Abstract

Social software needs an active user community before it becomes attractive to new visitors. We analyse and describe an attempt at attaining such critical mass for LogiLogi.org. LogiLogi is an experimental philosophical discussion platform that is different from forums and wikis. It provides a form of quick, informal publication, peer-review, and annotation of short philosophical texts. We have examined the limited literature on critical mass, and two usability studies were done. Then LogiLogi was improved in ways that would maximize its chances of attaining critical mass. Some of our conclusions can be useful to other applications as well.

1 Introduction

In this short paper we will report on an attempt at, and the problems involved in, gaining a critical mass of users for LogiLogi, an interactive hypertext application for the Digital Humanities. The aim of any Digital Humanities application ultimately is to be used, but for collaborative ones, the contributions and interactions of existing users are what make it worthwhile for new visitors.

Yet gaining critical mass is notoriously hard. Even Google, a billion dollar company native to the web, has failed at it for several of its products. Recently, for example, they discontinued Google Wave because of a lack of critical mass (Hölzle, 2010). So far we have not succeeded in attaining it for LogiLogi either, but negative results are results too, and unless published, they are bound to
be repeated.

We will start out with a short discussion of the limited literature on critical mass, establishing a workable definition. This will be followed by a description of LogiLogi, so we have some understanding of the platform we are working with. Next, we will discuss various factors of influence on the attainment of critical mass, and list the improvements we applied to LogiLogi. Finally we will wrap up with a discussion of the lessons learned.

2 Critical Mass

The value that connections can create, is called a network effect. The simplest example of a system that exhibits network-effects is that of a phone network: If there is nobody to call, a phone is not useful for prospective buyers, but unless it is useful, nobody is going to buy one so he can be called. Similarly, Facebook probably is valuable to you because your friends are on there.

John Platt described the problem of initiating a network as a type of social trap (1973). A social trap is a situation in which behaviour that brings small personal advantages, but greater social or long-term disadvantages, is perpetuated nevertheless. For web-communities that would provide a benefit, critical mass problems are among these.

There is no agreement in the (scattered) literature on a precise definition of critical mass (Goidel and Shields, 2009; Oliver and Marwell, 2001; O’Hear, 2004). The simplest conception is that of a threshold. That is; the minimum number of users required for an application to display network-effects (Economides and Himmelberg, 1995). Here one can see network effects as something which adds to the value of the application. Alternatively, with Jacob Goldenberg (2009), one can see it as something that prevents adoption before a threshold of users is met.

Another concept of critical mass is that of a minimum core group of active users needed to sustain the community (Marwell and Oliver, 1993; ?). This concept adds the possibility of a relapse in activity levels. It is analogous to the concept of critical mass in physics: the smallest mass that will sustain a reaction (Elam, 2009). We use a combination of these two minimalistic conceptions of critical mass: a threshold for the minimum group of active users required.
Several more definitions exist, however (Westland, 2010; Smith-David, 2009), but these demand even more than an active community. In addition, highly valuable work is being done in studying the usage of (digital) resources in the humanities, such as in the LAIRAH, INKE, Humanities Information Practices projects (Meyer, 2010; Warwick, 2008b; Siemens, 2010; Siemens, 2009; Borgman, 2009; Warwick, 2008a). But for lack of space, and because of their focus on resources, instead of web-communities, these will not be further discussed here.

3 A Webplatform for Philosophers

LogiLogi is a Web 2.0 application that tries to find an informal middle-road between good conversations and journal-papers by providing a form of quick, informal publication, peer-review, and annotation of short philosophical texts. It is intended for all those ideas that one cannot turn into a full sized journal-paper, but that one deems too interesting to leave to the winds (Wiersma, 2010b; Wiersma, 2009; Wiersma and Lezama, 2008).

LogiLogi makes commenting on texts, and more generally the linking of texts, very easy. Most notably it also allows other people than the original author of a document to add outgoing links behind words, but it does not allow them to change the text itself, so the author’s intellectual responsibility is guarded. Also important is that all conversations on the platform run via links (comparable to footnotes), not via forum-threads, avoiding their associated problems like fragmentation of the discussion.

To maximize the advantages of hypertext, texts are kept short within LogiLogi, at maximum around a thousand words. These texts, called logis, can be informal and experimental and they can be improved later on, in either of two ways: The text of the original document can be changed (earlier versions are then archived). Or secondly, links can be added to the text, possibly only when questions arise, or when the logi appears to arouse enough interest to make it worth of further elaboration.

Links in LogiLogi can refer to logis, to versions, and — by default — to tags (words that function as categories or concepts). Logis can be tagged with one or more of these tags. Multiple logis can have the same tags, and when a link is made to
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Wybo Wiersma

a collection of tags, multiple logis can thus be in the set referred to. From this set the logi with the highest rating is shown to the user.

The ratings in LogiLogi are essentially grades, given by visitors and other authors. The average of these grades forms the rating of the logi. Moreover these averages are weighted averages. Voting-powers can vary. If an authors contributions are rated well, she receives more voting-power. This makes LogiLogi a peer-reviewed meritocracy, quite comparable to what we, according to Bruno Latours philosophy of science, encounter in the various structures surrounding journals (Latour, 1987).

4 Factors

We will now discuss the success-factors important for the attainment of critical mass. We identified these from the literature. They are listed in table 1, in four blocks of three. For lack of space, we cannot discuss more than two of them at any depth, but a discussion of the others can be found in the longer version of this paper (Wiersma, 2010a).

The first is the importance of targeting a web-savvy audience. Christian Wagner (2007) found that people have quite diverse motives for contributing to web-communities such as Wikipedia. Means, time available, and skills can also vary between visitors. In addition, people that have fewer other outlets for their writings might be more interested in contributing them to a hypertext-community (Prasarnphanich and Wagner, 2008; Hars and Ou, 2002). Thus everyones personal critical mass threshold varies. A strategy that follows from this is targeting the most willing contributors first, such as students and non-academics, and then grow as the application gradually meets the expectation-thresholds of others.

The second is that browsers or other prerequisite software used by innovators should not be ignored. When thinking about browser support, many of us look at their respective market-shares (within our target audience), and choose which to support based on that. But, as Peter Swann noted, there are local network effects with regard to pioneering as well: pioneers are most likely to want to call other pioneers, and thus for pioneers, a small network of early adopters will have critical mass. Therefore one does well to support Google Chrome, Opera, and other browsers that they are
likely to use.

Tapping into technology that people use on a daily basis is another strategy we applied for LogiLogi, such as sending out e-mail alerts of content-updates. It would even be better to add Facebook and Twitter-alerts in the future, because existing communities of friends and colleagues, are more likely to want to communicate. Similarly, invites modelled after Google invites, also help to pull in pre-existing communities.

The other improvements we have implemented are listed in table 2. With these improvements, LogiLogi should be ready for wider use now, and better equipped to gain critical mass. As noted, no critical mass was attained yet, and while it is still possible, it will be increasingly unlikely. The competition may be relatively slim so far, but that likely is because of the impossibility of the undertaking. To speak with Platt again, the interlocking social traps that keep paper journals (and pdf-based ones) linked with academic success, might still be so strong as to even stifle projects that don’t directly compete with them. Why spend an afternoon working on a short publication for the web, when in that same time one can do 1/20th of the work required for a full journal publication?

The links of the chain will loosen, no doubt, but it might take another decade, or more. At which time LogiLogi will not be competitive any more, given that it is a small, toy-like project, only run by a couple of volunteers. Keeping up with increasing usability expectations on the side of potential users, and with changes in browser technology (such as HTML 5), is going to be very hard.

5 Conclusion

To conclude, we have first defined critical mass as exceeding a threshold of users required for an active community, followed by a description of the LogiLogi platform. Then we discussed two factors of influence on the attainment of critical mass, and listed the others, as well as the improvements we applied to LogiLogi.

As for the lessons learned from this attempt, and from the development of LogiLogi in general, one should start ones design with the user-interface, not with data-structures or back-end logic. LogiLogi could have been 90% of what it is today from an users perspective, with 20% of the work. Explanatory screencasts, frequent mailings,
**Table 1: Factors of influence**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Core question</th>
<th>Keywords</th>
<th>Examplar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outreach</td>
<td>For whom, and how to reach them?</td>
<td>web-savvy, no other outlets, existing communities</td>
<td>Arts-humanities.net</td>
</tr>
<tr>
<td>Audience</td>
<td>Who to target?</td>
<td>practices, interoperability, browser, mail-alerts</td>
<td>Facebook alerts</td>
</tr>
<tr>
<td>Integration</td>
<td>Can they use it?</td>
<td>ads, badges, pulling in friend-networks</td>
<td>Google invites</td>
</tr>
<tr>
<td>Marketing</td>
<td>How let them know?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atmosphere</td>
<td>Do they want to be there?</td>
<td>learning-curve, simplicity, screencasts, speed</td>
<td>Flickr.net</td>
</tr>
<tr>
<td>Usability</td>
<td>How prevent frustration?</td>
<td>education, expected return, not too formal</td>
<td>JStor.org</td>
</tr>
<tr>
<td>Sociability</td>
<td>Community safe-guarded?</td>
<td>raison d’être, attitudes, openness, policies</td>
<td>Wikipedia</td>
</tr>
<tr>
<td>Value</td>
<td>What value can the user derive?</td>
<td>quality, enough of it, controversial posts</td>
<td>Gutenberg Project</td>
</tr>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credibility</td>
<td>Growth prospects?</td>
<td>affiliation, expected return, not too formal</td>
<td></td>
</tr>
<tr>
<td>Rewards</td>
<td>Do users get something?</td>
<td>career, reputation-points, e-medals, recognition</td>
<td>Experts-Exchange</td>
</tr>
<tr>
<td>Market</td>
<td>Is there a void in the market?</td>
<td>competition good sign, prevent fragmentation</td>
<td>PhilPapers.org</td>
</tr>
<tr>
<td>Competition</td>
<td>Which projects compete?</td>
<td>winner takes all, unless useful on own</td>
<td>Delicious.com</td>
</tr>
<tr>
<td>Network effects</td>
<td>Are existing users a benefit?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timing</td>
<td>Are people ready for it?</td>
<td>not too far ahead, early leads, agility</td>
<td>Digg.com</td>
</tr>
</tbody>
</table>

**Table 2: Improvements**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Improvement / Strategy</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outreach</td>
<td>Target students and non-academics</td>
<td>Most willing contributors</td>
</tr>
<tr>
<td>Audience</td>
<td>google Chrome support, Notifications and weekly listings</td>
<td>E-mail is ubiquitous</td>
</tr>
<tr>
<td>Integration</td>
<td>google ads, badges for on blog, conference presentations</td>
<td>Diversified approach</td>
</tr>
<tr>
<td>Marketing</td>
<td>Google Chrome support, Notifications and weekly listings</td>
<td>E-mail is ubiquitous</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>Two usability studies, various improvements: edit, colours,...</td>
<td>Real user feedback</td>
</tr>
<tr>
<td>Usability</td>
<td>Easier annotations, embed-buttons for remarks</td>
<td>Improving core-tasks</td>
</tr>
<tr>
<td>Sociability</td>
<td>Open Source, data export, responsive to questions</td>
<td>For and by community</td>
</tr>
<tr>
<td>Value</td>
<td>Eighty seed-texts added, some controversial</td>
<td>Invite responses</td>
</tr>
<tr>
<td>Content</td>
<td>Logi-blogs, collaboration with journal, listing sponsors</td>
<td>Make support visible</td>
</tr>
<tr>
<td>Credibility</td>
<td>Rankings, e-medals, avoiding competition with journals</td>
<td>Recognizable, pragmatic</td>
</tr>
<tr>
<td>Rewards</td>
<td>Logi-blogs, collaboration with journal, listing sponsors</td>
<td>Make support visible</td>
</tr>
<tr>
<td>Market</td>
<td>Not much can be done, disabling sub-groups within site</td>
<td>Prevent fragmentation</td>
</tr>
<tr>
<td>Competition</td>
<td>Will put emphasis on usefulness for personal notes</td>
<td>Bootstrap to network</td>
</tr>
<tr>
<td>Network effects</td>
<td>Simple architecture, quick development, agility</td>
<td>Responsive to opportunities</td>
</tr>
</tbody>
</table>
and updates are also something which should be done early on. People don’t invest in understanding something before they understand its value. And finally and foremostly, technology is not everything. Social practices make all the difference.

The social aspects of collective technology adoption are among the hardest problems that face the Digital Humanities. And it is not possible for LogiLogi and similar projects to succeed without a better understanding of critical mass. More research should be done into critical mass. It would be particularly useful to study the process of attaining critical mass in web-platforms that have succeeded. A more rigorous approach, in the footsteps of the *LAIRAH* (Warwick, 2008b) study, would be to match the growth-patterns as derived from server-logs to a mathematical model, or simulation of the appearance of critical mass. This would enable us to identify the relative importance of various factors. This year I will begin such a study at the Oxford Internet Institute.

It is not just the Digital Humanities that could benefit from such research. The wider web world and society also stand to gain. Millions of pounds currently invested into failing web-projects could be used more effectively with a better understanding of critical mass.

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References


Smith-David, J. (2009). Social networks on both
sides of the transition point. *Electronic Commerce Research and Applications*.


