities. It is argued here that archival equipment, materials and technologies are fundamental for archives and are preserved with accessibility for multiple uses. This is evident in the practice of archivists who demand technological products developed with archival properties, available on the websites archivalmethods.com (2024), achival.com (2024) and preservationequipaments.com (2024).

Technically, as a response to the danger of the annihilation of digital archival documents, Lodolini (2015) defends the preservation of softwares and hardware, since such documents are partly physical, as they are fixed in circuits, memory and other physical entities, without direct access, depending on coding and decoding of the interaction between user and machines. That said, the preservation of the content of everything that was recorded depends on the preservation of its material base, that is, the support on which the information was recorded. A relevant debate to be held in this context is the universal verification that archives today are under the phydigital paradigm and that's why digital objects and hardware are relevant. Landis (2014) points out that digital preservation is not just software, but hardware and highlights: media readers (drives, connector), floppy, discs, zip, me, CD, DVD, BluRay, Laserdisc, and finally, write-blockers / forensic bridges like Tableau and Weibe Tech. For professional use these media and hardware must meet standards and possess archival properties..

In the case of devices such as microcomputers, it is necessary to preserve elements that could compromise the functioning of machines and computational logic systems. Take the case of floppy disks, for example, whose content is difficult to access, as computers with an interface for use are no longer produced. Added to this, in addition to preservation, these entities are also responsible for raising awareness and mediating according to the public's interest in different emphases (Carvalho; Marins; Lima, 2021).

In this context, digital documentary items (or not) with cultural, historical values and social interest, should, in theory, be under the protection of an institution to allow the use, enjoyment and enjoyment of documents as cultural assets in mediation spaces, and can be used in various activities with researchers, users and/or the public, including for the production of knowledge.

Lyotard (2009) points out that all knowledge today tends to be valued as an informational commodity, serving power and competition. From this point of view, files can be measured for their economic and pecuniary value, which, through direct observation, occurred at the then Fernando Henrique Cardoso Institute in 2007, when the former president asked Ana Maria de Almeida Camargo (1945-2023) about the priced value of preserved documents, for a practical reason: for risk management reasons, insurance needs to cover the pecuniary value of the loss resulting from losses in the event of fire or other sinister. This was, in fact, the project approved for the Master's degree in Social History guided

by the exponent of the area for the first author, which in turn is still unfinished, due to the need for an interdisciplinary research team between Archival Science and Accounting Sciences.

Considering the laws in force, mostly in Brazilian territory, archives, documentation centers and museums are state bodies that depend on public resources, being associated with the social rights and cultural rights of subjects, communities and groups. In this way, cultural mediation, understood as a field of action for such rights to be put into practice with items from the collection and under the provision of mediating practices by the institution, by constitutional imperative.

Based on Aldabalde and Rodrigues (2016), cultural mediation can be understood as a process whose objects are representations of archival documents such as digital representations in which the aim is to contribute to the democratization of cultures (including archival culture) thus expanding the circulation, appropriation, reception and production of cultural products and goods.

Marie-Christine Bordeaux (2008) apud Aldabalde (2015) presents the field of cultural mediation with institutionalization starting in the 1970s, including populations that had impediments or exclusion in cultural life. The author understands that cultural mediation is linked to social justice in the field of distribution of cultural goods. For Lafortune (2008) apud Aldabalde (2015), cultural mediation is an intervention that can come from the institutional field to meet its audience or the communities themselves, acting simultaneously in the cultural and political field.

As mediation is a common field for these spaces with multiple archives, the premise is that today heritage protection institutions find themselves in a hybrid scenario, meaning that institutional mediators will need to act to request structures and/or infrastructures for the protection, preservation, safekeeping, technical treatment and accessibility of documents of scientific and cultural value in accordance with Brazilian Law 8159/91.

Under the notion of mediation, protecting or guarding and providing access does not only mean a legal obligation to manage and preserve, but also to mediate and reach users and audiences wherever they are through various means, including digital means. Thus, documents produced and disseminated in digital media also as data files, that is, "[...]In data processing, the set of data related and treated as a totality" (Camargo and Bellotto, 2012, p.21-22). At the same time, such documents are fixed in technologically defined artifacts and located by practices in their material and organizational culture. In this context, mediation as a category meets Hegelian logic, being a form of relationship between entities (Martins, 2018), and in the case of the simple mediation model, it can be used to explain how the mediator interferes in aspects that concern the public and/or users and also in the mediated objects (data, information, knowledge, cultural goods, heritage and cultures).

In this case, on the one hand, the owner, custodian, exhibitor or holder of information sources, objects or collections, and on the other, those who need an intermediary to be able to enjoy the goods. In fact, it is through cultural mediation practices that the following cultural rights are realized: identity, mother tongue, participation in cultural life, free cultural manifestation/expression, access to cultural goods, protection of cultural heritage, free creation, enjoyment of cultural goods, cultural production (producing and appropriating) and authorship. It is notable that there is still no study in the national literature on cultural mediators and cultural mediation practices as determinants in the exercise of cultural rights associated with archives, libraries and museums.

Taking these notes into consideration, it can be stated that the space or institution is the holding part required by the user and/or public as an asset to which there are associated cultural rights, which are part of human rights and can be reported when there is intent, negligence or crime in relation to them.

For Santos and Murguia (2006), information mediation encompasses spaces such as museums, archives and libraries, recognizing itself in the act of mediation, being marked by its characteristics that encompass interaction, collaboration and appropriation. Furthermore, mediation is active in relation to the mediator's interference in reality.

It is noted that there is a variety of mediations in relation to the variety of objects to which they refer and the environment, see digital cultural mediation in Aldabalde, Rodrigues and Magaldi (2023). The digital mediation of heritage is also noted in Dieye (2013). This can occur through intelligent systems, repositories and digital platforms implemented through technological resources.

Such systems are aligned with the positive knowledge produced today due to "the search for new theoretical frameworks ("increased power", "effectiveness", "optimization of system performances") that legitimize scientific-technological production" (Lyotard, 2009, p.8). Although it is assumed that the so-called Brazilian 'Archivology' is linked to positivism and remains so, it still does not have technological productions. To do so, it would be necessary to map the products that have already been produced and their potential uses.

In this sense, table 1 seeks to list the types of mediation by object with levels of informational accessibility and the corresponding archival technologies:

Table 1 – Mediation by inhuman objects, accessibility levels and archival technologies

Mediation by objects	Estimated accessibility level for large public	Archival technologies
Data and metadata mediation	Restricted	Markup languages como XMLTerm, RDF Inference Language, TEI (text-encoding initiative), EAD (encoded archival description), ECD (encoded context description), MARCXML, MEI (music-

		encoding initiative), MODS (metadata object description schema), Dublin Core XML, Records in Contexts-Ontology (RiC-O); LIDO, DDILimDAS, CARARE Metadata Schema, Document Type Definition, OAI-PMH, OAI-ORE, RSS, Resource Description Framework, METS, SQL
Information mediation	Open interactive	Digital Asset Management Database, HootSuite, Post Planner, Bamboo Dirt, Sepiades, ccHost, Stacklife, CollectionSpace, Collective Access, Collex, Concerto, DSpace, Islandora e Kete; Wordpress, Flickr, Tainacan (plugin Wordpress), Archon, Archivits' Toolkit, ArchivesSpace, AtoM, Adlib Archive, Cuadra STAR, Eloquent Archives, MINISIS M2A, PastePerfect Contentdm, Greenstone, Tripod2, Keystone (Index Data), EPrints
Digital heritage mediation	Partially Restricted	RODA, Dark Archive in the Sunshine State, Archivematica, Home and Office Painless Persistent Long-term Archiving, Fedora, Hydra, AtoM, ArchivesSpace, BitCurator, Archive-It, DuraCloud, ArchivesSpace, Islandora, Digital Preservation Software Platform (DPSP); PlanTM: The Online Disaster Planning Tool Forensic Toolkit (FTK) Imager, FITS, JHOVE, Tableau
Cultural and knowledge mediation	Participatory, - Interactive and/or open	Serendip-o-matic, Today's Document, Archon, Omeka, Neatline, PRISM, Greenstone, Indigenous Knowledge Management Software, Kete, Open Exhibits, Vannotea, DAITSS, DPSP, HOPPLA, ELAN; Virtual Exhibit (from PerfectPast), Collective Acess

Source: Aldabalde, Cypriano and Bartolozzi Ferreira (2024) and Landis (2014)

Taking into account the prescriptive pragmatics explained by Lyotard (2009) and its applicability to Archival Science as a positive science, it can be highlighted that among the empirical challenges, there is a lack of quality and completeness in reliable digital repository systems integrated with technological resources conducive to cultural and knowledge mediation. Furthermore, repositories that are digital artefactual mediation devices for heritage may succumb due to a lack of programmers, see Archivematica and the Tainacan plug-in, for example.

When it comes to documents related to industrial or research secrets or sensitive data, it seems to be the case to work not only with accessible online repositories, but also with so-called ´dark archives´

and ´dark repositories'. These kinds of repositories are designed to protect confidential data that are deliberately closed to access on the web and, therefore, restricted to external or even internal access, when unauthorized.

It is worth highlighting that, to date, there are no Brazilian indicators collected with international standards on how much the services of documentation centers, archives, museums, galleries and their archives must achieve in terms of quality in relation to the field of artefactual mediation in meeting the informational rights of users and the cultural rights of audiences.

If for Schisler et. al. (2017) artifacts with predominant technological aspects and digital collections are continually at extremely high risk, therefore, museum and gallery archives should not adopt any technologies indiscriminately, but firstly the *archival technologies* with planning and resources already provided for in international standards like ISO 16363, for example.

In view of this, one can ask: which *archival building* in national territory was created with high technology? Couldn't find any. Unfortunately, Archival Technology as an area of knowledge has never been addressed in the country in this scope. Thus, national literature does not have a work that addresses the topic and no articles, or any other type of publication when it is considered worthy of a book and dossiers from specialized magazines dedicated to the topic.

The recognition of the sub-area called 'archival technology' initially occurred in relation to the following: the construction of buildings and the construction of environments to protect archival documents, and serve as a means for providing archive services, including calculations, among other things (Lodolini, 2015).

Therefore, it is worth remembering that, historically, the concept of archival technology is associated with the construction of structures and international literature, possibly from the impacts of Bauhausian thought and started to incorporate the 'how to' products of information and communication technologies for archives, such as, for instance, software and computer programs in fields such as 'information architecture', see Aldabalde (2006), who presented the archivist as an information architect at the VI Mercosul Congress of Archiveology, and Shirley Carvalhêdo Franco carried out research at the University of Maryland on a similar topic, with Luz (2020) being the reference author in the country.

Luz (2020) points to Casanova (1928) as a fundamental reference who studied archival technology topics. The name of Eugenio Casanova (1867 – 1951) is also recorded by Lodolini (2015) who recognizes the contribution of Casanova (1867 – 1951) to the theme and beyond such as: ´how to do´ to plan the study of the environment so that the collection archive can function and be created, the foundations of the archive, the construction, building, architecture, engineering and design of the archive, the materials used, the breakdown of the building, the shape and internal layout of the site, area, artificial light,

environmental control, refrigeration, installation, packaging units, facility furniture, shelves, cabinets, boxes, equipment, materials, rooms, painting, office furniture, public rooms for users and the public, support library, exhibition space, concierge, protocol, reprography service, photographic cabinet, restoration laboratory, storage and special maintenance of facilities.

Protecting the contexts, considering the year 1928, construction technologies, which in this period, with the impact of the Bauhausian school, began to take into account functionality and accessibility as pillars and this is directly related to technologies for mediation and access to information, as construction and structuring technologies from this period serve as a foundation for the development of archival infoproducts to this day.

Furthermore, Casanova (1928) included civil and electrical engineering, interior design and architecture in the interdisciplinary field of archival technologies, which have progressed since then. Although there are recommendations for the construction of Archives (CONARQ, 2020), there is no news of a building for a museum archive or a state built with high technology in Brazil. It should be noted that, although the current building of the Public Archive of the State of São Paulo is within the recommendations of CONARQ (2020), there is no use of archival technologies or high archival technologies. There is not even a building in the country with high archival technology dedicated to an institution for the protection of documents that meets the standards practiced in colonizing countries. This, in fact, can be attributed to the lack of robust innovative research and, consequently, the development and innovation of archival technologies in Brazil.

This is not a negligible fact, as the migration of artifacts, objects, works and their producers (artists, scientists and intellectuals) can occur due to neglect of infrastructure for mediation and preservation spaces. It can be said that the São Paulo State Public Archive building, technically directed by Ieda Pimenta Bernardes, is close to a Paradigmatic Archive (Aldabalde and Cid, 2020), that is, it is a 'high quality archive'. It is worth noting that she dedicates her biography to the Archive and this is relevant, as decision-making based on understandings about document types, the way of managing and many other advances depends on the director, and her superiors with execution power.

Lodolini (2015) also recalls that archival technology also includes not only construction techniques and methods for different types of archival structures, but also the ability to reproduce documents, which includes the possibilities of services in the field of reprography, including microfilming and non-invasive digitization. This is essential for the dissemination of works and reaching audiences so that mediation can be carried out.

Added to this is the direct application of chemistry, physics, biology and other sciences used for preservation, conservation and restoration. At this point, science meets art, as in addition to mastering

these hard sciences, technique is also necessary. Casanova (1928) includes subchapters to address this part of Archival Technology. In fact, there is still little research on the application of these sciences in museum and gallery archives.

Despite the use of imported equipment such as scanners or stereoradiography devices, there is still, for instance, no scientific proof as to which scanning technique is least invasive to high-risk archival collections and documents such as those produced in the 15th, 16th and 17th centuries under the custody of the National Archives. Thus, users of lighting and illuminated manuscripts no longer benefit, as the material could be available for online access. There are also no research and development sectors for technological products of this type in Brazil. The use of imported equipment and the application of the technique does not replace research into the effectiveness of its adoption, these are not even in the same field of activity and can or should, in theory, complement each other.

If Casanova (1928) already pointed out that the field of archival technologies must dialogue with engineering, then it is worth highlighting that scientific truths in this scope are necessarily in agreement with each other and very objective in reality, as solutions from Chemistry, Physics, Biology, Climate Science (microclimate), Materials Science, Engineering (Civil, Computing, Systems, Electrical, Workplace Safety, Information, Assessment and Expertise) and other areas must compete for the same truth in archival technology development projects.

In one aspect of Archival Technology, it is found in management, administration, control, development of devices for storage, packaging and logistics, taking into account the high durability typical of very long-term preservation activities of the collection, including in the digital environment. Whether in a new exhibition or in preservation, logistics are a constant challenge and in the Brazilian reality, cultural spaces are precarious. It is worth highlighting, given the continental proportion of Brazil, that there are very few institutions with available resources, among which the Moreira Salles Institute and the São Paulo Museum of Art can be highlighted.

Given the possible daily experiences of document producers who use IT and/or digital archival technologies, new types, new species, new forms, new genres and new formats in digital and electronic media may emerge. In this sense, the tools for creating digital ontologies seem relevant to identify new entities that represent new objects and contribute to know-how in the area, especially when new objects in the digital environment emerge quickly, and on large scales, making them susceptible to attacks on their integrity and other qualities listed in the introductory section.

Lodolini (2015) argues that the purpose of archival science is not preservation for preservation's sake, but the valorization and appreciation of what is preserved. Cardin (2012) apud Aldabalde (2015) points out that valorization is related to mediation, that is, it presupposes engagement and active

participation of mediators with audiences and users. This is because, for the author, valorization is understood in the context of the work edited by Hiraux and Mirguet (2012), that is, as a process of change or gaining interest in the archives so that they can be transmitted to the next generations.

Valorization occurs from the intervention of the archivist in the space of appropriation, circulation and in the production of documents in order to integrate them with the practices of society through reuse, transparency and accessibility. In this way, the archivist is not a mere intermediary but a cultural mediator who will create space for community or social alliance. Thus, mediation and valorization are interconnected in the work of Cardin (2012).

For Lodolini (2015), the organization of a fund is not carried out with IT and that IT tools are useful for working with inventories, being able to form databases and/or sophisticated archival research instruments with the cutting-edge technology available on the market. The author emphasizes that the so-called ´digital revolution´ brings with it the problem in the field of archival preservation in the face of the challenges posed by the obsolescence of systems or softwares and hardwares.

Furthermore, the author points out that archival science is a science applied, among other objects, to archival documents in digital format, exemplifying the application of archival principles to these natural-digital documents (Lodolini, 2015). To illustrate this argument about the application nature of this science, the author cites the project International Research on Permanent Authentic Records in Electronic Systems (InterPARES) highlighting problems still unresolved and with little or no research being developed in the field of production and use of archival documents. It is possible to list the following objects of archival technology in Lodolini (2015) and archival technologies based on Fontes and Aldabalde (2025), which can be related to these: archival codes, digital archival services, eletronic informational archival processes, digital archival tools, digital archival repositories, archival materials, archival equipments, archival building, archival ontologies, archival properties, archival qualities, archival data, archival evidences, archival systems, softwares and finally, archival artificial intelligences, which may emerge in the near future.

In relation to what the innovation stated here can provide, it is worth highlighting that they can vary according to traditions, so that in Brazil the archival discipline of Document Management does not constitute a practice of *re*cord managers, but of archivists. From UNESCO (2002), it can be stated that there are European countries in which training is focused on permanent archives, see the case of National Heritage Institute in France (Paris) with the areas of concentration: Heritage Legislation (and archiving), Public Management, Heritage Economics, Media Studies, Document Preservation, and Cultural Mediation. In the case of Germany, there are subjects such as Arrangement and Description of

Electronic Documents, Administrative History and Archival Technology, with the diploma referring to Applied Archival Science (Applied Archival Science).

When observing this curricular panorama, in North America there are changes in designations so that it is possible to find many curricular variations. In Canada, there are disciplines such as Administration of Archival Institutions, Archival Reference and Mediation Services and Document Management (Records Management). In Australia, since the late 1990s, disciplines have been integrated with information and data systems, moving towards Records Continuum, Electronic Recordkeeping, Archiving in the context of e-business and e-governance. These are for the reality of Brazil, recent or even new archival disciplines. In the Nordic countries, there are courses in Archival Science and Information Sciences with emphasis on the discipline *Archival Mediation* (International Council on Archives, 2002).

Additionally, the following sets of digital archival technology objects to be mediated: computational archival coding standards such as Enconding Archival Description, Enconding Context Description XML tag languages, among others; digital archival management systems (SIGADs), from which part of the archival document and information management services are provided by cloud computing, among other possibilities; archival repositories (RDC-Arqs) in which permanent archives of digital or digitized documents must be permanently preserved; intelligent systems or artificial intelligences (AIs); disruptive distributed technology platforms such as blockchain; digital archival tools such as BitCurator for digital forensics; archival materials; archival equipment; digital archival representations (metadata scheme, OAIS, etc.); archival methods and research techniques covered in *Archival research methods*; archival ontologies; archival properties and attributes); these are among other objects for which a search can be made just to map them.

In this context, a reliable digital archival repository serves as a base for truth and also as a space for digital mediation of information. From this, it can be understood that, when in public archives or other institutions with reliable digital archival repository technology, they are also associated with entities that ontologically belong to the field of plural social, political, administrative and cultural reality, so that the problems and solutions to the obstacles of the repositories are not limited to technological nature alone. An example of this is that digital heritage mediation software such as Archivematica, implemented to meet the national requirements, may collapse due to a lack of programmers or its discontinuity. And if a reliable digital archival repository is nothing more than the digital construction of a permanent archive as conceived by Bellotto (2007), it soon becomes dependent on the maintainers and developers of this technology.

Lyotard (2009) points out that a science falls to the lowest level when it is considered a mere instrument of power. According to the author, such knowledge cannot even be called 'science', since knowledge is compromised from merely instrumental knowledge. That said, it seems necessary to accept Lyotard's (2009) challenge in order to produce an archival science as an expression of life in the universal process, in the Hegelian conception, intelligent life or the spirit. This requires paying attention to looking at digital repositories, observing the observer or gaze, so as not to be techno-bureaucratic reductive and in order to enable the understanding that digital repositories are a space of mediation (*mediation spaces*) with cultural values, codes, ideologies and other components of culture.

That said, repositories can be used for cultural enjoyment and education. This can allow a critical analysis of the functioning of these technologies and provide greater integration between a digital archival management system, a curation and dissemination system, and a reliable digital archival repository, safeguarding the notions of each population, especially when it comes to ethnic cultural differences in recordkeeping, as discussed by White (2017).

In the context of diversity, the computer program called '*Indigenous Knowledge Management Software´* is an example of a digital curation system that marks a try to design beyond technique, considering the meanings and concepts of indigenous peoples about recording, archives or archival documentary heritage within the scope of their cultures. This is due to the Democratic State and referenced by human rights, including cultural rights, even though it is a Digital State enunciated by Silva and Ribeiro (2024). In fact, based on Lyotard (1991), the buried Digital State can converge with the Police State in which information technologies are used as means of coercive control by the so-called 'surveillance capitalism', studied by Zuboff (2019). Given this, the following question seems appropriate: To what extent can it be said that free will exists when human choices and desires are shaped by machines and intelligent systems manufactured to control the decisions of human intelligence in a fully automatic way, compromising the number of possibilities for individual choice with prior control over what is possible to do (or not) without human consent?

In this uncertain risky context, human archival mediation is crucial for understanding and interpreting recorded data (Sundqvist, 2017), including in repositories. In these systems, archival mediation assumes a preponderant role in technological mediation. In the field of technological digital mediation, there is a demand for the continuous construction of these mediation spaces to be, according to Deschamps (2019), readjusted to the demands of audiences, users and users.

Sundqvist (2017) highlights that it is worth considering, in addition to legalistic and instrumental representations, also symbolic representations, recognizing documents as symbols with historical or

religious significance for communities or individuals that do not necessarily coincide with the original reason for creating the document.

Finally, it is worth highlighting that any object of study of archival technology must not fail to instantiate in a broad sense for entities and relationships the following universal properties in Aldabalde and Cid (2020): a) controlled accessibility by different levels of protection and security, while paying attention to the different objectives of its users regarding enjoyment; this overlapping in usability, advertising and functionality; b) durability that depends on access and use, as the more easily accessible the greater the risks; this challenge to produce hardware, very long-term preservation software and means to allow the mediation of what is found in both; c) practicality, for which it is necessary to carry out all its operational and management archival practices with excellence, fulfilling functional requirements defined by prepared archivists, strategies, archival governance and archival information policies.

In summary, there is the field of Information Technology (IT) with historical correspondence with Information Science, there is also Archival Technology linked with Archival Science. This brings conflicts regarding the sale of knowledge as a mere product in the way conceived by Lyotard (2009), as the term 'information' is easier to be sold to the consumer, even if in a symbolic way, than the term 'archival'. Following the logic of Lyotard (2009), adopting 'information' is a process linked to capital gains in image, marketing or commodification rather than the concern of building a positive science so that it can change to the level proposed by the author. As a result, IT professionals are not even able to identify problems of an archival nature, even in the digital environment and its objects, which seems to lead to a dependence on technologies whose technical and ethical problems tend, at least in the scope presented here, to be misunderstood and ignored.

CONCLUSION

In a regime of accumulation of goods or capitalism in Lyotard (2009), the so-called 'archival technologies' exemplify Lyotard's thesis that there is a direct relationship between the performance of this regime and these technologies. For instance, banks, States and other long-term institutions seek in Archival Science, at least in developed countries, solutions to maintain databases, documents, systems, metadata, information, blockchain platforms and other digital objects for the long term, printed and on various media.

Added to this, the Lyotardian Theory of Knowledge can be confirmed in the disciplinary knowledge of Archival Technology (Lodolini, 2015) in development in the direction of Computational Archival Science in an interdisciplinarity movement alongside the fields of Information Technology

Management and Information Science, opening up to create a co-dependency between the capital system and the technical-scientific system. This did not occur in Brazilian research and development centers related to archival know-how, as here this has not yet been consolidated either as a positive science described in Lyotard (2009) or as a techno-science, still lacking a corpus of knowledge to do so.

Considering the Lyotardian concept of performativity and based on the qualitative results, it can be understood that the category called ´Archival Technology´ (Lodolini, 2015), refers to to increase efficiency, effectiveness and results. For accessibility, automation of mediation has been adopted as a solution, which denotes the problem of the dehumanizing and the immediate or technologically mediated access that alters the human perception of time as indicated in Lyotard (1991). One can highlight the increase in the degree of properties (Aldabalde; Cid, 2020) of durability, accessibility and practicability (archival praxis) of an archival enterprise, a collection or structure that maintains it.

Another aspect that should be highlighted from Lyotard (1991) is that such technologies can be used to prevent access and control knowledge, see the results above on the construction of archival building using calculations to produce structures that facilitate this construction to make easy or hard the access and extend the durability *ad aeternum*, so that such technologies can come to protect a governments or others that the interests that compatible with the humanism or not.

In order to group these technologies to produce a corpus of knowledge about the technological mediation of archives, the emergence of technologies with archival qualities is highlighted in the following three groups. Firstly, the durability archival technologies used in archival buildings, implementation of restoration and/or conservation laboratories, construction, interface design and engineering of systems for the very long-term preservation of digital archival heritage.

Then, it was possible to verify that there is archival technology as an innovation of procedures and processes, method and technical practices applied to archival systems management methods, electronic file management, systemic management of equipment (furniture, among many others), management of repository infrastructure; quality of repositories, their functioning and their surroundings; materials with seals or archival properties produced with specialized technology and developed for any final archive activities or archival functions. Finally, and with emphasis, we sought to address the archival mediation and access technologies that were produced with a view to accessibility in the meaning given by Aldabalde and Cid (2020). The latter were focused on in this work and this is unprecedented in international literature. Among these technologies are repositories, archival languages, archival ontologies, archival systems, archival platforms and others listed in Table I of the qualitative results section.

It can also be added that the reliable digital repositories can be a kind of digital archival buildings or constructions that nowadays fail to represent permanent archives in digital media, because nowadays

only corresponding to the field of technical reserve. From Lyotard's proposal, for a change in level to the techno-bureaucratic condition for an elevated science, Archival Science must seek to understand the mediation as a category that provokes new research with human centered approach and development in better conditions for human life.

In summary, the effort used here is aimed at stimulating the production of new knowledge on the topic of 'archival technology', considering digital technology applied for mediations. In the sense of technological mediation of archives, it was also pointed out that there are different types of mediation in operation according to their different inhuman objects: data mediation, information mediation, digital heritage mediation, cultural mediation and knowledge mediation.

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