Even with respect to the ideas of great men are we certain that they are exclusively the offspring of their brains? No doubt such ideas are always created by solitary minds, but is it not the genius of crowds that has furnished the thousands of grains of dust forming the soil in which they have sprung up?

–Gustav Lebon, The Crowd (1896)

University of Alberta

Why Bother?
Examining the Motivations of Users in Large-Scale Crowd-Powered Online Initiatives

by

Piotr Organisciak

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Examining Committee

Lisa Given, School of Library and Information Studies, University of Alberta

Geoffrey Rockwell, Department of Philosophy, University of Alberta

Stan Ruecker, Department of English and Film Studies, University of Alberta

Abstract

This study examines the motivations of participants in networked, large-scale content production and research – a paradigm of distributed work magnified by the Internet. This has come to be called crowdsourcing.

The approach taken in examining the crowdsourcing paradigm is of retrospection, with a study focused on observed examples and existing theories. Thirteen cases of existing crowdsourcing sites were selected for study, from a larger sample of 300. These cases were coded by their site properties and analyzed, identifying possible motivational mechanisms. Subsequent interviews with eight medium to heavy Internet users further explored these features, with an emphasis on ranking relative importance of various motivators.

This study concludes with a series of recommendations on motivating crowds in such projects, emphasizing among others the importance of topical interest, ease of participation, and appeals to the individuals' knowledge. In addition to base motivators, a number of support, or secondary, motivators are outlined.

Table of Contents

List of Tables

Chapter 1
INTRODUCTION

When a powerful earthquake struck Haiti in January 2010, millions of citizens in the impoverished country were affected. With infrastructure in ruin and outside aid being organized, online volunteers from the mapping project OpenStreetMap (http://www.openstreetmap.org) noted a particular but important obstacle to foreign workers: a lack of detailed maps in Haiti. Responding, they set out to create some; starting with historic maps and eventually tracing over UN and commercial satellite imagery, they quickly created a comprehensive digital map of Haiti[1] for ground aid to print out or load onto their GPS units. Changes in the country's infrastructure after the earthquake could also be easily updated from the ground.

Elsewhere, another online organization, Ushahidi (http://www.ushahidi.com) set up a system for reporting needs, emergencies and missing persons[2]. With a myriad of communication methods, including a cellular shortcode provided by Haitian cellphone companies, Ushahidi volunteers received reports and processed them for urgency, location, names and needs. Then, they passed the information back to relevant agencies on the ground. Additional work was provided by Crowdflower (http://www.crowdflower.com), a company with an infrastructure for distributing small tasks to online workers, and Samasource (http:// www.samasource.org), a non-profit company for providing online work to the underprivileged[3]. Utilizing paid labour in Haiti and volunteer labour worldwide, information was translated for relief workers and other non-Creole-speaking volunteers.

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[1] http://opensource.com/life/10/1/openstreetmap-haiti

[2] http://bloghaiti.ushahidi.com/index.php/2010/01/17/the-4636-sms-shortcode-for-reporting-in-haiti/

[3] http://www.samasource.org/haiti/mission4636

What these companies were offering to the relief effort was the organization of a curious phenomenon of the digital world: crowdsourcing.

Crowdsourcing is the term that has emerged to describe groups of disparate people, connected through technology, contributing to a common product. It refers to the collaborative possibilities of a communications medium as flexible and as populated as the Internet. If many hands make light work, crowdsourcing websites show how light the work can be, breaking tasks into hundreds of pieces for hundreds of hands. This study explores the concept of crowdsourcing as a tool. How is it being utilized, how can it be utilized, and most importantly, how does one utilize it? At the heart of it is a focus on the most important yet most nuanced aspect of crowdsourcing: gathering a crowd. It asks, "How does a crowdsourcing project motivate its users to participate?"

Though not new, crowdsourcing as it exists online has been enabled by emerging technologies. It has grown out of increasingly efficient – and affordable – forms of communication. Since such collaboration as expanded so quickly, there are still few investigations into the design of crowdsourcing. By examining motivations, this study moves one step beyond identification of the trend into understanding it, with implications for the future design of online research and development projects.

Crowdsourcing was first defined by Jeff Howe, who described it as "taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" (Howe, Crowdsourcing: A Definition 2006) . To understand this, consider a case such as Digg (http://www.digg.com), where users share Internet links and vote the most interesting ones onto the "front page". Through the lens of Howe's definition, the "front page" parallels the front page of a newspaper, but where the task once performed by employees –that of an editor– has been assumed by hundreds of readers.

The word 'crowd' is used in the sense of "a group of people who are linked by a common interest or activity" (Oxford English Dictionary). Such crowds are not necessarily a physically close group; a group of people using the same website is linked

by a common activity and often a common interest, regardless of where in the world those people are located. To crowdsource is to offer, through this common activity, a way to contribute knowledge or understanding. A number of people reading an entry on Wikipedia are part of a crowd, for example, linked by the act of browsing. By providing a public "edit" link, Wikipedia uses crowdsourcing, allowing members of this crowd to transition from passive readers to active editors. Many projects will be introduced within this study; as will be seen, they all share this trait of offering tasks to users of the Internet at large. Some may involve extra requirements – regardless of the number of helpers, one cannot translate a Byzantine text without knowledge of Byzantine Greek, for instance – but they all seek strength in numbers. Crowdsourcing is a verb; not a product but a means to an end. To crowdsource is not to reach a specific threshold of participants, but to enable the online masses to participate. The "crowd" of the term is the *potential* crowd. For this reason, Howe refers to it as "the billion", alluding to the number of Internet users worldwide (2008, 99). While the actual crowd of participants can qualify it as a success or failure, the task is crowdsourcing from the point that it is offered to the billion.

The problem

> *"Some have taken two heads better than one; But ten heads, without wit, I ween as good none" (Heywood 1562, 150) .*

> *"Skepticism about Wikipedia's basic viability made some sense back in 2001; there was no way to predict, even with the first rush of articles, that the rate of creation and the average quality would both remain high, but today those objections have taken on the flavor of the apocryphal farmer beholding his first giraffe and exclaiming, 'Ain't no such animal!' Wikipedia's utility for millions of users has been settled; the interesting questions are elsewhere" (Shirky, Here Comes Everybody 2008, 117).*

Large groups of collected peoples have been traditionally portrayed in a negative light. Early works on the topic, notably Mackay's *Extraordinary Popular*

Delusions and the Madness of Crowds (Mackay 1941) and Lebon's *The Crowd* (1896) , painted crowds as irrational, simplified organisms. Lebon focused on a "collective mind", writing that "the psychological crowd is a provisional being formed of heterogeneous elements, which for a moment are combined, exactly as the cells which constitute a living body" (1896). The collective mind displays a "singularly inferior mentality"; Mackay's book elaborates on this view by examining the contagion of emotions with crowds that result in collective irrationality. The concept of mob mentality, however, is at odds with the social roots of humanity. Much of what we know is taught to us through the testimony of others. Indeed, without a collective, shared intelligence, there would be little knowledge that existed between generations. As even Lebon mused, "is it not the genius of crowds that has furnished the thousands of grains of dust forming the soil in which [great ideas] have sprung up?" (LeBon 1896) Yet, in everything from soccer hooliganism to the rise and fall of the stock market, "observation of fact" – as Mackay would refer to it – seems to lend itself to a negative view of collectives.

More recently, group research has begun to look at the positive aspects of crowds, with an abundance of research arguing for the power of diversity and collaboration in problem-solving (Griesemer and Star 1989, Lakhani, Jeppesen, et al. 2005, Brown and Duguid 2001). Diverse groups in the right circumstances are said to be more creative and are encouraged in institutional settings. However, Lin and Beyerlein note that such views tend to "treat collaboration as structure", diminishing its importance as social construct (2006, 54). Furthermore, as networks grow, they become exponentially more complex, making the 'right circumstances' more difficult to determine. The reason is that each new node in the network adds many new connections – new agreements, decisions and compromises. Shirky (2008, 25-31) explains this in terms of friends deciding to see a movie. Two people deciding what to see have only one agreement of schedules and tastes to make, but adding a third person makes it three: first and second, first and third, and second and third. With four, it moves up to six and so on. Very quickly, groups grow difficult to manage. To whit, as Brooks writes: "adding manpower to a late software project makes it later" (1995).

The rise of the Internet in society has brought with it many examples of large, apparently intelligent networks. There still exist rash and irrational collectives, but many projects are showing that groups connected online can produce highly-complex objects and texts. This was first seen in free and open source software (F/OSS) development, a form of software development where the code is freely-accessible, and has little or no restrictions on its use. F/OSS is generally developed by dispersed communities with little managerial hierarchy and has resulted in a large number of successful projects. Crowdsourcing is a descendent of F/OSS; Howe even offers a sound-byte definition of crowdsourcing as "the application of open source principles to fields outside of software" (Howe, Crowdsourcing: A Definition 2006). Whereas open source looks most basically at collective problem-solving, crowdsourcing is a broader look at collective production and knowledge-gathering, not exclusive to software.

One of the most successful examples of crowdsourcing is Wikipedia, the ever-expanding online encyclopedia. Wikipedia can be edited by anybody, and thus spent its early history being dismissed as unreliable. As it has grown, however, these concerns have diminished as the website has improved in quality. Though it has been argued that we do not have a reliable way to measure success with the new system (Magnus 2006), it is increasingly regarding as a qualified success (Fallis 2008, Shirky 2008). As Shirky notes, reliability is no longer the fruitful research question; rather, it's time to look at how crowds with little managerial structure can successfully compile a large compendium of knowledge. Many have suggested, including early skeptic Kevin Kelly, that Wikipedia is "impossible in theory, but possible in practice" (2008)[4]. If this is the case, then indeed it is time to reevaluate what is known about groups of people. As Gilbert suggests, "if we are to make sense of the human world, we need to understand

[4] Gustav Lebon wrote that "The philosopher who studies social phenomena should bear in mind that side by side with their theoretical value they possess a practical value, and that this latter, so far as the evolution of civilisation is concerned, is alone of importance." How wonderful then that Wikipedia was co-founded by a student of philosophy.

the nature and functioning of collective cognitive states as well as the nature and functioning of the cognitive states of human individuals" (2004). When new evidence is at odds with old understandings of the value of the collective, we need to consider new models for comprehending what we know about human behaviour in these collective, social contexts.

However, crowdsourcing is not always successful. Sometimes this is because the initiator of the project is not sincere; “those that view the crowd as a cheap labour force are doomed to fail” (Howe, Crowdsourcing 2008, 15). When Heinz, for instance, put out a call for user-generated advertisements, the response was messy and uneven (Howe, Crowdsourcing 2008), especially in contrast to other commercial projects like the Netflix Prize (http://www.netflixprize.com), iStockPhoto (http://www.istockphoto.com) and Threadless (http://www.threadless.com). These latter projects, though they exist for business reasons, build communities around their task and have policies of users’ ownership over their content. Other times, projects fail because they do not reach critical mass, are not managed in a way that encourages the benefits of crowds, or are simply not appropriate for crowdsourcing. However, those projects that do succeed show the potential of crowdsourcing, with drastically different and oftentimes improved approaches to conventional problems; like encoding contents of images through an online game (Google Image Labeller, http://images.google.com/imagelabeler) or correcting library scans of historic newspapers through a public editing functionality (Australian Historic Newspapers, see Holly 2009). What makes them succeed? At the heart of crowdsourcing is the crowd, and there is a markedly insufficient amount of research into how a website comes to mobilize that crowd. In addressing this research gap, this project seeks to outline the motivations of users in crowd-assisted projects.

This study

This study looks at the motivations of people’s actions; it examines the reasons that, given a choice, a user decides to participate in a crowdsourcing project.

All degrees of participation are important in crowdsourcing; most of these systems benefit not only from a few highly active users but also from the aggregate contributions of a large number of casual or even one-time users (Mahoney 2009, Howe 2008, Shirky 2008, Springer et al. 2009). In the Library of Congress's case with Flickr Commons, there were certainly a number of 'power taggers' , including one person who added over 3000 semantic tags (Springer, et al. 2008). Overall, however, there were 2518 unique taggers; over 500 of these only contributed one tag (ibid). When small contributions are made in such large quantities, they add up. It may also be argued that only by motivating a large number of people to participate do the most dedicated participants emerge. Thus, in this study, a "user" or participant" is a person that contributes in *any* degree to a crowdsourced project. Highly-active, casual, and even one-time contributors have motivations for taking part, and while the particular motivations may differ, all types have a contributory role. A small contribution by itself may seem insignificant, but the magnifying nature of aggregating these contributions makes it important to understand even the motivations of infrequent or one-time contributors.

Motivation is a topic covered well in sociology, psychology and business. This study considers two types of theories: those that separate motivations by their effect on a person's internal and external needs (i.e., Maslow's hierarchy, ERG Theory) and those that separate them into considerations of satisfaction/dissatisfaction (i.e., Herzberg's Two-Factor Theory). Online, motivation has often been addressed in case specific manners, related to particular projects or areas (Springer, et al. 2008, Lakhani and Wolf, Why Hackers Do What They Do 2005, Raddick, et al. 2010).

Plainly, motivation is the reason that a contributor is compelled to contribute. A site can include multiple motivators. Consider Hunch (http://www.hunch.com), a decision-making website examined in this study, where participants create decision trees, evaluate them, and edit them. Motivations are diverse and plentiful, including award and point systems, user utility from the site they're contributing to, flexible levels of participation, and numerous others. Multiple motivations are not necessary, though, and other cases are more basic in their pull.

How does one address the question of user motivation? Online crowd motivation considers systems from a user's perspective, which would suggest the appropriateness of a user study. Yet a user study alone would not provide adequate insight into resolving the research problem. As the study examines a relatively new area, a user considering the context of a site might not notice important subtext. Additional grounding is required to determine what to explore with users. Thus, this study employs a case study methodology, an approach that allows for mixed-method research. Two methods, one qualitative and the other quantitative, were used with a purposive sample of crowdsourcing websites, to derive a theory of online crowdsourcing motivation. Cases underwent two steps of study; the first was a content analysis, which provided a foundational understanding of how these sites operate crowdsourcing system design and a basis for the second part of the study, which involved user interviews.

In this study, due discussion is given to appropriate circumstances for crowdsourcing. It should be made clear, however, that crowdsourcing is not always an appropriate development tool, and this study does not try to position it as such. The understanding of crowdsourcing as a technique is of upmost importance: it is a means for achieving a task if the task is appropriate for the approach. Most discussions of crowdsourcing, then, lie in a particular context. The question is not whether crowdsourcing is good, but rather whether crowdsourcing is good for a given task.

When crowdsourcing is an appropriate tool for an initiative, how does one encourage users to make it work? This study will explore this question through the following four chapters: background, methodology and methods, findings and discussion, and conclusions. In chapter two, a literature review is conducted considering the immediate history of crowdsourcing, as well as a selection of notable conceptual precedents. The next chapter, methodology and methods, delves more into the specifics of the case study methodology, the qualitative and quantitative methods used, and the rationale for those choices. The final two chapters explore results from the study, first with in-depth findings and culminating in conclusions and future directions for research.

Relevance to research

An understanding of the nature of crowdsourcing holds benefits to scholarship in the humanities and social sciences. Most significantly, this is because it allows large-scale insights into the qualitative and the abstract, those areas inextricably linked to the limits of manpower, unable to be delegated to computing power. "What is the sentiment of this sentence", is the type of question a crowdsourcing site may ask[5], if not always as directly. Since much work in the arts cannot easily be quantified, logistics and resources often limit humanities research to a balance between breadth and depth.

Consider one task that is often seen in existing crowdsourcing sites: crowd-encoded classification. Classification tasks are dependent on the person-hours available, because person-hours are the only dependable way to approach these tasks. Whether directly or incidentally, online crowds can effectively encode or classify content. Though the reliability of the end product is often far below that of a professional encoder, large-scale crowd projects can often account for this through multiple independent classifications, measuring consistency and reliability through agreement. *Galaxy Zoo*, an effort from Oxford to classify galaxies (from a sky survey that photographed millions of them), found that crowdsourced data came within 10% deviation from the same data classified professionally (GalaxyZoo1). The high quality of work is especially notable because the experiment and its follow-ups received their 60 millionth classification in April 2010.

Flickr Commons, an initiative to put photo archives on a photo-sharing community, is a similar project that, by way of community-based research, information and tagging, has enriched the metadata of hundreds of Library of Congress photographs in the United States of America (Springer, et al. 2008). Another pilot project involving public tagging, by the National Library of Australia, concluded that "tagging is a good

[5] Amazon Mechanical Turk, http://www.mturk.com, accessed May 3rd, 2010

thing, users want it, and it adds more information to data. It costs little to nothing and is relatively easy to implement; therefore, more libraries and archives should just implement it across their entire collections" (Holley, Tagging Full Text Searchable Articles: An Overview of Social Tagging Activity in Historic Australian Newspapers August 2008 — August 2009 2010). The National Library of Australia followed through on this recommendation.

Such projects are often greeted with suspicion in professional or scholarly communities. The National Library of Australia report notes that "institutions who have not implemented user tagging generally perceive many potential problems that institutions who have implemented user tagging do not report" (Clayton et al. 2008 qtd. in Holley 2010). The Library of Congress report similarly notes many concerns that critics provided, such as: "Would fan mail, false memories, fake facts, and uncivil discourse obscure knowledge? … Would the Library lose control of its collections? Would library catalogs and catalogers become obsolete?...Would history be dumbed-down? Would photographs be disrespected or exploited?" (Springer, et al. 2008, 40). In both cases, the reports state that the concerns, within the respective project's experiences, have not manifested.

Encoding is a notable use of crowdsourcing in academia, but not the only one. Some projects, such as the Suda Online, benefit from collected contributions of expertise and knowledge. Suda Online is a project to translate a Byzantine encyclopedia, Suda, into English for the first time. It has been steadily progressing since 1998, not growing too large but producing comprehensive results (Mahoney 2009). In other cases, crowdsourcing allows public and volunteer projects to compete with the scale and quality of commercial projects, as has been seen in OpenStreetMap, Project Gutenberg, and many open source projects.

As crowdsourcing continues to be tested – and if it continues to be successful – in public institutions, understanding how to undertake such projects will become more important. The benefits are being stated, and the scale and openness on which public institutions operate makes them a compatible beneficiary of crowdsourcing activities. As is discussed later in this study, users are especially altruistic toward public projects,

emphasizing their preference of meaningful engagement with institutional workings over symbolic outreach.

Chapter 2
BACKGROUND

The Rise of 'Crowdsourcing' with "The Rise of Crowdsourcing"

"The Rise of Crowdsourcing" appeared in the June 2006 issue of *Wired*. In it, Jeff Howe observed a particular facet of online crowd-based activities: the generally business-oriented outsourcing of tasks to users online. One of the examples in the article's focus was how amateur stock photography service iStockPhoto was turning the stock photography industry on its head by undercutting professional prices "by more than 99 percent" (2006, 7). However, this was much more complicated than simply an exploitation of photographers; rather, what iStockPhoto did was connect a community of amateurs that were being enabled by affordable, professional-quality cameras. "The product [stock photographers offer] is no longer scarce," Howe wrote. One way that such a case could be seen is as an isolated instance of a new technology (affordable digital SLR cameras) negatively affecting an industry - not unlike desktop publishing's effect on professional printers (Howe, Crowdsourcing 2008). However, Howe looked more at the means, and discovered another enabling factor: the Internet has passionate, willing amateurs, and examples like iStockPhoto find ways to bring them together into a cohesive, notable force.

The *Wired* article did not introduce anything new, conceptually: cases and theories on the concepts had existed well before. Thus, the significance of 'crowdsourcing' is that it named a collection of qualities the Internet was bringing to the forefront, and did so in a way that seemed to satisfy, for many, the uses that were being addressed. "A lot can happen in a week", Howe wrote shortly after the *Wired* article. Nine days after hitting newstands, there were 182,000 occurrences on Google, showing adoption, redefinition, criticism, and even satire (Howe, Birth of a Meme 2006). The term was being expanded, moving away from its particular definition into a more general one. It became a verb describing the utilization of the wisdom of the crowds that James Surowiecki had popularized two years earlier (The Wisdom of Crowds 2004). This emergent definition encompassed earlier concepts of commons-based peer

production (Benkler 2006, Benkler 2002), the long tail (Anderson 2004), and the user innovation research of Von Hippel (Democratizing Innovation 2005). Also, it was quickly noted that crowdsourcing, as it was emerging, was essentially a general-purpose umbrella under which open source software development belonged.

That is not to say that crowdsourcing, as a term or a concept, has not had its share of criticism. Early in its history, the term was often considered a buzzword. As Wikipedia users considered the merits of the term back in 2006, Wikipedian *hif* argued that "while the concept as a whole sounds somewhat valid, it feels as though it was conceived solely as a buzzword for articles and books and new, hip management styles to be pushed to execs."[6] This concern would not be off the mark. Businesses attempting to capitalize on Internet users as a labour force appear to have sprung up quickly. "While not a new phenomenon" *Business Week* wrote during this time, "crowdsourcing is really growing as a business trend" (Hempel 2007). Esquire included the word in a blurb on jargon, alongside such ephemeral terms as *dipmom* – "dad in prison and mom on meth" – and *earspray* – "the sound spilling from the overamped earbuds of the guy next to you" (2006).

The 'buzzword' stigma has gradually subsided: a full text scholarly search for 'crowdsourcing' and 'buzzword' for 2008-2010 reveals mainly defenses against crowdsourcing as a buzzword in a negative sense. However, criticisms of the concept of crowdsourcing are still commonly based on an understanding of the term from the perspective of an exploitive business. Such a view is diminishing of the complexities of crowds and their relationship to sites. As Howe writes, "those that view the crowd as a cheap labour force are doomed to fail" (Crowdsourcing 2008, 15).

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[6] "Talk: Crowdsourcing." *Wikipedia*. http://en.wikipedia.org/w/index.php?title=Talk:Crowdsourcing&oldid=87544527.

Other criticisms of crowdsourcing point to the quality of content created by crowds. This is a legitimate concern that projects need to tackle. In a study of expert versus non-expert annotation of political commentary, Hsueh, Melville and Sindhwani (2009) conclude that using single non-experts is detrimental to the annotation. However, they find that using multiple non-experts allows outliers and noisy annotators to be eliminated, thus benefiting the results.

Another quality issue was seen in the tagging feature of Flickr Commons (Springer, et al. 2008). It was found that the many tags did not enrich the photo data in a way that is pertinent to the library's records; the majority were taken from the Library of Congress's formal description or simply described the content of the image. Common typographic (i.e., spelling errors) or technologic issues (i.e., unintentionally split terms) were also seen, and variant spellings were rarely given by the same taggers. However, the quality of the tagging does not speak to the quality of the overall crowdsourcing initiative. As has been mentioned earlier, the Library of Congress appeared quite satisfied by the outcomes of the project, if not by the tagging then by "the wealth of interaction and engagement that has taken place within the comments section [which] has resulted in immediate benefits both for the Library and users of the collections" (Springer, et al. 2008, 25). Tags appeared to service the search engine foremost, though the Library of Congress had no strong measure of how many users arrived at the collection through tags.

The example of tagging in Flickr Commons is relevant to much of crowdsourcing: the method very much affects the results. The way that user-generated tasks are promoted may have a negative effect on the outcomes. For example, micropayment-based tasks may be rushed through by participants[7], while achievement-based "badges" may cause site participants to force a hasty contribution for the reward. Tags from the

[7] It should be noted that when Eckert et. al (2010) studied completion time of projects on Mechanical Turk as an indicator of quality, they found no notable correlation.

Commons, while not at the quality of professionally-catalogued terms, offer an insight into entry vocabulary; they show how regular people may describe an image. One possibility for finding use from the tags, thus, is to use them as search words in the Library of Congress archives (Springer, et al. 2008, 25). When Eckert et al. (2010) investigated the viability of crowdsourcing through Mechanical Turk and the creation of concept hierarchies, they also found the method to be important to the results . Through coding redundancy and the use of a hidden gold standard questions, simple filtering can identify reliable contributors; these filtered sets matched and even outperformed the quality of the community from InPhO, a project for developing an open philosophy ontology (2010).

Other criticisms that can be levied against crowdsourcing are those suggesting the negative impacts of the egalitarian, collective nature of the concept. Jaron Lanier, for example, calls Wikipedia "digital Maoism", criticizing the lack of an independent, recognizable voice in the website, using his own Wikipedia entry as an example (Lanier 2006)[8]. An alternate argument may be that crowdsourcing is not in fact egalitarian, as the influence of the few is often disproportionately represented over the voice of the many. Indeed, with many of these projects, there is a small portion of the users that make a large portion of the contributions; when this is not properly managed, these groups can develop a lot of power over the content. Such a structure has been the source of criticism in both Wikipedia (Angwin and Fowler 2009) and Digg's (Torkington 2006) content production.

Failures of Crowdsourcing

When Pixish, a website for running paid design contests shut down, co-founder Derek Powazek left behind a telling write-up of the project's successes and failures (Pixish Closing October 31 2008). Though first noting that it was closing "mostly because

[8] His Wikipedia page lays out this argument in simple bullet points.

of personal reasons", he went on to detail the other part of the choice: that "the community never really gelled." One of the reasons for this is that they did not communicate the site's purpose well enough. While the description of "design contest website" seems appropriate in hindsight, the creators were imagining and communicating the site in a much more grandiose way: it was a platform for recruiting communities to work on tasks. Powazek's earlier company was JPG, a magazine that was created solely from user-submitted photographs. The idea, it appears, was to create a platform for others to take their collaborative creative projects to and find people to work on them. This was too fuzzy or complex of a purpose to convey, Powazek suggests. Furthermore, the community does not exist for a specific purpose making it more difficult to gather a community. "There's a difference between a community and a network," Powazek wrote, referring to the fact that simply connecting people is not comparable to engaging them.

Assignment Zero, an attempt at crowdsourced journalism, also suffered from failings of communication. The project, led by *Wired* and NYU journalism professor Jay Rosen, was designed to write a series of articles about crowdsourcing by using crowdsourcing. Indeed, the choice of topic was the first misstep. In "Did Assignment Zero Fail", Howe wrote that "The choice of subject was a decision we would come to regret. The topic of crowdsourcing was too nebulous — too new — to gain immediate traction. One thing any volunteer project must inspire — be it citizen journalism, an open source programming project or simply an AIDS drive — is passion. Using the crowd to investigate crowdsourcing inspired, by contrast, confusion" (2007). Rosen's take away "is that you have to be waaaay clearer in what you ask contributors to do. Just because they show up once doesn't mean they'll show up over and over. You have to engage them right away."

It is sometimes difficult to disentangle the reasons that a crowdsourcing site may fail without close knowledge of the site. When Cambrian House closed, it was not immediately clear as to why. The site was essentially a platform for ideas: users would share ideas for *things* that needed to be created, and then the company and users would perform market research, develop the concept further, and finally build the

product. Curiously, the same general model has been utilized by other websites, notably Kluster and its sub-projects, with more success. As one journalist wrote, “They all have their own approach, and experimentation is necessary to find the right one” (Schonfeld, TechCrunch 2008). What appears to have been the issue, suggested by testimony and comparison to similar sites, is not the concept itself but the implementation of that concept. In response to an article considering the reasons for the company’s failure, CEO and founder Michael Sikorsky suggested that the problem was that “people loved to bookmark more than they loved to actively visit [the site]” (ibid). He explained that the ideas were great, but the support for realizing ideas once they were fleshed out was not there; “the wisdom of crowds worked well in the model, but it was our participation of crowds aspect which broke down” according to Sikorsky. Since the process was so open-ended, having the burden of realization move onto the company time after time stretched their resources too thin. Indeed, what has emerged since is a seemingly more sustainable model of more structured idea generation. Kluster, which functioned very similarly to Cambrian House, has transitioned into a packaged platform for starting purpose-specific projects. One of these is Quirky, a product development site and marketplace[9]. Quirky production follows a complete design process, with its community contributing to everything from market research to naming to industrial design. The logistics and necessary skills for producing the product at the end are easier to predict, and thus the company can specialize in the non-crowd parts. Like Kluster, Cambrian House has also transitioned into a packaged platform.

While the use of online crowds to solve problems has resulted in a number of successful projects, the greatest obstacle has repeatedly been accessing those crowds and offering a worthy return. In a survey of collaborative workforces, Kleemann et al. (2008) alluded to this problem, noting that "crowdsourcing strategies and platforms

[9] Quirky was one of the cases examined in this study. More discussion of its mechanics can be found in the study results.

require significant investments; whether these investments pay off depends on how the crowd responds to the crowdsourcing call" (23). Jeff Howe has also noted the failing of intentional crowdsourcing, explaining that “we know crowdsourcing exists because we've observed it in the wild. However, it's proven difficult to breed in captivity” (Howe 2008).

Precedents

The concept of large-scale collaborative creation or problem-solving is not a new concept. Chunkier due to less efficient methods of communication, crowdsourcing has nonetheless existed well before it was crowdsourcing. Particularly, the technique of solicited contributions from the many, in hopes of receiving a suitable response has been observed, in what Lakhani calls ‘broadcast search’ (Broadcast Search in Problem Solving 2006). One such example is that of the ‘longitude prize’, a bounty offered by the British government in the 18th century to the solution of a means for accurately measuring longitude. This parallels modern brainstorming and problem-solving projects, such as bounty-based R&D websites. Howe notes that such sites often succeed by finding solutions from diverse and unexpected areas of expertise (Crowdsourcing 2008, 153). In much the same way, the longitude problem was solved by a carpenter and without relying on astronomy, as the principal advisor to the judging committee, Isaac Newton, had asserted would be necessary.

Open Source Software Development

Lakhani has stated that when he first read of the Longitude Prize, he thought “Huh. Kind of like open source. Someone poses a problem and all sorts of random, strange people show up and say I've got an answer for you" (Howe, Crowdsourcing 2008, 147). Open source software development is a principle of freely accessible and easily reusable source code in programming that has been very successful in collaborative software development. It is also one of the closest predecessors to crowdsourcing. Jeff Howe gives the 'sound-byte definition' of crowdsourcing as “the application of open source principles to fields outside of software”. Open source software was an early instance where people realized the consistent value that can be

produced by (what came to be known as) crowdsourcing (see Goetz 2003) and thus numerous scholars have attempted to dissect the success of open source (Lakhani and von Hippel, How open source software works 2003) and the motivations of its users (Hars and Ou 2002, Lakhani and Wolf, Why Hackers Do What They Do 2005). What's notable about open source is that it has evolved around a few concentrated communities, rather than the relative autonomy of projects that crowdsource. This has allowed researchers to access a fairly representative sample when they explored motivations of open source developers.

In 2001, Lakhani and Wolf (2005) sent out questionnaires to a sample of contributors from Sourceforge, the most popular open source project hosting service, probing into their motivations. The most notable results were that, contrary to common assumptions, external motivation plays a considerable role in participation. In other words, the results showed that open source development works on more than deep-seated beliefs into the intrinsic value of the "open" model. Though one-third of respondents did note this reason, it was also noted that paid contributors spent more time on projects. However, feelings of personal creativity *did* play an important motivational role. A majority of respondents said it was (or equaled) their most creative endeavour, and most found that they lost track of time when coding. Lakhani and Wolf conclude that open source software is powered by a combination of multiple motivators, ones that balance both extrinsic/intrinsic factors.

Commons-Based Peer Production

In 2002 Yokai Benkler looked at open source and noted that it was challenging the standard view of organization based on Ronald Coase's 1930 paper *The Nature of the Firm*. Coase and subsequent theorists had outlined underlying costs tied to the organization of firms that made them more effective than a group of individual agents up to the point at which the managerial complexity made the transaction cost too great to grow any larger. Benkler notes that open source projects "do not rely either on markets or on managerial hierarchies to organize production" yet nonetheless successfully generate products (2002). Looking deeper, Benkler saw this not as an

anomaly exclusive to open source, but a new level of production evident throughout the Internet. This new, decentralized, open form of production, created by self-selected individuals, Benkler termed Commons-based peer production (CBPP) (Benkler 2002, Benkler 2006).

Benkler admits that CBPP has issues of motivation and organization that need to be overcome, but once this is done there are advantages that the production model brings. One is that contributors are given the capacity to judge their skills and contribute with their skillset as well as to the extent that it goes. Of course, sometimes a worker misjudges their abilities, but a good peer review and filtering system can account for this. Additionally, when workers are not restricted to a particular task, the approach to that task can benefit from a more diverse range of knowledge and creativity. As Benkler explains,

> *"Human creativity cannot be assumed to be an on-off switch of suitability for a job, as simple models of industrial production might treat labor. One cannot say in the information context that "this person passes threshold suitability requirements to pull this lever all day" and ignore variability beyond that fact. It is more likely that variability in productivity will be large for different people with any given set of resources and collaborators for any given set of projects" (Benkler 2002, 376).*

Krowne (2003) argues for a place for Commons-based Peer Production in digital libraries, using his own PlanetMath project as a case. He notes benefits in four distinct areas: philosophical, logistical, fiscal, and optimal. The optimal collection benefits — more material; more peer review; more up-to-date content; greater involvement of readers/learners; new treatments— offer perhaps the most high-level benefit to the future of information. Krowne repeatedly cites sustainability of participation as one of the primary concerns in utilizing CBPP for digital library development and outlines a number of system mechanics that PlanetMath has used in order to keep users motivated.

Long Tail

While CBPP deals with production models, the Chris Anderson-coined 'Long Tail' deals with consumption patterns. Anderson (2004) notes that society is moving away from an emphasis on blockbuster cultural products to one more accommodating of niche markets. The term refers to the distribution of demand: that in any given area there is often a lot of interest in a few cultural products –the head of a demand curve – and a bit of interest in many products – the 'long' tail of a reverse parabolic graph. The long tail of demand distribution is becoming viable partly due to the digital world: in a medium separate from many restrictions of physical media, such as those of space and material cost, demand is no longer necessary to release a product. If the production and distribution cost of an MP3 is negligible, there's little reason for an online music store *not* to 'stock' it. Perhaps more importantly, the scale of the Internet magnifies demand; though there may be relatively little need for a product, a miniscule fraction of people seeking it can still be notable.

Crowdsourcing usually does not deal with consumption, but the economic model Anderson shares parallels it in many ways. Notably applicable is the principle that with the ease of access provided by the Internet, even small contributions matter when magnified by large numbers of participants. For the Commons pilot from the Library of Congress, there were 2518 unique taggers, over 500 of which contributed only one tag (Springer, et al. 2008). However, it would be problematic to overemphasize the long tail of participation; the head (i.e., as denoting 'power taggers') is still important, regardless of a project's capacity for capturing the tail (i.e., a collection of one-time taggers). A few months before the aforementioned statistics were produced, an analysis of Flickr Commons data found that 40% of the tagging was done by 10 "power" users (ibid). This data corresponds to an inverse power law, a distribution that has been observed in numerous other projects, such as the Australian National Newspapers Project. That project reported that the top ten OCR correction contributors would contribute up to 45

hours per week on the task and whose contributions remained sustained over a long period of time (Holley 2009, 12).

Though the long tail distribution is not directly applicable to the motivation of users, it suggests that there are different types of users, which may be recruited through differing approaches to meeting their needs. For that reason, it is important to examine what motivates users to engage in crowdsourcing activities, wherever they might fall on the 'long tail' distribution.

User Innovation

Closely related to both CBPP and the long tail of demand is the user innovation research of Eric von Hippel. His research in the area has spanned multiple decades; although his work is not particular to digital culture, it is appropriate that it has progressed alongside the rise of open source software. In his most recent book, he writes about the democratization of innovation, which is to say that "users of products and services—both firms and individual consumers—are increasingly able to innovate for themselves" (von Hippel 2005, 1). This concept is at the heart of crowdsourcing activities.

One of the connections that von Hippel makes is of user innovators as 'lead users': those users that are ahead of the curve in the adoption of market trends. Like with the trends that they adopt, what they choose to create for themselves likewise has utility for the needs of casual users. It is here that the theory echoes the Long Tail. One of the reasons cited for user innovation in the first place is that existing solutions service the head of the demand curve; when nobody is providing for the long tail, those users are left dissatisfied. In one survey, Franke and von Hippel (2003) examined users of Apache, an open source server technology whose users have heterogeneous needs. Looking at users capable of modifying the software to their needs, they found that those who did were much more satisfied. However, they were not entirely satisfied, and the amount of modifications that would be required for their ideal solution were large.

Wisdom of the Crowds

James Surowiecki in *The Wisdom of the Crowds* in 2004 hailed the intelligence of groups in aggregate. Despite our individual limitations in making decisions, "when our imperfect judgements are aggregated in the right way, our collective intelligence is often excellent" (Surowiecki 2004, xiv). After all, Surowiecki notes, even the most popular information retrieval system in the world, Google, is heavily influenced by a citation authority model, making its quality a product of aggregated crowd wisdom. More recently, online discussion has begun to factor heavily into Google's results.

One of the reasons for the wisdom of the crowd is simple logistics. Surowiecki notes the game show *Who Wants To Be A Millionaire*, where contestants have "lifelines" for when a quiz question leaves them stumped. Two of these are "call a friend" – calling a contestant's friend that they presumably consider knowledgeable on the topic – and "ask the audience" – where the audience votes and their aggregated suggestions on the right answer are provided. "Everything we think we know about intelligence suggests that the smart individual would offer the most help," Surowiecki writes. In reality, however, the friend expert is correct about two-thirds of the time, while the audience is right over ninety percent of the time. The way that logistics factors into this is as such: a completely clueless audience would be expected to guess each of four options twenty-five percent of the time, but if just a few of them know the real answer, that answer will be chosen more while others are chosen less.

The title and term, wisdom of the crowd, is a nod to Charles Mackay's *Extraordinary Popular Delusions and the Madness* (Mackay 1941). Mackay cites numerous examples of the madness of crowds, such as stock market bubbles. Surowiecki considers these and suggests that bubbles are not a problem of crowds but in how they are structured in this case. His analysis considers the capacity for independent decision making, and that this important feature is minimized by *herding* –

the 'safety in numbers' flocking toward common choices, and over-amplification of meaning in small actions that happens when a person is invested in the choice.

The wisdom of the crowd is often understood alongside crowdsourcing[10]. Crowdsourcing is the utilization of this wisdom. Surowiecki's offering of the issues affecting proper utilization of crowds – cognition, cooperation, and coordination – offer a frame by which crowdsourcing can be effective in relation to its alternatives.

Social Movement Theory

An area that offers insight into large-scale mobilization, particularly the types that exhibit altruistic qualities, is social movement theory. Klandermans and Oegema (Potentials, Networks, Motivations, and Barriers 1987) outline participation in social movements as a process of maximizing mobilization potential, motivating potential participants and lowering barriers to participation, examining it through the scope of successful, large-scale demonstrations. Klandermans and Oegema argue that to achieve success in such an effort, a group needs to approach each of these steps individually, each with their own methodology.

Mobilization potential is the number of people that would at least consider participating. In other words, they are those that care about the issue at hand, whether they participate in any movement around it or not. When the number of potential participants has been maximized, it is important to enable them to participate. "Willingness is a necessary but insufficient condition of participation" (520); potential participants need to be encouraged and the process simplified. The lasting implication of this paper is the importance of critical mass, and it raises the question of whether the method the authors identify is applicable beyond social movements.

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[10] Consider the headlines for two articles about crowdsourcing: "Tapping the Wisdom of the Crowd" (Business Week, 1/18/2007) and "Collecting the Wisdom of the Crowd" (Business Week, 9/25/2006).

We see the application of such principles in crowdsourcing examples like Carrotmob[11] and Kiva[12]. Carrotmob is an online organized movement that rewards local companies – where participants frequent the business en masse - for making environmentally-friendly changes to their business. To use one early example, convenience stores around a number of blocks in San Francisco were approached with the proposition: 'if we bring a crowd of customers on one single day, what percentage of that day's profits would you contribute to green changes?' After the business with the best offer was determined, an auditor inspected them and suggested environmentally-friendly upgrades and a mob was organized to make good on the promise of customers. In a case like this, the barrier to entry is quite low for participants. They are asked to divert their regular commercial habits and take them to a different location, the reward being that that location's profits will benefit a cause they believe in. Also, by being based locally, crowds are more likely to benefit from knowing other participants, an observably notable motivator according to Klandermans and Oegema.

Another example, Kiva, mobilizes online participants to fund third-world business initiatives through micro-lending. Funds generally go into improving an entrepreneur's infrastructure, increasing their ability to make a living and, by extension, capacity to repay the loan. Like with Carrotmob and as Klandermans and Oegema suggest, the idea of critical mass is important here. Though loans are repaid, having a greater number of lenders allows a lower barrier to entry for potential funders.

Emergent Crowdsourcing

The emergence of crowdsourcing online has been dynamic, growing out of experimentation with technical possibilities more than from a particular instance.

[11] http://carrotmob.org/

[12] http://www.kiva.org/

Certainly there have been notable achievements, but in relation to the concept as a whole, they have each only been partial contributions. The wiki was invented in the early nineties; Slashdot and Everything2 allowed their consumers to be creators by 1997 and 1998; and, Delicious, and then Flickr, popularized tagging in 2003 and 2004. As new models have emerged, there have been a number of case-specific looks at notable crowdsourcing sites. In the sections that follow, I will look at a selection of this research.

Wikipedia

Most common amongst these studies are examinations of Wikipedia, the free, crowd-written online encyclopedia. Wikipedia grew out of a scholar-driven online encyclopedia called Nupedia. When the editorial board refused to let the Nupedia founders play with wiki technology, the spin-off was created and quickly grew while the original floundered.

Wikipedia is an intriguing subject because its success is seemingly paradoxical. As mentioned earlier, it appears to many as "impossible in theory, but possible in practice" (Kelly 2008). Certainly you can have people tag photographs for pennies, but write a compendium of human knowledge for *free*? Sanger writes: “When people first began learning about Wikipedia, when it was growing explosively, the first question they would ask is, ‘How can it be any good at all, if it is open to just anybody?’ And yet many Wikipedia articles were surprisingly good. The real shock came with the realization that Wikipedia’s articles were good not *in spite* of its openness, but *because* of it” (2009, 53).

The contrast between expert and amateur encyclopedias is the source of much fascination (Shirky 2008, Ebner, Zechner and Holzinge September 6 - 8, 2006). One of the successful features mentioned by Shirky (Here Comes Everybody 2008) and Sanger (2009) is Wikipedia’s "self-healing process", whereby each page is part of an ongoing public review. Each visitor is also a latent editor, possibly compelled to correct what they find to be wrong by virtue of being able to do so. In examining Wikipedia's success, he also cites common familiarity with the "encyclopedia" format that the site adopts, its "spontaneous division of labour", a low barrier to participation, quick correction as a vandalism deterrent, and a desire to change something in the world. Ebner, Zechner and

Holzinge note that Wikipedia allows users to assist in the writing of topics that they enjoy or are knowledgeable on. This investment, they note, is why internal wikis, such as student-written class wikis, have difficulty emulating Wikipedia.

The co-founder of Wikipedia, philosopher Lawrence Sanger, offers an alternate view of Wikipedia. He argues that it is "implausible that Wikipedia and its like might take over the epistemic leadership roles of experts[13]" (Sanger 2009). Although he notes that there are good qualities about Wikipedia, as evidenced not only by its cultural success but by the observed quality of the content, the overall mechanics of Wikipedia work against it, dissuading knowledgeable contributions. Its egalitarian nature, while apparently responsible for its success, erroneously seems to suggest that because a system without experts can thrive, expertise is no longer necessary to add credibility to knowledge. Another issue, hinted at by Sanger, is that the absence of a clear, individual voice makes bias more difficult to identify. An observer may consider Wikipedia to be an ideal of objectivity, where biases normalize; Sanger believes that this is not the case.

Another issue Sanger notes is that Wikipedia does little to account for its uneven quality. When readers move from a high-quality article to a low-quality one, they may not immediate realize it. Verifiability is not an unsolvable problem, however, and Sanger suggests a voting system where readers can easily rate the quality of the content. This is in addition to the current approach, which involves standardized flagging of low-quality content and an insistence on citation of all content.

The greatest issue with Wikipedia is that of reliability. Articles can vary in quality based on the attention given to them, and there are few indicators to help readers judge the trustworthiness of the article. However, it has been noted that Wikipedia's reliability appears favorable to other sources of similar accessibility (Fallis 2008, Sanger

[13] Note, for example, my own characterization of Sanger as co-founder of Wikipedia, lending more expertise to the philosophy paper.

2009). In other words the information offered by Wikipedia improves on the quality of information on the Internet at large despite its shortcomings.

iStockPhoto

When Cooke strove to understand factors of implementation in crowdsourcing (2009), he focused on the "microstock" photography website iStockPhoto. iStockPhoto was one of the earliest examples of crowdsourcing to be widely noticed, as its mere existence has threatened to upend the entire stock photography industry. The site is an online community of photographers on one end, and a micropayment-based image seller on the other. Images sell for a fraction of their equivalent cost from a traditional stock photo agency, with a percentage of each sale going to the photographer. The site has fared well, and Cooke cites an emphasis on community development, personal attributes, and user interaction for this success. The success of iStockPhoto has been studied a number of other times (Kleemann and Voß 2008, Howe, Crowdsourcing 2008, Howe, The Rise of Crowdsourcing 2006, Brabham 2008). Howe also notes the importance of “community first” (Crowdsourcing 2008), while Brabham's survey of users shows that the more individualistic factors of financial gain and creativity drive the majority of users (2008).

ESP Game

ESP Game is an online game that links anonymous online individuals and has them independently tag a random online image. Once they separately suggest an identical tag, they receive points for how quickly they did so. Thus, the system ends up with independently confirmed (i.e., validated) semantic information about the photo.

ESP Game's creators note that “the only method currently available for obtaining precise image descriptions is manual labeling, which is tedious and thus extremely costly” (von Ahn and Dabbish 2004). On increasingly large scales, the task becomes prohibitively costly and eventually near impossible, such as in trying to add semantics to the entire Internet of images. What the ESP Game offers is a solution: to make the task less tedious and even enjoyable.

Louis von Ahn, creator of the game, notes a number of motivators beyond simply that of "fun". According to him, though paired strangers never communicate directly, many nonetheless create bonds in playing cooperatively with real people. At the same time, players also have a scapegoat in their partners, so they can always justify that any failings were the fault of the partner (von Ahn and Dabbish, Labeling images with a computer game 2004). Ultimately the value of ESP Game is how it approaches a deficiency of computing not with complicated algorithms, but with people playing a game: “we’ve turned tedious work into something people want to do” (326).

Flickr Commons

"Web 2.0" is currently of interest in library and information science scholarship and in practice. Aharony (2008) identifies five characteristics of Web 2.0, three of which —user generated content, the wisdom of the crowds and the network effect of increasing value with increasing users— are directly related to crowdsourcing. The other two, sharing information and openness, are often also associated with crowdsourcing projects. The field shows particular interest in crowd-generated folksonomies, such as those of social bookmarking tool del.icio.us and photo-sharing service Flickr (Stvilia and Jörgensen 2009).

A subset of Flickr, called Flickr Commons, is increasingly used by public archives for both disseminating and enriching photo archives. The Library of Congress has begun to explore a future for bibliographic control that includes input from online crowds and has emphasized their success with Flickr Commons (Springer, et al. 2008). Other examinations have looked at the strengths of crowdsourced folksonomies in deriving ontologies (Huairen and Davis 2010, Eckert, et al. 2010). Despite positive enthusiasm on the broader scale, acceptance of Web 2.0 conventions is slow on the individual level, and there are numerous calls to emphasize Web 2.0 comfort when hiring library staff (Aharony 2008, Heinrichs and Lim 2009, Gary 2008).

Suda Online

Another crowdsourcing research project is the *Suda OnLine* (SOL). SOL is a collaborative classics project aimed at translating and annotating the Suda, a 10th century Byzantine Greek encyclopedia. About two-thirds complete, SOL has achieved what Nupedia did not: it involves a successful multi-editor collaboration of experts. The initial author of each entry receives the primary credit, and subsequent editors receive contributing credit. The original Suda is written in a transitional, inconsistent Greek language that limits its research potential to a few scholars (Mahoney 2009). However, with ten years of mostly volunteer work, an accessible English translation has emerged, with annotations that supplement mistakes and inconsistencies in the original text.

Motivation Theory

This study frames its data analysis through concepts developed in established motivation theory. The application of motivation theory to website evaluation is not without precedent. In "Websites that Satisfy Users: A Theoretical Framework for Web User Interface Design and Evaluation", Zhang et al. propose a framework for evaluating web interface design with an emphasis on the motivational issues of the interface (Websites that satisfy users 1999). Premising this on the concept that an appealing website is akin to a motivational workplace, they adopt Herzberg's Two-Factor Theory, a business-centric motivation theory which separates satisfaction and dissatisfaction into two separate dimensions, with dissatisfaction based on a set of "hygiene" factors and satisfaction on motivational factors. They adapt Herzberg's hygiene and motivational factors (which include examples like working conditions, supervision, and interpersonal relations) and relate these to web design through seventy-four sample factors. Two such examples, from the "responsibility" motivator, are "user control of pacing (how fast to go through the website)" and "opportunities for interactivity". While this paper proposes a framework for motivation in online projects, it leaves the question of effectiveness of motivation theory in website design for further study.

Maslow's Hierarchy of Needs

The hierarchy of needs is a motivational theory that based motivation on the pursuit of satisfying human needs. Maslow (1943) organized these needs into a

hierarchy of importance, beginning with the most primitive needs and moving into more complex needs, ones that become stronger once more basic ones are met. The most basic of needs are physiological needs, the needs of one's body. "It is then fair to characterize the whole organism by saying simply that it is hungry," (374) Maslow wrote; deprived of these needs will diminish any other needs. If satisfied, the next most basic need is safety. Though usually satisfied, this need is for stability in one's world. For obsessive-compulsives, Maslow argues, this need to be in control and in the familiar is exaggerated. Next are esteem needs, the needs "for self-respect, self-esteem, and the esteem of others". This manifests itself in two ways: the internal desire for achievement and the external desire for recognition and reward. Moving beyond that, the final need is for self-actualization. This is the need to fulfill personal goals, perhaps athletically, socially, or creatively.

Maslow's theory is dated in its approach. He focuses on what appears to be his opinion of well-adjusted individuals, rather than all individuals. Those that do not fit have "neurosis" or are "pathological exceptions". Nevertheless, the needs-based approach to motivation forms a foundation for further theory.

Alderfer's Existence, Relatedness, and Growth Theory

Alderfer's ERG theory is a modification of Maslow's Hierarchy of Needs. Once again, it is separated into "needs", which represent both desire and satisfaction. The inverse –frustration – is also relevant, as the existence of frustration suggests an unfulfilled need (Alderfer 1972, 8). In Alderfer's version, the needs are organized into existence, relatedness, and growth needs. These are defined as follows:

- "Existence needs reflect a person's requirement for material and energy exchange and for the need to reach and maintain a homeo-energy equilibrium with regard to the provision of certain material substances." (Alderfer 1972, 9). These are the physiological and material needs. Food, sleep, money: these are all existence needs.
- "Relatedness needs acknowledge that a person is not a self-contained unit but must engage in transactions with his human environment" (ibid). These involve

communication, interaction, and relationships. Satisfaction is derived through shared experiences. Alderfer notes that the opposite of satisfying relatedness needs is not anger but disconnect (Existence, Relatedness, and Growth 1972, 11). Unlike existence needs, there is no scarcity in satisfaction: a single experience can satisfy multiple parties.

- Growth needs emerge from the tendency of open systems to increase in internal order and differentiation over time as a consequence of going beyond steady states and interacting with the environment" (ibid). Growth needs are ones that require a person to engage and perhaps develop their skills, creativity, and other capacities. This desire for self-actualization is an important concept derived from Maslow, among others.

Unlike Maslow's theory, these needs are not hierarchical. Rather, Alderfer put forth a number of propositions for relationships between the three types. These seven propositions are considered in a later chapter, but they are all written as statements of relationships, such as proposition three: "the more existence needs are satisfied, the more relatedness needs will be desired" (Existence, Relatedness, and Growth 1972, 13). The relationships are not all similar, according to Alderfer. For example, lacking relatedness or existence needs will stimulate desire for those needs; however, it is when growth needs are *satisfied* that more growth needs are desired.

The ERG theory is not as centrally hierarchical as Maslow's hierarchy of needs. Nonetheless, there is an order of sorts that Alderfer suggests for understanding the relationships between types of needs. Existence needs are considered the most concrete, most primitive to human beings; on the other hand, growth needs consist of the least concrete or most abstract. This is relevant when Alderfer applies the concept of *regression-frustration* to his theory. This "concerns the tendency of persons to desire more concrete ends as a consequence of being unable to obtain more differentiated, less concrete ends"; in other words, lack of satisfaction of growth needs will cause greater desire for relatedness, while lack of relatedness needs cause greater desire for existence needs (in addition to the relatedness needs described separate from regression-frustration). The opposite is also true with *regression-progression*: satisfied

existential needs will lead to greater relatedness desire while satisfied relatedness leads to growth desire.

> *"Crowds, doubtless, are always unconscious, but this very unconsciousness is perhaps one of the secrets of their strength. In the natural world beings exclusively governed by instinct accomplish acts whose marvelous complexity astounds us. Reason is an attribute of humanity of too recent date and still too imperfect to reveal to us the laws of the unconscious, and still more to take its place." (LeBon 1896)*

It seems that given the appropriate tools, crowds have formed organically, and inducing successful crowdsourcing is still a difficult endeavor. However, emergent examples suggest clues of what works. This chapter has reviewed a number of cases in consideration of how they function, as well as theories considering the underlying workings of crowds. Moving forward, this study considers these prior concepts and examples in pursuing its goals.

Chapter 3
METHODOLOGY AND METHODS

The primary question being asked by this study is "how does a crowdsourcing project motivate its users to participate?" In pursuing this question, the study used a combination of methods, each one guided by a more directed research question.

This study employs case study methodology for data collection and analysis. This approach does not offer a specific method, but rather encourages a framework for theory-building from cases. It allows mixed-method data collection and continuous reassessment of methodology, making it more appropriate for exploratory studies such as this one. The methods adopted were content analysis, a quantitative analysis of message codes, and qualitative user interviews, with the latter method building from the initial analysis of the former.

In the content analysis, the question explored was "what types of motivators exist in a crowdsourcing site?" This was approached by looking at the cases and coding features that relate to a user's experience. If motivation considers how the project's offerings to users convince them to contribute, this study approaches the question by first examining this point of interaction. A series of questions codified the user's interaction with the site; these were subsequently analyzed for patterns and compared to existing literature on motivations in crowdsourcing. From this, a series of candidate motivators were derived, which served as the foundation for user interviews. Interviews explored the relative effectiveness of these, within the context of the cases from which they were derived.

Thus, the process of data collection was as follows:

- Case sampling occurred, from a larger set of crowdsourcing websites;
- Data were gathered of website features, for subsequent content analysis;
- Analysis of data: identification of patterns, evaluation of similarities to existing online crowd literature and motivation theory, and synthesis of these into a set of motivators;

- A series of user interviews examined the derived motivators and explored any additional ones;
- Analysis of data: examination of motivational themes in interview data.

Case Study Methodology

Case studies provide a way to examine the dynamics present within single situations through single or multiple cases (Eisenhardt 1989), in this case, that of crowdsourcing. This study followed a process outlined by Eisenhardt for deriving theory from case studies, one that closely resembles grounded theory (often used in human-based research approaches). For data collection, this process allows for the use of multiple techniques, either quantitative or qualitative, which best suit the context of the research problem. Combining qualitative and quantitative approaches has been advocated by others in looking at information systems (Kaplan and Duchon 1988).

Due to different data collection methods, case study methodology allows for overlap between data collection and analysis. Thus, early insights can influence a researcher's approach to later data collection. Eisenhardt addresses the question of whether it is "legitimate to alter and even add data collection methods during a study?" by arguing that "for theory-building research, the answer is 'yes,' because investigators are trying to understand each case individually and in as much depth as is feasible" (539). Another important feature of the method is that sampling is preferably purposive, to better address the particular context. Due to limitations in how many cases can be studied, "it makes sense to choose cases such as extreme situations and polar types in which the process of interest is transparently observable" (Pettigrew 1988 qtd. in Eisenhardt 1989, 537).

Case Sampling

Sampling for this study combined quota and purposive sampling methodologies in three parts. First, an initial sample of websites was taken through a social bookmarking service. These were the sites most frequently labeled "crowdsourcing" in users' bookmarks. Next, sites were reviewed and tagged according to categories of

function. The sample for analysis was finalized with purposive sampling, with emphasis on reaching quotas for each category.

Gathering a sample for study is complicated by the nature of the objects of study. As Neuendorf notes, "website research has difficulty in establishing a population and a sampling frame" (Neuendorf 2002, 88). The still emerging definition of crowdsourcing adds further complexity. What are crowdsourcing sites and where do you find them? This study is designed within these restraints, but also can only be understood within them. Broader discussion of its scope can be found in Chapter 4, but methodologically speaking, this study has utilized methods designed for inferences and theory-forming rather than conclusions and generalizations. Even if a single study cannot prove what motivates users, it can outline patterns of those elements that appear to motivate users through a rigorous approach to data collection and analysis.

Eisenhardt is careful to delineate statistical sampling and theoretical sampling. While statistical sampling strives for a generalizable representation of a population, theoretical sampling needs to "choose cases which are likely to replicate or extend the emergent theory" (1989, 537). This study sought sites that were healthy representations of their particular crowdsourcing sub-genre. The intention was not to gauge the state of the field but rather to find inspiration on best-practices for motivating online crowds. As per Eisenhardt's statement, within the practical limitations on objects of study that close readings are bound by, concentrating on the notable will produce more salient results. These are the sites that are successful *at* crowdsourcing: ones that achieve their goals, relying on crowdsourcing in doing so, and whose mechanisms are transferable rather than a stroke of luck.

Why not also sample to the other extreme, those sites that appear to be unhealthy or have failed? The choice not to do so was based on a combination of this study's scale and the logistics of including such a facet. While there is no doubt that understanding counter-examples is important to the results, this is most reliably done through literature and testimony rather than broad stroke data collection. It is difficult to analyze the motivations present in a website – or lack thereof – if users do not visit that site. A failed site may be designed exactly the same as a successful website, but

through some unfavorable combination of outside reasons, users never arrive at it to realize that they enjoy participating in it. Certainly such factors can be significant, but they are beyond the scope of this study. This study looks at gathering crowds through the value proposition that they provide to users to participate, not on the complex but more mundane issue of how they receive publicity.

In the process of sampling there were a number of sites observed that had failed. Investigating the reasons behind these failures showed both the difficulty that an attempt to study them would hold and the relatively mundane reasons that address this. One site, Fundable, preceded the fairly successful Kickstarter as a platform for threshold pledge fundraising. Why did one site fail while the other succeeded? While the reason was dramatic – in-fighting and public mudslinging between the two co-founders –it was not significant and certainly not applicable. Another project, also a threshold pledge system, lost its payment system when Paypal asserted that they cannot hold funds in trust. Pixish stated personal reasons, among others, while citizen journalism experiment Assignment Zero – an ironically failed attempt to collaboratively report on how crowds are changing the state of work in society – found technical issues to be one of the main roadblocks. A few other sites were simply down; my investigations could reveal what the site was, but without shedding light on why it no longer exists.

Note that these sites are the ones that attracted enough attention to have been repeatedly saved as bookmarks. They had received attention, and thus it was possible to investigate them after the fact, to varying degrees of success. In this way, they may also be unrepresentative of failed crowdsourcing sites. If crowdsourcing is about groups of people, it stands to reason that many failed sites did not find enough support. The ones that received attention are the ones that are documented and easiest to find, while others may be lost in obscurity or completely down, without any record of what existed.

This is not to say that all unsuccessful projects are mundane or not of relevance to our purposes. A notable segment of crowdsourcing projects are in the spirit of “see what sticks”. This is helpful because they usually concentrate on a particular concept, making it easier to measure by reducing the variables. Pixish, for example, left behind a

report on what was ran well and what could have been improved. Assignment Zero also produced a reflective article about the failings of the project, including steps to avoid. These first-hand accounts are useful because of the familiarity of the project that informs them, something that could not be reached nearly as adequately by returning to a site once it has either shut down, decayed, or ended. However, a more complete analysis of these failed projects would require further research, beyond the scope of this project.

Delicious

In determining the sampling frame for the study, an emergent definition of crowdsourcing was used. Rather than defining crowdsourcing and then sampling on the terms of that definition alone, it was decided to work from a collection of sites that have been independently defined as "crowdsourcing" and incidentally to re-evaluate the study's definition within this scope. This collection of sites was taken from Delicious.

Delicious (formerly known as del.icio.us) is a social bookmarking service. Similar to regular browser bookmarking, the site allows users to save links to websites that they find significant or that they would like to return to later. Since these bookmarks exist online, they can be accessed from anywhere. More notably, having all these bookmarks on a centralized service allows the introduction of social functionality. What is, for an individual, a useful archival service becomes a robust indicator of trends when patterns are aggregated across many individuals. The crux of bookmarking, after all, is saving links which are notable. A major feature of Delicious is tagging, which allows the organization of bookmarks through free text labels. Thus, it is easy to determine what sites are considered most notable by Delicious users, and which of those have been described as 'crowdsourcing' most often.

It is in this way that Delicious itself utilizes crowdsourcing. Tags on their own are unreliable, with no restrictions or standards on how users decide to describe a bookmark. However, by aggregating these descriptive tags, a picture of the website's 'aboutness' begins to form. Categorizing the meaning of a webpage is difficult to do algorithmically, and early web attempts to support author-written metadata in HTML

were inconsistent and abused. In his popular essay “Ontology is Overrated” (2005), Clay Shirky outlines the difficulties with using existing categorization methods and posits social bookmarking, like Delicious, as a solution for semantic metadata online.

Critical mass is important to the reliability of such aggregation: the more labels a site receives, the more reliable they are (and more protected from rogue mischaracterizations). For this reason, this study sampled the sites that were most frequently tagged “crowdsourcing”. The first 1000 results of a query for crowdsourcing were saved on February 10th, 2010. Later steps would categorize the results in order until new categories no longer emerged; one thousand was an exaggerated number of what an initial review suggested would be necessary to reach saturation. An examination of Delicious results showed that these were in fact sorted by the number of times they were tagged by the search term. While finding a population is improbable with websites, the importance of critical mass to crowdsourcing corrected slightly for this; in other words, because much crowdsourcing depends on enough people using it, viable sites can be reasonably expected to tend toward the front of results organized in this way. The purpose of this sampling is to be thorough in project categories; i.e. the various incarnations that crowdsourcing has taken. Limiting Delicious results to 1000 did not uncover all sites, but it is likely to have uncovered the breadth of the area.

There are some limitations to this approach. Searching for ‘crowdsourcing’, for example, means that a certain historical perspective is lost. The results tend toward more recent examples, as more users become familiar with the concept and more likely to use this particular term to describe something. The exceptions appear to be the mature sites that have been put under the lens of media and papers about crowdsourcing, such as iStockPhoto and Innocentive. I would expect that, if the crowdsourcing term continues to transition from novelty to ubiquity, results will no longer favour newer sites as users tag more on the content rather than the mechanics of a site. This can be seen on Delicious historical tagging charts of previous emerging concepts, such as ‘ajax’ and ‘web2.0’, which peaked and are now falling.

Another shortfall of the Delicious approach is a tendency toward the explicit. Sites that sell themselves as "crowdsourcing" sites appear to be more greatly

emphasized; thus, the material skewed toward financial-based or business crowdsourcing. However, overrepresentation was compensated for by the quota sampling, described later.

Identification

Once the initial sample of 1000 Delicious sites was gathered, the sites were formatted using regular expressions into comma separated values, opened as a spreadsheet and categorized. Not all of the thousand sites were examples of crowdsourcing: many were articles, blogs or blog entries, listings, book homepages and other media pertaining to, but which were not actually, crowdsourcing sites. This categorization served to determine which sites were relevant to the study – those categorized as "crowdsourcing site" or "crowdsourcing project" – and those which were not – such as duplicates and the other data types mentioned previously. Also, due to research restrictions, non-English language sites were noted for exclusion from sampling. Classification was done on the remaining set of 433 sites.

The process of identifying the nature of the websites was assisted with a number of spreadsheet formulas. URLs were separated into their domain and path. Those sites which ended with a top-level domain (such as .com, .org, co.uk) were noted as crowdsourcing sites. Though this was not completely accurate, it was a relatively robust approach, as non-crowdsourcing sites incorrectly identified could be identified in the later stage of tagging. Next, the paths of sites were analyzed: popular blogging and wiki software have url conventions that allow them to easily be identified. The occurrences of each domain were then counted. By sorting the items by number of occurrences per domain name, it was easier to identify news websites. For example, there were thirty-six items from the website of the technology periodical *Wired* (and source of the crowdsourcing neologism) and twenty-three items from Read Write Web, a popular technology blog. In addition to these top commentators, other recurring sources of crowdsourcing news in the popular culture include Mashable, *Business Week*, Techcrunch, *The Guardian*, and *The New York Times*. Counting domains also assisted in

identifying duplicate sites, for example *http://www.waze.com* and *http://www.waze.com/homepage*. Remaining items were reviewed individually.

The categories seen amongst the sample were as follows:

- Sites / Projects: Websites that use crowdsourcing. The difference between the two is that projects represent a finite timeframe, while sites are continuous or with long-term goals. There was occasionally overlap or ambiguity between sites and projects.
- Articles / Blogs: Commentary on or synthesis of crowdsourcing. These were fairly straightforward to identify, though once again, there was occasionally a fuzzy line between the two.
- Talks: Presentations on crowdsourcing.
- Papers: Academic commentary.
- Non-English Sites: Site in a language outside of this study's capabilities.
- Wikis: This refers to wikis about crowdsourcing, not wikis that were created through crowdsourcing.
- Collections: Websites that collected crowdsourcing links.
- Books / Films: Websites promoting media related to crowdsourcing.
- Other: various outliers, such as consultancy companies.
- Duplicates: Items that had already been gathered/noted.

Classification

Having identified the actual crowdsourcing sites from the collection of crowdsourcing bookmarks, each was then reviewed and classified. The end result found 433 crowdsourcing sites within the initial collection of 1000. Of the 300 that were examined in detail, 147 of there were determined to be sites that utilize crowdsourcing. The classifications were of themes related to the functionality of the website.

Process

Sites were reviewed individually and classified through a bottom-up approach, using terms that emerged from the sample. Terms represented visible themes of the

website functionality. These terms were classified in two ways: methodology and structure. The methodology terms represented the way that contributions were being used while the structure terms related to the implementation of the website.

Moving down through the list, sorted by most popular sites, each item was reviewed and classified. When sites were visited, they were evaluated first by the homepage, followed by the about page. If there was uncertainty about how and why the site functions as it did, further exploration of the site was undertaken. For a limited number of items, other media (e.g., articles, blogs) about the site was sought.

Whenever a new concept emerged, the site at which it emerged was noted, and later the previous sites were double-checked using an iterative analysis approach to assess whether they were also applicable under the new concept. For example, if a term emerged at the fifty-first site, the first fifty sites were reassessed in light of the new term. Using emergent terms protected against an incomplete ontology by keeping the process constantly introspective; meanwhile, the re-evaluation process kept results consistent. This process for analysis is explored in detail by Given and Olson (2003), which can be applied to textual, quantitative and qualitative research data .

When terms were applied, they were done so on a scale of one to three, representing coder confidence in the classification. A three meant that the term was fully applicable and important to the site, while lower scales meant it was somewhat applicable. Notes were taken, with clarifications, references, and researcher reflections, as encouraged by the case study methodology.

Terms that emerged were fairly specific. After the first 100 sites of the Delicious sample were classified, these terms were evaluated and condensed into broader terms, with the narrower sub-categories being noted in the definition of the new term. For example, *idea jamming*, *problem-solving*, and *brainstorming* was condensed into one broader term — idea exchange — and *microfunding* was added into a "group power" term. This same process of reviewing, condensing and double-checking results was again conducted after 200 sites were classified. No more terms emerged after this point

(i.e., data saturation was reached in the analysis), so classification was capped at item number 300.

Rank	Corrected Name	*Categories*										
		Platform	Creation	Financial	Group	Opinion Aggregatio	Knowledge	Ideas	Game Mechanics	Skills Aggregatio	Encoding	Fun
1	**Crowdspring**	3	3	3								
2	**Kickstarter**	2			3	2						
3	**Innocentive**	3		3				3				
4	**99Designs**	3	3	3		1	3					
5	**Aardvark**					1	3	3				
7	**Hunch**					2	3		3			
9	**Kluster**					3		3				
10	**Quirky**		3	3	3	2		3				
11	**Uservoice**	3			2	3		3				
12	**Ushahida**	3			3	3		3				
13	**Ideascale**				2	3		3				
17	**Spot.us**	3			3	2		1		2		
19	**NameThis**	1		3				3				
20	**Mechanical Turk**	3		3	2					1	1	
21	**Get Satisfaction**	3			2	3		3				
23	**uTest**	3		3	2			2		3		
24	**GWAP**								3		3	
25	**Dell Ideastorm**							3				

Table 1: Sample of website categorization.

Results for this categorization are available in Appendix B: Sampling Results.

Final Categories

The final classification includes terms for defining method and structure.

Method	**Structure**
Opinion Aggregation	Platform
Knowledge Aggregation	Group Power
Skills Aggregation	Game Mechanics
Idea Exchange	Just for Fun
Encoding	Financial
Creation	

Table 2: Outline of Classification Terms

Opinion Aggregation

These are site mechanics where value is derived from aggregating the opinions of many people. Since opinions are not necessarily arbitrary, and are often rooted in one's experiences, certain tasks overlapped between this category and the knowledge aggregation category. For example, when a prediction market site asks 'do you think…?', the question is more one of an educated guess than an opinion.

Opinion aggregation can be active, such as reviews of restaurants, or passive, such as sites that aggregate Twitter messages.

Examples include recommendations, ratings, and predictions.

Knowledge Aggregation

Sites that tap into what people know. Knowledge does not simply connote facts, but also includes the experiences of users.

Some sites involve Q&A: asking a question directly to the crowd and receiving an answer. Others, such as a few services for reporting issues in cities (e.g., potholes, stray dogs), are based on aggregating the circumstances of participants.

Skills Aggregation

These are sites that combine the talents and expertise of their users. These can be similar talents – such as iStockPhoto's approach of combining talented amateur photographers for a crowdsourced stock photo agency – or diverse talents – such as MyFootballClub's (www.myfootballclub.co.uk) collective management of a soccer team.

Idea Exchange

Idea-based sites combine brainpower in a number of ways. Sometimes this manifests in collective brainstorming, such as when a crowdsourced invention site tries to determine the industrial design for a product. Closely related is the highly popular "idea jam" (Howe2007), where users of products or services suggest and discuss ways that it could be improved. When done for a company, one may call it voluntary market research, communicating how that company can best serve their collective interests. One observed idea exchange was when the philanthropy offshoot of Google called for suggestions on what issues they should direct their funds toward. Another idea-based pattern seen is problem-solving.

Encoding

Encoding is used to encompass perception-based tasks. These are tasks that depend on human capabilities of abstraction and understanding. Image-encoding is one use, seen with projects such as the Google Image Labeler game. "What do you see in the picture" is a question immediately apparent to a person but extremely complex to program. Evaluation is also a perception-based pattern. A site like Swift River evaluates statements by asking about tone and perceived credibility.

Creation

Creation sites are ones where the participants of the project create a product. These tasks do not center on enhancement but on generation, whether it is writing an article together or designing a pair of shoes.

There can be individual creations or collaborative creations. With individual creations, the products are created separately and aggregated. This is the model used by design bounty websites, where users submit designs for a given project, and the best design(s) are awarded a prize. While individual creation benefits from the size of the crowd, ultimately the products are the same as without crowdsourcing: there is simply a greater quantity of them.

On the other hand, collaborative creations are much more unique to crowdsourcing. One observed example is a music video (One Frame of Fame, http://oneframeoffame.com/) with each frame acted by a different person.

Platform

Platform sites were those that offered an open-ended system for a variety of different types of tasks. The tasks are often hard to characterize or analyze, because they can be a great number of things. Mechanical Turk, for example, allows a wide range of micropayment-based tasks. Other sites, like funding site Kickstarter, do not have open-ended forms of contribution, but the projects being funded are different and therefore hold different appeal.

Group power

These sites utilize the strength in numbers that online communities provide. The collective is front and centre in these sites.

One common pattern is that of activism. Carrotmob, for example, rewards forward-thinking businesses by organizing a mob of customers if they pledge to use a percentage of profits for a good cause (i.e., the mob persuades with the carrot rather than the stick – say, of boycotting a business with which a group might be angry).

There are also many examples of group buying power. Threshold pledge systems allow a funding project or a new product to be realized by gathering enough small pledges. The principle is also seen in micro-lending, where crowds offer loans through small individual contributions.

Game Mechanics

Some sites operate like a game, in order to add an extra layer of competition or achievement.

These include full-out games, such as the Games with a Purpose series from Carnegie Mellon. Other sites simply incorporate game mechanics, with externalized achievements in the form of point systems or badges earned for performing various tasks. I have come to call such mechanics 'ludic labour' for their propensity to make the otherwise tedious, fun.

Just for Fun

These are the crowdsourcing sites that are based around curiosity and art rather than practical application. Certainly, included projects are not just for fun, but their spirit is ludic. This was the least represented category.

Financial

Financial sites offer profit or the possibility of profit at their core. These include micropayment based paradigms, where users are paid some amount of money for completing small abstraction-based tasks. Bounty, or contest, sites are another paradigm that was repeatedly seen. In these sites, a task is posted with a bounty to be given to the completion, either first or best, of the task. Tasks can include a scientific problem, a research question, a programming puzzle; however, the most commonly seen contest was the design contest.

Sampling

Once all of the 300 sites were classified, they were clustered by classification. For each group, two to three sites were selected as candidates. These candidates were pared down when accounting for redundancies, deriving the final sample of 147 cases.

In addition to the categorical quota, sites were selected with their categories through purposive sampling. This was done based on a number of factors:

- **Health of the site**. Sites that appeared to have a healthier and more immediately apparent community were given preference. There are no consistent metrics of success between the sites; rather this was ultimately a judgment call based on the perceived community. Perhaps predictably, the healthiest sites appeared to be the most publicized ones. Perhaps the site receives publicity for being exceptional, or perhaps they become exceptional from the crowds that publicity brings.
- **Complexity of the concept**. Given two instances of the same concept, the one that is more immediately understandable was preferred. This was done in order to lower the variables of a site and allow for easier understanding by interview subjects. For example, the micropayment-based crowd labour sites Mechanical Turk and Samasource were considered. Though similar, Samasource includes a humanitarian aspect, targeting third-world labourers. Mechanical Turk was chosen as a case, while Samasource was used as a secondary example of Turk's model in later user interviews.
- **Representing diversity of category**. Since the categories are broader umbrella terms, diversity within the category was sought. Similar sites were avoided, while unique models were included.

Content Analysis

Content analysis is "any research technique for making inferences by systematically and objectively identifying specified characteristics within text" (Stone et al. 1966 qtd. in Neuendorf 2002, 10). In conducting a content analysis, the cases were quantified using codes.

The content analysis was designed around the research question, "what motivators are present in crowdsourcing websites?" The codebook (Appendix C: Coding Form #1 and Appendix D: Coding Form #2) explored this question by examining the interactions of users with the sites. It operationalized two units of measurement, with a two-part coding form: the cases and the contributions that they allow.

The first part of the codebook measured the users' experiences in relation to the overall site, taking a look at social indicators, site accessibility, and most importantly, what users contribute to the site. The second and more significant part took the identified means of contribution as the unit of measurement and explored them. Indicators relating to the experience of making these contributions were measured, such as recognition and attribution, reward and potential reward, contribution visibility and independence, beneficiaries of the contribution, and depth of commitment. They were also classified and ranked on a scale by their perceived importance to the website.

As encouraged by the case study methodology that frames this study, any limitations of the codebook discovered during coding were open for reassessment and correction. This technique is the same principle that guided the classification of sites; in this case, however, the codebook design was a priori and the possibility of reassessment was corrective rather than part of the design.

The theory-forming case study methodology being used in this study is designed to shape a hypothesis from the evidence gathered (Eisenhardt 1989). Thus, setting an a priori hypothesis for the content analysis step of the study may seem counterintuitive. However, I did begin with two small assumptions to test, related to the specific part of the study rather than to the overarching goals. The first is that examining the user's interactions with a site will indeed reveal motivators. This will be measured by the comparison of results to existing literature on motivation. The other hypothesis is that the results will fit into Clay Alderfer's theory of Existence, Relatedness, and Growth, with an emphasis on the latter two. The assumption is that users participate mainly to fulfill social and growth need. The importance of the social is seen in evidence suggesting that even when money is involved – an existential need – other factors are still notable motivators. For example, in Jeff Howe's interviews with the heads of iStockPhoto and Threadless, two sites where users stand to gain financially through their participation, both emphasize the importance of community foremost (Crowdsourcing 2008). The need for growth is suggested by the abundance of user-generated content online, which Shirky argues is a product of people looking to spend their leisure time in a cognitively active way (2008).

After coding was complete, the coded results were analyzed for patterns that could be seen, or areas where there were no notable patterns. These were distilled into inferences as to what user motivation is suggested by the results. At this stage, other literature on motivation in crowdsourcing was added to the data, using both research studies and first-hand accounts – when available – from the sites or their participants. These inferred motivators and externally stated motivators form the basis of the next data collection stage: user interviews.

User Interviews

The second method of data collection consisted of in-person, qualitative interviews, pursuing the question of "which motivators in crowdsourcing affect users most?" Whereas the content analysis identified motivators, this part examined individuals' perceptions of those concepts, probing into whether they are effective, how important they are, and if there are any additional factors that did not emerge during the content analysis. This step, by exploring the concepts identified earlier by the single researcher, was meant to increase confirmability. Its primary purpose was as a stress test of results from the content analysis and literature review. However, it also was beneficial in revealing those elements in the cases that are otherwise difficult to quantify.

Ethics

As part of the requirements for human-based research in Canada, this study underwent research ethics approval.

For ethics approval, all of the study's reasonable risks had to be outlined, as well as an explanation of how they are being minimized. This study's inherent risks were not that great in that the object of focus during the interviews was the series of cases rather than the interview subject. This lowered the amount of sensitive personal information within the interviews and the potential stress or discomfort. The study simply did not need information with any significant capacity to damage.

Anonymity was promised to interview subjects, with reasonable steps taken to make materials confidential and secure. Raw audio was restricted only to the research and encrypted, and records transcribed with assigned codes rather than names. An approved letter outlining the interview process and the interviewee's rights was read to them at the start of the interview, with a personal copy provided. Finally all materials related to human subjects (including that of Appendix A: Recruitment Materials and : Interview Guide) were approved by the research ethics boards.

Recruitment

For the interviews, participants were recruited from the Edmonton area. Interviews were to be conducted until the data was saturated and little new information was being revealed. Data saturation is difficult to predict, but due to the mixed-method approach of this study, with content analysis preceding the interviews, the figure was expected to be lower than the teens that saturation studies commonly estimate (Francis, et al. 2009, Guest, Bunce and Johnson 2006).

Participants could be of any age group, gender or social class, provided they held a cursory understanding of social media. The primary form of screening during recruitment was determining whether they were active participants of online communities. Shirky (Here Comes Everybody 2008) suggests that mass online participation has resulted as an alternative to the forced passivity of television, as a way for people to use the 'cognitive surplus' that increased post-war leisure time has provided. If this is true, then those who *participate* rather than consume in their spare time are likely more representative of the individuals in crowdsourcing groups than a random sample. Thus, screening for users that use participatory media improves the likelihood that they will understand or even participate in the other cases.

As with case sampling, a fully random, generalizable sample of participants would not serve the purposes of the study. There are subsets of people that are more likely to participate and there are those that do not engage. It is the participant-type

that are central to crowdsourcing. The question is what motivates *users*; in other words, in the crowdsourcing that has been seen, what has compelled participants to take part?

Interview participants were recruited through three methods (see Appendix A: Recruitment Materials). The first was through Twitter, a microblogging website where users communicate in short public messages. Twitter has an active, accessible community of users local to the study. These users are likely to fit the inclusion criteria (by virtue of them already using social media), but are fairly heterogeneous for an online community. Twitter is not a niche community, but a general purpose social network. Initial recruitment was done through tweets – the primary form of transmission - and retweets – a method for users to pass on the recruitment tweet to their own networks of friends. Interested users filled out a screening form and eligible interviewees were be contacted via email. Further recruitment was done through traditional means, with posters and mailing list messages in the university community.

Interview Subjects

All interviewees were regular users of the Internet. The common response to 'what do you use the Internet for' was 'what *don't* I use the Internet for?' Their uses range from communication and news, to research and gaming.

The study had a mix of three males and five females, with participants' ages spanning from late teens to late twenties. There were six students – five graduate and one undergraduate. Among the two participants that were not students, one has a high school level education, while the other has a bachelor's degree.

One of the online habits explored was online reviews. None of the interviewees leave reviews routinely, but they have varying engagement with incentives to participation. Sometimes sites offer follow-up reminders about reviews: direct reminders were noted as an instance that some of the users do leave feedback. One user participates in a point-based restaurant review system and notes the points in the system as encouragement for him to contribute where he otherwise would not. Another user considers reviews as part of a moral arsenal, allowing them to punish or reward notable bad or good services and products.

A number of study participants use Twitter, which was understandable considering that part of recruitment was through the site. Notable however, is how varied their uses of the site were. One participant uses the service primarily for news, subscribing to the Twitter accounts of news providers. Another person uses it as part of her regular social routine, as an extension of her blog and Facebook account. Two other people use it as an aggregated social network, noting the low-maintenance way of tracking friends. The strong local community was also noted, with one user in particular emphasizing her ability to stay connected to the news and events of Edmonton through it.

Other experiences varied. One user has administered a message board for young writers, another is an active Wikipedia user, two more have donated to humanitarian microlending sites.

Process

Interviews explored the participants' impression of the motivators identified in the content analysis, while still framed within the context of the cases. One hour, one-on-one interviews were conducted and digitally recorded. These interviews were then coded, fully in summarized form and partially in exact transcription. In the spirit of the case study methodology being followed, researcher notes were taken during transcription and loosely organized by themes at this time.

Starting with their experiences, the interviews explored the participants' use of social media websites. What have they or have they not participated in, and what were the reasons for their choices? Moving into the more specific, popular forms of crowdsourcing (i.e. reviewing, tagging, editing) were briefly presented and the participant's experience with them was discussed.

After determining the interviewee's background with social and collaborative media, they were guided through a series of worksheets, each one representing one of the cases in the study. These worksheets showed points of interaction with the site. The site was explained and discussed. Here, discussion looked at whether the participant

had familiarity with the site, why they did (or did not) use it for, and if they had used similar sites. Their thoughts on what was compelling about the site and what type of people would be compelled by it were also noted. At this point, the interview moved into the previously identified motivators as compared to what the user has identified. Their thoughts on the motivators were gauged and ranked. Did they play a significant role or were they secondary? Other questions included possible improvements or shortcomings of the sites. This process of introducing a site and exploring its strengths and weaknesses was repeated for all of the cases explored in the content analysis.

Though the primary point of discussion is motivators, framing them within the context of sites where they exist gives grounding to the concepts. The order of the sites as presented to participants is also such that similarly motivated sites followed each other, to reiterate their concepts in a different context.

Materials from this phase can be found in : Interview Guide.

The next chapter will look at the outcomes of the processes discussed here. What were the cases sampled, how do they work and how does their functionality parallel other examples? How did interview respondents react to the cases sampled, and what were their priorities? Afterwards, chapter 5 will briefly return to the methodology, reassessing in order to scope the decisions made.

Chapter 4
FINDINGS & DISCUSSION

This chapter will outline what was learned through the project, as a result of data analysis. The general structure is delineated by the cases. For each of the sites that were sampled, I will:

- Introduce the site, describing how it functions, its notable features, and the case sampling categories that the site represents.
- Discuss any content analysis inferences that are pertinent to the case, alongside a review of relevant literature on the case or its motivation.
- Share outcomes from the user interviews, considering how they compare to other conclusions and this study's other studied sites.

Content Analysis

The range of contribution types per site varies greatly. Some sites, like Star Wars Uncut, Galaxy Zoo, and Mechanical Turk, offer a very particular form of interaction. Other sites, notably Hunch, Quirky, and Threadless, offer a myriad of ways to be involved with the site.

Considering Galaxy Zoo, there is not much that the site gives back to contributors. Users are not rewarded for their contributions in any notable way, and community functions are limited to a forum. However, the galaxies that they encode are saved in an activity report. The report is titled My Galaxies and shows both activity and favorites. This holds a number of possible motivators. First is the collecting of galaxies, working towards an ever greater collection. The possessive nature of the term "My Galaxies" supports this idea.

Evidence also suggests that less explicit motivators are at play, unrelated to the site's structure. On the Galaxy Zoo blog, for example, one commenter notes the value of the project for learning, as well as the appeal of both the subject matter and the ability to participate in science. "My grandchildren and I enjoy classifying galaxies," she wrote. "The children are learning about galaxies, all kinds of nebulas, globular and open

clusters, stars, and more. We also like astronomy very much. Galaxy Zoo is an excellent opportunity to learn and participate in real science" (Simpson 2010). Such relationships cannot effectively be linked to a site using the content analysis method.

Case Finding

Star Wars Uncut (http://www.starwarsuncut.com)

The Star Wars Uncut project is a crowdsourced interpretation of *Star Wars* (1977). The project split up the film into 15-second increments, which were then adopted and recreated by fans. On the project website, users would sign up for a section and produce their own version of those fifteen seconds. They are given few restraints, resulting in kitschy and unique contributions.

This project is the only one of the sampled sites that is a finite work, with a given end goal. At the time of this study, all the clips had been filmed and submitted by participants and they were being edited together into a coherent film.

Star Wars Uncut was one of a handful of cases from sampling whose purpose was simply fun. These sites were built with a ludic, or playful, purpose. It is also an example of creation-based and skills-based paradigms, where the contributions are artifacts generated by the contributor and driven by their creative abilities.

Findings

"I think it's mainly fans". – A participant who would take part in Doctor Who Uncut

The general impression of Star Wars Uncut was clear: with a higher barrier to entry, the project is more of an activity for the passionate user. Certainly, creativity plays a role, as evidenced by contributions from established animators like Malcolm Sutherland (http://www.animalcolm.com/). Also, the novelty of the idea seems to partially catch contributors. However, subjects were unanimous in placing the role of passion at the forefront.

The project allows those already interested in its centerpiece to engage further. None of the interview subjects had taken part in the project, but a number of them suggested that a similar project specific to a film of their tastes would have piqued their interests. “It’s a different and unique way to get into that universe,” said one interviewee. “The creative process is very valuable,” another suggested, “so I think people really appreciate the ability to get creative with one of their favorite things.” Considering the importance of having an interest in the topic, the appropriateness of a widely-engaging film such as *Star Wars* was noted.

The choice of subject also works for publicity. One user noted that “Star Wars has enough of a reach so as to attract people with different motivations for participation.” Another user, who is “not into Star Wars”, said that “if it was about a movie that *I* like, then I would have known about it.” There was also the suggestion publicity itself was a motivator. Though both the content analysis and the interviews suggested Star Wars Uncut to have one of the highest barriers to contribution, one user noted that given the returns, it was “an easy way to take part in something that could be really big, really cool, and a lot of people could see.”

Galaxy Zoo (http://www.galaxyzoo.org)

Galaxy Zoo is an academic project that crowdsources the classification of galaxies. In addition to being academic, it represents the application of crowdsourcing to encoding. Out of the astronomy department at Oxford, the project shows users galaxies from the Sloan Digital Sky Survey, one at a time, and asks them a series of questions regarding the visible properties of the galaxy. “Is there any sign of a spiral arm pattern?” “How many spiral arms are there?” “Does the galaxy have a mostly clumpy appearance?”

Galaxy Zoo was heavily discussed at its launch. On the third day of its existence, it was discussed on a BBC morning show, and by the end of the next day “nearly 1.5 million classifications had been completed by more than 35,000 volunteer classifiers” (Raddick, et al. 2010). According to organizers, the ‘spectacular growth’ of the project shows that the site was successful to its crowd-science purpose (ibid). Galaxy Zoo was

succeeded by Galaxy Zoo 2, as well as a larger umbrella for crowdsourced astronomy project called Zooniverse. In April 2010, the Zooniverse projects reached their 60 millionth classification.

Galaxy Zoo contributors themselves are exploring motivations of their community. They explain at the start of a survey: "we are trying to understand what drives you to do the great things you are doing, and this survey is part of building that understanding."[14] The Galaxy Zoo forums are notably busy, and include an entire subsection devoted to discussion of what people enjoy about Galaxy Zoo. The forum posts and surveys, along with user interviews, formed the basis of a study into the motivation of users[15].

In investigating motivations, Galaxy Zoo organizers finalized the following set of motivating categories:

- Contribute: "I am excited to contribute to original scientific research."
- Learning: "I find the site and forums helpful in learning about astronomy."
- Discovery: "I can look at galaxies that few people have seen before."
- Community: "I can meet other people with similar interests."
- Teaching: "I find Galaxy Zoo to be a useful resource for teaching other people."
- Beauty: "I enjoy looking at the beautiful galaxy images."
- Fun: "I had a lot of fun categorizing the galaxies."
- Vastness: "I am amazed by the vast scale of the universe."
- Helping: "I am happy to help."

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[14] http://astrosphere.org/Surveys/GalaxyZoo/GZsurvey.php

[15] Galaxy Zoo has led to numerous academic papers, some of which are about the ends and some about the means.

- Zoo: “I am interested in the Galaxy Zoo project.”
- Astronomy: “I am interested in astronomy.”
- Science: “I am interested in science.”

(Raddick, et al. 2010)

Findings

“It’s low stress, it’s interesting, and if you don’t have a high powered telescope, or if you live in a city with lots of light pollution, this gives you the opportunity to learn about stuff that you might not otherwise be exposed to.” – A participant who would try Galaxy Zoo out of a curiosity in what’s out there.

“It’s like a many hands make light work thing, right?” – A participant with a Wikipedia account

Unlike Galaxy Zoo’s own study, none of the participants in this study were participants of Galaxy Zoo. In this way, the previous study is more reliable in pursuing the question of why users participate. However, because literature is part of the basis for interviews, these motivators were further explored with interviewees, with a greater emphasis on exploring priorities. Also, the contrast between the two offers insight into the interview participants.

As was the case with Star Wars Uncut, passion was the most commonly cited reason for contributing to the project. This is what the Galaxy Zoo report characterized as interest in astronomy or interest in science. Interview participants were curious, but were not caught by the idea of any particularly in-depth or long term contributions (“It’s something I would do as a one-off, but I wouldn’t be an active participant”). The project presents something new and, among this sample of users, attracts those that do not expect to stay.

Interviewees echoed the 'contribute' sentiment, that Galaxy Zoo allows real and meaningful contribution to science; "essentially you're a research assistant". One user contrasted meaningful contribution to fun contribution with Star Wars: Uncut: "If I was doing this, I'd want to feel like I was contributing to 'galaxy science'… I don't know if it's a *fun* task; making a Star Wars video is *fun*."

- The desire to 'collect' galaxies was discussed and, as was common throughout the cases, participants were either apathetic or considered it a secondary motivator. Though users appeared in agreement that achievements are subjective – "there's some people that would be like, 'I've done 54! How many have you done?' – but not everyone" said a participant. Those more likely to collect are those with an interest in the topic ("the more interested you are the more interest you have in collecting the galaxies"). They often linked this concept to the more passionate user. As one participant explained, "those things really affect me, but it has to be something that I'm really interested in."
- For users that are not passionate about astronomy, curiosity would motivate them, if only for a short time. One user noted that the "novelty of it might make me play with it for about 5 minutes," but she was not interested enough in astronomy for continued engagement. A project like Galaxy Zoo is an "escape"
- Learning was not a motivator that occurred to all participants. Two participants declared that Galaxy Zoo's educational potential was limited – "most people that would be interested in this wouldn't be learning" it was insisted – while most others considered it only after it was brought up. This may be a factor of the limited age range of participants; on the forums, one of the cases for learning as a motivator was the ability for a parent or grandparent to participate with a child.

Kickstarter (http://www.kickstarter.com)

Kickstarter is a platform for threshold pledge funding. It is also one of the 'group power' forms of crowdsourcing, where the primary feature of its approach is in the strength of numbers. On the site, users pitch ideas or projects that they need funding to realize. A financial goal and deadline are set and other users make donations toward that goal. If the goal is reached or exceeded, the pledges are donated and the project goes through. Users are offered something in exchange for their contribution; like in many pledge drives, a gift is awarded based on different tiers of donation amounts.

In late May 2010, one project on Kickstarter started attracting a lot of attention in the news. In the midst of privacy and ownership concerns with Facebook, four computer science students decided to program an open source, distributed alternative to Facebook. They put their project up on Kickstarter, deciding that if their project raised $10,000 in 39 days, they would drop their summer internships and make this project, called Diaspora*, a reality (Four Nerds and a Cry to Arms Against Facebook 2010). Coinciding with more unpopular choices by Facebook this resulted in the project picking up steam, with unsatisfied Facebook users flocking to Kickstarter and donating. The students surpassed their goals in 12 days, and once the dust had settled, they had raised over $200,000 – making it Kickstarter's most successful project ever.

Findings

"It brings out your inner altruist."- A participant that does not care about the rewards, but would fund something that they believed in.

Kickstarter is a shell, a place that enables and simplifies the pursuit of crowdfunding. As such, it is has little inherent motivation; it is "more project-centric", as interview participants called it. During the interview, I was even told, "this one's going to be hard for you." While there are surely those interested in the concept, that form a community of patrons, most of the reasons to participant revolve around what each project brings to the table: the nature of the project, how interesting it is, what type of rewards it offers. To wit, a participant: "I don't see myself actively going through this and volunteering my money… If somebody told me about this project then I would go on the site, and it would be interesting if it was something I was interested in."

The primary motivational question in Kickstarter is between the intrinsic and extrinsic motivators. Do the rewards play the key role in encouraging donations, or is the project itself the key motivator? Interviews showed near-consensus in two ways. First, motivation depends on the individual project. However, in spite of this, the other agreed-upon opinion was that in the majority of cases the more important factor is the project while the reward is an appetizer. “A lot of rewards are silly,” one user suggested. The single dissenting voice disagreed with any altruistic characterizations “because you’re getting *something* back.” This recalls research on Mechanical Turk that suggests that, even when the reward in negligible, its presence is nonetheless significant (Ipeirotis 2008, Villarroel and Tucci 2010).

A number of improvement suggestions concentrated on the site structure, namely in regards to discovery. One former Kickstarter visitor complained that casual discovery was not easy, another suggested more browsing options (“between altruistic/patronage projects and creation/reward projects”).

Interview subjects considered Kickstarter to be really easy to contribute to. In spite of this, two participating users had explored Kickstarter in the past, without coming across anything that they thought worthy of a donation.

Kickstarter was twice compared to Kiva, a website for micro-lending directly to businesses in developing countries. They thought the same spirit of patronage was reflected in Kickstarter; however, more humanitarian leaning sites were more compelling were for these interviewees.

Part of the format’s appeal is that donations do not go through unless they surpass the go-ahead threshold. This lowers the risk of funding projects. Also, for certain types of projects, “it’s a way to get buy-in from interested people, so when it goes through you know people are interested in.” Of course, all this is “interesting – when you have money.”

Hunch (http://hunch.com)

At its core, Hunch is a decision-making website. It offers a form of decision trees: for a given question, a series of branching multiple-choice questions are answered by the user, who is then offered a ranked list of suggestions to their question. For example, a question of "things to do in Paris" will ask the user questions such as "are you looking for something indoors or outdoors". The decision trees are contributed by community members familiar with the topic. Other users can edit the trees, adding more decision-making questions or suggested answers or editing questions and flow. Even consuming users are targeted for contributions, with peripheral "Do you agree with this result?" questions asking for "Yes/No" feedback along the way. When a decision tree already exists, users can also contribute Pros/Cons lists for each possible suggestion.

Hunch aggregates the knowledge of its decision tree contributors, and is influenced by their votes on quality of the trees. These are deliberate actions performed by the user. However, there is also an indirect decision-making feature on Hunch that lifts this implementation above the regular mechanics of decision trees. Peppered throughout the site, in the periphery, are Teach Hunch About You (THAY) questions. These are simple multiple-choice questions (i.e., What is your favourite colour? Do you park your car in your garage? Have you ever been in the cockpit of an airplane?) that build a profile of the user. Hunch can then algorithmically match the user to similar users and predicts decision answers. Thus, once a user answers enough THAY questions, the site will often skip the tree of the decision tree, taking them straight to suggested answers.

Underlying all of a user's actions is a system of external indicators, called 'cred', or creditability. There are two types of cred: points (referred to as 'banjos') and badges. Users receive points for any actions they take that contribute to Hunch, while badges are received for fulfilling various requirements of contributions or participation. Some are simply affected by the number of points one receives, such as the teacher hunch, which states that one "earned 100 Banjos in Teach Hunch". Others are more whimsical, such as Critic ("Authored pro/cons totaling more than 1000 helpful [ratings]") and Skeptic ("More than 80% of feedbacks given are negative").

In the case sampling, Hunch was categorized with gaming, knowledge aggregation, and opinion aggregation.

The team at Hunch occasionally releases papers examining correlations between users based on specific THAY questions[16]. The reports choose a particular question, such as what dog ownership says about a person, and seek out correlations in their data along that question. Some of Hunch's correlations for dog owners, for example, are that they are more likely to be female, drive a truck or SUV, disapprove of rap and approve of Bill Clinton's impeachment, while being less likely to have taken calculus in high school and take public transportation to work[17]. These reports provide an interesting look into the quality and sheer wealth of the data that Hunch collects. Though Hunch is not academic, these reports show the sociological goldmine that the site has amassed as "a by-product of Hunch's core business and mission". These reports also provide notable explanations and details from the Hunch team.

"Hunch's THAY questions are designed to be engaging, innocuous and fun," they explain (Hansen 2010). This abstract invocation of 'fun' was repeated in interviews, but Hunch offered some reasons for its engagement. One is that they are scattered across the site so they are available whenever a user needs a new distraction. Another explanation is that questions are not grouped by a theme but progress rather randomly – something that the team says causes users more enjoyment. Of course, it cannot be forgotten that though the questions are fun and easy the user also benefits from them; thus "there is little reason to answer dishonestly or attempt to "game" the system, since answers are solely designed to help the user get better recommendations" (ibid).

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[16]Reports can be found at http://hunch.com/info/reports/. Questions include *Mommy Wars: Real issue or media myth?*, *Console Tribes: What your video game system says about you* and *Worth the Weight: How happiness corresponds with dieting*.

[17] Ford, Kelly. February 5th, 2010. "Like dog, like owner? What our pooches reveal about us." Hunch. <http://hunch.com/media/reports/dogs/>

Findings

> *"I'm just interested to see what comes up – what it knows about me and what it thinks it knows about me."*

Hunch appeared to be the most popular case among the users. Two of the interview subjects were users of Hunch, while others expressed interest in exploring it after the interviews.

The somewhat transient concept of fun was often cited with Hunch. It was referred as an "easy, fun time" and a "lot of fun" by the two Hunch-using participants and was noted as having interesting features. This sentiment was repeated by those who had no prior experience with the site. In this way, Hunch was painted as a pastime; "something I go on just to see what it says". "Maybe it's something primal," another user suggested. "Maybe it makes you feel good that there are people like you." One user, who admitted to spending long periods of time exploring questions (in contrast to arriving with a question in mind), called it "food for thought, adding that "it makes you think about creative questions." However, an interviewee with prior knowledge of the site but not a participant explained that "I'm not *that* indecisive."

One of the participants suggested good maintenance and policing by the company in explaining why Hunch succeeds where other community sites fail. She explained:

> *"It's not like some places on the internet where giving people the ability to edit is a negative feature, because it's poorly moderated or poorly self-policed people will put up random gobbledygook that doesn't belong. However, because this is a well-used site, there's a lot of people that are fairly considerate of what they're doing."*

Since in many crowdsourcing sites participation emerges from use, a well-maintained, well-functioning site has an influence on whether users decide to participate. In the words of one interviewee, "my major motivator would be how good it works: if it worked good, I would use it."

'Cred' was not the foremost feature for any of the users. When compared to other possible motivators, such as the sharing of one's opinions, the others were said to be "more compelling." Most participants cited it as an enhancing feature, though one noted that it "would be more useful if my friends saw it." This was not a reference to any failings of Hunch – as they offer such social features and import friends from Facebook or Twitter – but a comment on the strength of personal networks in cred. One user noted another social site with achievements where she was more motivated to participate because the badges earned carried with them a form of social currency. Both of the prior Hunch users expressed a desire for the relationship between actions and points to be better conveyed. This was also inquired about by two of the newly-introduced users. Also, "why banjos?"[18]

Other motivators cited by participants echoed those seen in other cases. Multiple users noted that the site offered easy entry points to contribution. As one pointed out, "There's no way you can take without giving back." A number of users said that if they saw an explicit need in their domain, they would certainly add content. In other words, they would fill a perceivable gap; "I would [contribute] if I saw something that really needed to be changed".

MyStarbucksIdea (http://mystarbucksidea.force.com)

MyStarbucksIdea is what Jeff Howe calls an idea jam: "essentially just a massive, online brainstorming session that takes place over the course of weeks instead of hours" (Howe, Crowdsourcing 2008, 134). They usually take the form of posted suggestions –

[18] This question, incidentally, is addressed in Hunch's FAQs: calling them 'points' would have been uninspired. The name originated from an analogy by co-founder Caterina Fake, that the difference between mainstream media and user-generated media is the difference between listening to Britney Spears and "grabbing your banjo, going down to the parlor and putting the band together" ("Why are they called banjos", http://hunch.com/help/#why-are-they-called-banjos). One wonders whether the gains in whimsy outweigh the losses in coherence.

generally business or product advice – that can then be voted on by other users in agreement or discussed in a comments section.

Idea jams were the most common type of site found in case sampling by a notable margin. Google has their own platform, Moderator, which they use for their products. They also used it for their philanthropic arm, soliciting ideas for what causes users would most like to see Google's support in. Some examples seen were platforms (e.g. UserVoice) while others were set up directly by their companies (e.g. Dell's Ideastorm). The mechanism is simple: If people are using a product, it is as much in their interests as it is the company's to suggest how that product would serve them better.

Findings

> *"Things would actually have to be changed for me to want to contribute." – A participant that remembers working for Starbucks and the constant tweaking of their formula.*

Once again, passion was the most prominent motivator. In fact, it was said to be necessary. Since this site is an official Starbucks product, it allows Starbucks fans to engage with it.

The interest that users have with MyStarbucksIdea is as consumers of Starbucks' products. Thus, there is a personal benefit to contributing or voting on ideas: "if it's something they're using anyway". Some user's viewed the site in terms of wants, while others in terms of needs (i.e. existence needs). These include accessibility and food needs. "A really specific need", in those words, was used by two different participants.

Some users did not see voting as making enough of a difference to be worthwhile. However, one argued for voting as a way to reduce the signal to noise ratio:

> *Not everybody has ideas but they want to have their say in things. I think that there's almost as good a reason to go there just to vote as there is to suggest. I'd be somewhat discouraged from suggesting things because I think that so many do and they probably don't all get noticed, so I'd go on and just pay attention to the really good ones that are worth voting for.*

Noise, with unfeasible or redundant suggestions, was an issue noted as a possible problem. Filtering was one suggestion, randomizing the display of results was another. However, here we see that a particular type of user recognizes the need to filter and rank, and sees it as just as much a way to express an opinion as posting it.

The final key finding here was the importance of feedback. Nearly all of the users thought that, at the very least, the perception of change was vital to continued involvement in a site like this. MyStarbucksIdea has a system for this, with icons that mark when ideas are being considered, are in the process of implementation, or have been implemented by the company. Also, moderators keep up with active discussion with the community. One participant, a former employee of Starbucks, was initially skeptical, before remembering that, "[the company was] always like that... constantly changing things." Another participant highlighted the importance of the site being run by the company itself, exclaiming upon finding out, "oh, then I would *definitely* use it!"

CitySourced (http://www.citysourced.com/)

CitySourced is a civic issue reporting service. It aims to simplify the process of reporting issues around a city, be it a pothole, dog bite, illegally parked car, or simply an overgrown bush. This is done using a phone application – compatible with Android, Blackberry, and Apple phones. Users with the application installed take a photograph while the phone determines their GPS location, then select the type of problem from a list, optionally add comments, and post it online. The service sends the reports to the proper agency. Cities can sign up for the service, where they receive a backend dashboard of problems. Also, the data can be licensed for media use.

The key to CitySourced is the aggregation of users' personal experiences to draw a larger image of their city. It is an example of a type of site referred to as hyperlocal, where the connecting factor for a community is shared geography.

Findings

"I would have never thought to report an abandoned bike, but now, I would actually consider reporting it." – A participant for whom the city is presumably now a fixer-upper.

"I like my city and think there are things they should be doing. I have strong feelings about that." – A participant that has seen too many cars parked in bike lanes.

CitySourced is easy, a simplification of the complicated alternate mechanism for reporting (i.e., phoning or writing letters to the relevant city department). "If it's easy enough to use, then people are more likely to use it… This looks easier to use." One user also explained that, though cards exist with important city phone numbers, few people carry them. Rather, "anything that's outside of 911's scope, most people aren't going to know what to do." Even phoning a number seems to be a heavier investment for some. One person related the story of seeing a fight in front of a convenience store and thinking, "I don't *really* want to call the police right now, but if I could text them I totally would."CitySourced would seem, then, to fit this niche, but users were quick to point out the catch: "…if you have access to the technology."

"I wouldn't use this," one participant stated. Then after a brief consideration, he corrected, "well, I would use this if you could see that you're actually making a change." Another user said, "it's one thing to report it, but it's another thing for it to be done." Feedback, in this regard, is important. While these participants stressed change as a catalyst for contribution, another stressed the inherent utility above all else, including action by the city: "I would *definitely* use this. If I had an iPhone I would use it: if Edmonton utilized it, or even not, I would use it so that there's a public record of it."

The directed focus appeared to work both in CitySourced's favour and against it, depending on which participant was asked. Twitter was cited as a general-purpose service that allows for hyper-local news when used in a particular way. However, it was said to be better for bigger events, while CitySourced's focus on the small carved out a coherent niche for itself. An important sentiment that was discussed by many participants was the fact that CitySourced exists, with its particular purpose; this makes

users not only more likely to report it, but more likely to be aware of things that need to be reported.

OpenStreetMap (http://www.openstreetmap.org)

The creation and maintenance of maps is a costly, difficult task. As a result, mapping data providers prioritize the data that they create, concentrating on certain countries and emphasizing more populous regions. OpenStreetMap (http://www.openstreetmap.org) offers an alternative: crowd-maintained map data. Originating in 2004 at University College London, OpenStreetMap has been likened to "the Wikipedia of the mapping world" (Keegan 2010) – a place where volunteers draw, edit, and annotate maps. Though the maps are sometimes donated or taken from public data, user-generated content is the main pillar of OpenStreetMap. Volunteers mainly use one of two methods to contribute: by physically traversing the space, recording and uploading the GPS data, or by tracing over aerial imagery of the space. Following in the wiki model, an "edit" link is included on all maps being viewed on the website, though an account is required to contribute.

The sample included two other products related to OpenStreetMap contribution: Walking Papers and Mapzen. Walking Papers (http://walking-papers.org/) offers an analog experience for collecting landmarks. Volunteers print specially designed OpenStreetMap maps of locations that they will be visiting and write down notable locations on the maps while they explore. Later, they scan their maps and upload them for encoding. Mapzen (http://cloudmade.com/products/mapzen) is a commercial tool that streamlines the OpenStreetMap contribution process and adds social features. It also includes a mobile application.

Findings

Interview subject were mostly perplexed by the utility of OpenStreetMap. What is the need for maps when the commercial mapping sites work well enough? Most quickly grasped the altruistic nature of it, but did not seem to consider it a necessarily important task. One interviewee, however, noted the curiosity of visiting, from above, exotic locations.

Philosophy was cited as the major presumed motivator for those that do contribute. “This is a good way for those open-source people to do something that can benefit regular people.” OpenStreetMap, in this way, enables people to support causes they believe in.

One user was particularly interested in the ability to load free maps onto his GPS, suggested that he “would definitely submit traces” if they were providing him with that utility. However, he would not be as interested in contributing from home, where “it’s no longer casual”.

Waze (http://www.waze.com)

Waze is a map-making game, an approach that uses extrinsic rewards for encoding. Whereas in OpenStreetMap users most commonly trace maps over satellite imagery, in Waze they “draw” roads with their GPS-enabled devices as they travel along them. The user is represented as a small figure, reminiscent of Pac-Man, eating pellets as it moves along. Eating pellets wins points for the user, with occasional large pellets providing a bonus. Behind the figure, roads are left behind on the map, providing a compelling sense of completion as the formerly blank screen fills up.

Waze provides a game model of progress not unlike classic video role playing games (RPGs). In the traditional model of those games, players’ characters gain ‘experience’ through turn-based fighting with monsters, leveling up at pre-defined experience thresholds. The more monsters players fight, the higher their level goes. Thus, a considerable portion of the gameplay is “grinding” – playing through repetitive portions of gameplay – while watching progress bars move bit by bit toward the next level. The work seems tedious – as the term ‘grinding’ suggests – but the longevity of the RPG genre, popularized in 1987 with *Final Fantasy* shows that there is much more value to the tedium than outside observers would suspect. Externalized progress, in Waze as in RPGs, appears to compel players, providing a feeling of productivity regardless of reality. Waze also included leaderboards, with the most point-awarded players ranked for all to see.

Waze has an app for GPS-enabled smartphones, so that users can use it for directions in their car. Users can report issues on the road, such as construction or obstructions, and benefit from the reports of others. These also result in points.

Findings

Considering the emphasis on extrinsic motivators in Waze, interview participants gave the same response that they gave other point systems: "it's good, but more important is its utility." Points would "probably take a backseat to it… I would use [Waze] because I could see myself needing it." When the point system is secondary, it can be assumed that contributions hinge on the incidental contributions from people foremost in using the service.

Whether there is enough utility to motivate users was indeterminate. "I think a GPS [unit] is good enough, I can't see needing this", one user stated. Others suggested that it was good for travelling, as well as for "new subdivisions not on maps". The timeliness of map information is notable, recalling the crowdsourced Map Share feature offered by GPS company TomTom.

Ultimately, contributions to Waze provide an indirect and occasionally direct benefit to users. However, its appeal is fragmented, particular to circumstances (i.e. geography, vehicle ownership) and character (i.e. degree of motivation in gaming system).

Crowdspring (http://www.crowdspring.com/)

Crowdspring is a design and writing marketplace. Though a platform, it is not as flexible a site like Mechanical Turk, as it is restricted to a very particular task. It allows 'buyers' to put up a project – e.g., a call to design a logo for a new coffee shop – and put up an award for the best submission from 'creatives'.

Such design bounty websites were plentiful during case sampling, with sites including reDesignMe (http://www.redesignme.com), ChallengePost (http://www.challengepost.com), 12designer (http://www.12designer.com), LogoTournament (http://logotournament.com), and Pixish. They are examples of

broadcast search (Lakhani, Broadcast Search in Problem Solving 2006), also termed crowdcasting (Howe, Crowdsourcing 2008), where the value is not in collaborative production but simply in the size of the audience. When a buyer asks for a design, the final relation between that buyer and the winning creative submitter is not unlike a one-to-one relationship with the right designer; the difference is that by asking more people, the chances increase of finding that right design.

For this reason, Crowdspring and its ilk are often criticized by the industry they are entering – in this case, that of design. Even though a contest winner may be paid fairly for their work, others are left having done work for nothing. Non-winning design creators keep the rights to their work, so they can rework it for future work, but whether this is any consolation is debatable.

Findings

"Money is the biggest reason there." – A participant for whom winning money is self-actualizing as much as it is financially gainful.

Interview participants did not leave any ambiguity with Crowdspring. "This is only about money" one participant summarized, and which could apply to most of the sentiments. What is interesting is that Crowdspring is not exactly about financial reward, it's about *potential* financial reward. If a few guaranteed pennies can be appeal, then the possibility of hundreds of dollars is surely catching.

Practice and creativity were also discussed a number of times. One participant noted that "I would rather make mockups from made-up companies, and put them in my portfolio." However, others named it a secondary motivator, after financial profit. "If you have the skill, this is a good way to practice more, while potentially benefitting from it."

Amazon Mechanical Turk (http://www.mturk.com/)

Mechanical Turk is a platform for micropayment supported tasks. Called HITs ('Human Intelligence Tasks'), tasks are generally short in time and effort, and utilize human intelligence in aggregate. On the site, people with a problem (i.e., 'requestors')

post tasks that cannot be automated, name a price, and the site's crowdsourcing workforce (i.e., 'workers') tackle the problem. For example, in one task I was asked to look at imagery of a road, with the task of marking sewers, road signs, and other notable road features[19]. The tagline for the Mechanical Turk is 'Artificial Artificial Intelligence", the suggestion being that from the point of view of the requestor data is fed into the system and results returned just like a computer response. Artificial intelligence tries to mimic human intelligence, while the Turk uses human intelligence in a way that mimics artificial intelligence.

Like Kickstarter, Mechanical Turk is a platform, meaning there is no single form that it takes. However, it is also an example of a financial paradigm, so the payment of workers underlies whatever work it is.

Villarroel and Tucci (2010) surveyed Mechanical Turk users on the topic of motivation. Most statistically reliable among their findings was money, "even in small or negligible amounts" (31). Fun was also notable, especially in affecting the quality and duration of contribution. Ipeirotis (2008) conducted a similar investigation, though more quantitatively. Asking Turkers of their reasons for using the site, Ipeirotis was able to extract nine general motivators from the responses. Greatest among them was income, mentioned by nearly half of respondents. Close behind was entertainment ("for fun, interesting, addiction"), followed by the earning of pocket change. Somewhat significant was also "to kill time" (20.50%) and "fruitful way to spend free time" (14%), while other motivators trailed[20]. A final survey, of about 400 workers by Crowdflower, looked at the primary motivators of workers, by regions. Their findings, which were majorly

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[19] This same task was also undertaken by the writer of a *New York Times* feature on the Turk: Pontin, Jason. March 25th 2007. "Artificial Intelligence, With Help From the Humans." *New York Times.* <http://www.nytimes.com/2007/03/25/business/yourmoney/25Stream.html>

[20] Ipierotis encourages the reading of the full responses, as they are more interesting than the tabulated response. See them here: http://behind-the-enemy-lines.blogspot.com/2008/03/why-people-participate-on-mechanical.html

represented by India and the US, showed that “money is a big motivation for everyone”, and that “money aside, people from India are there to learn; people from the US are there to have fun” (Horton 2010).

Findings

“Everybody likes to get paid.”

Participants generally agreed on the importance of money in the Mechanical Turk. One opinion was that even though the amount is small, the “money adds up”. Another interviewee was enthusiastic about the prospect of seeing “how much you could save in a year.” Money, however, was treated more casually than had been expected. The emphasis on other motivators, such as boredom and productive use of time, is in line with prior studies on Mechanical Turk.

One participant with Turk experience lamented the problem of spam on Mechanical Turk. Sure enough, the “artificial artificial intelligence” is often misused, with a large amount of HITs asking for ethically questionable tasks, such as posting advertisements in message boards. My own introduction to Mechanical Turk was three years ago, and this issue was seen just as much then as it is now: with little apparent policing from Amazon. This problem is the inverse of what participants noted about Hunch, which was commended specifically for keeping the site quality up by policing for spam.

The importance of communicating the reason for the task was often cited. In interviews, this was contrasted to Galaxy Zoo: “It’s not like Galaxy Zoo though [where the reason for using the site is very clear]. Why am I doing this?” In their investigation of using Mechanical Turk for deriving concept hierarchies, Huairen and Davis also emphasized communication of task goals (2010), and the *New York Times* likewise noted the lack of context from the worker end.

Other insights touched on by participants included:

- Boredom. Opinions toward the mundane differed. Some participants thought the site was a productive way to spend off-time; they noted

that it would be good to do when you're bored or need a distraction. However, this sentiment was not consistently shared; "if I'm bored, there are a million other things I would do first…I'd have to be locked in a room."

- Ease of use. Ease of use was again cited as a reason to participate. "It looks pretty easy to make some money," one participant noted.

Aardvark (http://vark.com)

Aardvark is a social question and answer service. On it, users can ask a question, which is sent to other Aardvark users. Upon signing up, one can plug in their Facebook or Twitter social network information; their reason for this is that the question-asking favours social connections. In asking, for example, about any good falafel shops in your town, the question will first go to your friends and friends-of-friends.

Aardvark's human answer service has many peers with different approaches. ChaCha, for example, is a search engine with humans answering the queries. Both ChaCha and Aardvark emphasize mobile device access to information, where seeking information traditionally is more challenging.

Findings

"Why wouldn't I answer?" – A participant who would answer.

Participants questioned the need for such a service. One subject stated, "I wouldn't use this because if I needed the answer to a question, I would put it to Google or Twitter." Twitter has more users, she added, and "Aardvark would be *one more thing*". Another user lamented the presumed wait. "Why not just Google?"

However, interviewees were somewhat receptive to the crowdsourcing part of the service: i.e., answering questions. They were asked whether they would answer a question that they knew the answer to, if it was posed to them; "why wouldn't I?" echoed throughout the interviews. One participant, though, said that "I don't have enough confidence in the things I know to answer questions. I would feel bad all the

time for giving a wrong answer." However, she added that "if you really know an area, it's very compelling to share what you know."

Threadless (http://www.threadless.com)

Threadless is a t-shirt company that sells shirts designed and vetted by the community. Community members contribute designs each week, which are voted on by other members. The company chooses to print a weekly batch of shirts based on the highest rated designs. The community etiquette has developed such that the voting process is reminiscent of a critique, with strong and weak elements of a submitted work often discussed in comments, and artists returning in subsequent weeks with improved submissions. In addition to the Likert voting scale, on a scale of one to five, there is also a checkbox of "I'd buy it". This, in no subtle terms, refers to a notable benefit of crowd-vetted products: they go to market with an audience of eager consumers. In fact, as of 2008, every single run they have ever had has sold out (Howe, Crowdsourcing 2008).

There are also financial incentives to participate. Design winners receive $2000 in cash and $500 in credit, as well as $500 for every reprint of their shirt. They are also placed in the running for the year end awards, which are worth thousands more. Winning slogan submissions receive $500. Users can also submit photos of themselves in their shirts, for site credit.

Jeff Howe looked at Threadless in his original article on crowdsourcing, as well as the subsequent book. One motivator that he emphasizes is that of "cred" – the "emerging reputation economy, where people work late into the night on one creative endeavor or another in the hope that their communities acknowledge their contribution in the form of kudos and, just maybe, some measure of fame" (Crowdsourcing 2008, 3). Another notable observation by Howe is the delineation between the designer and the voters. "Not everyone can design a T-shirt that is at once funny, visually pleasing, and resonant...but you don't have to be a talented designer or a born chanteuse to recognize these attributes" (228).

Findings

"Everyone has an opinion, and everyone wants their opinions heard… I have a lot of opinions."

None of those interviewed saw themselves as a talented designer. However, many would vote, admitting that it benefits their needs. "I would vote, and if I liked it I would buy it"; "[voters] want the shirt they want". One participant, however, stated that "I would vote and submit slogans, but I don't think I would submit designs. I'm not creative enough [for design] but I can be witty." This suggests that the inclusion of slogans adds more room for community members to gauge their skills and possibly contribute.

Threadless is foremost a store, interview participants said, despite it only being "a business by accident". One participant pointed out the size of 'buy' interface actions over 'submit' elements on the front page. Their products are well-respected by familiar users, a few of whom have purchased shirts for themselves or as gifts. As a storefront, then, it does well to attract users though, as mentioned, the rabbit hole from consumer to participant is not well emphasized. Part of this may be the sheer size: with hundreds of thousands of monthly visitors[21] even a small turnover is notable.

The value of cred was repeated in interviews. One user noted self-confidence in one's craft for submission, saying that "you'd have to be proud of the work you've done and confident that it could win something." Another noted that motivations align exactly with what Threadless advertises: "cred, fame, and $2500".

[21] Quantcast estimate. http://www.quantcast.com/threadless.com (Accessed July 25 2010).

Quirky (http://www.quirky.com/)

Similar to Threadless, Quirky is a crowd creation website. However, rather than simply contributing visual designs and voting, participants create entire products. Every week, participants submit ideas for a product, and the community votes on them. The winning product is then placed on a development track, with the majority of tasks being done by the community. Names, taglines, industrial designs and visual designs are done by, and voted on by, users. The final steps of realizing the crowdsourcing-designed product are done by the Quirky team, but this is not done until one more step: the pre-orders pledges reach a break-even point.

Quirky also includes financial facets. First of all, it costs $99 to post an idea for weekly voting, and $10 to repost in a subsequent week if it loses in its first time. The application fee works to discourage too many ideas, theoretically keeping the average quality higher so as to not obscure the best ideas[22]. Losing bids receive details, with demographics, of who liked and did not like the idea, so that they could go ahead on their own. More central to the site is the concept of "influence". Every action that contributes to the final product is awarded a percentage of influence, which translates to a percentage of community profits. The originator of the idea gains the most influence, but everyone gets a cut - even the people who vote on the winning tagline or who pre-order before the order threshold is set.

In the end, the site combines numerous crowdsourcing paradigms that were seen in the case sampling. It is an idea site, a community creation site, a site where participants can earn money, and in the threshold pre-order system, a two-heads-are-better-than-one group power example.

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[22] In practice, there are still many horrible or inane ideas that are submitted for consideration, but this helps support the argument that the site would be overwhelming without the fee.

Findings

One of the features of the system is that most actions that benefit the user also benefit the system. Good ideas are rewarded, and voting on the best ideas is also rewarded. One user noted that he would only submit something if he "had a really good idea", another speculated that people "have good ideas and are willing to try their hand" at utilizing them.

Quirky is a curiosity in that earning money takes a backseat to the "fun and interesting" concept. This is not to say that it is not important, but rather that it is a secondary incentive. "Profit definitely comes into it, but I think it's just cool to have something that you made." Even if you "would probably vote just out of curiosity", an extra few pennies is an extra incentive. "Everyone likes money, right?"

There were differing opinions on the application fee to submit a new idea. On one end, a participant thought that it was unseemly, comparing it to a scam ("pay me to get your book published"). This fee fully discouraged the participant from using the site. On the other extreme, a participant – incidentally the reliable skeptic of the interviews – praised the price. "$99 is so cheap to make a product." *But you have a one in ten chance*. "A one in ten chance is better than 0% chance."

Chapter 5
CONCLUSIONS

This study set out to answer the question, "How does a crowdsourcing project motivate its users to participate?" In pursuing this, a number of related questions needed to also be addressed. In revisiting these questions, this chapter will consider:

- Methodology. What was learned from the way that the study was undertaken?
- Motivation. What key motivational elements are possible from the study?
- Future directions. What should future studies explore?

Methodology

First is the question of methodology. Were the presumptions successful or correct? Methodological insights can be outlined in the following areas:

- Twitter recruitment. What was the effect of this unusual form of recruitment?
- User recruitment criteria. Were the arguments made for screening criteria relevant to the final results? How did they influence the study?
- Sampling method.
- Mixed-method methodology.

Twitter recruitment. Users were initially recruited through Twitter, directed to a screening form through a short, appreciative message. The principle was that Twitter users were more likely to be active in communities, by virtue of being on at least one, and that the strong, altruistic Edmonton – or #yeg – community would be easily accessible.

Ultimately, there was no clear benefit to the use of Twitter for recruitment. The recruitment message was noticed, and there were a few "retweets", where users helpfully retransmitted the message back to their users.

Later, the secondary method of recruitment was enacted, with mailing list messages sent to a few lists around the University of Alberta campus. Since these directed potential participants to the same recruitment form, it is unclear how many of the final participants arrived via Twitter versus through the emails. However, at the time that the secondary method was begun, there were four respondents; three of those were in the final group. Though, by oversight, it was not asked during interviews, it is known that two participants were recruitment through word of mouth with a third through the email list. This left two participants of unclear recruitment origin, but presumably by way of email list (noting the quick decay of Twitter messages). In other words, there is no evidence to support the success or failure of Twitter as a recruitment method.

User recruitment criteria: Recruitment avoided most screening criteria, including gender and age. The only conscious decision was to seek participants with some level of familiarity with sites that consist of user-generated content. This was because the motivations of potential users were being investigated, and users that do not participate online are much less likely to be potential users.

The study had a mix of three males and five females, with participants' ages spanning from late teens to late twenties. As age was not being closely considered and the range was relatively small, there is not enough evidence to speak to whether this approach was a correct one.

Within the study, the amount of experience with online communities varied considerably. There were no users with absolutely no experience, but among varying experiences of the interviews, there were notable if small benefits to having prior experiences on which participants could draw. However, the diversity of personalities and opinions provided gave a fairly complete image of a user that satisfied the needs of this study.

Mixed-method methodology. The combination of content analysis and interviews worked well in complementing each other. Where the content analysis looked at the patterns of coded site elements, interviews showed elements that require

human intuition to notice. However, given the time commitment, the content analysis' returns were notably lower than those of the interviews. Furthermore, many of the relationships observed simple, supportive ones that would not have stood alone. More valuable than the actual data collection segment of the content analysis was the comparison to literature that was done alongside it. Some of the sites that were studied already had been subject to prior motivation research. In these cases, such as the case with Galaxy Zoo, the interview could build on the previous study and look more at the order of importance between motivators.

Primary Motivators

The following motivators were seen as most important within this study.

Money

One of the most reliable ways to find participants appears to be simply to pay them. When other motivators are unsuccessful or non-existent, sites with financial incentive still appear to function. In this study, there are three sites studied that offered a reward: Mechanical Turk gives micropayments for micro-tasks, Crowdspring holds much larger but contested rewards, and Quirky holds potential reward proportional to the importance and success of the contribution. As a motivator, the financial angle is the least nuanced. As one interviewee said, "we all want money."

The tendency of money to subvert other motivators is avoided best by Quirky. What Quirky does is integrate its rewards into the community structure. There are limited ways to be negatively selfish on Quirky: to capitalize from the site one must perform in its best interests. A user is limited in how many actions they can perform (e.g., three votes for a product tagline) and they receive influence by carefully choosing those actions. In addition, the financial gain of the site is linked to an attribution system: yes, it translates to real money, but it also signifies the number of useful contributions that the user has made, akin to points.

While financial incentives are reliable for motivation, they have other features that make them detrimental to crowdsourcing. Ethical issues exist, for one. Is the

amount participants are paid appropriate to the task? Are participants well enough informed of how their contributions are being used? Also, financial incentives create a dependent relationship with users, at risk of making users 'workers' and sidestepping the generous, playful nature of crowdsourcing. Finally, it ties a project down to resource limitations, keeping it from reaching the scales that often define crowdsourcing. A project like ESP Game, with the modest goal " to label the majority of images on the World Wide Web" (von Ahn and Dabbish, Labeling images with a computer game 2004, 1) would simply be too expensive as a paid project.

Interest in the Topic (Passion)

"Interest precedes creativity. You want to participate in this community, then you'll end up contributing." – Interview participant on Star Wars Uncut

Throughout this study, a passion for the subject or purposes of the project has repeatedly been stressed. Any project aspiring to crowdsource, the results suggest, should seek out and cater foremost to those that are interested in its focus or outcomes. This leads to longer, more consistent engagement than that of casual or curious users.

With some cases, the passionate users are apparent. Galaxy Zoo or Star Wars Uncut, for example, were well-suited for fans of astronomy or Star Wars, respectively. Though it has not been examined by this study, Quirky appears to attract the similarly dedicated and eccentric niche of amateur inventors. However, the link to pre-existing passion is not apparent. For example, the Australian Historic Newspapers project found that the newspapers they were digitizing were of importance to genealogists, because they sometimes detailed the arrivals of convicts to the country. Genealogists, whose strong pre-existing communities and willingness to learn new technologies added unexpected benefit, "have taken to text correction like ducks to water" (Holley, Many Hands Make Light Work 2009, 26).

Oftentimes, it appears that passionate communities not only motivate but also bring the project to the attention of others. The choice of film in Star Wars Uncut was

commended by interviewees for this, and it was mentioned that projects of movies they like would similarly attract their own attention. Similarly, it was reported that "the release of Australian Newspapers beta and the ability to text correct was immediately reported and discussed in forums internationally and this is how many of the users heard of the service" (Holley, Many Hands Make Light Work 2009, 19).

Ease of Entry, Ease of Participation

Low barriers to entry and participation were cited for every single case that was examined, making it highly significant to contribution. However, while money and passionate users often work independently of a project's other qualities, a project that is easy still is dependent on other motivators. Just because something is easy does not make it inherently successful; rather, as with the cases examined, it is a quality that nearly always needs to be there, amongst other features.

When tasks are considered by time commitment, the ones that take longest do not occur on the system's end. OpenStreepMaps' GPS traces, Star Wars Uncut's video submissions, or Threadless's designs: though they may be complex in their own right, the complexity is not in the act of contribution. In contrast, the failed Assignment Zero suffered from the problem of complexity. Wikipedia has a low barrier to entry – just click 'Edit' – but has been criticized for the barrier to participation created by the interface and the overzealous core community (Angwin and Fowler 2009, Sanger 2009). As a result, it is also trending downward in regards to number of editors (Angwin and Fowler 2009).

Occasionally sites intentionally place accessibility restrictions. However, this itself is used to discourage, usually for quality reasons. Quirky's $99 submission fee, meant to lower the noise in the submission stage of development, was repulsive to one interviewee. Hunch's decision, after this study, to implement mandatory login was also expected by the site to "cut traffic in half, at least, but improve the overall experience for those who remain" (Schonfeld, Big Change At Hunch; Caterina Fake Predicts "Traffic Will Plummet," But Quality Will Rise 2010). Half of a reported 1.5 million monthly visitors is something that Hunch can afford, but for a small project looking to hit critical

mass, the message is clear: simplify to the greatest extent. This speaks to the process not the product: users can be challenged in what they do, but they should not be challenged in how they do it.

Star Wars Uncut was considered to have the highest barrier to entry – "if you compare it to other sites – if you compare it to Twitter where you type 140 characters – this is a bit more complicated." Regardless, even Star Wars Galaxy was suggested to be a relatively low investment for a fan to be able to engage in such a large and visible way.

Altruism and Meaningful Contribution

> *"We appear to have tapped into the Web community's altruistic substratum by asking people for help. Taggers tag for a variety of different reasons, and this diversity is part of what makes Flickr photo collections valuable to a wide membership base. The original Flickr blog post and text announcing the Commons ("This is for the good of humanity, dude!!") struck just the right chord. People wanted to participate and liked being asked to contribute." – On Flickr Commons. (Springer, et al. 2008, 15)*

People like to help if they believe in what they're helping, whether they are donating money to an artist or collaboratively trudging through Senate bills. This desire to help is a particularly potent motivator for academic and non-profit projects, which appeared in interviews to avoid the suspicion that profit-seeking businesses receive from newly-introduced observers.

This does not mean that projects should fully dedicate themselves to benefitting from generosity. When asked about the best crowdsourcing examples, one participant suggested "the ones that are easy and let you create but also give something back. So you can be altruistic and greedy at the same time."

"There has to be a point for the big picture and a point for you."

Users are also motivated to contribute if they feel that the contribution is meaningful. On the Galaxy Zoo forums, users praise the fact that the project is not

simply public outreach, but rather real work with real data. With idea suggestion sites, users want the community's suggestion to be considered.

An alternate outlook is that altruistic projects are fetching because they allow contributors to procrastinate without feeling like they are doing so. This may be so, and there is no evidence to suggest otherwise. Time put into a crowdsourcing project can either be time taken away from important matters or time taken away from trivial matters. At least through testimony, this study's interviews suggest that users see these distractions – from Galaxy Zoo to Mechanical Turk to OpenStreetMap – as a productive use of 'off' time.

Sincerity

Do the organizers of the project seem sincere? This is the $100 question; well, more like the $99 question. In interviews, there was debate over the ninety-nine dollar application fee to submit a new idea to Quirky. What was clear, however, is that how it was viewed tempered a user's view of the whole site. When a user considers it insincere – a "scam" – any positive qualities are nullified for them.

Sincerity is closely linked to altruism, where users are more willing to be micro-benefactors for an honest beneficiary. Again, academia holds a hard-coded benefit in its public rather than financial mandate. However, it also holds for self-benefiting projects. The notable sites, like Threadless, are the ones that appreciate and celebrate their community.

Netflix understood this well with the Netflix Prize, a $1 million dollar bounty to the person or team that could improve the quality of their recommendation engine by 10%. Despite the money they were putting up for it, their cut of the winning algorithm was a non-exclusive license. In other words, the winning team still owns their algorithm and can license it to others, including Netflix competitors. In addition, Netflix required

the winning formulas to be published before claiming the final prize (or the $50,000 year-end progress awards).[23] Competitors were fairly open and semi-collaborative throughout the project – the winning team was an endgame merger of multiple earlier teams – which begs the question of what effect the contest structure had on this friendly competition.

Appeal to Knowledge / Opinions

Asking users a question that they can answer is another motivator that recurred throughout this study's findings. Some users are shy or worried about supplying erroneous information, but for most, if they know they can contribute something in their knowledge domain, it appears that they will.

Such knowledge/experience based motivators can be small. Wikipedia does this well: any reader is also in a sense an editor, so if they see something that requires changing they are compelled to do so. Hunch has direct questions for rating results: if a user sees something that they are familiar with and they are asked 'Do you like this result', it is simply one click to answer 'yes' or 'no'. The same applies to Q&A crowdsourcing, such as Tweetbrain (http://www.tweetbrain.com) and Aardvark: once again, driven by users seeing questions that they know the answer of.

There are a few factors to note here:

Language: In an interview with Howe, the Cincinnati Enquirer's online communities editor said of their popular user submission section:

[23] I've found that the common first reaction to the project is that Netflix is exploiting the masses with the promise of riches, and their unexpectedly generous rules negate this concern.

> *"It used to read 'Be a Citizen Journalist', and no one ever clicked on it. Then we said, 'Tell Us Your Story,' and still nothing. For some reason, 'Get Published' were the magic words." (Crowdsourcing 2008, 106)*

The language of a website's appeal for one to contribute is a complex issue that would require further research for a better understanding. However, as with the example Howe cites, the ways that an appeal positions one's contributions within the project affects how likely one is to do so.

Perceivable gap in information: If a site is meant for consumption as well as crowdsourcing, allowing consumers to be cognitive of shortfalls that they can improve can compel submission. A site like Hunch tailors answers to questions for each user – it is easy, then, for a user to see something missing and correct it. Other sites simply place unfinished information in front of users hoping that the lack of data will motivate a user to fill it in. Interviewees, when presented with a question they know they answer of, will certainly do so.

System qualities: Users need to be enabled to share their experiences in a way that is easy and that provides feedback. Sometimes, the simple ability to do something quickly is motivation to do it. With CitySourced, we saw that having a phone application for reporting problems around the city not only would motivate interviewees to report problems, but might even help them notice those problems.

Consider the rationale for participating that an interviewed Wikipedia user provided:

> *"Wanting things to be right! It's part of the editor brain I have. When you're reading a newspaper and you see a mistake you can't fix it – well you can, on your copy with a pen, but nobody else will see that. Here you can – that's part of it. A lot of people criticize Wikipedia for credibility, but when you have that ability to fix it – well, when I see typos, that reduces their credibility for them; so if I could fix it, I can make it more reliable."*

Clay Shirky (Here Comes Everybody 2008) looks at the topic of Wikipedia in his look at personal motivations of online users. He examines a fairly unexciting topic – asphalt – and its progress from a "stub" (a short article that essentially serves as a placeholder) through the work of 129 contributors in five years into a full-fledged article. A major part of this process is the self-selection of contributors, who can make small changes as they see fit. A Wikipedia editor does not need to know everything about a topic, but if they know anything, they can contribute it. Recalling the issues that maligned the professionally written predecessor to Wikipedia, Shirky writes that "In an expert-driven system, an article on asphalt that read 'Asphalt is a material used for road coverings' would never appear, even as a stub. So short! So uninformative!... Which, of course, is one of the principal advantages of Wikipedia" (Here Comes Everybody 2008, 121).

Secondary Motivators

External Indicators of Progress and Reputation (Cred)

Perhaps the most surprising finding was the strong sentiment that point systems, achievements, and leaderboards are secondary motivators. Nothing in the study suggests that crowds flock to systems simply for the intrinsic value of their progress systems. Rather, such functionality supplements systems, making interested parties slightly more interested. This should not be discounted though, as it often does well to serve the more dedicated contributors, giving them something to show for their dedication and something to still strive for.

When one potential interviewee wrote on his screening form that he is a heavy user of Foursquare, a different approach to achievements was expected. Foursquare, a GPS enabled service where users 'check-in' to their location, is defined by its badge and point system. Every time a person checks in they receive points, gaining more for consecutive check-ins. Badges cover the gamut; one example is a badge given for checking into five airports. However, upon interviewing this participant, even he explained the achievements were beside the point. Rather it is the less obvious benefits that catch him, such as the ability to track where you have been and where your friends

are. Achievements just make it more fun to do. In this way, these systems parallel research on brand loyalty programs, which offer customers rewards for continued involvement, but also follow rather than precede the existing value of the brand and interest of their users (Dowling and Uncles 1997).

One of the assertions of the ERG motivation theory contends that when social needs are met, the desire for growth goes up (Alderfer 1972, 18). This agrees with the interviews, which found that users are more compelled to achieve when their friends are on the system.

Another effect of externalized progress is that it leads to collection. Once you start classifying galaxies and they start appearing your profile, it becomes "like stamp-collecting: gotta collect them all!" Galaxy Zoo does not have a point-system – just a count – and this reaction was not the norm. Rather, it was, like all point systems examined, subject to personal preferences. It catches some people – one person was caught by the idea of seeing how much money she could make on Mechanical Turk in a year - but not others.

Utility

Many crowdsourcing projects provide utility to contributors. Sometimes this is in the product of contributions, like Hunch, Wikipedia, or Waze. Other times, the crowdsourcing is incidental to the useful action being performed, like when one organizes their Flickr photographs with tags and incidentally improves the search engine's understanding of what is in the photos.

Fun

What is 'fun'? The word is given often, but determining why something is fun is, well, not fun. I would suggest a number of sub-qualities than may motivate a user to call something fun.

Curiosity satisfying. Indulging a thought or intrigue. Novel ideas seem to benefit from this, but only for a short amount of time.

Passing the time; breaking boredom. Perhaps the mundane is good? A low-impact, harmless contribution offers an easy feeling of achievement in one's spare time. Mechanical Turk, Hunch, and Galaxy Zoo were all cited at some point as cures for boredom.

Rewards for actions. This refers to the pursuit of goals and being rewarded for reaching them. Achievements, described above, and games are satisfying in this way.

Feedback / Impression of change

When it was a possibility in the data being dealt with, interview subjects consistently responded to swift feedback on their contributions. For sites where they contribution is information for a website, they want that information to show up. Reports should be responded to, and suggestions should be considered or at least appear to be considered.

Good follow-through on issues and contributions emergent from crowdsourcing can benefit participants to the detriment on non-participants. It was noted that a site like MyStarbucksIdea can risk over-serving those who choose to use the site, which is a very particular segment of Starbuck's customers. This has been seen in similar systems, like when Dell's Ideastorm was overrun with suggestions to sell Linux-based computers or when President Obama's online town hall was taken over by questions about legalizing marijuana in the midst of an economic meltdown. Such systems skew toward those who know about them, which tend to be younger, more savvy users.

Recommendations and the Social

"I'd be more willing if a friend forwarded it on."

It is becoming easier to share recommendations and opinions online and, with people's social graphs online, these are increasingly enter personal friend space. Seeing a friend recommend something, either directly or through their actions, may affect one's desire to try it themselves.

All but one of the website cases had community functions. The most popular case among participants was Hunch. Attempts to explain why it is compelling generally revolved around the curiosity of seeing how one's own character is interpreted by the system. Based on similar people, who does it think I am?

Fixing Windows

An interesting motivation for some participants was that sites were well-groomed, noticeably absent of the junk or noise that is expected with large crowds. To put it another way – an obviously simple way – quality attracts users.

This bears a resemblance to the broken windows theory, which suggests that a neighborhood in decay will encourage more negligence and vandalism (Wilson and Kelling 1982). Fixing human-created damage, be it cleaning up litter or replacing broken windows, will discourage such behavior in the future. While the applicability of the broken windows theory in society is still being debated, others have observed similar effects online (Shirky, Here Comes Everybody 2008). As one user put it:

"I met someone today that openly admits to going in [to Wikipedia], erasing pages and replacing them with profanity… but it doesn't last long, because there's other people that can fix it, and they save the revision history. When you know it's going to be undone fairly quickly, why bother?"

After this study was conducted, Hunch took the pursuit of quality a step further, restricting site usage to logged-in users. "I think traffic will plummet," co-founder Caterina Fake said, "but users who are using the product will have a significant lift in the quality of results."

ERG Assumptions

I earlier hypothesized that results will map onto the ERG theory, with the majority of motivators tending toward relatedness and growth needs. The reason for this is that the Internet as a digital space and as a communications medium is non-essential to existence and offers little to that effect. It could, in principle, be used for

obtaining commodities related to existence, though in reality the only practically available existence need available is money.

In the ERG Theory, Alderfer makes a case for the following relationships between motivators:

> 1. *"The less existence needs are satisfied, the more they will be desired.*
> 2. *The less relatedness needs are satisfied, the more existence needs will be desired.*
> 3. *The more existence needs are satisfied, the more relatedness needs will be desired.*
> 4. *The less relatedness needs are satisfied, the more they will be desired.*
> 5. *The less growth needs are satisfied, the more relatedness needs will be desired.*
> 6. *The more relatedness needs are satisfied, the more growth needs will be desired.*
> 7. *The more growth needs are satisfied, the more they will be desired."*
>
> *(Alderfer 1972, 18)*

In this context, a number of assumptions can be made about crowdsourcing motivation:

- A site with a satisfying social design will also stimulate greater desire for growth. This was supported by interviews, where users placed more emphasis on external indicators of progress when real-world friends or online community members could view them.
- Utilizing one's skills and capacities in a satisfying manner will encourage more self-fulfilling growth. Growth breeds growth needs. This may explain the addictiveness that interviewees cited in answering questions on Hunch. In the words of one user: "The more I'd get into it the more I want to expand it."

- Sites that serve to satisfy low existence needs do not serve other needs. This assumption is only partially supported by the findings. Money does indeed exist in its own eco-system, able to circumvent any other needs. However, there are a number of cases that incorporated money with other motivation. There exist a number of explanations for this, most importantly that money, as a secondary motivator, is no longer an existential need. Indeed, as Maslow states, usually when one states that they are hungry, they are in fact speaking of appetite and not in fact precariously malnourished. A project like Crowdspring or Mechanical Turk can be for people that *need* money, but in Quirky and Threadless, it exists as a reward, a self-actualizing growth need.

Future Directions

This study has provided a broad look at the spectrum of crowdsourcing and the motivations inherent to it. As research moves forward, it should move toward the particular. Ripe areas for further exploration include:

- When to crowdsource. While this study has looked at the' how', and a particular subset of it, it has not provided a systematic way to identifying projects appropriate for crowdsourcing. In the same vein, reviews of actual problems that would make good candidates for study may bring benefit should somebody be inspired enough to realize them.
- What actual and/or heavy users think. The 'users' of this study had a mix of experience with the cases, familiarity with them, familiarity with similar cases, and first impressions. How does direct experience relate to the mixed experiences in this study?
- More directed crowd motivation research. One size does not fit all, and the methodology chosen as the best fit for a study of this breadth is not perfectly suited for all potential motivators. For example, content analysis will not easily uncover the effect of copy writing on motivation, and a user will not adequately consider it unless directed to it. How does wording

matter to what is being asked? What about usability design or visual design? Users sometimes made statements like “looks fun”, but to understand what that look is and how effective it may be, more directly consideration needs to be given.

- Comparisons between similar sites. There are numerous types of crowdsourcing websites that follow the same paradigm: why do some succeed while others fail? In-depth case studies may provide some answers.
- Behind the scenes investigation. Project organizers offer generally insightful big-picture systems-end perspective on the motivations of crowds. There is potential is seeking more experienced testimony on this issue.

Finally, perhaps the most pertinent direction for the future of crowdsourcing is to *use it*. As research slowly scratches away at the perplexities of online crowds, more experiments are needed at consciously mobilizing crowds. Did you know that crowds can create concept hierarchies? According to Eckert et al. (2010) they can; what other tasks are they suited for?

With understanding, there is also a need for crowdsourcing tools and platforms. Flickr Commons, for example, is no longer just a Library of Congress pilot – as of July 2010, there are forty-five participating institutions. For public institutions, why bother creating a new system, when Flickr’s masses are already there? Platforms, whether out-of-the-box “just add server” solutions or centralized hosted solutions, could help polish the technical end so that more time can be spent on the project or the theory.

The motivation of users is an encompassing topic. By utilizing purposive sampling and qualitative methods, the results are limited to key thematic patterns. This study has chosen a limited number of sites, coded them, crunched the numbers, asked social media users on their thoughts and finally said, “this is what *seems likely* to be the case.” By design, it has tried to give a better launching point for further research than to naïvely try to close any doors itself. Thus, it is hoped that that finding contribute to further, deeper understandings of a phenomenon that is still being understood.

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Appendices

Appendix A: Recruitment Materials

The following recruitment materials are included here: an example tweet, a mailing list email and the recruitment poster.

Twitter

Mailing List

>>Needed: Participants for crowdsourcing user study

Do you participate in social websites? Have you used wikis, blogs, photo sharing websites or online bookmarking?

If so, you're needed for a user study!

Participants would undergo a 45-60 minute interview about collaborative and community websites. If you're interested, volunteer through this form <http://bit.ly/bBmA9N> or by replying directly to Peter <organisc@ualberta.ca>.

This is study is part of an MA thesis. Participation would be greatly appreciated.

Thank you,

Peter Organisciak, MA Candidate, Humanities Computing

Supervisor

Lisa Given, Associate Professor, School of Library and Information Studies

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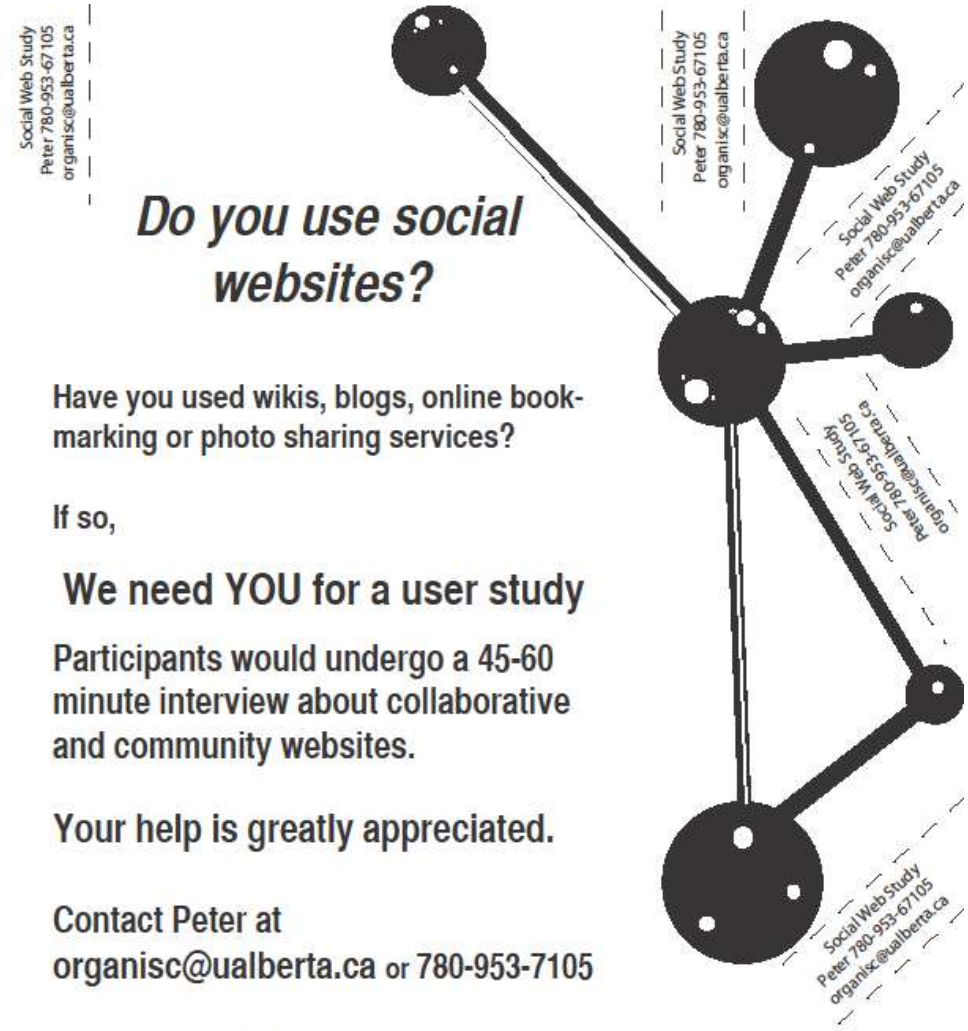
The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension, Augustana and Campus Saint Jean Research Ethics Board (EEASJ REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEASJ REB c/o (780) 492-2614.

Poster



Supervisor
Lisa Given
Associate Professor
School of Library and Information Studies
780-492-2033
lisa.given@ualberta.ca

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Appendix B: Sampling Results

Below are results from sampling, presented in two parts.

In the first part is the categorization of all relevant cases. Certainty or relevance to a particular category, ranked of a scale of 1 to 3, moved from "somewhat" to "definitely" applicable. Unranked a blank entry denotes no relevance. Below that are all 300 of the reviewed cases, along with coder notes (as encouraged by the case study methodology) and a selection of metadata about the links. The full dataset is too large to publish, but can be requested from the author. It includes some of the processes used for identifying sites and cleaning data, as well as columns used for the final categorization.

Categorized Sites

		Categories										
Rank	**Corrected Name**	Platform	Creation	Financial	Group power	Opinion Aggre-gation	Knowledge / Experience Aggregation	Ideas	Game Mecha-nics	Skills Aggre-gation	Encoding / Percep-tion based	Just for Fun
1	**Crowdspring**	3	3	3								
2	**Kickstarter**	2			3	2						
3	**Innocentive**	3		3				3				
4	**99Designs**	3	3	3		1	3					
5	**Aardvark**					1	3	3				
7	**Hunch**					2	3		3			

9	**Kluster**					3		3				
10	**Quirky**		3	3	3	2		3				
11	**Uservoice**	3			2	3		3				
12	**Ushahida**	3			3	3		3				
13	**Ideascale**				2	3		3				
17	**Spot.us**	3			3	2		1		2		
19	**NameThis**	1		3				3				
20	**Amazon Mechanical Turk**	3		3	2					1	1	
21	**Get Satisfaction**	3			2	3		3				
23	**uTest**	3		3	2			2		3		
24	**GWAP**								3		3	
25	**Dell Ideastorm**							3				
26	**CrowdFlower**	3		3	2					1	1	
28	**Assignment Zero**		3				1	3		2		
31	**Crowdspirit**	3	3	2		3		3				
35	MP Expenses Scandal				2	3						
36	**Herdict**						3					
37	**txteagle**			3							1	
38	**Threadless**		3	3	3	3				3		
39	**Ideablob**											
40	**Crowdsound**							2				
41	**brand tags**					2	2				3	

42	**RedesignMe!**	3	3	3								
44	White Glove Tracking										3	
45	**Google Moderator**	3						3				
50	Ten Thousand Cents		3								3	1
51	**Ponoko**		2	1						3		
52	**Spigit**	3						3				
53	**NowPublic.com**		3				3			3		
55	**SuggestionBox**	3						2				
56	**OpenAd**	3		3				3				
57	Bicycle Built for Two Thousand		3								3	1
59	Star Wars: Uncut		3							3	1	3
60	**My Starbucks Idea**							3				
61	**Blellow**		3				3	1		2		
64	**Fellowforce**							3				
66	**The Superstruct Game**					3	2	3	3			
67	**SellaBand**	3			3	2						
69	One Frame of Fame		3							3	1	3

70	**local-motors.com**		3		3			3		3		
72	Project 10 to the 100th					3		3				
74	**Waze**						2		3		3	
77	**Buzzillions**					3						
78	**Chaordix**	3						3				
80	**iStockphoto**			3						3		
81	**myGenko**			3	2		3				1	
83	**The Extraordinaries**	3		3								
87	**FeedbackArmy**	1		1		3						
89	**Crowd Science**	1				3		2				
90	**Tweetbrain**											
93	**Help Me Investigate**	3					3	1		2		
97	**CitySourced**						3					
98	**NineSigma**	3		3				3				
99	**Mob4Hire**	2		3	3	1				1	1	

100	**JustBought.it**					3	2					
101	**ChallengePost**			3	3	3		3				
107	**id this**										3	
108	**SideTaker**					3						
110	**White House 2**					3		3				
112	**Zooppa**	3	3	3				2		2		
113	**WePC**		3	2		3		3				
114	**Idea X**							3				
117	**TopCoder**		3	3								
120	**Transparency Corps**						1		2		3	
122	**innovation exchange**		3	3				3				
124	**Poptent**	3	3	3				2				
128	**The Sheep Market**		3	3						1		2
130	**Galaxy Zoo**						1				3	

131	**gooseGrade**				3		1			2	2	
132	**Google Image Labeler**								3		3	
133	**FixMyStreet**						3					
137	**unclasses.org**						3					
138	**inkling**					3	3					
139	**yet2.com**	3		3				2				
141	**jovoto**	3	3	3				3				
142	**Brooklyn Museum**		1			3				3		
143	**Worldwide Lexicon**						3			1		
144	**Peer to Patent**						3			2		
145	**SeeClickFix**				2		3					

146	**Swiftriver**					2					3	
148	**Logotournament**	2	3	3								
151	**Amazee**	3			3							
152	**12designer**	2	3	3								
153	**Flickr Commons**						3				3	
154	**CloudMade**											
157	**Samasource**	3		3						1	1	
159	**Fluther**					2	3					
160	**Ask 500 People**					3	2					
161	**UserTesting.com**	3		3		2					3	
169	**reCaptcha**										3	
170	**Google Product Ideas**							3				
174	**MyFootballClub**					3	3			3		

177	**YourEncore**			3			3			3		
180	**LiveWork**	3		3						1		
183	**Kindling**	1						3				
184	**The Point**	3			3							
189	**DotSpot**		3			3				1		
192	**Free Sales Leads**			3			3					
194	YouTube - SOUR '????? (Hibi no neiro)'		3							1		3
200	**Bootb**	3	3	3								
202	**SickCity**						3					
205	**BigCarrot**	3			3	1						
206	**IdeaConnection**	3		3			3			3		
207	**Carrotmob**				3							
209	**Kiva**			3	3							
211	**Twitturly**					3						
212	**Marketocracy**					3						
213	**Slicethepie**			3	3	2						
215	**Cameesa**				3							

218	**SpringWise**						3					
220	**Cofundos**	3	2	3		3						
221	**Authonomy**					3				3		
223	**Spudaroo**		3	3								
225	**Atizo**						1	3		1		
228	**noticings**						3		3			
230	Building Rome in a Day						3					
231	**Stimulus Watch**						3					
236	**MilkorSugar**					3	1					
239	**DesignBay**	2	3	3								
242	**Covestor**						3					
244	**OpenStreetMap**										3	
245	**Groupon**			1	3							

247	**WeBook**					3						
250	**Zopa**			3	3							
252	**Ideas Culture**			3				3				
255	Pepsi Refresh Project			3				3				
257	**RYZ**		3	3		3		1		3		
258	**Short Task**	3		3							1	
262	**pimtim**	1	3	3								
264	**iamnews**	1	3	2	3		3			2		
266	**Shapeways**		2	3								
271	microPledge	2			3							
276	**Walking Papers**						3				1	
278	**Skribit**							3				

280	**giffgaff**		2	2	3	2						
286	**MixedInk**	1	3									
292	**Hypios**			3			3	1				
293	Mapping L.A.						3					
296	**Wordy**			3	1					1	3	
297	**Massify**									3		
298	**Buy A Beer Company**				3							
299	**edopter**					3	1					

Reviewed Cases (300 cases) and Notes

Rank	Corrected Name	URL	Save Count	Type	Case?	Notes
1	**Crowdspring**	**http://www.crowdspring.com/**	4758	Site	3	
2	**Kickstarter**	**http://www.kickstarter.com/**	4207	Site	3	
3	**Innocentive**	**http://www.innocentive.com/**	3494	Site	3	Outlined in "Crowdsourcing"
4	**99Designs**	**http://99designs.com/**	6625	Site	3	
5	**Aardvark**	**http://vark.com/**	2225	Site	3	Recently purchased by Google
6	Cambrian House	http://www.cambrianhouse.com/	1900	Other		Was a crowdsourcing site, now a platform developer and consultancy company.
7	**Hunch**	**http://hunch.com/**	2998	Site	3	Decision-making
8	Wired 14.06: The Rise of Crowdsourcing	http://www.wired.com/wired/archive/14.06/crowds.html	849	Article		
9	**Kluster**	**http://www.kluster.com/**	1101	Site	3	
10	**Quirky**	**http://www.quirky.com/**	1078	Site	3	
11	**Uservoice**	**http://uservoice.com/**	3970	Site	3	
12	**Ushahida**	**http://www.ushahidi.com/**	1357	Site	3	
13	**Ideascale**	**http://www.ideascale.com/**	840	Site	3	
14	Crowdsourcing: A Million Heads is Better than One	http://www.readwriteweb.com/archives/crowdsourcing_millio	559	Article		

		n_heads.php				
15	Four crowdsourcing lessons from the Guardian's (spectacular) expenses-sc...	http://www.niemanlab.org/2009/06/four-crowdsourcing-lessons-from-the-guardians-spectacular-expenses-scandal-experiment/	533	Article		
16	Your Guide to the Crowdsourced Workforce – ReadWriteWeb	http://www.readwriteweb.com/archives/crowdsourced_workforce_guide.php	481	Article		
17	**Spot.us**	**http://www.spot.us/**	1064	Site	3	
18	Crowdsourcing - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Crowdsourcing	552	Article		
19	**NameThis**	**http://namethis.com/name_this/**	727	Site	3	
20	**Amazon Mechanical Turk**	**https://www.mturk.com/mturk/welcome**	1764	Site	3	
21	**Get Satisfaction**	**http://getsatisfaction.com/**	7415	Site	3	
22	List of Open Innovation & Crowdsourcing Examples - Best practices - Open...	http://www.openinnovators.net/list-open-innovation-crowdsourcing-examples/	422	Article		
23	**uTest**	**http://www.utest.com/**	948	Site	3	

24	**GWAP**	**http://www.gwap.com/gwap/**	1119	Site	3	
25	**Dell Ideastorm**	**http://www.ideastorm.com/**	980	Site	3	
26	**CrowdFlower**	**http://crowdflower.com/**	401	Site	3	
27	Crowdsourcing Examples / FrontPage	http://crowdsourcingexamples.pbwiki.com/	299	Collection		
28	**Assignment Zero**	**http://zero.newassignment.net/**	559	Site	3	By their evaluation, the experiment was a failure.
29	Popular Ideas - Dell IdeaStorm	http://www.dellideastorm.com/	813	Duplicate		
30	Crowdsourcing	http://crowdsourcing.typepad.com/	299	Blog		
31	**Crowdspirit**	**http://www.crowdspirit.com/**	370	Site	3	
32	CrowdSpirit	http://www.crowdspirit.org/	377	Duplicate		
33	Amazon Mechanical Turk - Welcome	http://www.mturk.com/mturk/welcome	3795	Duplicate		
34	Dolores Labs	http://doloreslabs.com/	314	Other		VVery capable crowdsourcing firm.
35	MP Expenses Scandal	http://mps-expenses.guardian.co.uk/	265	Project	3	
36	**Herdict**	**http://www.herdict.org/web/**	680	Site	3	Reporting on where sites are down
37	**txteagle**	**http://txteagle.com/index.htm**	265	Site	3	Like Mturk but mobile.

		l				
38	**Threadless**	**http://www.threadless.com/**	22019	Site	3	
39	**Ideablob**	**http://www.ideablob.com/**	1151	Site	3	
40	**Crowdsound**	**http://www.crowdsound.com/**	486	Site	3	
41	**brand tags**	**http://www.brandtags.net/index.php**	2459	Site	3	
42	**RedesignMe!**	**http://www.redesignme.com/**	377	Site	3	
43	http://www.crowdsourcing.com/	http://www.crowdsourcing.com/	217	Duplicate		
44	White Glove Tracking	http://whiteglovetracking.com/	536	Project	3	
45	**Google Moderator**	**http://moderator.appspot.com/**	1002	Site	3	
46	The Dirty Little Secret About the "Wisdom of the Crowds" - There is No C...	http://www.readwriteweb.com/archives/the_dirty_little_secret_about_the_wisdom_of_the_crowds.php	256	Article		
47	The Myth of Crowdsourcing - Forbes.com	http://www.forbes.com/2009/09/28/crowdsourcing-enterprise-innovation-technology-cio-network-jargonspy.html	181	Article		

48	Crowdsourcing Directory ? The Revolutionary Power of Crowds	http://www.crowdsourcingdirectory.com/	158	Collection		
49	My Starbucks Idea	http://mystarbucksidea.force.com/home/home.jsp	700	Duplicate		
50	Ten Thousand Cents	http://www.tenthousandcents.com/index.html	457	Project	3	"Fun" by definition, but only slight considering it being built on Turk
51	**Ponoko**	**http://www.ponoko.com/**	5812	Site	3	I believe the "crowdsourcing" being referred to is the marketplace.
52	**Spigit**	**http://www.spigit.com/index.html**	441	Site	3	
53	**NowPublic.com**	**http://www.nowpublic.com/**	3501	Site	3	
54	Solve Puzzles for Science | Fold It!	http://fold.it/portal/adobe_main/	772	Duplicate		
55	**SuggestionBox**	**http://www.suggestionbox.com/**	446	Site	3	
56	**OpenAd**	**http://www.openad.net/**	595	Site	3	
57	Bicycle Built for Two Thousand	http://www.bicyclebuiltfortwothousand.com/	291	Project	3	"Fun" by definition, but only slight considering it being built on Turk
58	We Are Smarter Than Me: Home	http://www.wearesmarter.org/	498	Book		

59	Star Wars: Uncut	http://www.starwarsuncut.com/	753	Project	3	
60	**My Starbucks Idea**	**http://mystarbucksidea.force.com/**	422	Site	3	
61	**Blellow**	**http://blellow.com/**	444	Site	3	
62	Predictify	http://www.predictify.com/	953	Failure / Down		http://en.wikipedia.org/wiki/Predictify
63	Crowdsourcing	http://crowdsourcing.typepad.com/cs/	154	Duplicate		
64	**Fellowforce**	**http://www.fellowforce.com/**	227	Site	3	Combination of Ideajam and product bounties.
65	GeniusRocket - Crowdsourced creative design	http://www.geniusrocket.com/info/	239	Duplicate		
66	**The Superstruct Game**	**http://www.superstructgame.org/**	676	Site	3	See Jane McGonigal's TED Talk.
67	**SellaBand**	**http://www.sellaband.com/**	1979	Site	3	
68	Crowdsourcing	http://crowdsourcing.typepad.com./	155	Duplicate		
69	One Frame of Fame	http://oneframeoffame.com/	242	Project	3	
70	**local-motors.com**	**http://www.local-motors.com/**	210	Site	3	Like Quirky with cars. http://www.businessweek.com/innovate/content/oct2009/id20091028_848755.htm ..huh.

71	Crowdsourced document analysis and MP expenses	http://simonwillison.net/2009/Dec/20/crowdsourcing/	134	Article		
72	Project 10 to the 100th	http://www.project10tothe100.com/	1086	Project	3	Crowdsourcing big ideas to change the work. Google pledges $10 million to winning ideas.
73	**Victors & Spoils - The world's first creative (ad) agency built on crowd...**	**http://victorsandspoils.com/**	163	Site	1	Tentative site for ad agency based on crowdsourcing.
74	**Waze**	**http://www.waze.com/**	359	Site	3	
75	Crowdsourcing Examples / FrontPage	http://crowdsourcingexamples.pbworks.com/	97	Duplicate		
76	Is Crowdsourcing Evil? The Design Community Weighs In | Epicenter from W...	http://blog.wired.com/business/2009/03/is-crowdsourcin.html	130	Article		
77	**Buzzillions**	**http://www.buzzillions.com/**	2073	Site	3	
78	**Chaordix**	**http://www.chaordix.com/**	102	Site	3	
79	The Future of Our Cities: Open, Crowdsourced, and Participatory - O'Reil...	http://radar.oreilly.com/2009/04/the-future-of-our-cities-open.html	177	Article		
80	**iStockphoto**	**http://www.istockphoto.com/**	24183	Site	3	

81	**myGenko**	**http://mygengo.com/**	301	Site	3	Translation
82	The FLIRT model of Crowdsourcing / Collective Customer Collaboration at ...	http://www.samiviitamaki.com/2007/02/16/the-flirt-model-of-crowdsourcing-collective-customer-collaboration/	101	Article		
83	**The Extraordinaries**	**http://www.theextraordinaries.org/**	237	Site	3	Similar to Crowdflower's GiveWork app and txteagle. Do micropayment work on behalf of somebody else.
84	crowdSPRING / How it Works	http://www.crowdspring.com/how-it-works/	193	Duplicate		
85	Crowdsourcing: Consumers as Creators	http://www.businessweek.com/innovate/content/jul2006/id20060713_755844.htm	101	Article		
86	spigit: innovation evolved	http://www.spigit.com/homepage	305	Duplicate		
87	**FeedbackArmy**	**http://feedbackarmy.com/**	757	Site	3	Built on top of Mturk. Similar to Crowdflower, but not for a particular (rather than open-ended) purpose
88	A Swarm of Angels	http://aswarmofangels.com/	943	Failure / Down	1	Down, In transition
89	**Crowd Science**	**http://www.crowdscience.com**	564	Site	3	

		/				
90	**Tweetbrain**	**http://tweetbrain.com/questions/all**	173	Site	3	URL corrected.
91	10 kickass crowdsourcing sites for your business | Blog | Econsultancy	http://econsultancy.com/blog/4355-10-kickass-crowdsourcing-sites-for-your-business	93	Article		
92	Ten Thousand Cents	http://www.tenthousandcents.com/top.html	181	Duplicate		
93	**Help Me Investigate**	**http://helpmeinvestigate.com/**	162	Site	3	
94	Sometimes Crowds Aren't That Wise - ReadWriteWeb	http://www.readwriteweb.com/archives/sometimes_crowds_arent_that_wise.php	142	Article		
95	designenlassen.de	http://www.designenlassen.de/	205	Non-English Site	1	
96	Us Now	http://www.usnowfilm.com/	480	Film		Somewhat follows the Remix (NFB crowdsourced film) model, but appears more of a transparent production than a crowdsourcing project.
97	**CitySourced**	**http://www.citysourced.com/**	183	Site	3	App for reporting issues in a city, for quick resolution.
98	**NineSigma**	**http://www.ninesigma.com/**	306	Site	3	Innocentive knockoff.

99	**Mob4Hire**	**http://www.mob4hire.com/**	230	Site	3	
100	**JustBought.it**	**http://justbought.it/**	292	Site	3	
101	**ChallengePost**	**http://www.challengepost.com/**	132	Site	3	Microfunding and ratings.
102	Is Crowdfunding the Future of Journalism?	http://mashable.com/2009/07/16/crowdfunded-news/	173	Article		
103	A List Apart: Articles: The Wisdom of Community	http://www.alistapart.com/articles/the-wisdom-of-community/	349	Article		
104	Open Innovators	http://www.openinnovators.net/	148	Other		
105	Crowdsourcing	http://www.businessweek.com/magazine/content/06_39/b4002422.htm	98	Article		
106	Wired 14.06: The Rise of Crowdsourcing	http://www.wired.com/wired/archive/14.06/crowds_pr.html	136	Article		
107	**id this**	**http://idthis.org/**	254	Site	3	
108	**SideTaker**	**http://www.sidetaker.com/**	414	Site	3	
109	The Extraordinaries | micro-volunteering at www.beextra.org	http://www.beextra.org/	162	Duplicate		

110	**White House 2**	**http://www.whitehouse2.org/**	254	Site	3	
111	Star Wars: Uncut	http://www.starwarsuncut.com/#/	219	Duplicate		
112	**Zooppa**	**http://zooppa.com/**	795	Site	3	How many of these are there?
113	**WePC**	**http://www.wepc.com/**	309	Site	3	Aus's ideajam. A relatively fresh example.
114	**Idea X**	**http://bestbuyideax.com/**	166	Site	3	Best Buy's Ideajam.
115	First Look: Kluster's Market Approach to Crowdsourcing	http://www.techcrunch.com/2008/02/18/first-look-klusters-market-approach-to-crowdsourcing/	93	Article		
116	Top 10 Crowdsourcing Companies	http://innovationzen.com/blog/2006/08/01/top-10-crowdsourcing-companies/	72	Article		
117	**TopCoder**	**http://www.topcoder.com/**	2340	Site	3	
118	Concept Feedback | Free Concept Reviews for Marketers, Designers and Dev...	http://www.conceptfeedback.com/	1087	Failure / Down	1	"being upgraded"
119	10 Crowdsourcing Marketplaces for All the Designers and Freelancers	http://www.inspiredm.com/2009/07/06/10-crowdsourcing-marketplaces-for-all-the-	94	Article		

	| In...	designers-and-freelancers/				
120	**Transparency Corps**	**http://transparencycorps.org/**	107	Site	3	"For many of the projects that make government transparency a reality, human eyes and analysis are required. With Transparency Corps, we break those tasks down into short, small actions that make a BIG difference."
121	Collaborative Filtering: Lifeblood of The Social Web - ReadWriteWeb	http://www.readwriteweb.com/archives/collaborative_filtering_social_web.php	210	Article		
122	**innovation exchange**	**http://www.innovationexchange.com/**	126	Site	3	
123	Solve Puzzles for Science | Foldit	http://fold.it/portal/	780	Duplicate		
124	**Poptent**	**http://www.poptent.net/**	130	Site	3	
125	The FLIRT Model of Crowdsourcing - The Updated Model and Background	http://www.samiviitamaki.com/2007/05/06/the-flirt-model-of-crowdsourcing-the-updated-model-and-background/	69	Article		
126	Google Uses Crowdsourcing To Create Maps In India	http://radar.oreilly.com/archives/2007/08/google_uses_cro.html	105	Article		

127	Tchibo ideas | Die besten Ideen gewinnen	https://www.tchibo-ideas.de/index.php/	158	Non-English Site	1	
128	**The Sheep Market**	**http://www.thesheepmarket.com/**	1560	Site	3	See Bicyle Built for 2 Thousand and One Hundred Cents. Less directly connected to financial however, because of the freedom submitters were given
129	NineSigma - Sourcing Innovation Worldwide™	http://www.ninesigma.net/	146	Duplicate		
130	**Galaxy Zoo**	**http://www.galaxyzoo.org/**	1331	Site	3	
131	**gooseGrade**	**http://www.goosegrade.com/**	150	Site	3	Tagged experience aggregation because it includes editing based on incidental surfing
132	**Google Image Labeler**	**http://images.google.com/imagelabeler/**	3330	Site	3	Academic (Licensed/purchased from ESP Game)
133	**FixMyStreet**	**http://www.fixmystreet.com/**	879	Site	3	Same as CitySourced.
134	Crowdsourcing: What It Means for Innovation - BusinessWeek	http://www.businessweek.com/innovate/content/jun2009/id20090615_946326.htm	72	Article		
135	5 Ways to Attract and Empower Your Crowd	http://mashable.com/2009/09/02/attract-your-crowd/	118	Article		
136	UserVoice - Customer	https://uservoice.com/	418	Duplicat		

	Feedback 2.0 - Harness the ideas of your customers....			e		
137	**unclasses.org**	**http://unclasses.org/**	208	Site	3	Spontaneous learning based on what people know or what they want to know.
138	**inkling**	**http://inklingmarkets.com/**	917	Site	3	Prediction market.
139	**yet2.com**	**http://www.yet2.com/app/about/home**	465	Site	3	Old site, sort of a pre-cursor to bounty-based R&D. It's for connecting companies with needs to companies with the IP solution for them.
140	Official Google Blog: The bright side of sitting in traffic: Crowdsourci...	http://googleblog.blogspot.com/2009/08/bright-side-of-sitting-in-traffic.html	92	Article		
141	**jovoto**	**http://www.jovoto.com/**	205	Site	3	
142	**Brooklyn Museum**	**http://www.brooklynmuseum.org/exhibitions/click/**	166	Site	3	User's submitted photos, users voted on photos, museum installed most popular ones. Threadless for art!
143	**Worldwide Lexicon**	**http://www.worldwidelexicon.org/**	245	Site	3	Plugin for translating websites.
144	**Peer to Patent**	**http://www.peertopatent.org/**	459	Site	3	Academic and public patent review pilot, in US as well as Australia.
145	**SeeClickFix**	**http://seeclickfix.com/citizens**	155	Site	3	Another community issue tracking site.
146	**Swiftriver**	**http://swiftapp.org/**	100	Site	3	Alogrithmic/crowdsourcing filtering of crisis (or

						other) data. See TED talk: http://www.ted.com/talks/erik_hersman_on_reporting_crisis_via_texting.html.
147	Clay Shirky: How social media can make history | Video on TED.com	http://www.ted.com/talks/clay_shirky_how_cellphones_twitter_facebook_can_make_history.html	943	Talk		
148	**Logotournament**	**http://logotournament.com/**	782	Site	3	Why are there so many of these?
149	What Does Crowdsourcing Really Mean?	http://www.wired.com/techbiz/media/news/2007/07/crowdsourcing	70	Article		
150	Wired 14.06: Look Who's Crowdsourcing	http://www.wired.com/wired/archive/14.06/look.html	67	Article		
151	**Amazee**	**http://www.amazee.com/**	523	Site	3	
152	**12designer**	**http://www.12designer.com/**	192	Site	3	
153	**Flickr Commons**	**http://www.flickr.com/commons**	3261	Site	3	Institutional/academic
154	**CloudMade**	**http://cloudmade.com/**	961	Site	3	Company making tools for OpenStreetMaps's crowdsourced map data. The crowdsourced part is Mapzen, a tool for contributing to

						OpenStreetMaps.
155	My Starbucks Idea	http://mystarbucksidea.force.com/ideaHome	301	Duplicate		
156	How The Huffington Post uses real-time testing to write better headlines...	http://www.niemanlab.org/2009/10/how-the-huffington-post-uses-real-time-testing-to-write-better-headlines/	279	Article		
157	**Samasource**	**http://www.samasource.org/**	176	Site	3	Like Turk but emphasizing poor countries. Also allows volunteering (similar to The Extraordinaries)
158	Will Work for Praise: The Web's Free-Labor Economy - BusinessWeek	http://www.businessweek.com/technology/content/dec2008/tc20081228_809309.htm	194	Article		
159	**Fluther**	**http://www.fluther.com/**	1037	Site	3	See Aardvark.
160	**Ask 500 People**	**http://www.ask500people.com/**	1443	Site	3	
161	**UserTesting.com**	**http://www.usertesting.com/**	1977	Site	3	
162	kluster | prereg	http://beta.kluster.com/	98	Duplicate		
163	For Certain Tasks, the Cortex Still Beats the CPU	http://www.wired.com/techbiz/it/magazine/15-	136	Article		

		07/ff_humancomp				
164	nvohk - THE FIRST COMMUNITY-MANAGED, ECO-FRIENDLY, SURF-INSPIRED, CLOTHI...	http://www.projectnvohk.com/	123	Failure / Down		Domain parked, definitely down.
165	MIT Center for Collective Intelligence	http://cci.mit.edu/	940	Other		Academic center.
166	Getting Rich off Those Who Work for Free -- Thursday, Feb. 15, 2007 -- P...	http://www.time.com/time/magazine/article/0,9171,1590440,00.html	165	Article		
167	Can Business Be Crowdsourced? 135 Real-World Examples - ReadWriteWeb	http://www.readwriteweb.com/archives/can_business_be_crowdsourced_135_real-world_examples.php	64	Article		
168	Yes, We Plan: How Altruism and Advertising Could Change the World | Epic...	http://blog.wired.com/business/2009/03/yes-we-plan-how.html	151	Article		
169	**reCaptcha**	**http://recaptcha.net/**	5885	Site	3	
170	**Google Product Ideas**	**http://productideas.appspot.com/**	168	Site	3	Google's implementation of Google Moderator.
171	Wired 14.06: The Rise of	http://www.wired.com/wired/a	70	Article		

	Crowdsourcing	rchive/14.06/crowds.html?pg=1&topic=crowds&topic_set=				
172	NewAssignment.net	http://newassignment.net/	461	Other		Academic (started by Jay Rosen, NYU journalism prof, to test new crowd based approaches to journalism). NOT crowdsourcing site itself: their projects are at other URLs.
173	Technology Review: Crowd-Sourcing the World	http://www.technologyreview.com/business/21983/?a=f	58	Article		
174	**MyFootballClub**	**http://www.myfootballclub.co.uk/**	513	Site	3	Internet community- owned football club.
175	Can Creativity Be Crowdsourced? - Advertising Age - DigitalNext	http://adage.com/digitalnext/article?article_id=136019	65	Article		
176	Can Creativity Be Crowdsourced? - Advertising Age - DigitalNext	http://adage.com/digitalnext/article?article_id=136019	65	Article		
177	**YourEncore**	**http://www.yourencore.com/**	162	Site	3	Somewhat similar to Innocentive, but more

						consolidated and traditional.
178	When Crowdsourcing Fails: Cambrian House Headed to the Deadpool	http://www.techcrunch.com/2008/05/12/when-crowdsourcing-fails-cambrian-house-headed-to-the-deadpool/	65	Article		
179	How it Works - Cambrian House, Home of Crowdsourcing	http://www.cambrianhouse.com/how-it-works/	161	Duplicate		
180	**LiveWork**	**https://www.livework.com/**	88	Site	3	Turk-like, but workers are organized more traditionally.
181	Battle of Concepts	http://battleofconcepts.nl/	126	Non-English Site		
182	Open-Source Journalism: It's a Lot Tougher Than You Think	http://www.wired.com/techbiz/media/news/2007/07/view_from_crowds	101	Article		
183	**Kindling**	**http://www.kindlingapp.com/**	565	Site	3	Platford for internal ideajams.
184	**The Point**	**https://www.thepoint.com/**	516	Site	3	
185	YourEncore	http://www.yourencore.com/jsp/index.html	99	Duplicate		
186	The Point	http://www.thepoint.com/	678	Duplicate		
187	A journalist's guide	http://www.ojr.org/ojr/stories/	54	Article		

	to crowdsourcing	070731niles/				
188	10 examples of how crowdsourcing is changing the world.: The Social Path	http://www.thesocialpath.com/2009/05/10-examples-of-crowdsourcing.html	59	Article		
189	**DotSpot**	**http://dotspots.com/**	176	Site	3	
190	Creating Passionate Users: The "Dumbness of Crowds"	http://headrush.typepad.com/creating_passionate_users/2007/01/the_dumbness_of.html	592	Blog		
191	A Speculative Post on the Idea of Algorithmic Authority « Clay Shirky	http://www.shirky.com/weblog/2009/11/a-speculative-post-on-the-idea-of-algorithmic-authority/	230	Article		
192	**Free Sales Leads**	**http://www.leadvine.com/**	145	Site	3	
193	Clive Thompson on the Taming of Comment Trolls	http://www.wired.com/techbiz/people/magazine/17-04/st_thompson	109	Article		
194	YouTube - SOUR '????? (Hibi no neiro)'	http://www.youtube.com/watch?v=WfBlUQguvyw	614	Project	3	
195	Four Tools for Crowdsourced Funding	http://www.readwriteweb.com/archives/four_tools_for_crowd	60	Article		

		_sourced_funding.php				
196	CROWD CLOUT | Groups of consumers exercising their collective (purchasin...	http://trendwatching.com/trends/crowdclout.htm	116	Article		
197	Innovation: The sinister powers of crowdsourcing - tech - 22 December 20...	http://www.newscientist.com/article/dn18315-innovation-the-sinister-powers-of-crowdsourcing.html	52	Article		
198	Unboxed - Crowdsourcing Works, When It's Focused - NYTimes.com	http://www.nytimes.com/2009/07/19/technology/internet/19unboxed.html?_r=1	54	Article		
199	Learn More — Kickstarter	http://www.kickstarter.com/learn-more	126	Duplicate		
200	**Bootb**	**http://www.bootb.com/en/**	781	Site	3	
201	Pixish	http://pixish.com/	1019	Failure / Down		What they learned and reasons for failure: http://powazek.com/posts/1370
202	**SickCity**	**http://sickcity.org/**	138	Site	3	Experiment to see if people talking about ill health online is indicative of the real-life health of the city.
203	Dolores Labs Blog	http://blog.doloreslabs.com/	86	Blog		
204	Wired 14.06: 5 Rules of the	http://www.wired.com/wired/a	53	Article		

	New Labor Pool	rchive/14.06/labor.html				
205	**BigCarrot**	**http://www.bigcarrot.com/**	107	Site	3	
206	**IdeaConnection**	**http://www.ideaconnection.com/**	338	Site	3	
207	**Carrotmob**	**http://carrotmob.org/**	563	Site	3	
208	SitePoint Design Contests - Crowdsourcing Graphic Design	http://www.sitepoint.com/contests	170	Article		
209	**Kiva**	**http://www.kiva.org/**	10401	Site	3	Microlending, focus on poorer countries.
210	RedesignMe!	http://www.redesignme.org/flash.html	105	Article		
211	**Twitturly**	**http://twitturly.com/**	2782	Site	3	
212	**Marketocracy**	**http://www.marketocracy.com/**	818	Site	3	
213	**Slicethepie**	**http://www.slicethepie.com/**	519	Site	3	
214	The Future of the Social Web: In Five Eras « Web Strategy by Jeremiah Ow...	http://www.web-strategist.com/blog/2009/04/27/future-of-the-social-web/	994	Article		
215	**Cameesa**	**http://cameesa.com/**	158	Site	3	Threshold pledging on t-shirts.
216	Fundable	http://www.fundable.com/	666	Failure / Down		Fundable is closed, worth investigating. It's like

						Kickstarter 3 years bfore its launch. (update: looks like nothing useful, just old fashioned catfighting: http://www.flickr.com/photos/maryrobinette/3974965115/in/set-72157622378699323/)
217	» Using Web 2.0 to reinvent your business for the economic downturn | En...	http://blogs.zdnet.com/Hinchcliffe/?p=223	187	Article		
218	**SpringWise**	**http://www.springwise.com/**	6261	Site	3	"Springwise and its network of 8,000 spotters scan the globe for smart new business ideas, delivering instant inspiration to entrepreneurial minds."
219	CUSTOMER-MADE | Co-creation, user-generated content, DIY advertising and...	http://www.trendwatching.com/trends/CUSTOMER-MADE.htm	489	Article		
220	**Cofundos**	**http://cofundos.org/**	404	Site	3	
221	**Authonomy**	**http://www.authonomy.com/**	618	Site	3	
222	How To Crowdsource Grading | HASTAC	http://www.hastac.org/blogs/cathy-davidson/how-	96	Article		

		crowdsource-grading				
223	**Spudaroo**	**http://www.spudaroo.com/**	64	Site	3	
224	Cheap, Easy Audio Transcription with Mechanical Turk - Waxy.org	http://waxy.org/2008/09/audio_transcription_with_mechanical_turk/	490	Blog		Testimonial of using Turk for audio transcription. I wish it was possible to do this for this project's interviews, but oh well.
225	**Atizo**	**https://www.atizo.com/**	107	Site	3	
226	kluster | buy	http://www.kluster.com/buy/features	72	Duplicate		
227	Expert Labs	http://expertlabs.org/	109	Other		Lab for experimenting with crowdsourcing in government. Nothing yet.
228	**noticings**	**http://noticin.gs/**	368	Site	3	]
229	vOdA	http://www.vo-agentur.de/	48	Non-English Site		
230	Building Rome in a Day	http://grail.cs.washington.edu/rome/	293	Project	3	Academic. Alogrithmically connected tagged Flickr photos.
231	**Stimulus Watch**	**http://www.stimuluswatch.org/**	486	Site	3	
232	Technology Review: Can You Trust Crowd Wisdom?	http://www.technologyreview.com/web/23477/?a=f	75	Article		
233	The Extraordinaries: About	http://www.theextraordinaries.org/about.html	67	Duplicate		Relevant to Motivation

234	P&G Connect + Develop	https://secure3.verticali.net/pg-connection-portal/ctx/noauth/PortalHome.do	114	Duplicate		
235	Amazon Mechanical Turk - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/Amazon_Mechanical_Turk	138	Article		
236	**MilkorSugar**	**http://www.milkorsugar.com/**	85	Site	3	Shopping portal for customizeable products.
237	Caterina.net: Hunch!	http://www.caterina.net/archive/001169.html	138	Article		
238	Coversourcing	http://www.coversourcing.co.uk/	67	Failure / Down		Design contest for UK cover of Jeff Howe's book.
239	**DesignBay**	**http://www.designbay.com/**	112	Site	3	
240	RedesignMe!	http://www.redesignme.org/	282	Duplicate		
241	Waze: Way to go |	http://www.waze.com/homepage/	67	Duplicate		
242	**Covestor**	**http://www.covestor.com/**	835	Site	3	
243	Outsource to Freelancers, IT Companies, Programmers, Web Designers from ...	http://www.odesk.com/w/	4966	Duplicate		

244	**OpenStreetMap**	**http://www.openstreetmap.org/**	8988	Site	3	
245	**Groupon**	**http://www.groupon.com/**	271	Site	3	Collective buying site, where big discounts are offered for group commitments. See great econimic theory behind it in this essay: http://www.evanmiller.org/golden-football.html
246	??????????????????:C-team	https://c-team.jp/	180	Non-English Site		
247	**WeBook**	**http://www.webook.com/**	1544	Site	3	Another new writer discover site. Consider the stories one hears of groundbreaking or bestselling books being rejected, perhaps there's potential in democratizing this area?
248	customAdart	http://www.customadart.com/	74	Failure / Down		No activity.
249	Idea Crossing, Inc.	http://www.ideacrossing.com/	99	Other		
250	**Zopa**	**http://uk.zopa.com/ZopaWeb/**	782	Site	3	Microlending.
251	Unboxed - Crowdsourcing Works, When It's Focused - NYTimes.com	http://www.nytimes.com/2009/07/19/technology/internet/19unboxed.html?	52	Article		
252	**Ideas Culture**	**http://www.ideasculture.com/ideas.php**	68	Site	3	

253	Ag8: Purefold	http://www.ag8.com/purefold	101	Failure / Down		
254	Did Assignment Zero Fail? A Look Back, and Lessons Learned	http://www.wired.com/techbiz/media/news/2007/07/assignment_zero_final	60	Article		
255	Pepsi Refresh Project	http://www.refresheverything.com/	510	Project	3	Grants from Pepsi to change the world. Like Google with Project 10 to the 100th.
256	Flickr Co-founder Unveils Her New Startup: Hunch - ReadWriteWeb	http://www.readwriteweb.com/archives/flickr_co-founder_unveils_her_new_startup_hunch.php	84	Article		
257	**RYZ**	**http://www.ryzwear.com/**	290	Site	3	Threadless clone for shoes.
258	**Short Task**	**http://www.shorttask.com/index.php**	394	Site	3	Turk clone.
259	Wired News: Gannett to Crowdsource News	http://www.wired.com/news/culture/media/0,72067-0.html	64	Article		
260	Welcome to Groupon: A Deal of the Day on Fun Things to Do in London	http://www.groupon.com/welcome_to_groupon	161	Duplicate		
261	XLNTads	http://www.xlntads.com/	150	Other		Copmany behind PopTent.
262	**pimtim**	**http://www.pimtim.com/**	61	Site	3	
263	Google Wave vs Twitter at	http://blog.freshnetworks.com/	227	Article		

	conferences | FreshNetworks Blog	2009/11/google-wave-vs-twitter-at-conferences/				
264	**iamnews**	**http://www.iamnews.com/**	148	Site	3	"open newsroom"
265	The end of the office... and the future of work - The Boston Globe	http://www.boston.com/bostonglobe/ideas/articles/2010/01/17/the_end_of_the_office_and_the_future_of_work/?page=full	72	Article		
266	**Shapeways**	**http://www.shapeways.com/**	2443	Site	3	Crowdsourcing? As a community marketplace, I think.
267	Crowdsourcing the semantic web | lexanderA	http://lexandera.com/2009/04/crowdsourcing-the-semantic-web/	59	Article		
268	The Troubles of Crowdsourcing: How Do You Keep a Secret?	http://mashable.com/2009/06/29/the-troubles-of-crowdsourcing-how-do-you-keep-a-secret/	52	Article		
269	Crowdsourcing: 5 Reasons It's Not Just For Startups Any More - Dion Hinc...	http://www.ebizq.net/blogs/enterprise/2009/09/crowdsourcing_5_reasons_its_no.php	36	Article		

270	Crowdsourcing Customer Service	http://www.businessweek.com/smallbiz/content/sep2007/sb20070910_313949.htm	52	Article		
271	microPledge	http://micropledge.com/	378	Failure / Down	3	Appears to have died due to payment system restrictions and lack of developer interest.
272	Harnessing Crowds: Mapping the Genome of Collective Intelligence	http://cci.mit.edu/publications/CCIwp2009-01.pdf	40	Paper		
273	FLIRTing with the Crowds	http://www.samiviitamaki.com/	79	Blog		
274	UserVoice - Customer Feedback 2.0 - Harness the ideas of your customers....	http://uservoice.com/?referer_type=poweredby	438	Duplicate		
275	Collaborative Map-Reduce in the Browser - igvita.com	http://www.igvita.com/2009/03/03/collaborative-map-reduce-in-the-browser/	437	Article		
276	**Walking Papers**	**http://walking-papers.org/**	305	Site	3	Print maps of places you're exploring. Take notes and upload them to improve Open Street Maps.
277	Need To Build A Community? Learn From	http://www.forbes.com/2010/01/06/threadless-t-shirt-	77	Article		

	Threadless - Forbes.com	community-crowdsourcing-cmo-network-threadless.html				
278	**Skribit**	**http://skribit.com/**	843	Site	3	
279	Hoosgot	http://www.hoosgot.com/	115	Blog		
280	**giffgaff**	**http://giffgaff.com/**	79	Site	3	
281	Guerra Creativa | The crowdsource community for logo & web design servic...	http://en.guerra-creativa.com/	200	Non-English Site		
282	Evolution and Wisdom of Crowds	http://karmatics.com/docs/evolution-and-wisdom-of-crowds.html	570	Paper		
283	Brightidea, Inc.	http://www.brightidea.com/new.bix	70	Duplicate		
284	**The Significant Lab**	**http://lab.signtific.org/**	84	Site		
285	The Wisdom of Crowds - Wikipedia, the free encyclopedia	http://en.wikipedia.org/wiki/The_Wisdom_of_Crowds	461	Article		
286	**MixedInk**	**http://mixedink.com/main.php**	611	Site	3	Collaborative writing platform
287	Assignment Zero: Can	http://www.wired.com/techbiz	51	Article		

	Crowds Create Fiction, Architecture and Photography?	/media/news/2007/07/assignment_zero_all				
288	CreativeCrowds	http://www.creativecrowds.com/	49	Other		Dutch crowdsourcing consultancy agency (a la translation).
289	Outsource to Freelancers, IT Companies, Programmers, Web Designers from ...	http://www.odesk.com/w/home2	221	Duplicate		
290	Digg's Recent Bans and the Limits of Crowdsourcing - Mashable	http://mashable.com/2008/10/08/digg-bans/	54	Article		
291	We-think: The power of mass creativity - Charles Leadbeater	http://www.wethinkthebook.net/home.aspx	480	Book		
292	**Hypios**	**http://www.hypios.com/**	72	Site	3	
293	Mapping L.A.	http://projects.latimes.com/mapping-la/neighborhoods/	223	Project	3	
294	Take a Tip. Share a Tip. - Google Moderator	http://moderator.appspot.com/#16/e=3cfc	768	Duplicate		
295	Google Product Ideas	http://productideas.appspot.co	98	Article		

		m/#0				
296	**Wordy**	**http://www.wordy.com/**	127	Site	3	
297	**Massify**	**http://www.massify.com/**	300	Site	3	
298	**Buy A Beer Company**	**http://buyabeercompany.com/**	54	Site	3	Pledges toward a $300mil buyout of a beer company. Not sure if it's just for fun, but they act serious. Pledges are at $85mil now.
299	**Edopter**	**http://www.edopter.com/**	574	Site	3	
300	Brainstorming service uses Twitter to crowdsource ideas overnight - Spri...	http://www.springwise.com/marketing_advertising/ideasculture/	37	Article		

Appendix C: Coding Form #1

The following coding was done first. The results of question 1.0, regarding contributions to the site, formed the units of measurement for coding form #2.

Site Name:

Url:

Description:

Contribution-based Indicators

1.0 What do users contribute to the site? *

separate with commas

_____

1.1 Notes

_____

2.0 Does a user need an account to contribute? *

- o Yes
- o No
- o Varied (write in notes)

2.1 Notes

_____

3.0 Who owns the content that is contributed? *

- o Everybody (public domain, non-restrictive license)
- o Website owners with low restrictions (i.e. creative commons)
- o Website owners
- o Website client(s)
- o The contributor
- o Unclear
- o Other (specify in notes)

3.1 Details

_____

Social-based Indicators

4.0 Is there communication between contributors? *

- o Yes, during contribution
- o Yes, separate from contribution
- o No

4.1 Are contributions collaborative? *

- ☐ Yes, always
- ☐ Yes, optionally/occasionally
- ☐ No

4.2 What sort of community functions are available to users?

- ☐ Forums
- ☐ Comments
- ☐ Private messages

☐ Indicators of user's online status
☐ Notifications, pings
☐ Friending
☐ User blogs
☐ Other: _____

4.3. Notes

_____

Recognition-Based Indicators

x.1. - Are there any indicators of a user's overall contributions?

☐ Leaderboards
☐ Contribution counts
☐ Badges
☐ Activity reports/lists
☐ Point counts
☐ Other: _____

x.2 – Notes

_____

Final Notes

5.0 Notes

_____

Appendix D: Coding Form #2

Contribution-specific questions.

1.0 Site:

2.0 Type of Contribution:

x.1 What is the nature of this contribution?:

- ☐ Financial
- ☐ Content
- ☐ Voting / Rating
- ☐ Discussion (Thoughts, opinions)
- ☐ Ideas (suggestions, problem-solving, brainstorming)
- ☐ Editing
- ☐ Encoding
- ☐ Community-Building
- ☐ Recommendation
- ☐ Other:

3.0 How central is this contribution to the operation of the site? *

○ 1	○ 2	○ 3	○ 4	○ 5
Not Important At All				Very Important

x.2 Notes

_____

4.0 Contribution Visibility

4.1. Are the user's contributions publicly accessible? *

- o Yes
- o No

4.2 Are the users' contributions accessible to themselves? *

- o Yes
- o No

4.3 Are similar contributions by others accessible to the user? *

- o Yes
- o No

5.0 What is the approximate time commitment for this contribution?

- ☐ Very short (up to a minute)
- ☐ Short (under ten minutes)
- ☐ Moderate (ten-thirty minutes)
- ☐ Long (1/2 - 1 hour)
- ☐ Very Long (1+ hours)
- ☐ Other

5.0.1 How independently is this contribution visible?

- o Visible alone
- o Visible aggregated

5.1 Notes

_____

6.0 Recognition-based Indicators

6.1 Are users attributed with this contribution? *

- o Yes
- o No

6.2 If Yes, how is attribution given?

- ☐ Name on contribution
- ☐ Credit on larger product
- ☐ Other: _____

6.3 Does this contribution feed into any of the following indicators?

- ☐ Leaderboard
- ☐ Contribution counts
- ☐ Badges
- ☐ Activity reports/lists
- ☐ Point counts
- ☐ Other: _____

6.4 Notes

_____

7.0 Reward-based Indicators

7.1 Is there a reward for contribution? *

- o Yes
- o No

7.2.1 If Yes, what type of reward is available?

_____

7.2.2 If Yes, is the reward exclusively for this particular contribution?

- Yes
- No

7.3 Is there potential reward for this contribution? *

- Yes
- No

7.4.1 If Yes, what type of reward is available?

_____

7.4.2 If Yes, is the reward exclusively for this particular contribution?

- Yes
- No

7.5 Notes

_____

Other Questions

x.3 Can any of the following benefit from this contribution?

☐ The contributor
☐ Other users
☐ Casual online surfers
☐ Other: _____

8.0 Final Notes on this Contribution

Notes

_____

Appendix E: Interview Guide

Part 1: Establishing background

- What types of tasks do you perform through the Internet?
- What social-media sites do you use regularly?
- Do you ever contribute to public content online?

Ask about the following online actions, and why they do or do not participate. Also, ask about whether they are consumers of such content

- Website / blog comments
- Reviews (i.e. ratings, written reviews)
- Tagging (i.e. photo-sharing, online bookmarks – do they use tags?)
- Wiki editing (i.e. writing content, correcting copy)
- Other (e.g. “flag inappropriate content” links)

Part 2: Introducing cases and evaluating motivators

Give printouts of motivators and discuss according to this guide.

First, introduce the related case.

- “This is…. It works like this…”

- Can you see yourself using this site? Why?
- Can you see others using this site? Why?

Move closer into specific motivators

- “This is an example of a motivator. The way that it works is..”
- What do you think about this motivator?
- Is it successful?
- Would this affect you?
- Can you think of instances that you have encountered this motivator?
- Can you think of times that would benefit from this motivator?
- Do you think this version of it is the best example, or could it be improved?

Part 3: Closing Questions

- Which of the examples that you have seen are the most compelling?
- Do you have any other thoughts on crowdsourcing?