

THE SOCIAL WEB: THE FUTURE IS NOW

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Abstract— This paper presents a review of the Social Web and its tools in the context of professional and scientific activity. The utility of these tools is discussed and some success examples are presented.

Keywords— Internet, Communication, Social Networks, Social Media, Blog, Twitter, Facebook, LinkedIn.

I. INTRODUCTION

In his 1945 article “As We May Think”, Vannevar Bush described *the memex*, a device in which individuals would compress and store all of their books, records, and communications. The concept of the memex influenced the development of early hypertext systems, eventually leading to the creation of the World Wide Web, by Tim Berners-Lee 45 years later. Being an extraordinary concept, the memex has been largely surpassed by the current communication tools based on the World Wide Web.

If we concentrate on the scientific activity, we may ask ourselves: Can we really measure the impact of these new tools in this context? Have their use proved of any benefit for the scientific community and its activity? In August last year, The Guardian published two articles dealing with the subject of the utility of social media in research. The first was titled: “I’m serious academic, not a professional Instagrammer” and presented a strong critic about the use of social media in research. In a few days, an ironic response came up: “I’m a non-serious academic. I make no apologies for this”, dealing, point per point, with the issues pointed out by the first article. At least, what is clear is that Social Media tools are controversial and a continuum debate is taking place around them in the scientific community.

My aim here is to present some Social Media tools, and to show how they can be used to be useful in the context of research activity. In particular, how they can be used in the communication of the science research and the spread of its culture.

II. ANATOMY OF SOCIAL MEDIA

Let’s begin by answering to this question: What is Social Media? Social Media is a group of internet-based

applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Content [2]. Web 2.0 is a term that was first used in 2004 to describe a new way in which software developers and end-users started to utilize the World Wide Web. Content and applications were no longer created and published by individuals, but instead were continuously modified by all users in a participatory and collaborative fashion. Web 2.0 can be understood as the platform for the evolution of Social Media. User Generated Content can be seen as the sum of all ways in which people make use of Social Media, and describes the various forms of media content that are publicly available and created by end-users.

There are two important concepts that are useful to understand the potential scope and impact of Social Media. The first one is the concept of *social presence*, developed by John Short, Ederyn Williams and Bruce Christie in 1976. According with social presence theory, media differ in the degree of social presence they allow to emerge between two communication partners. Degree of social presence is equated to the degree of awareness of the other person in a communication interaction, and it is influenced by the intimacy and immediacy of the medium. The face-to-face medium is considered to have the most social presence, and written, text-based communication the least. In text-based communication, an e-mail has a lower degree of social presence than, say, a WhatsApp communication. The higher the social presence, the larger the social influence that the communication partners have on each other’s behavior.

Closely related is the idea of *media richness*, introduced by Richard L. Daft and Robert H. Lengel in 1986 as an extension of information processing theory. It is based on the assumption that the goal of any communication is the resolution of ambiguity and the reduction of uncertainty, and is used to rank and evaluate the ability to reproduce the information sent over a certain communication media. The degree of richness of any media is related with the amount of information they allow to be transmitted in a given time. In this sense, some media are more effective than others in resolving ambiguity and uncertainty due to the possibility to allow conversations between communication partners.

III. TOOLS FOR COMMUNICATION

There are currently several applications for Social Media, differing in their degree of richness and social presence. It is important to note that these are dynamic properties that depend on several factors that continuously evolve in time, as, for example, the popularity of the application. The three main categories of Social Media applications are presented below.

A. Blogs

Blogs represent the earliest form of Social Media. A blog is a discussion or informational website consisting of discrete, often informal text entries ("posts"). Posts are typically displayed in reverse chronological order, so that the most recent post appears first, at the top of the web page. Blogs could be the work of a single individual, or of a small group, and often covered a single subject or topic. Generally, although not always, blogs offer the possibility to comment post engaging the end-user in the construction of the content.

A lot of things have changed since the first blog, [Links.net](#), was created by Justin Hall in 1994. The current, more mainstream, platforms like Blogger or World Press allow end-users to add comments to the post, thus increasing the social presence of the media. Besides, with the help of content hosting platforms (see the ones discussed in Content Communities section), blogs are not limited to text content, but can include video or other media, and that increases their richness.

B. Content Communities

Content communities are web 2.0 applications oriented to sharing media content between users. They exist for a wide range of different media types like photos (Flickr), videos (YouTube and Vimeo) or presentations (Slideshare).

Usually, content communities allow the creation of personal or brand profiles and the sharing of content in a social network-like fashion. Another popular use is as a hosting platform for content to be shared in blogs or social media.

C. Social Networking Applications

A social networking service is an online platform that enables users to build social networks or social relations with people who share similar personal or career interests, activities, backgrounds or real-life connections. They are based on the creation of personal, institutional or brand information profiles, and on the interconnection of these profiles through the exchange of instant messages.

The most popular application for Social Networking is Facebook, created by Mark Zuckerberg along with his fellow Harvard College students and roommates in 2004. Facebook has around 1.7 billion monthly active users (December 31, 2016) which makes its potential for interaction and influence huge. Twitter was created in March 2006 by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams, and is another very popular tool. Users post and interact with messages restricted to 140 characters ("tweets").

Being two very popular tools, Twitter and Facebook have different levels of acceptance in the scientific community. According to a recent survey published in Nature [7], among a subset of researchers active in social networks, very different patterns of use were found. While the majority declares the utility of Twitter to comment, actively discuss and share research and contact peers, very few researchers declare this use of Facebook, and that the majority, in fact, declare not using Facebook professionally.

Social networks are a noisy communication channel, but with a high social presence due to the high degree of interaction they allow.

IV. TWITTER SUCCESSFUL USES CASES

In the last years several articles and reports had been published dealing with the use of social networks for the transmission of scientific information to society.

Li et.al. in their article "Tweeting disaster: an analysis of online discourse about nuclear power in the wake of the Fukushima Daiichi nuclear accident" studied how people used online tools like Twitter to communicate about global and local environment and health risk related to nuclear power. They stress the utility of this kind of tools inasmuch as "reflecting spontaneous and trending opinions, Twitter, along with many other social media tools, allows policymakers and crisis managers to understand the concerns of a group of informed citizens who are well engaged in a given issue".

Vinay Prabhu and Andrew B. Rosenkrantz arrive to similar conclusions in their article "Imbalance of Opinions Expressed on Twitter Relating to CT Radiation Risk: An Opportunity for Increased Radiologist Representation". In their study, they try to assess perspectives and information relating to CT and radiation risk on Twitter. What they found was that the large majority of content shared was either unfavorable or concerned regarding CT radiation risk. Besides, most shared articles were not peer-reviewed, and were posted by non-professionals without any relation with medical imaging. They advocate that "more active engagement on Twitter by radiologist and physicist and increased dissemination of peer-reviewed articles may

achieve a more balanced representation and alleviate concerns regarding CT radiation risk on social networks”.

An interesting action in relation to the use of social networks in the communication of medical information is the Social Oncology Project. The initiative, which has been in operation for four years, has sought to take the view of cancer in society. In their last report a shift has taken to capture a more detailed snapshot on how the members of communities (an ecosystem that includes doctors, patients, media and advocates) communicate and relate. What they found is that Twitter can be a very powerful tool when professionals participate in the conversation with patients: “There was a clear interest in education—no cat videos or Reddit memes—but the sources each group shared varied and demonstrated the different veins of information each group tapped. Doctors were far more likely to share peer-reviewed publications, patients and advocates preferred well-established consumer information sources and video content, media often referenced news stories. These patterns were not absolute, however: everyone in the community consumed information from a wide range of places, and the only consistent similarity was the high quality of the content.” [9]

V. DISCUSSION

It goes without saying that the use of social media is a personal choice. And it is not an easy one, as it implies a high level of exposure with which not everyone feels comfortable. But it has proved to be a powerful tool for professionals to engage with peers and society.

For institutions, it is almost an obligation if they want to communicate in an effective way with the public. As current Chair of Communications and Publications of the EFOMP, my greatest efforts are focused on strengthening the presence in social networks, an activity that we inaugurated last year with Twitter and LinkedIn accounts.

And for the worried with the excess of self-promotion using social media, a last advice: use the Kardashian index to keep the ego at bay ;-)

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