A SCENARIO OF MEDIA AWARENESS FOR SOCIAL NETWORKING

Dr. Ramchandra, Dr. Yojna Lal, Dr. S.B. Lal
Sam Higginbottm Institute of Agriculture, Technology and Sciences,
Allahabad, 211007, India
dram_chandra@yahoo.co.in

Abstract

The term media is derived from Medium, which means carrier or mode. Media denotes an item specifically designed to reach a large audience or viewers. The term was first used with the advent of newspapers and magazines. However, with the passage of time, the term broadened by the inventions of radio, TV, cinemas and Internet.

Tools for social networking and social awareness are developing rapidly and evolving continuously. They are gaining popularity in a growing number of professional as well as personal activities, including scholarly research. There are social awareness tools for science researchers that facilitate collaboration, help manage references, and offer options for presenting findings in new ways. This paper discusses those tools. Evaluating and understanding their functionalities requires effort, and scientists can be reluctant to invest the necessary time to learn to use and populate them on their own. This suggests that an important role for librarians is to evaluate the many social awareness tools available, to recommend the ones that are best suited to each researcher's needs, and to help researchers use those tools effectively.

In the world of today, media has become almost as necessary as food and clothing. It is true that media is playing an outstanding role in strengthening the society. Its duty is to inform, educate and entertain the people. It helps us to know current situation around the world. The media has a strong social and cultural impact upon society. Because of its inherent ability to reach large number of public, it is widely used to convey message to build public opinion and awareness.

INTRODUCTION

As social networking tools compete to touch all aspects of our lives, it is likely that science and scientific research will be increasingly affected. After all, social networks have always been a catalyst for scientific research — from large formal conferences to weekly department get-togethers. Research must begin with an idea, and collaboration must begin with a connection. Social networks facilitate scientific progress by mixing people and ideas; social networking tools bring this mixing online. Now mini-conferences can be held in Google+, while spontaneous discussions erupt on Facebook, serendipitous meetings are enabled by Foursquare, and the insights from all these interactions are disseminated via Twitter. The rapid and

sustained adoption of these tools is making such scenarios more common. In just over two years of existence, Foursquare has surpassed 10 million users. (Indvik, 2011) Meanwhile, Facebook has 800 million active users, half of whom access the site on any given day. (Facebook, 2011) As these tools connect more people, they create more paths for ideas to travel, and subsequently more opportunities to seed new ideas. Once the crucial idea is sparked and the necessary collaborators are linked, the research begins, and a different set of tools becomes necessary.

This paper discusses social awareness tools developed specifically for the scientific researcher — tools to facilitate collaboration, tools to manage article references, tools to present findings in new ways. They are tools that the authors have used at the Los Alamos National Laboratory (LANL) Research Library. The Library's Knowledge Systems team created ScienceSifter, SAT, and EXPAT, while the Library's Customer Service team has discussed VIVO, Mendeley and SciVee with interested researchers. Our scientists are not opposed to learning a single tool, but they have neither the time nor inclination to test all the different options themselves. We suspect this is not unique to our institution, but common across academia. One of the authors discovered similar concerns when the Penn State Hershey College of Medicine implemented the Harvard Catalyst Profiles tool. The implementation revealed how little scientists know about such tools and how little time they have to learn them. This suggests a role for librarians: to study the many social awareness tools available, to recommend the best one for each researcher's particular needs, and to help that researcher climb the tool's learning curve.

PURPOSES:

Mass media can be used for various purposes:

Entertainment:

The original idea behind the creation of various 'media means' was to entertain masses. Radio, TV, cinemas and magazines spend most of their resources targeting on entertaining items and programs. Because of the growing population and developing lifestyle, the demand for more entertainment is increasing. Every year billions of dollars is traded in entertainment industry.

News & Current Affairs:

One of major duties of media today is to inform the people about the latest happening around them and the world. They cover all aspects of our interest like weather, politics, war, health, finance, science, fashion, music, etc. The need for more and more news has evolved into creation of dedicated TV & radio channels and magazines. People can listen, watch and read latest news whenever and wherever they want.

Political Awareness:

Media is the overseer of the political system. If it plays its role honestly, it will be a great force in building the nation. It plays a great role in bringing common man close to their leaders. The media

focuses in bringing details of all major political situations, decisions and scenarios. Hence people can better understand their rights and make better decisions.

Education:

Because of the power of media is so extensive and huge, it can be used to educate people with very little cost. Imagine a classroom in every city with thousands of students being taught by just one teacher. But unfortunately, because of money-making approach of media and lack of interest by government, very less work is done in spreading the education.

Public Announcements:

Various authorities and agencies utilize the power of media to spread informative messages to public. This may include warning against a storm or epidemic, delay in arrival or departure of flights and trains, etc. In some cases, it is legally binding to publish notices in newspaper like tenders, change of property ownership, etc.

Almost all business concerns use the power of media to sell their products. They advertise in media for the enhancement of business purposes. Huge amounts of money are invested in media for marketing of a product. The more attractive the advertisement, the more people will follow it. Even though there are lot of plus points for use of media but there are also many disadvantages associated with it. Media has the bad effect of inducing baseless ideas through advertisements. People are forced to buy harmful or substandard products. Sometimes, the Media develops unnecessary sensation and distortion of truth to attract attention. Because of its power to build public opinion, the influence of media can make or break the government. The media has the power of educating people, the good and the bad. Since it affect the eyes, the ears and the mind simultaneously nothing can overcome the influence of the media. The media in the advanced society should perform a noble mission of enlightening people and discourage sectarian, communal and divisive trends.

SOCIAL AWARENESS TOOLS VERSUS SOCIAL NETWORKING TOOLS

Social tools can be broken down into two main types: social networking and social awareness. In this paper, we define social networking tools as those that build upon people, and social awareness tools as those that build upon data. Social networking tools allow a user to connect with others and utilize these connections to create networks. Social awareness tools, on the other hand, allow one to see or manipulate data about people, such as co-authorship networks. They allow the researcher to become aware of new social connections through the ability to view and combine data in different ways. These tools, however, are not mutually exclusive. A social tool that combines both social networking and social awareness elements provides a powerful framework for advancing research.

Social awareness tools and social networking tools are similar in many respects. A human element exists in social awareness tools, but data has an equally important role. Social networking tools, on the other hand, rely much more extensively on the human element, such as "friending" someone on Facebook, sending a tweet on Twitter, or adding someone to a Google+ circle. There is a required human action for these tools. As a result, an element of trust exists for the user within social networking tools, and recommendations and collaborations are built upon this trust. Social awareness tools build recommendations based on data. Some go so far as to predict successful collaborations for researchers who have never met, physically or virtually, in varying areas of research based solely on data. (Weber, 2011).

Unlike social networking tools, people may not even realize they are using social awareness tools due to a lack of conceptual understanding or familiarity with such tools, especially when a social awareness tool is used within the framework of a social networking tool. The Friend Finder functionality and the targeted ads within Facebook are examples of "embedded" social awareness tools. These recommendations are based on data analysis. While many find the targeted advertisements invasive or annoying in a consumer setting, the use of such data mining techniques as components of a research tool could connect researchers and ideas that might otherwise never have the opportunity to interact.

THE SCIENTIFIC APPLICATION OF SOCIAL AWARENESS TOOLS

It is instructive to look to an earlier innovation in scientific communication — the journal article. Compared to the time frame involved in the publication of a book, the journal article allowed scientists to disseminate their ideas quickly to a wide audience in a more concise format. A similar expediency also describes some of today's most popular social networking tools, like Twitter. Furthermore, the journal article shares another important similarity with social networking tools. Unlike email, chat or text, communication across the social network plays out in the public sphere, where it can be aggregated and analyzed.

A scientist's journal article is intrinsically valuable to science in a way that his tweets or status updates are not. But like a component of a social network, the article has additional worth simply as one of many nodes in a network of literature. Networks form around all the ways articles connect to one another — citations, subjects, co-authorships, affiliations, etc. Each of these networks can be mined. Citation analysis is perhaps the most familiar example. High citation counts hint at influential papers and researchers, while certain patterns of citations might reveal related sets of articles or topics that bridge disparate fields.

Social networking chatter itself may contain informative patterns. Just as one can read a scientist's peer-reviewed, published articles, one may also follow that person's blog posts, online comments, shared videos, and so on. The latter communications may contain few novel scientific insights, but in aggregate, combined with those of his colleagues, and viewed across a network, these abbreviated communications may reveal aspects of science itself: the connections between researchers and disciplines, or the growth and emergence of ideas. The more social networking tools proliferate and flourish, the greater the potential exists for social awareness tools to harness data and enhance our understanding of the research process.

VIVO and Harvard Catalyst Profiles

VIVO and Harvard Catalyst Profiles, commonly referred to as Profiles, are open source research networking tools often described as "Facebook for Researchers." (Vence, 2009) Both are funded by the National Institutes of Health (NIH) to support national networking for biomedical researchers. These systems allow researchers to create a profile describing their research areas, titles, education, grant awards, and publications. Authoritative information is harvested from external databases, such as PubMed, and a variety of internal databases. In Profiles, keywords are automatically generated from the MeSH (US National Library of Medicine, 2011) terms associated with harvested publications. Profiles software provides Active and Passive networks. The Active Networks are created by the person maintaining the researcher's profile page, in a way similar to Facebook. The person selects his collaborator. The Passive Networks are automatically generated based on data about the researcher. For example, MeSH terms associated with a researcher's publication can be used to link other researchers with similar interests (Weber, 2011). Profiles can predict potential collaborators based not only on matching keywords, but also on centrality metrics (Newman, 2001) calculated automatically through the social network analysis functionality. Both Vivo and Profiles provide powerful co-author visualizations, and allow users to glean information about funding and topics necessary for making future research decisions.

The Research Networking Group of the Clinical and Translational Science Awards (CTSA) consortium initiated the Direct2Experts (Distributed Interoperable Research Experts Collaboration Tool) pilot project, which includes Profiles and Vivo. The aim of this project was to design a national federated network of researchers across multiple institutions incorporating data from tools and platforms local to that institution. The initial 28 institutions successfully completed the project by creating a tool that provides the institutions as much control as possible over their data while creating a federated search. While this

product should be considered a proof-of-concept, it is an example of just how far and fast a research network can grow.

Mendeley

Mendeley is an online service along the lines of Facebook or Flickr designed to help researchers manage and share their PDF files. Public collections share reading lists and associated metadata with the world at large. Smaller shared collections can include the full-text PDF articles. (Barsky, 2010) The creators attempted to mimic the music service Last.fm, which allows users to catalog their music, but at the same time anonymously aggregate data about listening preferences. Similarly, Mendeley was designed to create a way to help manage academic papers and anonymously track reading habits to show trends such as popular papers and key researchers within the various communities. By aggregating metadata, tags, and usage, Mendeley hopes to become an alternative to pay-walled databases. (Henning, 2008)

Science Sifter

ScienceSifter (Collins *et al.*, 2005) was designed as a personalized RSS feed aggregator which focuses on the challenge of sifting through current scientific literature, in order to facilitate shared intellectual activity awareness among group members. Designed using open source tools, ScienceSifter provided an opportunity for the group of researchers or channel editors (trained librarians) to set up a collaborative space to share current scientific literature of interest. Setting up a collaborative space was a two-step process, in which the researchers: a) entered keywords of their interest, and b) selected different sources to aggregate current scientific literature. Once the collaborative space setup was complete, the ScienceSifter underlying architecture and algorithms were designed to use keywords of interest to automatically filter and aggregate multiple RSS feeds information. At a given time, results were displayed in one of the three different formats: list; a list with descriptions; and or hyberbolic tree visualization. Users of the group had an option to save items as part of their shared list. Thus ScienceSifter provided an opportunity for the researchers to save the amount of time they would normally spend in finding the current literature in the area of interest, and also save on time to setup user access privileges.

SAT & EXPAT

When you combine populations of users with social tools such as Facebook and Google+, social networks inevitably form. These networks are not just a function of technology but also human nature. Similarly, in scientific research, the end product includes several inherent mechanisms that make explicit the network

of collaborations that resulted in the publication that describes it. The co-authorship listing, for example, delineates the network of collaborators for a paper. Broaden this network to all papers co-authored by each co-author, and soon you may end up with a fairly extensive and interesting network that is both temporally and topically diverse. It is through such networks that users may broaden their knowledge of a given topic, or serendipitously discover new material.

Through semantic transformation of bibliographic data, the Knowledge Systems Team at Los Alamos National Laboratory formally represents these co-authorship networks using the Friend of a Friend (FOAF) ontology. FOAF describes people, and the relationships between them. The fact that two or more authors co-authored a paper is represented as a foaf:knows relationship between those authors. In this way, as data is mapped from a collection of bibliographic records, a social graph for these records is built. The tool built by the Knowledge Systems Team for exploring graphs like this is called the Social Awareness Tool, or SAT (Powell, *et al.*, 2010). SAT renders a visualization of a co-authorship graph where authors are nodes and the edges connecting authors represent the know relationship. As one might imagine, with as few as a hundred records, the graph can grow to be quite large, so two techniques are employed to better enable users to explore the graphs. First, a user can search for text that occurs in a particular document's title or abstract. The resulting social network is a subset (a subgraph) of the entire co-authorship graph, where only authors and co-authors associated with papers that matched the search are returned. Secondly, network centrality measures are utilized to highlight certain special nodes. These centrality measures are calculations that can be used to determine things like the node with the most connections (degree) or the node that connects clusters of other nodes (betweenness). The SAT will generate views where the node with the highest degree centrality, or the node with the highest betweenness centrality, is highlighted.

As noted above, there are some additional relationships specified in the semantic representation generated for bibliographic data. Subject-author relationships form the basis of a second tool called the expertise Awareness Tool (EXPAT (Powell *et al.*, 2010). EXPAT graphs show subject headings associated with authors. In the SAT, edges between nodes represent knows relationships, but the EXPAT is what is known as a bipartite graph, where two types of nodes occur in one graph. Author names are one of the node types, and subject headings are the other. Edges represent a relationship between authors and subjects. Although these graphs become complex very quickly, several query options are offered to limit the number of nodes displayed. The interdisciplinary nature of the work of some researchers is quickly and dramatically apparent in such graphs, as are the numerous connections among researchers in a particular field.

These tools use semantic representations of bibliographic data combined with basic search for extracting specific subgraph that are then presented visually. A similar, but hypothetical analogy would be, for example, the ability to view a stripped-down map of the "friend" relationships in Facebook for a set of users, based solely on interests or content in status posts. This may not be an optimal method for locating friends on a social networking site but it works quite well for research purposes. Furthermore, it is difficult to imagine how one might enable users to explore these relationships in a conventional text interface.

As a social awareness tool, SciVee provides the researcher with a multimedia presentation that makes scientific content more accessible, engaging and even more enjoyable, while also providing a quicker means to view the work of other scientists and to form collaborations. From a scientific standpoint, this makes it a considerably more desirable tool than the more mainstream social networking sites such as YouTube. More importantly, it provides researchers with an effective way in which to potentially increase the number of views of their publications and broaden their audience. (Fink & Bourne, 2007) The developers of SciVee predict that today's generation of graduate and post-doc student scientists will help to incite a "revolution in scientific communication", since "cyberinfrastructure" was, in actuality, part of their daily life while growing up and so it is quite natural for them to perform research solely within an electronic framework. (Fink & Bourne, 2007) Given the Pub Cast's dynamic attributes, it seems reasonable to conclude that this particular form of scientific communication will only serve to present science in a way that is more accessible and engaging for the viewer than text alone, and with SciVee's target audience being primarily scientists, researchers are also provided with an effective medium from which to distribute their publications, increase article views, view the work of other scientists, and form collaborations.

WHY USE THESE TOOLS

These tools allow users to acquire an overview and a greater understanding of current research fields and emerging fields. (Howard, 2011) Trending research areas can reveal themselves in social networking chatter long before publications, or even preprints, have caught up. The aware researcher might publish early on an emerging topic and thereby enjoy the first-mover advantage of a high citation count. Similar tools have been proposed in other fields, for instance, to predict the stock market (Bollen, *et al.*, 2011) or detect emerging geo-social events. (Lee, *et al.*, 2011) Why not science? New collaborations can be discovered, and these tools allow researchers to easily leave their research silos. Serendipity will increase, as will interdisciplinary work. Social awareness tools, while foreign and cumbersome to many, are

increasingly becoming the norm for early career and future scientists. Knowledge and use of these tools will provide a competitive edge, as administrators and funding agencies are increasingly using these tools during the decision-making process. Social awareness tools will have a profound effect on scientific discovery both today and tomorrow.

CONCLUSION

Social awareness tools can enhance the research process. Tools like VIVO and Profiles can connect researchers to collaborators; ScienceSifter can connect researchers to scientific literature; and the SAT and EXPAT tools can do both. While a paper is being developed, authors can discover and manage new references in Mendeley. When a paper is completed, a site like SciVee can move its core ideas beyond the static page. Social awareness tools can benefit researchers, and that alone makes them of interest to research librarians. Librarians may be called upon to troubleshoot issues for those who are already using these tools. They might recommend and teach these tools to other patrons. Librarians themselves can employ these tools to answer reference questions, or to facilitate their own special projects. Organizations of all kinds, including libraries, must leverage widely-used technologies if they are to develop a trusted digital presence. But more than that, libraries and librarians are a crucial nexus between the information scientists who develop these tools and the research scientists who use them. In teaching these tools, librarians are well placed to discover ways to improve them. And as shepherds of the research process, they are well placed to imagine and ask for new tools that have not yet been theorized. Thus, libraries can shape not just the preservation and discovery of scientific research, but also its creation.

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