



ARTIFICIAL INTELLIGENCE AND THE RIGHT TO MEMORY

Inteligência Artificial e o direito à memória

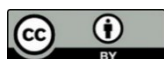
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ABSTRACT

Background

As an exploratory research, our paper aims to describe how social media websites are reshaping our processes of memory-making. Artificial intelligence, algorithms and deep learning are changing the way we dig into our past radically and forever, determining what is memorable to us.

We relate the right to identity with individual memory and characterize different ways by which technology alters traditional memory process. Finally, we evaluate the incidence of new memory processes in the identity of each person.

Method

This is basic research. We use qualitative methods to understand people's beliefs, experiences, attitudes, behavior, and interactions with social media and AI. We make use of sources of international and domestic Law.

Results

The results have implications for new wellness interventions that take into account the relationship between the internet and AI in human memory. Especially, knowing the incidence of AI in the recreation of the human right to memory and consequently, the right to identity, will be useful to delimit principles of action that regulate certain algorithmic functions of social networks.

Conclusions

We as humans increasingly tend to rely on the Internet as an external hard drive for our memories. This fundamental change tends to deprive us of the natural process of remembering things. Over time, individual changes in the remembering process will impact individual and social memory processes. Consequently, as a final conclusion, we emphasize that the personal and social categories of the right to identity of the human person and of peoples will also be altered.

Keywords: human rights / right to memory / right to identity / neuro-rights / artificial intelligence.

RESUMO

Objetivo

Como uma pesquisa exploratória, nosso artigo visa descrever como os sites de mídia social estão remodelando nossos processos de construção de memória. A inteligência artificial, os algoritmos e deep learning estão mudando radicalmente e para sempre a maneira como investigamos nosso passado, determinando o que é memorável para nós.

Relacionamos o direito à identidade com a memória individual e caracterizamos diferentes formas pelas quais a tecnologia altera o processo tradicional de memória. Por fim, avaliamos a incidência de novos processos de memória na identidade de cada pessoa.

Método

Nosso trabalho é pesquisa básica. Usamos métodos qualitativos para entender as crenças, experiências, atitudes, comportamentos e interações das pessoas com mídias sociais e IA. Utilizamos fontes do Direito internacional e interno.

Resultados

Os resultados têm implicações para novas intervenções de bem-estar que levam em conta a relação entre a internet e a IA na memória humana. Especialmente, conhecer a incidência da IA na recriação do direito humano à memória e, conseqüentemente, o direito à identidade, será útil para delimitar princípios de ação que regulam certas funções algorítmicas das redes sociais.

Considerações finais

Nós, como humanos, tendemos cada vez mais a confiar na Internet como um disco rígido externo para nossas memórias. Essa mudança fundamental tende a nos privar do processo natural de lembrar das coisas. Ao longo do tempo, as mudanças individuais no processo de lembrar impactarão os processos de memória individual e social. Conseqüentemente, como conclusão final, destacamos que as categorias pessoal e social do direito à identidade da pessoa humana e dos povos também serão alteradas.

Palavras-chave: direitos humanos / direito à memória / direito à identidade / neuro-direitos / inteligência artificial.

I. Introduction: processes of memory-making

Memory is not only an instrument to explore the past, but a content that can be accessed by our own conscious efforts: “*He who seeks to approach his own buried past must conduct himself like a man digging*” (Benjamin, ca. 1932). Authentic memory implies an active journey into the past. It is not a passive store of old events which can be accessed the way and the time we choose. On the contrary, it must be actively mined from the ever-growing debris of daily life. From an individual approach, digging in our past may be useful for knowing who we are, which in time could help to predict things to come. There is also a social perspective. From it, memory is recalled as an instrument for enacting memory laws, which are legal provisions governing the interpretation of a historical event that serve as a safeguard against the recurrence of human rights violations (Salvioli, 2019). In this article we will deal with the individual and interpersonal approach.

Three main processes characterize how human memory works. They are called encoding, storage, and retrieval or recall (V.A., 2022). Encoding refers to the process through which information is learned, the ways by which information is taken in, understood, and altered to better support storage (Brown, Roediger, & McDaniel, 2014). The second process -storage- refers to how, where, how much and how long encoded information is retained within the human memory system. And retrieval is the process through which individuals access stored information, which are retrieved differently according to whether it is stored in short or long term memory (Roediger and McDermott, 1995).

The modal memory model highlights the existence of short-term and long-term memory (STM and LTM hereafter). Encoded information is first stored in STM and then, if needed, it is stored in LTM (Roediger and McDermott, 1995). While STM is retrieved in the order in which it is stored (such as a telephone number), LTM is retrieved through association, like when someone remembers where the car is parked by returning to the entrance of a place visited previously (Roediger and McDermott, 1995).

Throughout history the human being was the only one responsible for digging into the individual and social past. Nowadays we start putting the production of memories in the hands of automated systems. This way, artificial intelligence, algorithms and deep learning are changing the situation we dig into our past radically and forever.

II. Real and artificial memory

As we mentioned, human memory can be broadly categorized into two kinds: STM, also called working memory, and LTM. STM is responsible for storing and managing the information required to carry out everyday cognitive tasks such as reasoning and language comprehension. It operates over short time scales and allows us to focus our attention, resist distractions and guide our decision-making (Parthasarathy et al., 2017). It deals with immediate phenomena and manipulates it for other cognitive functions. Tasks in which we use recently encountered data to accomplish some goal involve STM (like counting or putting together a puzzle). The prefrontal cortex is essential for maintaining this kind of working memory and suppressing distractions.

As regards LTM, there are two types: procedural or implicit and declarative or explicit. Procedural LTM is mostly unconscious, and involves information related to activities learned through practice and repetition over time, such as playing the piano or riding a bicycle; memories of body movement and how to use objects in the environment (Tulving, 1972). It involves knowing how to do things, though it does not involve conscious thought. Declarative LTMs are made up of information about facts, rules, events, definitions, and experiences that anyone can recall when necessary. They include all of the memories available in our consciousness. Declarative memory can be further divided into episodic memory -also called autobiographical-, which catalogs personal experiences and stores them in memories and it is useful to retrieve specific events; and semantic memory which generally stores knowledge and concepts about the world (Pondering Memory..., 2021). Artificial Intelligence and neurosciences may produce relevant effects in declarative LTMs and in particular affect episodic memories to the point of changing and modeling our identity in a different way than it would be if it had not existed.

Theoretically, the capacity of LTM could be unlimited, the main constraint on recall being accessibility rather than availability. These kinds of memories are often outside of the conscious mind and our awareness, but can be called into STM to be used when needed. Some memories are relatively easy to recall, while others are harder to access. Through the process of association and rehearsal, the content of STM can become LTM in a region of the brain called the hippocampus. Human intelligence is characterized by a remarkable ability to maintain and manipulate information within STM which performs the function of an active store (Goldman-Rakic, 1990). Classic cognitive theories suggest that this functionality depends on interactions between a central controller which performs the role of an executive and separate, domain-specific memory buffers (Baddeley, 2012). AI research draws inspiration from these models, by building architectures that explicitly maintain data over time.

The information-processing model of human memory characterizes memory as much like a computer. Information enters human STM (a temporary store) and then some of this information is transferred into LTM (a relatively permanent store), much like information being saved to the hard disk of any computer. Translating this to artificial intelligence and algorithmic models, recurrent neural networks and long-short term memories (LSTMs) are equivalent models which hold information online to solve a problem, and then usually let it go afterwards. In 2018, professor Andrea Banino and some of his colleagues published a paper explaining a model they built programmed to mimic the human hippocampus. (Banino et al., 2018). In common neural networks the amount of computation used is proportional to the size of the inputs. Basically, it is not related to the complexity of the problem. Professor Banino and his team created a programme called Ponder Net aimed to overcome the limitation posed by the capacity of data stored. The algorithm they created learns to adapt the amount of computation based on the complexity of the problem. On a complex synthetic problem, it dramatically improves performance over previous state of the art adaptive computation methods achieving a compromise between training prediction accuracy, computational cost and generalization (Banino et al., 2021).

Here it is when a question arises: ¿will memories created by AI emulate predictions and model future behaviors as human memory has been doing until now? . In the next paragraphs we review the relation between social media driven by AI and memories to find arguments which help us to answer the question.

III.Social Media and human memories

Memory and learning are intertwined. Consistent experience enables generalization. People take memories and use them to predict the future. In some ways, our brains aim to minimize uncertainty, incorporating previously known information and learnt experiences.

As an exploratory research, our paper aims to describe how social media platforms are reshaping our processes of memory-making, with algorithms increasingly determining what is memorable to us. Social media platforms are archives which have an active impact on human memory formation. They currently act as extensive memory devices which capture snapshots of everyday users' lives and recirculate them back to the user, freshly labeled as 'memories' (Jacobsen-Beer, 2021). This is called 'the automatic production of memory' a term coined by Jacobsen and Beer who trace a path showing how particular data is partitioned and subsequently promoted to the status of personal memories on social media sites such as Facebook. The relevant claim they made is that the way in which our social media content is partitioned and classified has an inherent effect on

the way we experience the world. In due time many of our future actions may be determined by our present memories. McAdams states that memories are complex, personal, and emotional. According to him, positive experiences can be remembered more negatively over time (such as after a romantic breakup) and on the contrary negative experiences can be remembered more positively (such as a new relationship that makes someone feel better about an old breakup). This is called contamination and redemption sequences which as well as attitudinal factors can influence how a person remembers things (McAdams et al., 2001). These changes of perception are not taken into account by the automatic production of memory.

Years ago, Facebook developed some classificatory systems behind its memories feature (Artie, 2017). In 2017 the company started a memory product called On This Day as a way to help people re-experience their posts without having to manually go through their timeline and revisit memories from a given day in their Facebook history. Different studies carried out by the facebook team with potential users served to establish boundary lines to these memory machines, among which they found negative memories and lack of control. Negative memories include posts that people would prefer not to see surfaced again as memories, although they recognized that even positive memories may become negative ones. The stated goal here is to filter negative memories out, *“so that people see more enjoyable content instead”* (Konrad, 2017). The research also showed that people wanted to have some control and options for how their Facebook memories appeal, letting them remove some memories selected by Facebook algorithms that they do not want to see or share. In a previous work Konrad also discovered that recent memories may sometimes have a positive influence on mood and well-being through various mechanisms (i.e. Isaacs, Konrad et al., 2013). Based on this, he created a new memories experience that packages the user's recent memories in a delightful way to enjoy and share, like a summer holiday. As a final step, considering that some Facebook activities such as reconnecting with lost friends or creating new friendships are meaningful to people, the team took into account not only the number of friendships made every year or likes received, but the people and memories behind those numbers. This way the team made up a taxonomy of memory themes which helped Facebook to bucket memories into distinct categories, and at the same time to inform its ranking algorithms that select which memories to resurface (Konrad, 2017).

Any memories feature of social media serves as a tool to maximize engagement within a particular platform. This circumstance causes a significant bias in the production of memories. Moreover, what is important here is that passive memories which are suggested by the algorithms lacked the authenticity that is implicit in the active excavation that Benjamin saw as extremely relevant. Indeed, Jacobsen and Beer write:



“when this digging and marking out are automated and targeted at users, the tensions of authenticity and value are likely to arise. Redefining what is a memory and where it comes from is always likely to be fraught with discomforts and disjunctures of different sorts [...] we have tried to bring to the surface how these insights give glimpses into the very redefinition of memory as a concept (Jacobsen-Beer, 2021: 88-89).”

It is this situation that authors Jacobsen and Beer call the promotion of the memorable (Jacobsen-Beer, 2021).

This path of continuous reinforcement of the users' happiness that accentuates only pleasant moments and eliminates or hides those *prima facie* considered negative memories is highly useful for the main purpose of social networks, which is to retain the user as long as possible within the platform. However, we have seen the changing nature of memories that are initially considered negative and also their usefulness for personal learning and growth. Without them, a relevant part of each person's history is unconsciously or rather deliberately left out, based on the decision of the programmers of social websites.

The partitioning of data is another factor that impacts the way we remember. Even small changes in the availability of certain social media content and the way the content is promoted, could have a significant impact on the way our memories are created. Apart from this, the way in which any data about people is ranked and promoted serves to solidify its status as what *shall be* a memory and what not. Apart from the damage made to each individual memory, there are also negative consequences to society and the right to memory. Older memories contain an element of surprise and nostalgia. Bad or negative memories also help us to learn and avoid repeating mistakes. We wonder about the place for such memories in the future if they are deleted from our social media, because algorithms decided it on the basis that they are inconvenient for our wellbeing. According to media research, people express interest in revisiting memories which help them enhance and prolong their enjoyment. Since the process of learning needs a time for reflection, both nostalgia and negative memories may not be given the chance to be reflected upon. They will be simply discarded from the social media account of our life. While older and *prima facie* negative memories appear as not useful to retain people more time surfing social media, we fear for the future retrieval of sorrowful memories which are meaningful emotions for our own growth. Since they do not extend the eternal happiness some social media sell, algorithms may be prone to ignore them.

The control of individual and social memory is another way to exert power over people. Jacques Derrida intended the archive to serve as the place of authority (Bertella and Dau, 2015). He wrote: *“there is no political power without control of the archive, if not of memory”* (Derrida, 1997). Social media sites would be taking the place of Derrida's archive in the context of social memory.

IV. Biological and artificial neural networks: solving the problem of catastrophic forgetting

A better understanding of biological brains could be critical in the development of intelligent machines. The brain does not learn by implementing a single, global optimization principle within a uniform and undifferentiated neural network (Marblestone et al., 2016). Rather, biological brains are modular, with distinct but interacting subsystems supporting key functions like memory, language, and cognitive control (Anderson et al., 2004; Shallice, 1988). This neuroscience insight has been imported into many areas of current AI advances inspired by the study of neural computation in humans and other animals. AI has been transformed in recent years by dramatic advances in neural networks, or deep learning methods (LeCun et al., 2015; Schmidhuber, 2014).

In the 1940s, investigations of neural computation began with the construction of artificial neural networks that could compute logical functions (McCulloch and Pitts, 1943). Soon after, other researchers proposed mechanisms by which networks of neurons might learn incrementally via supervisory feedback (Rosenblatt, 1958) or efficiently encode environmental statistics in an unsupervised fashion (Hebb, 1949). These mechanisms opened up the field of artificial neural network research, and they continue to provide the foundation for contemporary research on deep learning (Schmidhuber, 2014). When deep learning evolved into a main area within AI, new ideas appeared, such as the development of deep belief networks (Hinton et al., 2006) and the introduction of large datasets inspired by research on human language (Deng et al., 2009). Apart from this role, neuroscience was instrumental in erecting a second pillar of contemporary AI, stimulating the emergence of the field of reinforcement learning (Sutton and Barto, 1998).

The human brain assimilates dynamic, multidimensional information about the world on a daily basis in order to produce rich and context-dependent behaviors. Confronted with such complexity, neuroscientists traditionally designed controlled experiments to reduce the dimensionality of the problem to a few factors conceived by the experimenter (Fisher, 1935). Professor Hasson explains that this reductionist program relies on *“the assumption that the neural computations supporting many of our cognitive functions can be decontextualized and decomposed into a handful of latent features; that these features are human-interpretable and can be manipulated in isolation; and that the piecemeal recomposition of these features will yield a satisfying understanding of brain and behaviour”* (Hasson et al., 2019).

At the same time, artificial neural network (ANN) models are attaining human-level behavioral performance across many tasks. Among them we find face recognition (Taigman et al., 2014), language processing (Radford et al., 2019), complex gameplay (Jaderberg et al., 2019), and motor learning (Levine et al., 2018). They abandoned traditional experimental design and simple

interpretable models, putting instead a premium on behavior (task performance) and embracing complexity. These models learn directly from the structure of the real world by optimizing millions of parameters (big models) over millions of examples (big data; LeCun et al., 2013). Artificial neural networks are beginning to reveal the power of mindless overparameterized optimization guided by objective functions over a densely-sampled real-world parameter space (Hasson et al., 2019).

Deep neural networks are the main drivers behind recent AI advances, but progress is held back by forgetting previous memories. This circumstance has been called the problem of catastrophic forgetting. Intelligent agents must be able to learn and remember many different tasks over multiple timescales. Both biological and artificial agents have a capacity for continual learning, that is, an ability to master new tasks without forgetting how to perform prior tasks (Thrun and Mitchell, 1995). While animals relatively adapt at continual learning, neural networks suffer from the problem of catastrophic forgetting (French, 1999; McClelland et al., 1995). Humans are able to continuously accumulate information throughout their life, building on earlier lessons. An important mechanism in the brain believed to protect memories against forgetting is the replay of neuronal activity patterns representing those memories (UoM Amherst, 2020). Artificial intelligence experts at the University of Massachusetts Amherst and the Baylor College of Medicine report that they have successfully addressed the problem of catastrophic forgetting by drawing inspiration from that human brain memory mechanism known as replay. According to the experts, the replay in the human brain does not store data. On the contrary, *"the brain generates representations of memories at a high, more abstract level with no need to generate detailed memories"* (van de Ven et al., 2020).

Drawing inspiration from the mechanics of human memory, the experts from Massachusetts university charged their algorithm with a powerful capability called memory replay, in which no data is stored. Instead, like the human brain does, the network generates high-level representations of what it has seen before. This is a kind of rehearsal of experiences in the brain that cements new learnings into long-lived memories. Instead of playing a perfectly accurate video tape of memories, the experts coded an algorithm that reflects brain-inspired replay. It doesn't store learning per se to be used for playback, but something similar to our actual experience of memory: situations reconstructed from reality, but tainted by our history and worldviews.

Once the problem of catastrophic forgetting is solved, artificial neural networks dramatically resemble the human process of memory, opening a new door to artificial social memories which can shelter -and control- the history of a community or a nation.

V. The social and the individual right to memory

Millard distinguishes between the right of memory, which corresponds to the set of norms and public policies intended, especially in societies that establish a democratic form of government and adhere to the rights of the human person, to account for precedent human rights violations; and the right to memory, conceived as a subjective right of victims to see the violations they have suffered repaired in the new legal-political order, and their perpetrators condemned (Millard, 2014).

Millard explains that while the former participates in a political (and therefore collective) construction of the future, the latter is generally understood as a legal process of reparation for damages suffered by individuals and even groups (though considered as a singularity). However, the turning from one right to the other often occurs, from the point of view of the victims in their uniqueness as well as from the political and moral approach. Violations of democracy values by autocratic and dictatorial governments which try to manipulate social memory shall be condemned anywhere and whatever the form they assume (Millard, 2014).

Memory is related to the right to identity on an individual and social basis. Any past situation that is considered to be promoted as memorable has implications for each individual and at the same time from a collective perspective, for the entire community.

V.a. The right to identity and individual memory

Every human being has a right to identity, which covers a spectrum of relevant static and dynamic personal characteristics and social ties. The right to identity intends to protect an *"individual's significant and knowable personal attributes and social relationships"* (McCombs and Shull, 2007).

Even if there is no prevailing legal definition of identity (Besson, 2007), scholars emphasize the importance of an individual's personal and social ties in the formation of identity (Fernández Sessarego, 1992; Weigert and Gecas 2005). Personal context may be explained in more or less stable data, encompassing relatively static personal attributes, such as biographical data and physical traits. Social context can be understood in terms of the individual's uniqueness *vis-à-vis* others (Breedy and Carazo, 1998), extending to an individual's outward expression (Fernandez Sessarego, 1992:113) and also encompassing the web of significant social relations that almost every person establishes along his life (Ronen, 2004:154). These social ties embrace the individual's psychological preferences, as well as larger social, cultural and historical dynamics (Wiegert & Gecas, 2005: 162).

In this sense, personal identity begins with human conception (IACourtHR in re *Hermanas Serrano Cruz*), but comprehends more than mere identifying simple information such as the place and date of birth (Fernandez Sessarego, 1992: 113). An individual's identity evolves dynamically as any person interacts with meaningful social ties and reshapes himself as a response to every socio-cultural context anyone is part of (Donders, 2002). As Weigert and Gecas explain "*self and society are two sides of the same coin*" and because of this no one can be fully understood without the other (Weigert and Gecas, 2005). Fernandez Sessarego affirms that identity is the person's social profile that individuates and distinguishes anyone from other human beings (Fernandez Sessarego, 1992:113). This profile includes personal traits -such as genetic code, medical history or biological sex-, and social ties, including inter-personal ties such as family and friend relations, culture, religion, or even territory. In the *Awas Tingni* case, the Inter-American Court of human rights required recognition of "*the close ties of indigenous people with the land (...) as the fundamental basis of their cultures*".

These two categories that make up the right to identity, the personal and social, can be equated with individual and social memory. When characterizing the right to identity, they describe a spectrum rather than a dichotomy. For example, a person's name is both a highly personal attribute and an identifying social tie between that individual and the family to which he belongs, his peers, and also his status as regards the State. In brief, the right to identity spans the spectrum of personal attributes and social ties.

The Convention on the Rights of the Child explicitly recognizes a human right to identity (Article 8.1), though this right has existed implicitly in treaties and constitutions for much longer (IACourt *Hermanas Serrano Cruz*). At a domestic level in the case *Deyanhira Pintos Gomez v. Corporación Social para las Comunicaciones-Centro TV* (T-090/96, 6/3/1996), the Colombia Constitutional Tribunal stated that: "*Even if the Constitution does not expressly include a 'right to identity,' one may deduce such a right from its principles and positively recognized rights*". Nevertheless, despite the existence of some domestic case law, no unified jurisprudence has yet emerged around identity rights.

V.b. Memory and the identity of the person

Historically, remembering has been a social process. We remember certain things and share those things with others, and in turn rely on others to fill us in on the things we have forgotten. This way collective memory forges the identity of the people. Tradition forged customary law. Because of this, the care of historical facts in which the collective memory is built is especially relevant.



Knowledge can also be distributed across a social network, giving rise to interconnected knowledge systems with human memory partners. As people coordinate the distribution of relevant information with these external memory resources, they form information systems known as transactive memory (Wegner, 1987).

But in this social process, individual memory plays a major role. John Locke holds that personal identity is a matter of psychological continuity. According to Locke's memory theory, a person's identity reaches only as far as their memory extends into the past (Locke, 1690). This connection between consciousness and memory earned the title of Locke's memory theory of personal identity. In other words, who I am depends upon what I can remember. Since we bring our past to the present in order to remember situations we consider relevant -as the man who digs to find his past-, we should ask ourselves about the incidence of AI to the extent we use it to bring past situations to present. If our memory remembers differently than it would without the existence of social networks and data stored, then our identity would have been -indirectly- altered by AI.

Indeed, technology is changing the processes we are used to remembering events through various ways. Instead of storing information internally, people outsource to the Internet and retrieve it when needed. Some studies found that using an internet search engine can lead to poorer recall of information, although other studies recently published failed to replicate this effect (Fisher et al. 2022; Sparrow et al., 2011). Most researchers agree that in those situations it is not that memory becomes less effective, it is only used in a different way. Sparrow and Chatman (2013) affirms that *"when people interact with the Internet they may adopt particular mind-sets, modulating basic psychological processes"*. Another recent study showed that a group pausing to take photos at regular intervals had poorer recall of the event than those who were immersed in the experience (Soares et. al, 2018; 2022). But an earlier piece of research suggested that photos helped people remember what they saw, but reduced their memory of what was said (Loveday, 2018).

Time ago, television has also been blamed for undermining memory (Hazel, 2013). And Keightley (2011) concludes that *"television content is used to mark common cultural knowledge and is actively deployed to articulate and re-establish commonality"*. We could say the same as regards streaming platforms that are replacing television. They are maybe more intrusive than the old tv set since they can be carried out and watched wherever the holder decides, invading the whole of their privacy.

In all the situations described, the key factor seems to be human attention, completely participating in the experience -when AI is absent- or taking some particular notes of it, depending on each specific technological convergence that is used at the time.

All together considered, memory is altered by Technology in different ways. First, information overload makes it harder to retain information and affects STM. Second, the Internet is becoming something like the brain's external hard drive, making us rely on data we do not have to retain since we easily find it online. Third, distraction which is a consequence of the overuse of social media makes it more difficult to form memories. Fourth, information overload causes us to lose sight of the big picture and we remain less prone to focus on the important things. Fifth and final, as a result millennials' memories are rapidly degenerating.

Although technology may not affect the actual information we receive, it does affect how we perceive it and store it in our memory. Technology often distracts us from a potentially special moment, or induces us to surf the web instead of sleeping. A growing body of research suggests that new technologies may have deeper effects on our memories, particularly the short-term memory, altering and even impairing its function. Gregoire (2017) states that the internet has so much information that is easily accessible, we as humans tend not to remember such a big amount of information. He also argues that the distraction caused by the excess of data available makes it harder to form new memories.

While human long-term memory has a nearly unlimited capacity, our short-term memory has more limited storage and it is very fragile. Carr states that *"when facts and experiences enter our long-term memory, we are able to weave them into the complex ideas that give richness to our thought"* (Carr, 2010). The stages of introspection, reflection and search for memories, disappear as fast as we enter social networks. Once we dive into them, we find constant and biased repetition of particular moments of our lives. This situation is generated by our own web browsing and multiplied to infinity through confirmation bias. AI and biased algorithms try to keep us surfing as long as possible, confirming the way we perceive the world and thus, forging new memories that are absolutely biased. In due time all those biased memories will shape the individual and social sides of our identity. According to Reading (2011),

"Identities are now developed within the context of a media and cultural field that is digitized and globalized. This 'globital memory field', enables social movements to rearticulate a new 'national' identity through utterances and symbols that recall earlier national memories that are reassembled and shared with new kinds of rapidity, extensity and transmediality".

VI. Conclusions

In this first article, we began by distinguishing memory creation processes. We then characterized real and artificial memory, and differentiated between short-term and long-term memory. We explained the relationship between memory and learning, and the way in which the use of social media alter the natural process of human memory.

We took a look at the conformation and processes of biological neural networks and how they have been copied by neurotechnology to be replicated in artificial neural networks. We dealt with the legal aspects of a social and individual right to memory. Here we found it relevant to highlight that while the social right to memory is related to the history of human rights violations suffered by any people that ask for redress through positive law, the individual right to memory is closely linked to the identity of each individual, to what he was and want to be. In this last sense, the right to memory is intertwined with the right to identity, which also has individual and social aspects.

Finally, we related the right to identity with individual memory and explained the incidence of memory processes in the identity of each person. Any circumstance that affects the process of generation memories will affect the identity of the individual and, subsequently, of the entire community to which they belong. Finally, we analysed and characterized the different ways by which technology alters our memory.

Some ideas emerge from the preceding exercise.

First, human memory is being altered by technology and technological convergence as a synergistic summation of individual technologies. The process of remembering facts and people will never be the same as before the appearance of social networks, AI and its algorithms.

Second, artificial neural networks are designed to function like biological neural networks, which resemble the human process of remembering things. We, as humans, tend more and more to rely on the Internet as an external hard drive for memories. This change deprives us of the natural process of remembering things. The content of these memories is what is at stake. Naturally, we try to remember situations or people based on our feelings and our reason. The advent of AI changes this, replacing our previous natural memory engines with one made up of the algorithms that tend to keep us connected for as long as possible. For this reason, they prevent us from remembering situations and people that such algorithms judge as "negative" a priori. The decision of what –we, as humans- "choose to remember" is replaced by what technology believes that according to it "it is convenient for us to remember".

Third, in due time, individual changes in the process of remembering will impact the social memory process, possibly changing the social memory of a given community. The right to identity that is shaped by both our past, our perception of it, and what we want in the present, sees one of its vital elements transformed: our own past. Shaping our identity according to patterns that we have not chosen freely, but have been chosen by the programmers of the social sites we visit, changes our real identity. This fact may alter our human nature.

Fourth and last, we are certain that nowadays, we remember -maybe- less and -surely- different, as before. As a result, the personal and the social sides of the right to identity will also be altered. It is possible that we will be less reflective and more biased and this may negatively affect any culture of peace. Algorithmic biases that contribute to the making of individual and social memories tend to create niches of opinion and interests that increase differences. This can lead to social isolation, discrimination and eventually increase hate speech within each society.

The solution will not be to deny technological progress but to understand it, make its negative aspects known and monitor the results of memory creation processes in their individual and social aspects.

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