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The Exploration and Realization of Online Collective Intelligence

Abstract

With the advent of Web 2.0 and all that it entails, collective intelligence has become a very enticing buzz word in the online arena. With it, individuals become more empowered, information is generated and shared in ways that it never has before, and the Internet now provides a place that is decentralized and democratized. Yet what are the underlying implications of such a phenomenon? How can people understand the individual roles they play in such an arena? Though online collective intelligence is usually considered a positive phenomenon, there exist many underlying implications that often go unseen and must be considered in order to truly understand the impact of this phenomenon and the technology that enables it. This project explores such questions and seeks to demonstrate, visualize, and experiment with the idea of collective intelligence as it pertains to Wikipedia, the online community-driven free encyclopedia.

Introduction

With the advent of Web 2.0 and all that it entails, collective intelligence has become a very enticing buzz word in the online arena. The idea of collective intelligence implies that individuals become more empowered. They now have a voice that will be heard. They now can show their work and know it will most likely be seen by the right people. They can give and take information faster and more effectively than ever before. The web becomes a decentralized and more democratized space, which motivates people to become more self-organized, more open to ideas, and more committed or involved as they realize that they can create an important and powerful role for themselves in this vast frontier. Some of the most powerful spaces online such as Google, Wikipedia, Ebay, open source communities and more thrive off user-generated content and rely heavily on the masses to make their sites or businesses what they are today.

It is no wonder, then, that the idea of collective intelligence sounds really great. After all, who does not want to be empowered or have freedoms to share and receive as much information as exists in this virtual world? But what really makes collective intelligence what it is? What are some of the underlying implications of this phenomenon? What are the roles of individuals in this space, and are they aware of their roles and responsibilities as people who are in a powerful and influential position? How can we truly grasp the idea of collective intelligence and better understand what it is, how it is formed, and what it truly impacts? These are the questions that prompted me to take a closer look at this movement and better understand what makes it tick.

When brainstorming this topic, part of me got an unsettling feeling that we all might be missing something. If this online space is so vast, how can it possibly be organized into something that is 'intelligent' or more meaningful than other traditional means of sharing information? Is it possible that collective intelligence online is nothing but organized chaos? We get so caught up in the novelty and excitement that Web 2.0 and collective intelligence brings, that many of these questions are abandoned with little consideration. Here in my project is where I wish to finally consider them. Though online collective intelligence is usually considered a positive phenomenon, there exist many underlying implications that often go unseen and must be considered in order to truly understand the impact of this phenomenon and the technology that enables it.

Background/Research

Collective intelligence is an extremely broad and loaded topic. To better grasp it, I tackled quite a bit of research to wrap my head around it all. After reviewing all my findings, I

was able to break my research down into three areas: studying the nature of collective intelligence and what encourages/enables it, studying all the positive, empowering aspects of collective intelligence that makes it such a welcomed phenomenon, and studying some critique on it.

The nature of collective intelligence implies that a group of people are somehow of a like mind and can come together to agree upon shared meanings. According to Surwiecki, “Crowds do a better job of decision making than individuals”; and he claims that, “The most valuable resource on the Internet is the collective intelligence of everyone who uses it. (Surwiecki, 2004).” No one knows more than everyone. That is the basic idea behind collective intelligence. The idea here is that creating a democratic environment such as that which lives on the web allows the masses to decide nearly everything, and this can lead to better knowledge, truth, and order.

Another way to look at this, is in terms of swarm theory. Many studies have been conducted which observe the behavior of ant or bee colonies and how they can thrive in masses so successfully when there really is no centralized power. Ants themselves are not smart, but entire colonies can be (Miller, 130). The key to their success lies in the fact that they are completely decentralized. Instead of relying on one voice or one source of information or power, these insects interact countless times with each other on an individual basis from which can emerge a very self-organized structure. This implies that collective intelligence starts at a very local level – a level that many people often never see beyond – which is why they often do not see the true impact of their contributions or actions online. As Miller puts it, “[This is] how swarm intelligence works: simple creatures following simple rules, each one acting on local information. No ant sees the big picture. No ant tells any other ant what to do...Everything is

very distributed. They don't all talk to each other. They act on local information (Miller, 131-132).”

For swarm intelligence or collective intelligence to work based on constant interactions and localized activity, however, it all depends on how responsibly each individual acts and how capable they are of making their own decisions. Diversity is also a very important element in this. If members do not act individually and merely imitate each other or follow fads, nothing will be accomplished that moves the group further along. Thus, collective intelligence can only truly exist in the proper environments where certain factors are present. Citing Surowiecki, Mark Rotella discusses how cognition, coordination, and cooperation all must be present for collective intelligence to thrive. This means that we as a group are striving to identify the same results, that we are willing to synchronize our activities, and that to a certain degree we must be willing to put our own self-interest aside. Rotella goes on to say that,

“ ‘Wise crowds’ need (1) diversity of opinion; (2) independence of members from one another; (3) decentralization; and (4) a good method for aggregating opinions. The diversity brings in different information; independence keeps people from being swayed by a single opinion leader; people’s errors balance each other out; and including all opinions guarantees that the results are ‘smarter’ than if a single expert had been in charge (Rotella, 46).”

Without these factors in place or provided by the technology online which hosts this space of collective intelligence, all this online activity and information could easily turn to chaos or not really fall under the definition of what might be considered ‘collective intelligence’. This goes to

show that collective intelligence can only naturally happen so long as certain conditions exist. It is not a phenomenon unless it can properly be enabled.

How exactly is collective intelligence enabled? Much of it is thanks to the technology that is now available to most individuals online. Advancements in programming languages such as AJAX, XML, and advanced algorithms, allow for real time dynamic content to be generated and organized with ease and efficiency. Many powerful online organizations are capitalizing on this technology including Google (<http://www.google.com>), Wikipedia (<http://en.wikipedia.org>), Innocentive (<http://www.innocentive.com>), YouTube (<http://www.youtube.com>), blogging sites, open source communities, and social networks. Google is able to track every bit of information and activity that occurs online and provides us with a wealth of resources from which we can build upon. Wikipedia allows users to come together to generate perhaps the largest and most dynamic encyclopedia that exists purely thanks to user contributions. These organizations have created online environment through which users can take an active role that is not directly controlled by any one person or group. Quite simply, these corporations merely give us the tools to do what we want to do (Naish, 10-11). Other forms of technology or organization methodology are also making it easier for people to generate and organize information efficiently. Social bookmarking, tagging, and folksonomy are all new ways of organizing and visualizing categories of information online – all methods by which were developed almost out of necessity due to the weight and rate that content is being created (Albrycht, 16-17). This technology also gives people new roles that they have the opportunity to take on. We can now be creators thanks to all the open source software available to us. We can now be entertainers thanks to sites like YouTube. We can now be toolmakers thanks to sites like Craigslist, Google Maps, and Ebay or Amazon (where user ratings make all the difference). We can now be

gatherers and pool our sources and content together on sites like Flickr, Digg, and Del.icio.us (Howe, 60).

There is no doubt that the advent of collective intelligence brings with it many benefits to the masses. The book *Wikinomics* now terms the masses as ‘prosumers’ rather than consumers since they now have the power to drive the market and demand the exact products that they want (Tapscott, 125). In his article entitled “The Power of Us”, Robert D. Hof explains,

“Customers are creating what they want themselves – designing their own software with colleagues, for instance, and declaring their opinions via blogs instead of waiting for newspapers to print their letter. It’s the democratization of industry...The online masses aren’t just offering up ideas: sometimes they all but become the entire production staff (Hof, 74-74).”

This powerful online space also enables other benefits to emerge. No matter who you are, people have equal footing online. Race, social status, and context no longer become such a definitive factor; and this allows people to work with more fluidity and openness. The social distance created online also helps to eliminate awkward situations and usually allows people to produce higher quality work than groups that work in a more traditional manner. The focus is now on information exchange and not on the people themselves, thus allowing for less distraction or road blocks (Wellman, 218-219).

Several critics, on the other hand, question the idea of collective intelligence and how well it works to bring people together in a meaningful. Many complain that online technology only allows people to become more fragmented and alienated. Carroli claims that, “In the fragmented space provided by the Internet, consensus is impossible and irrelevant, a utopian

ideal. So framed, collaboration attends to multiplicity and partiality without subscribing to consensus as a manifestation of commonality and an articulation of the unitary (Carroli, 361).”

Or as Geoff Cox explains,

“Power is not centralized but dispersed, like a web (or crowd) with no center or edge. Power now presents itself in multiple flows rather than just in spaces like invisible information that passes along its channels of communication...Rather than some kind of public sphere, this global space perhaps is more a new space of collective alienation, one in which there is a disconnection between people and spatial form...If this is likened to a crowd, one is left wondering why it has gathered in the first place; interaction has taken place but to no clear purpose (Cox, 22-23).”

Others argue that the globalization of communities as cultures continue to interact with each other on deeper levels is killing the heart of what makes cultures unique. We are all becoming more like each other as we continue to share the same information, the same fads, the same ideas, etc. Something unique to cultures is lost as we all become one big mashup of what we create and share online (Wohlers, 185). Furthermore, now that anyone and everyone can contribute to knowledge, one is left to wonder what happens to the role of experts and professionals. Can we trust information that is put together by ‘amateurs’ as opposed to exploring the works of smaller groups of experts? How does this shift the way people think and what they know or should know (Levy, 16)? The changes that occur on a grassroots level, a cultural level, and an academic level due to online collective intelligence leave much to be explored as new roles emerge for individuals to take on.

Motivations and Goals

After conducting extensive research, I was faced with more questions that prompted me to explore this topic further. How can such a vast and ever-changing phenomenon be contained in a way that makes it easier to grasp? How can people learn about the effects, both good and bad, that collective intelligence has on society or the world at large? How can we see what all this technology implies and what is implied when people use it in certain ways? These questions led me to design a project that would allow me to explore these issues further. My goal was to find a way to demonstrate the power and implications of collective intelligence as well as experiment with it hands on in order to learn more of the patterns (if any exist) that are formed and how exactly it all comes together to be the big and powerful activity that people celebrate so much.

Methods and Approach

To achieve my objectives, I first realized that I needed to start small if I wanted to tackle this big issue without getting lost in it. Thus, I focused my efforts solely on Wikipedia since it is considered to be one of the best examples of online collective intelligence. With this project, I took two different approaches on Wikipedia. My first approach was to create a visualization that could demonstrate the sort of activity that happens in this space and what that means to people on an individual basis. This approach took the form of a desktop widget that displayed a growing garden based on content delivered via Wikipedia's RSS feeds. The different activities or events on Wikipedia were symbolized as different objects in the garden such as a rock for Wikipedia activity, growing roots for dialogue on the discussion pages, flowers for new users that join, and

blades of grass for article entries or edits. The garden would populate in real time as new activity on Wikipedia occurred. Through this method, my hope was that people could instantly see how people working together can grow something large, beautiful, and meaningful.

My second approach took me straight to the source as I joined Wikipedia and created my own user account. When doing research for this project, I went to Wikipedia to see what would be said there about collective intelligence, mass collaboration, and other related topics. What I found there was extremely surprising and disappointing. Barely any of the information coincided with what I found in other research, and many articles were flagged with warnings about the relevancy and credibility of sources. Not only was this shocking, but I also found it to be very ironic. How could one of the greatest examples of collective intelligence not even have decent information about the topic? So I decided to get my hands dirty and participate on these pages to see what kind of activity or information could be generated. I wrote on discussion pages, added to articles, and also deleted things I thought were irrelevant; and during all of it, the responses I received from people were minimal. One person challenged me from the outset, claiming that my input did not belong on these pages – which surprised me a great deal. Other than that, though, not much happened at all. My activity on Wikipedia was left to be what it was, and that is that. This left me to wonder how such things can be considered collective intelligence if nobody seems to be reacting or working with me based on my actions. I was hoping this experiment would help demonstrate how collective intelligence works on a more localized level, and I'm not sure if it really 'worked' at all.

Through these two methods I discovered some key elements to collective intelligence that I had not considered before. In terms of the desktop widget, I observed an element of time which I had not yet thought about before. I automatically assumed from the start that the garden would 'grow' at a fairly fast and steady rate, yet in reality, there would be chunks of time where not

much would grow at all. What does this say about the consistency of collective intelligence?

Through my experimentation in participating on Wikipedia, I found that collective intelligence is not as exciting as it poses to be. It can be slow at times, and some people can cause more of a distraction rather than contributing something that helps to move the content and users along to a better shared meaning. Most importantly, though, these two approaches made realize that there are a lot more questions that need to be explored. These two methods helped to expose a dichotomy between how collective intelligence appears to be and how it really is at times. On a macro level, when looking at the widget, collective intelligence looks like a great thing. It grows something impressive thanks to individual contributions. When we work together, big and important results can occur. However, on a micro scale, when looking at the grassroots level, it is not necessarily very eventful or even useful. It can take a bit of time for people to come together to generate content, and even when that happens, there is no guarantee that the content will take us closer to a better, more complete, and more effective shared meaning. There is a gap, and it is unsettling to me. Thus, I am left to ask: How can this gap be bridged? How can I find better connections or ways to help create an improved form of collective intelligence? Through this project, I now realize that there is a lot more I will need tackle in order to gain better direction and more understanding into this vast and overwhelming topic.

Overall, I felt my project was a success in that I learned a great deal about the topic of collective intelligence and gained insight into aspects of it that were not apparent to me before. My visualization with the widget really helped with that, and finding ways to demonstrate the nature of collective intelligence was a step in the right direction for helping me to understand it all. However, this experimentation is not enough. I need to do more. This project was a good starting point as it helped me to generate more questions into what I will need to study further and what direction or focus I should take. I received strong positive feedback on the desktop

widget, and know that it has potential to become something very viral and relevant to individuals. Yet, I feel that I should have explored more with other ways to portray the data and done more user tests to see how meaningful the prototype was that I created thus far. While I am happy with what I learned from this project, there is still a lot more I would like to pursue.

In the future, as I explore this topic further, I would like to continue participating in a stronger way on Wikipedia and perhaps also generate a presence on other spaces that could be considered to demonstrate collective intelligence. I also intend to create further iterations of the desktop widget and experiment with different ways that I can visualize activity as opposed to simply sticking with the garden theme. Is there another way to portray the data that might make it more meaningful? I also would like to apply the widget to other sites besides Wikipedia. For instance, I might try to use another RSS feed from a site such as Del.icio.us, or a blogging site that has high traffic and frequent contributions.

While I was hoping that this project would be more conclusive, I have come to realize that this project is merely a starting point to get me up and running in the right direction. I now have so many more questions and more curiosity about this complex issue. I am happy with the direction it has taken so far, but would like to go a lot further with it. I feel that the more I explore it, I will be able to reveal something about collective intelligence that has not been considered much before, and I feel that it is important for people in today's age to know of such things since much of the world they live in is generated by such content.

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