Does the Right to be Forgotten Work in Social Machines Context?

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***Abstract*— This paper presents a reflection about the right to be forgotten in the context of social machines operating in Web 3.0 and present this "new" distribution of information environment. The reflection was based on a literature review and suggests the ineffectiveness of how the right to be forgotten is being applied due the complex structures existing connection between users, social software and devices (hardware) designed to work together. Thus, disconnecting more than a right, becomes a duty for those who choose to be forgotten.**

Keywords-Social machines; Right to be forgotten; Connection; forgetting; Internet.

I. INTRODUCTION

On May 13th, 2014 the Court of Justice of the European Union (CJEU) has taken a decision that caused a huge impact, not only in the legal aspect, but also in the relationship between users and the content related to them on the Internet. The decision referred to search engines, which, from that moment, must enable users, in European Union (EU) territory, to delete their personal information. The court considered that any person "has the right to be forgotten" on the Internet under certain conditions [1].

This decision triggered a worldwide debate about the right to be forgotten and their implications in the current Internet scenario. The central subject was the existing conflict between legal aspects related to the right to be forgotten against freedom of expression and law about data protection in EU [2].

Another issue was about the request made by a citizen requiring "only" that his name did not appear anymore in Google results. But the fact Google hides this information means that they were indeed forgotten? EU legislation is not valid in other countries and the search results cannot be hidden outside EU. This omission indicates that forgetting is more superficial than real [1].

But, even if Google and Facebook were forced to delete all data of a specific citizen, would he/she be forgotten? In this light, this paper presents a reflection on the "right to be forgotten" and how it will work, if there is no change in the way of how it will be implemented, in this social machine context.

Besides this introductory session, this paper presents the following structure: Section 2 will present concepts about forgetting. Section 3 will present the concerns about the "Right to be Forgotten". Section 4 will present connection concepts. Section 5 will present social machines concepts. Section 6 will present a reflection of this whole scenario. And in section 7 will present final considerations.

II. FORGETTING (OBLIVION)

When investigating forgetting, we soon realized its inseparability of the concept of memory. It seems more logical to begin this Section explaining concepts related to memory and its connection to oblivion.

Ricoeur [3] suggests that memory can be observed from two approaches: (i) the cognitive one, which refers to the ambition to reproduce or forgotten the past and (ii) the pragmatic approach referred to memory operative side.

Levy [4] also proposes three categories to memory: (i) biological memory: which is that all knowledge was transmitted orally to individuals through narrations, rites and myths. (ii) Support memory: means that facts could be recorded in physical objects. The human memory is not the unique support to retain and preserve information. And (iii) digital memory: these are stored in electronic format using bits and bytes.

When analyzing these categories proposed by Ricoeur, we observed that cognitive approach considers important to determine what are the "traces" left and perceived by individuals in the reconstitution of the memory. In the pragmatic approach, Ricoeur states that there are three types of forgetting: (i) the deep oblivion: which is the one from the deletion of tracks; (ii) forgetting of reserve: which is "necessary" for the proper functioning of memory; and (iii) the manifest oblivion that is exercised intentionally.

Deep oblivion occurs when tracks needed to rebuild memories are not found. Ricoeur suggests that memory in the process of "remembering" follows four steps: (i) persistence, (ii) the remanence, (iii) revival and (iv) detailing. The deep oblivion occurs when there is a lack of "traces" at least in one of these four steps.

The forgetting of reserve is characterized by the deliberate forgetfulness in the everyday life of our memory. Ricoeur himself says: "there is no memory that nothing forget ..." and "forgetfulness would not, in all aspects, be an enemy of memory. The memory should negotiate with forgetting to find, blindfold, the balance between both". The lack of balance led to the "Societal Forgetting" [5].

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The last category of forgetting suggested by Ricoeur is the manifest oblivion, which is exercised with some level of intentionality. The manifest oblivion presents another three categories that are: (i) hindered memory, (ii) manipulated memory manipulated and (iii) controlled forgetting also called Amnesty.

To address the hindered memory Paul Ricoeur refers to clinical and therapeutic categories mainly from Freudian psychoanalysis, seeking to link this "pathology" to human and fundamental historical experiences.

The manipulated memory is in the field of power relations. The balance of power, memory and forgetting is forged suggesting a kind of instrumentalization of the memory.

Controlled Forgetting, also called amnesty, has in it something of the reversibility order. The preservation of memory happens through mechanisms of latency and the control of physical supports. The controlled forgetting is related to what the author considered the small miracle of happy memory that is “the recognition”.

Observing the memory classification of Levy, we should begin with the investigation of biological memory that according to Rignano [6] is derived from the connections between neurons and the contact points receiving the denomination of synapses. According to Levy, this memory is more susceptible to forgetfulness.

To minimize the inherent and constant forgetfulness of biological memory, the humans began to use some kind of objects to keep records of their memories. This model was not reflected only in simple transformation of how memories are preserved, but the constitution of a new way of thinking about memory. Coulmas [7] states that memory supports not only mean preservation, but the conditions of memory creation.

Levy [8] states “inscription supports (clay, wax tablets, parchment, papyrus or paper), represented an extension of human biological memory. Thus, writing extended the biological memory transforming it into large long-term memory semantic network.

Finally, we have the digital memory, and on it Garde-Hansen *et al*. [9] suggests that digital mind is susceptible to oblivion: “scanning our memories and the production of new information already in digital media together with the fragility and complexity of maintenance of the files in a virtual environment leads us to create a new concept that threatens the modern world, called digital amnesia.

Cerf [10] suggests that the memory stored in cyberspace is constantly a threat: Cyberspace is a fickle and virtual environment in which the data are in endless movement, succeed, change, interact and mutually exclusive. In cyberspace the issue of preservation of information and knowledge is questioned because, being in the virtual environment, there is no guarantee that this information is available after a certain time, or, if it is available in which format or conditions.

Levy [8] suggests that communication networks and digital memories will incorporate most of the representations and messages produced on the planet thus becoming the main form of human memory.

III. RIGHT TO BE FORGOTTEN

Ambrose [11] states that any citizen has the right to not belong to a particular memory, whether collective or individual. In this context, the right to be forgotten, through the right to informational self-determination begins to be exercised all over the world, in view of the many violations committed daily by the media, such as the rights related to honor, privacy and intimacy, all of them, results of constitutional protections given to human dignity. The right to be forgotten comes to guarantee that no one need to be forced to live forever with a past that no longer represents the current condition of an individual.

Hornung, and Schnabel [12] state that the first case in which the informational self-determination was related to digital data processing was observed in 1983 in Germany. The German government, after conducting a general population census, was target of several constitutional complaints that the census directly violates some fundamental rights, particularly the right to free development of personality. The German Supreme Court considers, given the conditions of the automatic processing of data, it is needed an effective protection of the free right of personality, since with electronic data processing, detailed information about personal relationships can be stored indefinitely and consulted at any time.

The right to be forgotten in the EU legislative framework was proposed by the European Parliament on 25 January 2012. Viviane Reding, Vice-President of the European Commission and responsible for Justice, Fundamental Rights and Citizenship areas, announced a reform of legislative framework reserved for personal data protection in EU [13].

Since then, search engines, more specifically Google, become the center of controversy in the EU. The discussion lies in the distinction between data storage services and search engines, and the consequent legal position to which they are subject. For the EU justice, Google is not just a storage service that maintains particular content without liability. Thus, both are similar search engines and data producers, exercising control over the content presented [13].

Peter Fleicher [14] states that Google is nothing more than a tool that promotes facility to finding content, but merely redirects users to the provisions content elsewhere. In his view, the responsibility to eliminate inappropriate content published should lie, above all, to the source of information and not to the search engines.

The EU members believes that any search engines or social networks has the same legal responsibilities of the original sources of information when it the right to be forgotten. This understanding suggests a kind of connection between the sources of information and Internet services.

IV. CONNECTION

It is not known exactly when, and in what context, the word “connection” was created. The earliest reference dates from the second century AD, in the Chinese book “I Ching, the Book of Changes”. In it, the phrase "watch what connects and separate people". This text is applied to a complex context of social capital.

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Barabási and Frangos [15] state that a connection between two elements happens when they could be represented by a graph and any one of them can reach the other following a path. These objects do not need to know the existence of these connections to make them real.

Christakis and Fowler [16] suggest that a connection is a set of links, as well as, particular patterns that provide meaning to links. These ties are more important than the people themselves because they determine the existence of networks that are more complex than a "flat" collection of "disconnected" people. Connections affect every aspect of everyday life of an individual. These are links that explain why the whole (network) is greater than the sum of the parts (individuals).

Shaviro [17] states that the connections are important for people to remain visible. If no action is taken to connect, the tendency is that person disappears, after all, someone disconnected is someone who is not part of the system.

Castells [18] relates the concept of connection with network and places. “The network itself cannot suggest a sense of space, but there is a whole series of connections and disconnections of “places” on net. These places are connected globally and physically locally disconnected and socially. Megacities are discontinuous constellations of spatial fragments, functional parts and social sectors, which are all networked.

Levy [19] states that "The human mind works to connect" and suggests: “grasp the development of perception, memory, communication, general connection as a single organic movement that tends to develop a collective intelligence of humanity ... The growing connection between the men is the other side of the world growth”.

Frigyes Karinthy conducted the first, documented; scientific study about connection and it was called "chains". It suggests that people are far apart, on average, in a degree of separation of six. This theory was first confirmed by Stanley Milgram in 1967 and ratified by Duncan Watts [20] that after receiving data collected from 48,000 members of 157 different countries, found the same number “six”. This theory is known as the 'six degrees of separation ".

Christakis and Fowler [21] state that our connections do not end in the people we know, but beyond our social horizon, friends of friends are part of the chain reaction that eventually passes us within a network.

V. SOCIAL MACHINES

The term “Social Machines” was coined by Wade Roush [21] where it was highlighted the role that Internet exerted on people's lives. Almost all interactions between people and electronic devices have Internet involved. Roush pointed the mobile nature of the connection via smartphones and now, the "network" follows the individual to “where” and “when” he wants to. Roush defines a social machine as a mechanism operated by a human who is responsible for the socialization of information between different communities.

Meira *et al*. [22] suggested a more complex definition of social machine: "A social machine is an entity" pluggable "containing an internal processing unit and an interface that waits for requests and responses to other social machines. Its processing unit receives inputs, produces outputs, have states and their connections, intermittent or permanent, define its relations with other social machines ".

Meira [23] suggests that social machines enable any person to "set" his own network, creating their connections and deciding who participates, and how to get involved. Social machines are programmable platforms in the network, whose function and purpose can be, largely extended and redefined by those who hold the knowledge to do it.

Now, instead programming computers as in the past, users will increasingly programming the Internet itself. Programming social machines, each user will be able to create their own applications and provide new forms of articulation and expression network [23].

Burégio *et al*. [24] suggest that social machine has its origins in social computing. It would be an evolution of social software based on the Internet, referred collectively as "Web 2.0". Social machines are based on three pillars that are (i) the social software, (ii) software as sociable entities and (iii) persons as computational unit as shown in Figure 1.

(i) Social Software are those with working on social data, based on Application Programs Interface (API), Web Services or Mashups and have the ability to collaborate with other services and enable users to program "their own Internet".

(ii) Software as sociable Entities means that software has the ability not only store social data, but that they are able to “socialize” autonomously and automatically and thus have "Social Relations" with other software, people and even devices (Internet of Things).

And (iii) People as Computational refer to the effort to integrate people and software in the task of processing of social data. If the software is able to create, process and store data, people also are, and this integration promotes greater social capacity machines. Social machines represent the intersection of these three categories.

Shadbolt *et al*. [25] suggest that the power of the metaphor of social machines comes from the notion that a machine is not just a computer used by users, but rather something purposely designed in a socio-technical system comprising equipment and personnel. Thus, one can view this ecosystem as a set of social interaction machinery and studying each machine becomes only part of the story.

Semmelhack [26] states that transformation promoted by Web 3.0 is deeper than the simple attribution of meaning to the digital objects. This new Internet generation allows that several entities could be created online and from there various services/resources can access these organized and modularized data. An example of this reality portrayed by Semmelheck is the interoperability standard called Microformats that has a specific pattern called H-card, which stores information about people and can be reused on multiple websites.

VI. THE RIGHT TO BE FORGOTTEN AND SOCIAL MACHINES

Before turning our attention to the questions about right to be forgotten in the current structure of social machines, it is worth to mention two aspects of the current EU decision in

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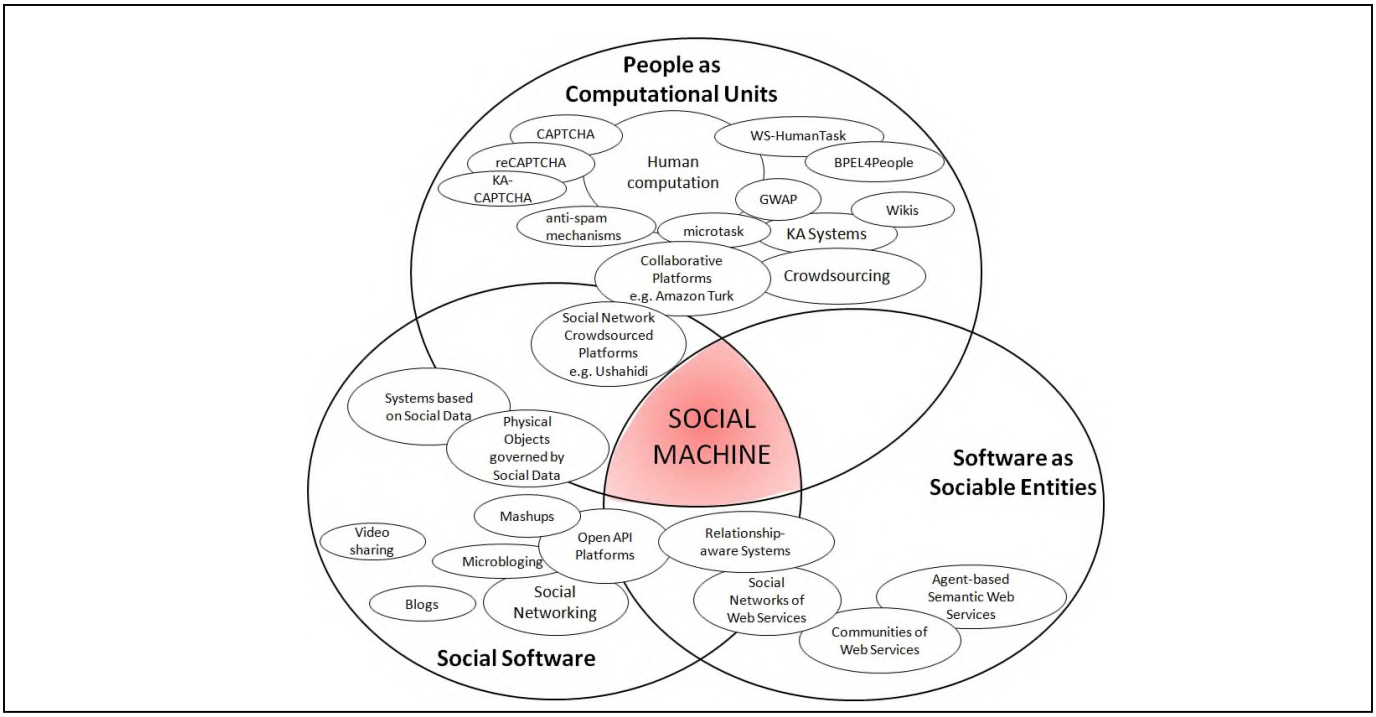

Figure 1. Social Machines Definition - Retrieved from Burégio *et al.* [24]

the case of Google that will not be discussed in this section that are (i) The question of the location of the decision and (ii) the question of the sources of information do not respond jointly to Google in the decisions. These matters are related to legal aspects and not with the structure of the Internet itself.

Following Ricoeur`s [3] statement about forgetting, the right to be forgotten, in this context, falls in manifest oblivion and, more specifically, the manipulated memory since that one organism (CJEU) exercises its power as a justice court that refers about legal aspects. In this case, the manipulation does not have the intention to create a new image from an individual or even reduces the memories for any suitable purpose. This manipulation towards the direction of deep oblivion considering the real intention that is to erase, deliberately, the tracks.

If we consider the structure of web 1.0, where the content was only available to users, data erasing, similar to what has been requested by the CJEU, of a particular service, determines that the user is in fact forgotten by that company since the information contained therein do not suffer any correlation or semantic treatment.

When we consider the web 2.0, also known as "social web", some social networking services store information about users, their connections and their behavior on their networks. Figure 2 shows a fictitious scenario of a user that uses the services Facebook (a), Twitter (b), LinkedIn (c) and Whatsapp (d) and their respective, different, connections on each.

The deletion of data implies, certainly, in forgetting static data and connections. However, the traces inherent to collective memory, such as friends' referrals, demographic data and others that do not belong necessarily to the deleted user will be maintained. Most likely, traces that could restore or reassemble the memory of the deleted user will not exist.

In Web 3.0, the social software enables to use a new kind of service when using "enter using Facebook" option. Now, that service collects from Facebook, the necessary information to carry out the registration. This type of data sharing, known as data skimming, in most cases, is based on the transfer (copy) of the data from the original service (e.g., Facebook) to the requesting service. The available data that could be shared with other services changes the connection structure from several individual networks observed in Figure 2 to a single network shown in Figure 3.

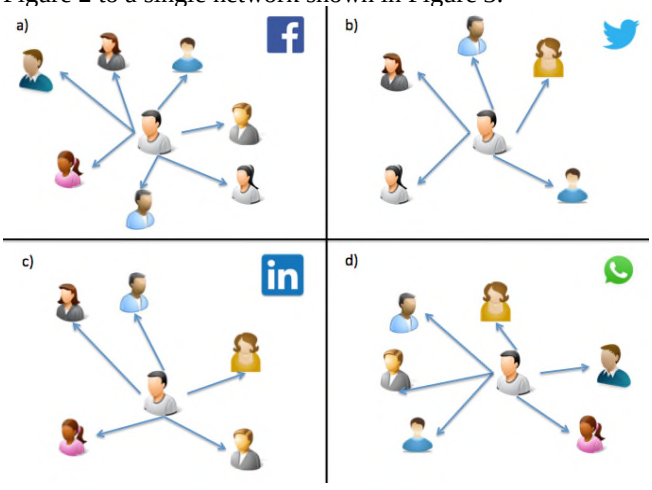

Figure 2. Social Networks of an User in Web 2.0

In this new scenario, we can observe that even Facebook keeps information about User A. Due to the amount of "places" where he exists on Internet, he becomes, in practice, an entity on the Internet because his data, as well as his connections, are spread over the Internet, becoming structures of "information redundancy" scattered in various services.

In scenario (a), User A is connected to User B through Facebook, Twitter and Candy Crush Saga application running on Facebook. If Google does not find data of this relationship on Facebook, these can be found or in Twitter or in Candy Crush Saga. A consideration about this connection is the situation of Candy Crush Saga. Both users run the application from Facebook, but it exists out of Facebook.

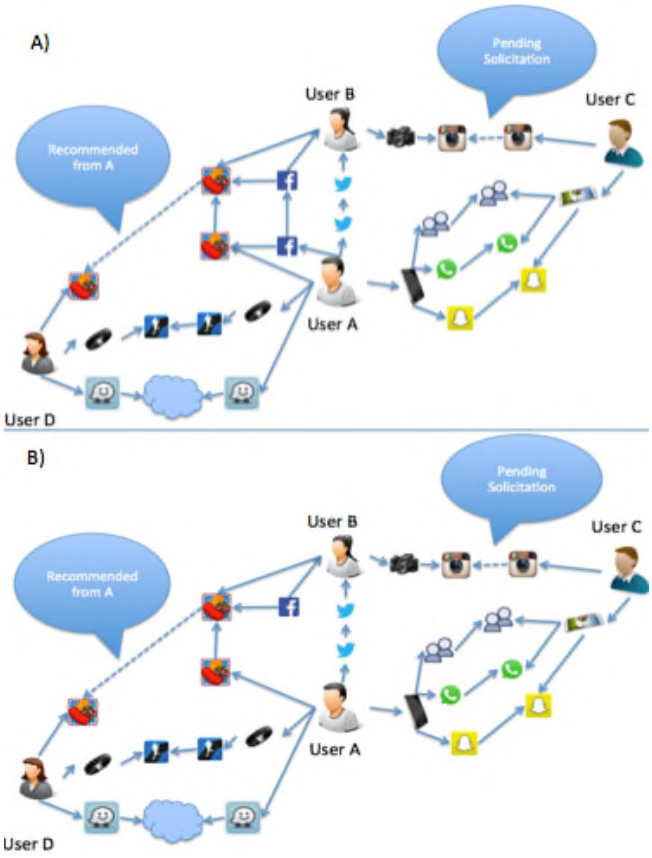

Figure 3. The Web 3.0 Network from an user A, before (a) and after (b), being forggoten by Facebook.

This means that the Candy Crush Saga also has in its database information about users A and B, and every time that they play the game on Facebook there is an exchange of information between services.

If we consider the connection with User C, we now have a new element part of network of both users: the smartphones. Before the emergence of the Internet of Things, devices such as Tablets, Laptops, Smartphones, Google Glass among others, were considered only “means” to access Internet. However, when we consider that Social machines are also software as entities sociable, the software running on smartphone also contributes to the network.

VII. Final Considerations

The structures of connections and stakeholders in context of social machines suggest a complex flow of information scheme in Internet, particularly as regards the distribution and use of information from social software. Although this article presents only the reflection of the social machines and its relation to the right to be forgotten, is still needed discussion of privacy, connectivity, distribution, use and other issues relating to information in this context.

The connections of an individual are as important as the information itself since they determine, not just for who, but, for what and where information regarding this individual may move. In part, these connections are invisible or transparent to users causing a false sense of control and the naive thought that the data are restricted to that service.

If everything is connected, the right to be forgotten should not be restricted to the exclusion of data on one, or more particular services, but suggests the user disconnection from Internet. This new reality changes the point of view that to be forgotten is a right, but actually, forgotten should be the conscious, intentional and voluntary duty of any citizen, who wants to be forgotten and not return to the Internet. The oblivion, in this network of social machines, without disconnection is, at least, paradoxical, since when an individual connects to the Internet, the network should remember that he/she is a forgotten one.

More than apparent, this forgetfulness is naive and imposes penalties on precisely those who would be the main allies in this task, search engines, which are able to identify the sources of information and their connections. If, we want to reflect about the effectiveness of actions taken toward oblivion we should rethink the role of Internet, as whole, and the role of its services.

Finally, we believe that the right to be forgotten, in the way of how it is being promoted, only transformed, in a very subtle way, how the information is used by Internet services. The data will no longer be visible to regular users of the search engines, but may continue to be collected and interpreted freely to other types of business transactions. They move the actors, but not change the actual information flows and the memory built about a particular user. This information remains unscathed and connected, but invisible.

Aware of all these conclusions we recognize that further researches should be performed on: how and how much “our information” is spread on Internet and which are the sources of this information? This future work is related to the degree of influence of “robots” that are sharing and collecting our information. Is our information private? Or they start a viral process on Internet? Further research is still necessary on how the user behavior impacts this process of information sharing on Internet.

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