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Analysis of a Scholarly Social Networking site: The Case of the Dormant User

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ABSTRACT

Many scholarly social networking sites targeting an audience of academicians and researchers have appeared on the Internet in recent years. Their vision is to change the way researchers connect, share and collaborate to solve real world problems. Despite the hype, however, their impact on higher education is unclear. Studies exist that address the benefits of these sites, but studies that investigate the implications of how scholarly social networking systems vet information, including data related to user profiles and uploaded content, is nonexistent. This paper chronicles the system management of user information for an inactive user of a scholarly social networking site. The paper shows what can happen to user profile data when a user remains dormant and data correction is reliant upon system users. The quality and accuracy of information provided on a scholarly social networking site are paramount to its success and effectiveness.

Keywords

Scholarly social network, academic social network, research network, social network, crowdsourcing

INTRODUCTION

A multitude of social networking sites have appeared on the Internet in recent years. A social network is a community established to connect people with common interests. Social networking sites take the network online providing users with the ability to set up profiles and connect with other users to form groups for sharing information and other content. With the phenomenal success of Facebook and LinkedIn, online communities as places for sharing and collaboration, have shown great potential. While Facebook and LinkedIn are positioned to attract a broad audience, other sites have evolved that focus on specific communities of interest. One such area is that of scholarly social networking sites for academicians and researchers. These sites have proliferated with many, such as Mendeley.com, Academia.net and ResearchGate.net, touting more than one million members each (Mangan, 2012). Typically, these sites offer a platform for organizing and sharing research and for finding and connecting with potential collaborators. Common features include creation and maintenance of user profiles, searching capabilities for both users and content, methods for contacting and communicating with other users, ability to form groups, and the ability to organize and post articles, working papers or other content (Duke & Jordan, Ltd., 2011).

Academic (synonymous with scholarly) social networks are positioning themselves to change the way researchers connect, share and collaborate (Giglia, 2011). In their social media guide, Cann, Dimitriou and Hooley (2011) illustrate the typical academic research cycle which is depicted in Figure 1. Collaboration is the common thread running through all phases of the research cycle. Online social networking tools have to capability to support and enrich or even change each phase in the cycle. For example, searching is enhanced through focused-collections of relevant information and more streamlined filtering capabilities. Knowledge creation and quality assurance are supported through facilitated opportunities for collaboration and the ability to receive immediate and interactive feedback from others with expertise in the field. Finally, these networks support more widespread and targeted dissemination of scholarly work including the potential to rapidly raise the profile of recently completed research.

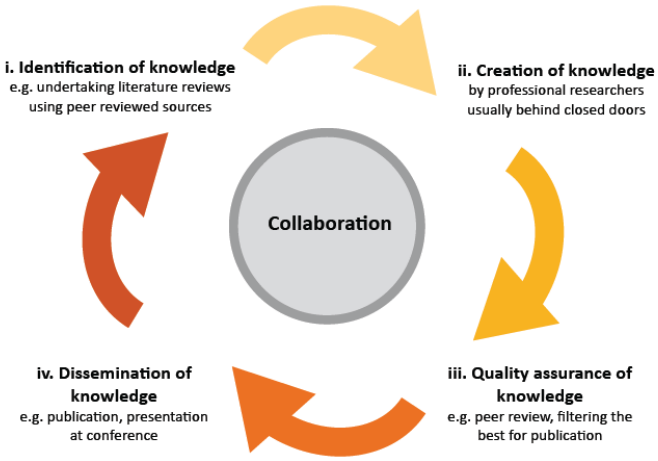

Figure 1: The Academic Research Cycle

(Image from: Cann, A., Dimitriou, K. & Hooley, T. (2011) Social Media: A Guide for Researchers. London: Research Information Network p.15.)

Despite the hype, the impact of scholarly social networking sites on higher education is less clear (Mangan, 2012). For instance, despite the myriad of sites, no one site as emerged as the 'go-to' system (Gewin, 2010). While many users sign up, activity level remains sub-optimal. Gewin (2010) suggests many reasons for this including, lack of confidence in the individual site, concern about the use of personal data, concern about monetization of the site, protection of intellectual property or just that none of the existing scholarly networking sites have the features or tools valuable enough to "lure a majority of busy scientists" (p. 993). Further, the quality of what these sites offer – including user profile data and research data – has to be deemed reliable and credible before value can be attributed. In an attempt to reach the holy grail of critical mass, some scholarly networking sites have simply used publicly available data, without any internal form of checks on that data, to create user profiles (Gewin, 2010). Subsequently, they employ a form of crowdsourcing relying on the user community for data correction.

According to Taulli (2012) of Forbes Magazine, there are four keys to building a successful social network. These include choosing the right audience, generating value and building trust, evolving the site based on user input and making it easy for users to invite others to join the network. The user base is a critical factor of success for a community-of-interest social network. For a site to be effective, it not only needs a large user-base but those users must be actively engaged. Most online social networks are member driven, relying heavily on voluntary efforts and member participation. In scholarly social networks, the user community is typically built from the ground up, through member recommendations and associations (Gewin, 2010).

A technique commonly used in scholarly social networking sites is crowdsourcing. Crowdsourcing enlists many people to help solve a problem; a problem defined by the system owners (Doan, Ramakrishnan and Halevy, 2011). Crowdsourcing is used in two ways in a scholarly social networking site, one to enlist a group of people to work together to build a collective library of research related materials and the other is to enlist users as part of quality assurance to correct and verify data. Crowdsourcing has proven to be beneficial in many aspects but crowdsourcing also represents some very specific challenges. Doan, et al (2011) identify these to be recruiting and retaining members, identifying the contributions users can make, combining user contributions to solve the problem and evaluating users and their contributions. An effective scholarly networking site has to address each of these challenges.

Several studies exist that address the benefits of scholarly social networking sites (Duke & Jordan, 2011), investigate precursors to their use or review existing sites (Arda, 2012). However, studies that investigate the implications of how scholarly social networking systems vet information, including data related to user profiles and uploaded content, is nonexistent. This paper chronicles the system management of user information for an inactive user of a scholarly social networking site. The paper shows what can happen to user profile data when a user remains dormant and data correction is reliant upon system users. False user profiles or profiles ridden with inaccurate data can quickly undermine a social networking site (Gewin, 2010) and in the academic community, this can have a profound and negative impact.

STUDY METHODOLOGY

This study employs a single-unit case study approach. A case study approach is useful for exploratory research especially when a research base has yet to be developed. A single-unit case study also allows for in-depth analysis which increases the strength of the inferences drawn from the outcomes (Nock, Michel, and Photos, 2007). The single-unit under investigation in this study is a dormant user of the scholarly social networking site, Researchgate.net. ResearchGate was started in 2008 as a social networking site for scientists and researchers to support collaboration, networking and sharing (ResearchGate 2014). 'Sharing' is broadly defined and includes posting of scholarly publications as well as data and results of experiments, even those with negative results. ResearchGate claims more than 3 million users (ResearchGate, 2014).

The case study chronicles and analyzes user profile updates that occurred during a sixteen month period (September 2012 through December 2013). The dormant user, hereby referred to as 'User X' joined ResearchGate on September 12, 2012. The only data entered was the required data of user name, institution, department and email address. It should be noted that users who do not have an institutional email address recognized by ResearchGate's automatic check must directly request an account and wait for approval before they are able to create an account.

The account was setup using default settings. Default settings are applied to three areas, privacy, notifications and invitations. In regards to privacy, users are given control over access to their information with the exception of 'general information' (name, degree, institution, discipline), which is always made visible. Other profile data, including publications and research data, may be made public or restricted to other ResearchGate members or mutual followers. Mutual followers are those users in a reciprocal arrangement – users you follow who also follow you. By default a user's profile is visible to everyone, however, contact data is only visible to mutual followers.

ResearchGate offers a myriad of notification options. These options include notifications of changes one makes to their profile, notification of activities of users in their 'network', publication notifications, job announcement notifications and scheduled notifications pertaining to site activity or updates. By default, all but 2 of the 57 notification options are selected. Also, by default, invitations to join ResearchGate are automatically sent to co-authors when a user posts an article in their profile.

FINDINGS

User profile data was analyzed at the end of a 16 month period of inactivity. A summary of the data showed this user to be the author of 431 publications. These publications resulted in 25,555 total publication views, 4,244 total full-text downloads, 27 full text requests and 3,815 citations. In addition, the summary indicated that there had been 830 profile views of this account, the person associated with the account had 258 co-authors, 478 followers, 476 users they followed. Overall this account was given a ResearchGate scientific reputation score of 45.70 (97th percentile). In addition, 297 invitations to 38 separate individuals were sent under this user's account inviting them to join ResearchGate. None of these individuals responded to the invite. Summary data is depicted in Table 1.

Summary Data Related to Publications	
Authored publications	431
Views by other users	25,555
Full-text downloads by other users	4244
Full-text requests by other users	27
Citations made by other users	3815
Summary Data for User Profile Views	
Views by other Users	830
Actions related to Other Users	
Co-authors	258
Followers	478
Following	476
Invitations sent to others to join ResearchGate	38 (297 invitations sent to 38 different individuals)
Overall ResearchGate Scientific Reputation Score – 45.7 (97th percentile)	

Table 1. User X's ReserachGate Data Summary

An examination of the publications attributed to User X was undertaken. All of the publications were added by ResearchGate using publicly available metadata. Specifically, they cite using PubMed, NASA and CiteSeer (ResearchGate, 2013a). Interestingly, the listing of publications available under the user profiles states, "User X added the publication …" Only six of the 431 publications attributed to User X were actually authored by User X. However, the last name of User X appeared as an author in all listed publications. ResearchGate provides the user with the option to remove publications from their profile. Further, on a user's profile overview page, an option appears to purview a listing of publications matching the user's name. This option also appears as a message window each time you login to the ResearchGate site. From the listing provided, users have the option to 'claim' authorship to specific articles. In this case, 263 publications with a matching name had been identified. Many of those did belong to User X.

Over the course of sixteen months, the number of co-authors, followers and those being following increased significantly. In fact, the actual numbers are quite high. Only one of the co-authors listed was actually a true co-author of User X. The high number of followers and those being following is most likely attributed to the fact that when co-authors are added, by default, they are automatically included in the list of users being followed. It is hard to say, however, how the number of those being followed became so much higher than the number of co-authors listed. While a user can modify the list of those they follow, there is not a way for a researcher to delist someone as a co-author. The only option is to contact ResearchGate directly and ask they remove the co-authors manually. When asked about this problem, ResearchGate responded:

"There is a lot of room for improvement in our suggested publications algorithm. It currently has limited name-matching abilities, which as you have correctly pointed out, are not meeting your needs. The name-matching abilities are especially limited when it comes to reoccurring names, which is why we're improving it with an approach called 'Name Specialization.'

We're hard at work behind the scenes, and within 3 or 4 weeks, we're implementing changes that will allow the suggested publications algorithm to use more signals, such as affiliations, disciplines, publication dates, and keywords/topic" (ResearchGate, 2013b).

This exchange occurred five months ago.

Email notifications were collected daily for a period of 12 months. During this time User X received 980 email messages. The large number is consistent with using default notifications. Total monthly email notifications received is provided in Figure 2. The lowest number of emails were received during the month User X joined ResearchGate. The majority of emails (more than 80%) related to updates made by other users who were part of User X's network. For instance, notifications were made when colleagues (users followed and co-authors) changed institutions or added a publication. Notifications were also sent when the account owner, i.e. User X, added a new publication was posted or a publication was cited. In addition, a weekly ResearchGate reputation score and summary of publication views, download and citations was reported. Periodically, requests would be sent asking for verification of authorship or citation of another author's work. Overall, the email notifications were succinct and reasonable, usually no more than two a day. Users do have the option to opt out of receiving notifications.

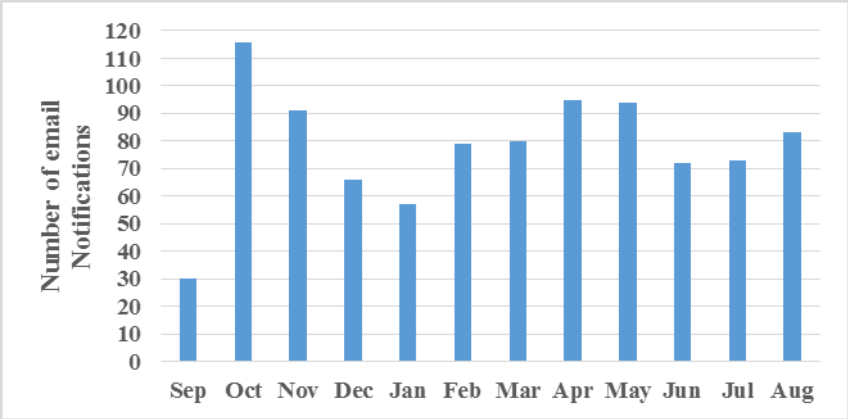

Figure 2: Monthly Email Notification Activity Covering a 12- Month Period

Each week ResearchGate reports two sets of stats for a user, those related to publications and those related to the user's profile. Publication stats provide an overview of the previous week's activity including the number of views for all publications, listing of the most often viewed publications and number of views by country and institution. The listing also shows an aggregate of total number of publication views and full-text downloads. Profile stats report the number of users who viewed the user profile, both during the previous week and the aggregate number of all views. For both set of stats, the number of times a publication or profile view was reached through a Google search is reported in the format of a line-graph. While these individual statistics are interesting, ResearchGate has formulated their own score which they cite as a measure of 'scientific reputation' (ResearchGate, 2013c). According to ResearchGate, the criteria used to determine the RG score is drawn from how contributions to ResearchGate are evaluated by peers. These contributions include anything shared on ResearchGate such as published papers, raw data, questions asked or answers posted. Peer evaluation is based on user interactions with contributions and also the prestige of the peer based on that individual's reputation. Although not specifically stated, it could be assumed the peer's reputation is equated with their RG score. Figure 3 provides a chronology of the RG score for User X. The algorithm used to determine the RG score was changed by ResearchGate in November 2012. This jumped the RG score by more than 38 points. Consequently, only RG scores given after this change are shown. RG scores, with the exception of one slight dip, steadily increased over time.

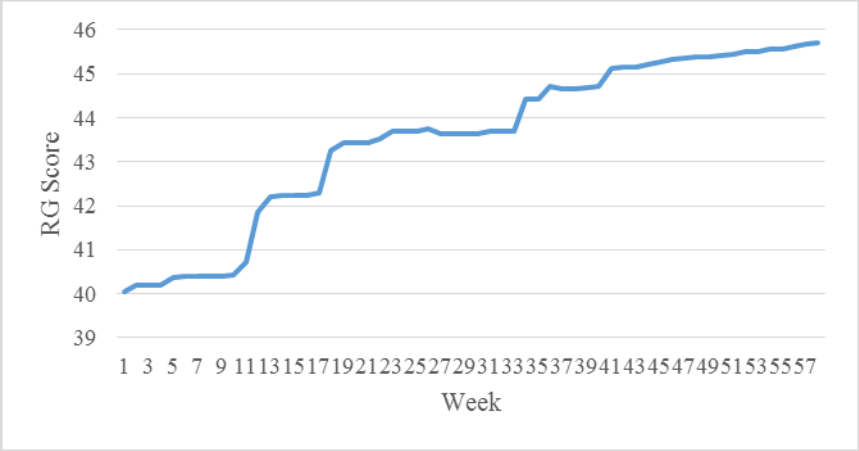

Figure 3. Chronology of User X's Weekly ResearchGate Score of Scientific Reputation

Even though dormant, a lot of activity occurred under the auspices of the account associated with User X. After sixteen months of no engagement with ResearchGate, User X's research profile was 'awesome.' The number of publications (431) attributed to this user was outstanding and the number of followers amazing. Further, based on ResearchGate's own RG score with a rating in the 97th percentile, User X is a phenomenal researcher. Assessment of how ResearchGate associates publications with an author, indicates a reliance on author last name. Based on this study, this approach did not result in an accurate portrayal of a dormant user.

CONCLUSION

The vision for a scholarly social networking site is to "change the way we solve real world problems with scientific collaboration" (Rao, 2013). Given the number of users these sites are reporting, it appears that many researchers are experimenting with using these sites. However, the question remains as to whether these sites will be able to realize the success of their purely social networking counterparts. The goals are admirable: facilitating collaboration, expediting the peer-review feedback process, and engendering instantaneous and wider distribution of scholarly works. Nevertheless, the challenges are many. Quality and accuracy of information provided on a scholarly social networking site are paramount to its success and effectiveness.

Quality assurance is a major issue in crowdsourcing sites (Oleson, Sorokin, Laughlin, Vaughn, Le and Biewald, 2011) or any site that relies on user participation for data correction and verification. Currently quality assurance is done through a manual process, something unsustainable with memberships in the millions. Crowdsourced sites often report problems with issues of scamming (Oleson, et al , 2011), but as this study demonstrated, data accuracy issues arise as a result of other situations, such

as that of the dormant user. System owners of scholarly social-networking sites must find better ways to insure quality assurance.

Strengthening the peer-review process has always been an objective for scholars and researchers and on online network that achieves this goal would likely be welcomed by many researchers. Ijad Madisch, one of the founders of ResearchGate, believes that scholarly social networking sites will promote transparency in the research process and facilitate, not only, pre-publishing peer-review but post-publishing peer review as well. This, in the end, he believes will strengthen scientific research (Mangan, 2012). His argument may be valid, but the outcomes will not be realized until researchers can trust the information provided on scholarly social networking sites.

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