Shared secrets: Web 2.0 and research in Social Sciences

Sandra MARTORELL
Researcher PhD, Polytechnic University of Valencia,
SPAIN
sanferm2@epsg.upv.es

Fernando CANET
Associate Professor, Polytechnic University of Valencia,
SPAIN
fercacen@upv.es

Abstract: Web 2.0 represents a revolution in terms of the possibilities it offers for facilitating communication and collaboration between users – something that has become increasingly common in the world of research. A mere few years ago, the information produced by scientists and scholars remained in the hands of a very limited circle of institutions and publishers, as if it were a guarded secret. Today that secret is being shouted from the rooftops and shared with the rest of the scientific community in order to make it more accessible and to allow new advances. A clear example of this can be found in the social sciences, where there is a constant increase in the production of articles and materials that in turn serve for the pursuit of further research, thereby promoting the continuous development of scientific knowledge. This new situation is being fostered by the proliferation of tools and applications that make it possible, but also by a change in mentality towards a philosophy of exchange and open access.
In this article, we will examine this phenomenon using a methodological system based on the analysis of platforms for the exchange of scientific knowledge, and especially social networks (both general and specialising in the social sciences), in order to demonstrate their potential in a society that is becoming increasingly aware of the need to overcome physical or institutional boundaries and move forward together.

Keywords: collective intelligence, academic social sciences networks, open access, collaboratory, Web 2.0

ESSACHESS. Journal for Communication Studies, vol. 6, no. 2(12) / 2013: 45-64
eISSN 1775-352X

***

Secrets partagés. Web 2.0 et la recherche en sciences sociales

Résumé : Le Web 2.0 représente une révolution en termes de contribution au développement de la communication et collaboration entre les usagers. Cela est devenu de plus en plus commun dans le monde des chercheurs. Il y a très peu de temps, le savoir produit par les scientifiques était accessible seulement aux institutions et maisons d'éditions comme si c'était un secret. La situation est en train de changer aujourd'hui car, d'une part, on est face à un phénomène de prolifération des outils et applications qui rendent ce savoir accessible et, d'autre part, on est témoins à un changement qui met au centre une philosophie de l'échange et de l'accès ouvert.
Dans cet article, on examinera ces phénomènes à l'aide d'une méthodologie basée sur l'analyse des plateformes d'échange du savoir scientifique, c'est-à-dire des réseaux sociaux généraux ou spécialisés en sciences sociales afin de montrer leur potentiel dans une société qui devient de plus en plus consciente du besoin de progresser au delà des frontières physiques ou institutionnelles.

Mots-clés : intelligence collective, réseaux académiques en sciences sociales, accès ouvert, collaboration, Web 2.0

***

Introduction

At the 17th International World Wide Web Conference held in Beijing, China, a group of authors proposed "Why Web 2.0 is Good for Learning and for Research" (Ullrich et al., 2008). The web has evolved considerably since that time, to the point that to speak of Web 2.0 today may no longer be relevant given how quickly the Internet and new technologies change and develop. Today, the academic debate revolves around Web 3.0, its future, the advantages it offers, and the challenges and threats that it faces.

However, it should not be forgotten that the direction taken by the new web today continues to be marked by the parameters set by what was Web 2.0, which brought about a veritable revolution that established the foundations for a new era in which the Internet became a social phenomenon, resulting in the connection of web users in a global network.

Area and Pessoa (2012) describe Web 2.0 using metaphors that make the concept more accessible. For them, Web 2.0 is at once a universal library, a global market, a gigantic puzzle of hypertextually connected pieces of information, and a public

square for meeting and communication between people who form social communities; it is a realm where the prevailing features are multimedia and audiovisual communication and the diversity of virtual interactive environments.

Nevertheless, the seven principles originally proposed by Tim O'Reilly (2005) have become the predominant points of reference for any analysis of Web 2.0:

- The web as a platform;
- Harnessing Collective Intelligence;
- Data is the Next Intel inside;
- End of the Software Release Cycle;
- Lightweight Programming Models;
- Software above the Level of a Single Device;
- Rich User Experiences.

These seven principles have resulted in an enhanced web where information is not merely disseminated but shared. This new web relies on applications, tools and content that are stored on the web itself, rather than on the user's computer (Cobo, Pardo, 2007), with the quality of being constantly evolving, and in most cases freely available to users who work together to generate collective intelligence. According to Lévy (2004), this intelligence is distributed everywhere, constantly evaluated, and coordinated in real time, resulting in an effective mobilization of skills based on and aiming for the recognition and mutual enrichment of individuals rather than the establishment of fetishistic or hypostatized communities. In this respect, information and the ever greater ability to process that information to make it available to users constitutes an element of collective empowerment. This is in turn supported by Lightweight Programming Models, which, because of their simplicity, facilitate the growth of applications as they allow programming to be reused and products to be combined creatively (thereby increasing productivity), thanks to new tools that permit Web 2.0 applications to offer more enriching experiences for the user, at any time and from anywhere – an essential requirement in an age dominated by the connectivity and mobility fostered by mobile devices.

In short, we can define Web 2.0 as the enhanced version of Web 1.0, particularly in terms of social participation. It was a new innovation which according to Cebrián Herreros (2008) was based largely "on interactive relations open to Internet surfers who want to participate in communicative processes of production, dissemination, receipt and exchange of all kinds of files." In this respect, the concept of Sharism coined by Isaac Mao is particularly relevant. Sharism refers to the trend among researchers of sharing their work (everything) for use by their social network (or the public domain), while retaining ownership and rights as stipulated by the author (Mao, 2007). For Mao, Sharism is the spirit of the age of Web 2.0 (Mao, 2008). It is a new philosophy that has led to certain changes in the relationship between the web and its users. Among the most vitally important of these changes is the development and success of social networks, which Flores-Vivar suggests have become the

flagship of Web 2.0 (2009); this suggestion is supported by Codina, who argues that they are by far the best-known feature of Web 2.0 (2009).

Social networks have had a major impact, which has also been reflected in the academic community, where there has been a proliferation of virtual social networks dedicated to research (hereinafter referred to as academic social networks). These social networks, particularly those dedicated to the social sciences, will be the focus of this article, with the aim of achieving the following objectives:

- To identify the basic pillars on which these networks are based;
- To analyse their main resources;
- To highlight their potential;
- To identify their deficiencies or weak points and the importance of correcting them in the interests of ensuring their successful future development;
- Based on the previous points, to establish a definition of the ideal academic social network.

1. State of the question

1.1. *Online research*

Codina (2009) appeals to two basic underlying ideas in the extrapolation of Web 2.0 into the world of science: the first is that science is communication; the second, that science is collaboration. And he posits the following equation: Web 2.0 + Science = Science 2.0. Science 2.0 refers to the set of services and applications based on user collaboration and participation within the scientific field (Cabezas-Clavijo, Torres-Salinas, Delgado-López-Cózar, 2009). The following graph shows the possibilities offered to researchers and the extent to which these possibilities affect their day-to-day activities:

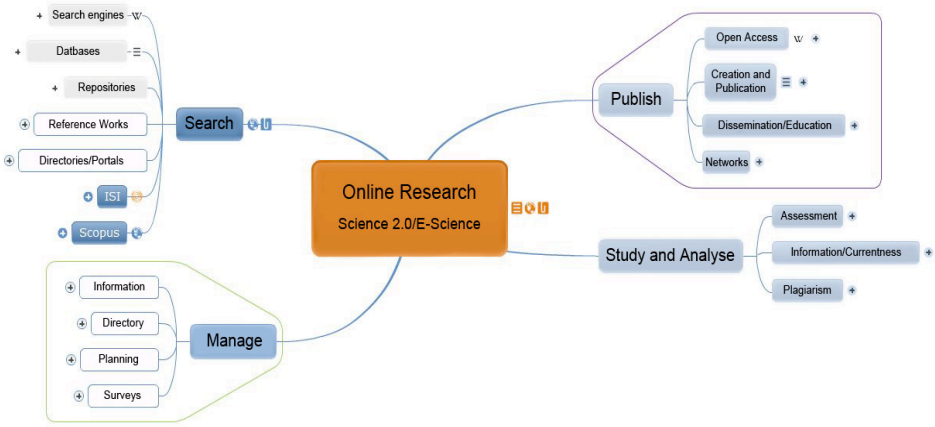

Figure 1. *Online Research Diagram*

Science, like society itself, is constantly evolving, and has had to adapt to the changing times. According to Wu and Neylon (2008), as discoveries are made, technologies developed, and data generated, new approaches for conducting science arise and flourish. In this respect, these authors suggest, we are currently witnessing an unprecedented period of scientific and technological advancement, due mostly to the ubiquity, connectivity, and power of computing at multiple levels. Not only has computing drastically changed our ability to produce and analyse data, it is also changing the ways in which we store knowledge and communicate about science.

From this we can see a clear relationship between the changes in researcher practice and technology, specifically ICTs[1]. The concept of ICT refers to the set of technological tools that allow us to access information and share it with others (Solano, 2007). Thanks to these tools, relationships with knowledge sources have increased and individuals are now able to communicate with each other in a different way, which in turn has changed traditional conceptions of communication of and access to knowledge (Reyes Iriarte, 2010). But it is not simply that these new technologies have facilitated advances in this sense, but that the change is being brought about by the volition of thousands of users. In other words, technology alone cannot force people to participate against their will; however, for those who are willing, it can provide the environment necessary to facilitate collaboration and communication (National Science Board, 1998).

Evidence of this can be found in the concept of the collaboratory, a term coined by former UNESCO Director-General[2] Koichirō Matsuura, which combines the

[1] Information and communication technologies.

[2] From 1999 to 2009.

words 'collaboration' and 'laboratory'. The concept defines the combination of technology, instruments and infrastructure that allows scientists to work with remote facilities and other colleagues as if they were located in the same place and with effective interface communication (Glasner, 1996). As Jane Russell (2001) points out, these 'centres without walls' are associated with a new paradigm in scientific practice that gives researchers in any field easy access to people, data, instruments and results; a kind of virtual research lab which represents a significant challenge to traditional research methods that has been growing and gaining force gradually for a few decades.

This is also in turn fostering the growth of what is known as collective intelligence, and of collaborative intelligence, two terms which although similar should not be confused as they are characterised by a range of distinguishing features, expressed by Mayfield in the concept of the "Power Law of Participation", outlined in the following graph (Mayfield, 2006):

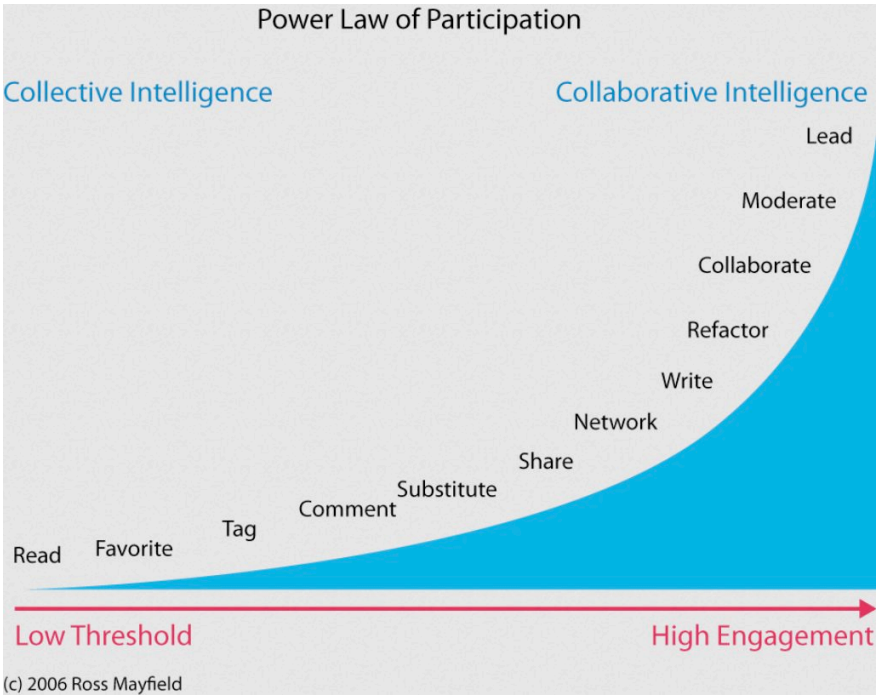

Figure 2. *Power Law of Participation*

While collective intelligence results in the emergence of a final product based on the actions of a group of people who do not interact with each other, collaborative intelligence addresses issues where individual experience and the different

interpretations of different experts are critical to problem solving (Alcalde, 2012); the latter of these two is, according to Lee and Lan the measure of the collaborative ability of an entity or a group. These authors argue that knowledge derived from collaborative efforts is increasing in proportion with the growth of the World Wide Web.

1.2. *Open Access in research*

In this context of collaboration among users, the world of open access is increasingly significant. This is a world which, according to Tapscott (2012), is built on four basic principles: collaboration, transparency, sharing and empowerment. This philosophy is extended to the internet universe in various ways. One is through what is known as Open Source. Generically, open source refers to a program in which the source code is available to the general public for use and/or modification from its original design free of charge, i.e., open. This type of software is a clear example of "intercreativity" as described by Berners-Lee (1999). This term is the product of the fusion of the words "interactivity" and "creativity" and according to the author refers to the "process of making things or solving problems together" (Martorell & Canet, 2013). In this way, intercreativity furnishes the mechanisms necessary to allow all members of the community to contribute their knowledge to the product being developed in a horizontal and organized manner (Pardo Kuklinski, 2005).

At the same time, the philosophy of the open world goes beyond the notion of open source, as it also encompasses Open Access, a concept endorsed in international declarations such as the Budapest Open Access Initiative, signed in 2002. This declaration makes a very clear and concise distinction between the two concepts:

Open source software, like free software, is a kind of software, namely, software whose source code is freely available for inspection or modification. Open access is a kind of access or availability. This kind of access could apply to any digital content, such as software, music, movies, or news. However, the Budapest Open Access Initiative defines open access as referring solely to a certain kind of scientific and scholarly literature[3].

[3] Other authors, such as Suber (2006), define open access as scientific or academic online resources, which should not be restricted by any impositions other than technological limitations or the Internet connection of the user. Björk (2004) defines the concept as follows: 'Open access' (OA) means that a reader of a scientific publication can read it over the Internet, print it out and even further distribute it for non-commercial purposes without any payments or restrictions.

According to this initiative, "Open Access" to this literature means its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

Since the Budapest Open Access Initiative, there have been other international declarations that seek to define the concept, such as the Bethesda Statement on Open Access Publishing in June 2003, or the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities in October 2003. The advantages offered by Open Access are (Alonso, Subirats, Martínez, 2008):

- The cost is low and the results can have a big impact in a short period of time, facilitated to a large extent by the viral nature of the Internet.

- The results obtained can be compared with other previously published results, or the data can be reused for further research without the need for a new investment, which constitutes a vital advantage for small research groups with limited resources.

Research is thus liberated from the constraints of intellectual inbreeding and opened up to the world in the interests of fostering what is an unprecedented move towards embracing the "wisdom of crowds" described by Surowiecki (2004) or Rheingold's "smart mobs" (2002). Related to these ideas is Cobo Romaní and Pardo Kuklinski's description of a kind of knowledge that is more valuable when multiplied because, according to the authors, shared or distributed knowledge is on average much more effective and accurate than the knowledge that may be produced by the most acclaimed or accomplished expert (2007).

We thus need to leave behind the secrecy that is all too often associated with studies and research and move towards the free publication of data and results, because only in this way can our research be meaningful.

Fortunately, today there are open journals like *Essachess* that uphold the principle that making research freely available to the public supports a greater global exchange of knowledge. This publication is a clear example of the fact that open access and high quality can go hand in hand, as evidenced by its indexing in important international databases. Ensuring such quality involves meticulous work on the part of the journal, ranging from exhaustive rigour in the publication stage to a selection process based on a double-blind peer review. And there are other open access publications which, like *Essachess*, are also furthering research in the social sciences with quality articles. According to data provided by the *Directory of Open*

Access Journals (DOAJ), there are currently 1915 open access journals in the category of social sciences covering the fields outlined in the table below.

Table 1. *Breakdown of open access journals in different social science fields*

Subject	**Number of OA journals**
Anthropology	102
Education	643
Ethnology	33
Gender Studies	40
Library and Information Science	149
Media and communication	127
Psychology	206
Social Sciences	372
Sociology	165
Sports Science	78

All of these journals advocate open access as a form of democratisation of scientific and academic knowledge, which at the same time contributes to progress for society as a whole.

1.3. *Academic Social Networks*

We are currently experiencing a time of fragmentation in scientific communication (Brown, Boulderstone, 2008) where other modes of publishing research results are beginning to participate in the space previously reserved only for journals (Torres, Delgado, 2009). The "Science 2.0" described in this article is playing a decisive role in this transition, and specially, academic social networks for exchange of scientific knowledge, whose essential priority stems from the need to communicate and disseminate scientific information, seeking to reach a large number of readers, and to this end they make use of the web, so that through a message or a link or a file attachment, information can be shared with all their members (Arriaga, Minor, Pérez, 2012).

García-Aretio (2007) attributes to these networks the objectives of sharing, co-creating and building knowledge through their relations and communication exchanges, while for Salinas, Pérez and De Benito (2008) the basic principles are information exchange and an adequate flow of information which, according to these authors, depend on accessibility, the culture of participation, collaboration, diversity and sharing that condition the quality of life of the community, the communication skills of their members and the relevant content. For Sañudo (2012), central to their activities are knowledge production, resource management and achieving results geared towards innovation, among others. Some networks of this

type outline their own definition, such as ResearchGate, which does so using a graphic explanation:

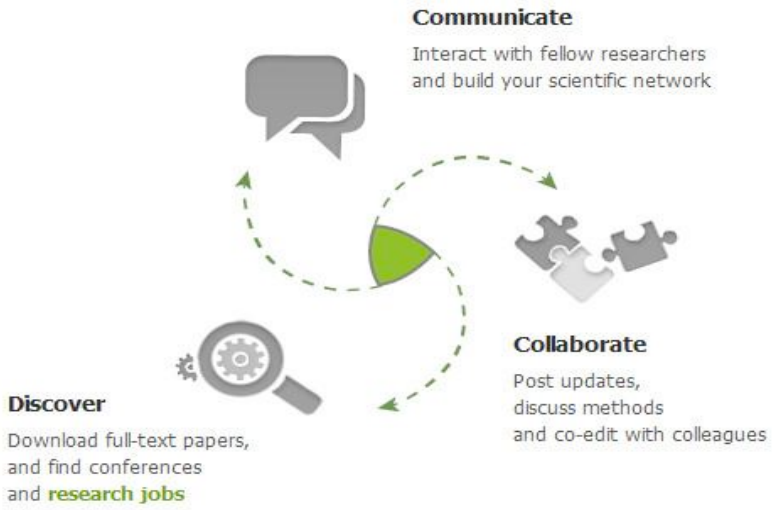

Figure 3. *Diagram of the three pillars that define ResearchGate*

2. Material and methods

There are various different kinds of academic social networks. Specifically, we can make a distinction on the basis of two fundamental criteria: the topic they address, and their operating policy. Under the first category there are general and specialist networks. General networks cover a more diverse range of disciplines, allowing for interdisciplinary exchange on a single platform, thereby fostering the transversality of knowledge. Specialist networks, as the name suggests, focus on specific fields, although the degree of specificity may vary (ranging from fields as broad as social sciences to others with more specific objects of study). In terms of operating policy, the most notable factor is whether the networks are free or require the payment of a subscription payment to gain access to them. For this study we have taken examples of all these kinds of networks, general and specialist, whether requiring paid subscriptions or offering free access. The methodological system employed draws from theoretical approaches and from our own experience for the purposes of conducting a qualitative analysis. Through this analysis we identified the characteristics of the different networks and of their resources, which we subsequently converted into variables that allowed us to obtain a series of

percentages to use for another analysis, this time quantitative, which would enable us to determine the extent to which the networks conform to what would be, according to the conclusions we drew from the study, an ideal knowledge network for the purposes of research.

The networks analysed were selected as follows: For general networks the selection has been made taking into account the number of users registered and the quantity of documents stored, and considering Metcalfe's Law, according to which the value of a network increases in proportion with the square of the number of system users (n2), which Foglia (2009) shows using the following graph:

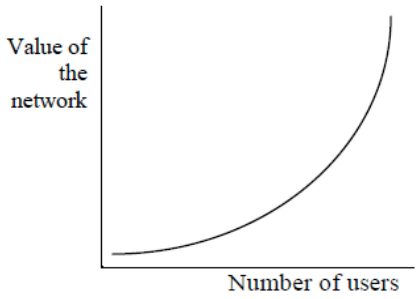

Figure 4. *Metcalfe's Law*

We therefore chose three basic networks: ResearchGate (2.2 million users and 35 million documents), Academia.edu (2,201,270 users and 1,661,926 documents as of February 6, 2013) and Mendeley (2,153,818 users and 351,357,178 documents as of February 8, 2013), all of which are free to users.

For specialist networks the selection criteria have been different. There are networks of this kind associated with a wide range of disciplines, with some of the most prolific fields being those related to the natural sciences. These include the networks Biomed Experts, Epernicus, Scilife and Nature Work, and many other networks with large numbers of users that have been the subject of numerous studies. There are others, however, which to date have not had so much visibility, such as those associated with the social sciences, which are the very networks we have determined to focus our attention on given their increasing proliferation and the lack of articles studying and analysing them, despite the fact they constitute a substantial change in terms of the knowledge models used in their different research areas. Of these we have selected five for their affinity with our field of study, which is essentially the field of communication. We have therefore focused on the following networks:

- Social Science Research Network, hereinafter SSRN (although it does not have any fee for registration, it does require payment for certain documents);
- H-net (free);
- ECREA (payment required);
- NECS (payment required);
- Portal de la Comunicación (free).

3. Analysis and results

After studying each of the networks and the resources they offer, we determined that each network can be defined according to four basic aspects common to all. These are:

1. General parameters: These allow us to obtain a general idea of the network, both with regard to its size and to the basic characteristics that define it, such as the type of users it targets, the geographical regions it covers and its objectives.

2. User data: In this section we examine everything related to new user registrations. This includes the different points and information to be filled in every time a new user signs up. This allows us to determine the type of information that this kind of network considers relevant for the creation of user profiles.

3. Services and resources: This is a list of the different actions and resources that determine the possibilities that network users have, ranging from conducting searches to the option of contributing files or creating work groups. Many of these features originate from conventional social networks, such as the use of a wall or chat function, but there are also others that are highly useful to academics, such as repositories for storing users' documents and consulting the documents of other users, bookmarking, and the facility to create quotes or links to scientific or academic databases.

4. Content: This section allows us to analyse the kind of files stored on the network and the nature of their organization or access (whether you need to be a registered user to view them, whether they can be downloaded or whether all or only a part of the information stored is accessible).

As noted above, these four aspects are common to all the networks; however, in each case, each network also establishes its own parameters, tools and resources. After analysing each one we were able to identify another highly significant fact: irrespective of the resources or items unique to each network, all of the networks can be classified according to three major functions, which constitute the fundamental pillars of this kind of network. These three functions are: communication, collaboration and sharing. Our identification of these functions was based as noted on the analysis of the different networks, but also on the objectives that these

research-focused networks fulfil, according to the authors cited in the previous section. Together these functions will result in a network that allows researchers fluid, transparent and barrier-free access to its collective knowledge, thereby enabling them to further their research, in turn contributing to progress in society as a whole.

There are various features and resources that contribute to these three functions. Having studied those offered by each network, we have made a list of the most important of these features (25 in total). These would be, according to our analysis, the features that an ideal knowledge network can never do without: participation on social networks, communication network-users, communication user-user, global character, following/followed function, free to users, search engine, subscription to topics of interest, upload files, download files, invite contacts, citation, creation of work groups, share links, wall, chat, forum, user recommendation, sending updates, repository, calendar of events, job offers, statistics, news, bookmarking.

When analysing the networks selected, both the general networks and those specific to the social sciences, we converted these 25 resources into variables, each one of which was given a value of[4] 4 points[5], i.e., 4% of the total. Our aim was to extract a numerical representation to determine in percentile terms the extent to which each network conforms to the concept we posited of the ideal academic social network, regardless of whether they are general or specialist. The results are as follows:

Table 2. *Percentage of conformity to ideal for online knowledge networks*

General networks	
ResearchGate	84%
Academia.edu	75%
Mendeley	75%
Specialist networks	
SSRN	61%
H-net	52%
Portal de la Comunicación	49%
ECREA	39%
NECS	33%

The figures show that the general networks conform more closely to the idea that we have of a knowledge network than the specialist networks, with ResearchGate

[4] 25 parameters with a value of 4% each equals 100% of the total.

[5] With regard to the variable "Search Engine", it should be noted that this encompasses four types of searches (user, topic, conference and article searches), with each of these being attributed one of the total 4 points for this variable.

(which is also the most popular) standing out above the rest. This may be due to the fact that because it has the largest number of users and the highest user participation, it is able to monitor actual user needs more dynamically and adapt the network accordingly. Another determining factor is a network's international character; we therefore especially take into account the languages in which it is established, which as a general rule is English. The one exception is Portal de la Comunicación, which has opted for Spanish and Portuguese, which thus, despite not operating in English like the others, also expands its potential by reaching beyond national borders. As can be seen, this platform is located at the halfway point towards the ideal and is designed more as a portal than a network as such, although we have decided to include it because of its uniqueness, the work it performs, and its marked social character, which bring it closer to our idea of academic social networks.

In terms of user fees, as noted above we have sought a mixture of options. The three general networks studied offer free access, unlike some of the specialist networks such as ECREA and NECS, both of which finished in last place, below those without user fees. This makes it clear that the option of open access is viable, and that there is no reason that the quality of the platform will be lower if payment is not required, but rather that free networks can be just as sustainable. Moreover, the academic social networks analysed (both general and specialist) that do not charge user fees have more users (while NECS has around 1,100 users and ECREA has 3,500, Social Science Research Network reports more than 1.3 million and H-net more than 100,000). In this respect, several aspects should be considered:

On the one hand, the wider the network's field of study, the more users will join, which in itself places NECS and ECREA at a disadvantage due to their very narrow focus (the first is the European Network for Cinema and Media Studies and the second is the European Communication Research and Education Association), something that may be favourable for certain researchers not seeking transversality between disciplines but instead wishing to focus on a specific field. On this basis, it is clear that they have fewer users, while others like SSRN with many more users cover the wide range of all the social sciences.

On the other hand, it is true that many of the users registered on these networks are not willing to pay, either because initially they will only be exploring and getting to know the platform and refuse to pay for something that they are not certain they will benefit from, or because they are in favour of the philosophy of open access, or perhaps even because they are reluctant to pay for certain services online. In this sense, we find that often the number of users is not representative of the use of the network, since many users registered on a network do not engage in any activity on it. This tends to occur more often on the networks with no user fees, where many register to try it out but soon stop using it. On networks with user fees, however, people may think it over more carefully but if they ultimately decide to register it is because they are truly convinced or at least have the intention to use the network. As

a result we find that although they may have fewer users, the users they have may participate more than users on free access networks.

Indeed, low participation is one of the issues that most severely afflict these types of networks in general, constituting one of their most common weak points. Thousands of registered users do not participate, or if they do, they often abandon the network to a certain degree once they have covered their information needs and make no new contributions. We can affirm that only a portion of registered users participate actively and with a certain degree of regularity in the achievement of communication, collaboration and sharing. However, for the network to function properly participation is essential, because to truly build knowledge in virtual environments, according to Nó Sánchez (2008), the conditions of active commitment, participation, frequent interaction and connection with the real world need to be met, a point also underlined by Arriaga Méndez, Minor Jiménez and Pérez Cervantes (2012), who argue that the meaning and objectives of a network will only be made a reality through the work of the participants.

We therefore need to ask what the low participation of certain groups of users could be due to. According to Cabezas-Clavijo, Torres-Salinas and Delgado-López-Cózar (2009), there may be various reasons for the reluctance of researchers to participate in these networks. One factor may be the highly competitive nature of scientific work, which fosters a certain degree of discretion in the dissemination of results until those results are published by conventional means. Another factor may be the age of the researchers, i.e., the fact that the more established researchers do not tend to be so familiar with the Internet and the new possibilities it offers, and prefer traditional methods, a situation that nevertheless is changing thanks to the up-and-coming generations of academics who have grown up with ICTs and who apply them in practically all spheres of action, both personal and professional.

Another aspect is the fact that there are knowledge networks where there is total freedom to post content, without the need for that content to undergo any type of review process, the most common type being peer review. While it is true that there are networks that do include a review requirement, such as H-net and SSRN, on others there is no filter whatsoever; this, rather than favouring collective progress, is actually harmful to it, given the hazard to scientific rigour constituted by the possible inclusion of erroneous information. Also, as noted by Torres-Salinas (2008), this in a way keeps researchers from publishing freely, as any contribution not submitted to the scrutiny of their peers is always under suspicion. Moreover, any unreviewed publication would most probably not be taken into account in the evaluation processes to which researchers are submitted.

Of course, the review process does not guarantee total accuracy of information, because reviews, and thus the filters established to ensure maximum reliability, sometimes fail, but at present they are the forms of legitimation that are most widespread and commonly considered to be the most reliable, and we therefore

cannot sidestep them, either for journals or for the knowledge networks that concern us here, which they endow with scientific rigour, trustworthiness and prestige.

Conclusions

Based on this analysis we can conclude by establishing our definition of the ideal academic social network as follows:

"A meeting point for researchers from all over the world who join forces in an effort to advance their studies on the basis of three basic principles: communication, collaboration and sharing their knowledge, in a democratic virtual environment that is optimal for dissemination provided there is a commitment to participation and faithfulness to academic rigour."

To achieve this, academic social networks offer a series of resources and services that have been developed through the application of the advantages of Web 2.0 and its successive versions to the field of research, such as work and collaboration on line, the creation of interest groups, communication via chats or other types of messaging, and the possibility of document sharing. In this way, these knowledge platforms or networks have the virtue of serving in two basic ways, especially those that are open access:

On the one hand, they benefit participants individually, as we must not forget that sharing research data publicly can have a positive effect on citation (Piwowar, Day and Fridsma, 2007), thereby contributing to an increase in productivity and in impact.

On the other hand, they are good for society in general, given that, according to the theories of Ávalos (2005) and Aguilera (2000), research and education constitute the cornerstones of the economic policy of developed nations. Toffler suggests something similar in arguing that knowledge is the central element of our society today. In this context, according to Gil Domínguez et al. (2012), the search for knowledge guides our actions, is the source for the production of goods and services, and the means that allows us to pursue greater development.

We see the great potential of these networks as lying in the fact that they allow researchers to advance professionally while also championing the good of all citizens. However, it is still too early to proclaim their ascendancy. The quality filters of some of these networks are still limited and user participation in relation to the number of registered users is low. Moreover, the typical profile of most of these users is young and without an established academic career. This reflects the fact that these social networks constitute a new development still in its early stages. Nevertheless, they are bringing about a change in the ways of conceiving of and

conducting research, as they advocate global access to knowledge, collaboration and progress, which continue to develop as these networks, begin to grow.

Acknowledgements

The research for this article was enabled with the support of the Research Project 'Study and analysis for development of Research Network on Film Studies through Web 2.0 platforms', financed by the National R+D+i Plan of the Spanish Ministry of Economy and Competitivity (code HAR2010-18648).

References

About Opensource. (n.d.). Retrieved from: http://opensource.com/about.

Academia.edu. Retrieved from: http://www.academia.edu

Aguilera, M. (2000). La Investigación Universitaria: indispensable en los nuevos tiempos. *Universitas 2000, 29*, 11-12.

Alcalde, I. (2012). *Inteligencia colaborativa: más allá de la inteligencia colectiva*. Retrieved from: http://www.ignasialcalde.es/inteligencia-colaborativa-mas-alla-de-la-inteligencia-colectiva/

Alonso, J., Subirats, I., Martínez Conde, M.L. (2008). *Informe APEI sobre acceso abierto*. Gijón: Asociación profesional d'especialistas en información.

Area, M., & Pessoa, T. (2012). De lo sólido a lo líquido. *Comunicar, 38, (19)*, 13-20.

Arriaga Méndez, J., Minor Jiménez, M.G., Pérez Cervantes, M.L. (2012). Retos y desafíos de las redes de investigación. Revista *Iberoamericana sobre calidad, eficacia y cambio en educación, 10(3)*, 178-183. Retrieved from http://www.rinace.net/reice/numeros/arts/vol10num3/art13.pdf

Avalos, I. (2005). La investigación universitaria en tiempos de la sociedad del conocimiento. *Revista Venezolana de Economía y Ciencias Sociales, 11*, 89-105.

Berners-Lee, T. (1999). *Weaving the Web*. London: Orion Business Books.

Björk, B.C. (2004). Open access to scientific publications - an analysis of the barriers to change. *Information Research, 9(2)*. Retrieved from: http://InformationR.net/ir/9-2/paper170.html

Brown, D. J., & Boulderstone, R. (2008). *The impact of electronic publishing*. München: KG Saur.

Cabezas-Clavijo, Á., Torres-Salinas, D.; Delgado-López-Cózar, E. (2009). Ciencia 2.0: catálogo de herramientas e implicaciones para la actividad investigadora. *El profesional de la información, 18(1),* 72-79.

Careaga Mercadillo, A. L. (2009). Ingenet 2.0: El saber colectivo. Retrieved from: http://comunidad.ingenet.com.mx/anacareaga/2009/12/04/ingenet-2-0-el-saber-colectivo/.

Cebrián Herreros, M. (2008). La Web 2.0 como red social de comunicación e información. *Estudios sobre el Mensaje Periodístico, 14*, 345-361.

Cobo Romaní, C., & Pardo Kuklinski, H. (2007). *Planeta Web 2.0*. Inteligencia colectiva o medios fast food. Barcelona: Grup de Recerca d'Interaccions Digitals Universitat de Vic.

Codina, L. (2009). *Ciencia 2.0: Redes sociales y aplicaciones en línea para académicos*.

Codina, L. (2010). Retrieved from: http://www.mindomo.com/es/view.htm?m=d4d1f77be0d04af0804c719038144de8

Directory of Open Access Journals. Retrieved from: http://www.doaj.org/

Essachess. Journal for Communication Studies. Retrieved from: http://essachess.com/index.php/jcs/about/editorialPolicies

European Communication Research and Education Association. Retrieved from: http://www.ecrea.eu/

European Network for Cinema and Media Studies. Retrieved from http://www.necs-initiative.org/

Flores-Vivar, J. M. (2009). Nuevos modelos de comunicación, perfiles y tendencias en las redes sociales. *Comunicar, 33(17),* 73-81.

Foglia, G. (2009). Cómo se comportan las Redes Sociales según las Leyes de Moore y Metcalf. Retrieved from: http://www.iprofesional.com/notas/87619-Como-se-comportan-las-redes-sociales-segun-las-leyes-de-Moore-y-Metcalfe.html

García-Aretio, L. (2007). Redes y comunidades. *Comunicación y Pedagogía, 223*, 28-33.

Glasner, P. (1996). From community to 'collaboratory'? The Human Genome Project and the changing culture of science. *Science and Public Policy, 23*, 109-116.

Hipertext.net, 7. Retrieved from: http://www.upf.edu/hipertextnet/numero-7/ciencia-2-0.html

H-Net: Humanities and Social Sciences Online. Retrieved from: http://www.h-net.org/

http://www.opensocietyfoundations.org/openaccess/read

Lee, M.R., Lan, Y. (2007). From Web 2.0 to Conversational Knowledge Management: Towards Collaborative Intelligence. *Journal of Entrepreneurship Research, 2(2)*, 47-62.

Lévy, P. (2004). *Inteligencia colectiva. Por una antropología del ciberespacio*. Washington D.C.: Organización Panamericana de la Salud.

Mao, I. (2007). *Sharism is not Communism, nor Socialism*. Retrieved from: http://www.isaacmao.com/meta/2007/09/sharism-is-not-communism-nor-socialism.html

Mao, I. (2008). *Sharism: A Mind Revolution*. Retrieved from: http://freesouls.cc/essays/07-isaac-mao-sharism.html.

Martorell, S., & Canet, F. (2013). Social media: engagement and the revolution of the masses. *II International conference on Communication, Media, Technology and Design*.

Matsuura, K. Retrieved from: http://unesdoc.unesco.org/images/0013/001330/133015e.pdf (Retrieved 02/03/2013).

Max Planck Society (2003). *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities*. Retrieved from: http://oa.mpg.de/lang/en-uk/berlin-prozess/berliner-erklarung

Mayfield, R. (2006). *Power Law of Participation*. Retrieved from: http://ross.typepad.com/blog/2006/04/power_law_of_pa.html

Mendeley. Retrieved from http://www.mendeley.com/

National Science Board (1998). *Science and Engineering Indicators*. US: US Government Printing Office.

Nó Sánchez, J. (2008). Monográfico comunicación y construcción del conocimiento en el nuevo espacio tecnológico. *Revista de universidad y sociedad del conocimiento, 5(2),* 2-3. Retrieved from: http://rusc.uoc.edu/ojs/index.php/rusc/article/view/v5n2-comunicacion-y-construccion-del-conocimiento/v5n2-no

Open Society Institute. (2002). *Budapest Open Access Initiative*. Retrieved from:

O'Reilly, T. (2005). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *Communications & Strategies, 65*, 17.

Pardo Kuklinski, H. (2005). La noción de intercreatividad en la evolución de Internet y su influencia actual en las aplicaciones web universitarias institucionales y en sus redes de gestión de conocimiento. *2do Congreso Iberoamericano de Comunicación Universitaria Mass Media y Universidad*. Universidad de Granada. Retrieved from: http://prensa.ugr.es/prensa/dialogo/biblioteca/cdrom_cicu/cicu2005/area3.htm

Piwowar, H.A., Day, R. S., & Fridsma, D.B. (2007). Sharing detailed research data is associated with increased citation rate. *PLoS One, 2*, 308.

Portal de la Comunicación. Retrieved from: http://www.portalcomunicacion.com/

Research Gate. Retrieved from: www.researchgate.net

Reyes Iriarte, J. E. (2010). Conocimiento y tecnología; una relación esencial en la reinvención humana. *Akademeia, 5,* 32-37.

Rheingold, H. (2002). Smart Mobs: The Next Social Revolution. Cambridge: Perseus Books Group.

Russell, J. M. (2001). La comunicación científica a comienzos del siglo XXI. *Revista internacional de ciencias sociales*, 178.

Salinas, J., Pérez, A., & De Benito, B. (2008). *Metodologías Centradas en el Alumno para el Aprendizaje en Red*. Madrid: Síntesis.

Sañudo, L. (2012). El papel de las redes profesionales de investigación e un mundo globalizado. *Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación, 10(3)*, 136-143. Retrieved from: http://www.rinace.net/reice/numeros/arts/vol10num3/art9.pdf

Social Science Research Network. Retrieved from: http://www.ssrn.com/

Solano, A. Retrieved from: http://www.slideshare.net/ppitufo/tic-y-web-20

Statement on Open Access Publishing (2003). *Bethesda Statement on Open Access Publishing*. Retrieved from: http://legacy.earlham.edu/~peters/fos/bethesda.htm

Suber, P. Rerieved from: http://bibliotecavirtual.clacso.org.ar/ar/libros/secret/babini/Peter%20Suber.pdf

Surowiecki, J. (2004). *The Wisdom of Crowds*. New York: Anchor Books.

Tapscott, D. (2012). Retrieved from: http://www.ted.com/talks/don_tapscott_four_principles_for_the_open_world_1.html

Torres Salinas, D., Delgado López Cózar, E. (2009). Estrategia para mejorar la difusión de los resultados de investigación con la web 2.0. *El profesional de la información,*18(5).

Torres-Salinas, D. (2008). El paradigma 2.0 en las grandes revistas científicas. *3rd International LIS-EPI Meeting*.

Ullrich, C. et al. (2008). Why Web 2.0 is Good for Learning and for Research: Principles and Prototypes. *17th International World Wide Web Conference* (Beijing).

Wu, S., Neylon, C. Open Science: Tools, approaches, and implications. Retrievd from: fgamedia.org/faculty/rdcormia/collaboration/PDF/Open%20Science%20-%20Tools,%20approaches,%20and%20implications.pdf