Facebook & Co. change science

In brief

- Today, the Internet is an important working environment for all scientists and researchers. They also increasingly use Web 2.0, mainly on an experimental basis. There are also research-specific services with special features for closed groups. By now, some of these platforms have more than a million members worldwide.

- Web 2.0 has the potential to change science and research: the relationship with the public is redefined; written micro-communication is intensified; web activities affect the standing of the scientists.

- Using Web 2.0 services intensively leads to partial loss of control over information input and a possible information overload for the individual.

What is it about?

The Internet's influence on science and research is rather comprehensive, with cyberscience having become a reality today: emails have become a standard, all scientists and their institutes have a presence online, databases are everyday tools, and digitally available journals are the norm. Differences between individual subjects, whilst important in the beginning, have increasingly become indistinct. Over the last years, the Internet has changed considerably; on the one hand because of Google's dominance, on the other because of so-called Web 2.0 services such as:

- Social network sites (Facebook *et al.*)
- Microblogging (e.g. Twitter)
- Virtual worlds (e.g. Second Life)
- Blogging (public diaries)
- Collaborative text production (in particular Wikipedia)

These services have been gaining ground in academia since around 2006. By now, there are Facebook-like platforms for scientists which offer special features, for instance with a view to publications: ResearchGate, Academia.edu or Mendeley all have more than a million members, of which, however, only a fraction are actually active. There are many scientific blogs, twittering scientists as well as research institutions within Second Life. Not only laypersons contribute to Wikipedia, but also many researchers do so intensively. So far, only very few can, however, be called "cyberscientists 2.0".

Princeton University in Second Life

In the context of five case studies we researched how these services are being used in the academic world and to what extent they are functional for science. We asked which factors hinder or promote the large-scale application of Web 2.0 services. The analysis focused on the following questions:

- Will the proverbial ivory tower get new windows?
- What is the relationship between novel formats of quality control and traditional procedures in academia?
- Is there a danger of information overload and with it of dysfunctionalities?
- Is there a conflict between the new transparency and the protection of privacy?
- Do we have to expect a democratisation of academia?

Basic data

Project title: Interactive Science
Project team: M. Nentwich (ITA Vienna) and R. König (ITAS Karlsruhe) as part of a consortium (Management: ZMI Gießen)
Duration: 6/2008 – 05/2011 (04/2012)
Funded by: Volkswagen Foundation
Website: www.oeaw.ac.at/ita/interactive

Key results

The debates on Web 2.0, in particular when it comes to its impacts on academia, are marked by extremes: dystopic and euphoric points of view. In any case, this newly developing, highly dynamic environment challenges the usual ways of doing research.

Web 2.0 services are partially functional for science and research and address concrete needs, such as search for information in the Twitter network, public relations via blogs, or contacting cooperation partners via social network sites. By contrast, it is dysfunctional that, presently, one can reach their own network only via many parallel channels, with the result that certain positive network effects do not (yet) occur. Furthermore, intensive use may lead to information overload and problems with time management.
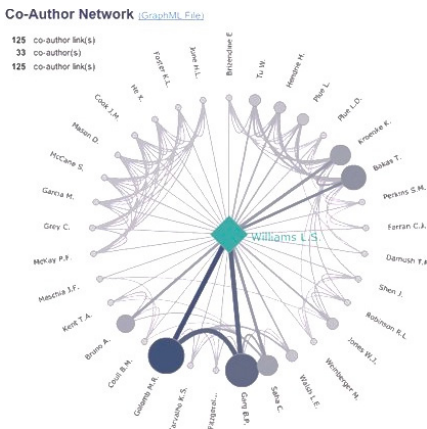
Co-author network in VIVO

Fully-fledged cyberscience 2.0 would be characterised by high permeability between academia and its external world, by strongly intensified micro-communication, and by greater variety of publication types. The standing of scientists and researchers would also largely be co-determined by their web activities. Because of the special ways these media function (recommender systems, rankings), the individual will lose some control over what information will be reaching them.

Whether and how cyberscience 2.0 will become a reality depends, amongst other things, on the following factors: continuation of the widespread trend towards a 'Facebook society', commercial interests, closeness of individual specialities to their application, activities of so-called cyber-entrepreneurs, incentive systems, political decisions, and optimum adaptation of the services according to the needs of academia.

What to do?

Given the potential of Web 2.0 and its increasing use in research and academia, actors in research policy, universities, research institutions and academic associations are well advised to actively deal with this powerful development:

In order to realise the potential, academia would have to actively engage in the design and further development of these platforms as the large Internet players with primarily commercial interests will hardly offer solutions optimised for scientific niche applications.

- Dealing professionally with these new media is important, in particular, this means:
- Raising awareness about algorithms and modes of operation as well as supporting individual competencies with regard to efficient and adequate use of Web 2.0.
- Academic institutions need guidelines for the handling of Web 2.0; in particular, they will have to clarify who would speak on behalf of the institution and how to deal with the inherent interactivity (and the impossibility of formal clearance procedures as a result thereof).
- If one of the aims is to open up academia to the public, special incentives are necessary; otherwise it would make more sense for the individual that they orientate themselves towards scientific criteria, i.e. to publish in a science journal instead of a blog.

Further Reading

Nentwich, M. and König, R. (2012) Cyberscience 2.0 – Research in the Age of Digital Social Networks; Frankfurt/Main: Campus

www.zmi.uni-giessen.de/publikationen/publikationen-cyberscience2.html

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