

Motivations of Contributors to Wikipedia

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ABSTRACT

This paper aims to explain why people are motivated to contribute to the Wikipedia project. A comprehensive analysis of the motivations of Wikipedians is conducted using the iterative methodology developed by Batya Friedman and Peter Kahn in *Value Sensitive Design and Information Systems*¹ and co-developed by Nissenbaum and Friedman in *Bias in Computer Systems*². The Value Sensitive Design (VSD) approach consists of three stages: Empirical Investigation, Conceptual Investigation, and Technical Investigation. During the empirical phase, motivations of the contributors to Wikipedia are identified through analysis of data from two published surveys and a pilot survey conducted at New York University. The underlying values behind these motivations are then defined in the conceptual phase of the study. Finally, a technical investigation is conducted in order to determine how features of the Wiki technology support and facilitate these values.

Keywords: Wikipedia, motivations, Value Sensitive Design

INTRODUCTION

Wikipedia is a free online encyclopedia that draws its entire content base from voluntary contributions. Most Wikipedia articles are created, edited and revised by Wikipedians- Internet users who volunteer to participate in the Wikipedia project. Since it was founded in 2001, Wikipedia has grown to include over 3,800,000 articles in more than 200 different languages³. In just five years, it has become the world's largest collaborative body of information, encompassing more subjects and content than its most serious traditional rival- the Encyclopedia Britannica.

Such unprecedented success undoubtedly stems from the commitment and enthusiasm of Wikipedians⁴- people who write or edit Wikipedia articles. Currently, Wikipedia totals 1.25 million registered contributors⁵, not including an unknown large number of unregistered editors. These volunteers are creating and modifying entries on subjects ranging from foot fungus to astrophysics to Mao Zedong. Anybody can add or delete information, and unlike traditional encyclopedias such as the Britannica or the Encarta, the content of Wikipedia is not monitored or controlled by a central authority. Instead, accuracy is maintained by the watchful eyes of many decentralized contributors, who

examine updates made by others and remove false facts or offensive content⁶. Although this decentralization can lead to disagreements about which information is appropriate for a particular article, a consensus is almost always reached through discussion and friendly debate.

The editing process is simplified by the Wiki technology- the underlying technology of Wikipedia. People with almost no technical background can add or remove content using a simple markup language. This markup language is then processed by the Wiki engine and used to generate web pages that share a clean and consistent layout. In addition, the Wiki also serves as a versioning system. The "Diff" feature of the Wiki enables users to track all content changes and revert back to older versions as needed. The "Diff" tool is essential to the integrity of Wikipedia, as it allows contributors to quickly remove vandalism or false information and restore previous content.

Yet, despite the convenience of the Wiki technology, the maintenance of Wikipedia requires diligence and dedication. Wikipedians must ensure that all information is correct, unbiased and comprehensive. Their work is often anonymous, their time is unpaid, and their edits are impermanent. What motivates these people to contribute effort and time to the Wikipedia project, and what role does Wikipedia play in fostering these motivations? Answers to these questions not only offer insight into the rapid success of Wikipedia, but also shed light on the complex interactions between society and technology. This paper develops an account of the motivations of Wikipedians by applying Friedman and Kahn's the Value Sensitive Design (VSD) methodology to the study of Wikipedia.

VALUE SENSITIVE DESIGN

The underlying idea behind VSD was first introduced by Nissenbaum and Friedman in *Bias in Computer Systems*. Friedman and Kahn developed this approach as a theoretical framework to the study, design and development of new technologies. VSD is an "integrative tripartite methodology, which involves conceptual, empirical, and technical investigations, employed iteratively"⁷. Each stage of the framework focuses on a different aspect of the technology and its surrounding social context. These stages, presented below, can be repeated and revisited in any order, as necessary.

Empirical Investigation

The purpose of the empirical investigation is to situate the technology in its social context and analyze the interactions between the system and the people. This stage hinges on successfully identifying the "stakeholders"⁸ - the people who are directly or

indirectly impacted by the technology. Many different methods can then be employed to answer the relevant questions about the stakeholders and their relationship to the technology, including surveys, experiments, observations, interviews, etc.

Conceptual Investigation

Conceptual investigation provides a theoretical study of values. The data gathered during the empirical investigation is used to identify the values that are involved in the interactions between the stakeholders and the technology. These values are then formally defined, and their role in the technological and social processes is stated. The conceptual stage relies most heavily on previous research, which helps formulate a clear definition of the relevant values.

Technical Investigation

This stage focuses on the technology itself, and aims to understand how technical features facilitate, support, or hinder the values identified in the conceptual investigation. Friedman and Kahn suggest that this stage can be used to design or redesign technology that facilitates the desirable values. If the technology is found to be unsuitable for or incompatible with certain values, alternatives or improvements are proposed. Thus, technical investigation requires familiarity with the technology in order to analyze its function, design, and operation.

THE STAKEHOLDERS OF WIKIPEDIA: AN EMPIRICAL INVESTIGATION

The direct stakeholders of Wikipedia work with the system by reading the articles, adding new information, or editing existing content, while indirect stakeholders are impacted by the system without any hands-on interaction. However, since this study is primarily concerned with the motivations of contributors, a broad analysis of all stakeholders of Wikipedia is beyond the scope of this paper. Furthermore, this paper will not address motivations behind vandalism in Wikipedia, focusing only on contributions made in a "constructive manner". "Constructive" contributions are edits that add to the integrity of Wikipedia as an encyclopedia with a neutral point of view (NPOV)⁹ and do not include malicious edits or deliberate vandalism such as false information, propaganda, or offensive content.

Although no official survey of the motivations of Wikipedians has been conducted, suggestive data can be derived from surveys of participants in other collaborative projects. Three surveys are analyzed in the empirical investigation: the Free/Libre and Open Source Software (FLOSS) Survey and Study, the SETI@home volunteer poll, and an informal pilot survey of students around the New York University campus.

Free/Libre and Open Source Software Survey and Study

The Free/Libre and Open Source Software (FLOSS) Survey and Study, conducted by Berlecon Research at the University of Maastricht in Berlin, gathered primary data about the development and distribution of Free Software and Open Source (FS/OS) software. FS/OS projects are similar to Wikipedia in that they adhere to a collaborative approach, having neither a central entity to claim ownership to the produced material, nor a "boss" to distribute, direct or ensure the quality of the content. Volunteers, who are often scattered throughout the world, autonomously select the features they wish to develop and work at their own pace to advance the goals of the project.

Section IV of the FLOSS study included several questions about their motivations for contributing to FLOSS. The prevailing majority (over 78%) of the 2,784 FLOSS survey respondents indicated that the reason why they joined FLOSS projects was to "learn and develop new skills". The second most popular reason was to "share my knowledge and skills" (49.8%), followed by the motivation to "participate in a new form of cooperation" (34.5%). However, when asked why they continue to be involved in FS/OS development, the percentage of respondents who cited the desire to "share my knowledge and skills" increased to 67.2%. Nevertheless, the motive to "learn and develop new skills" (70.5%) was still the most prevalent, followed by the desire to "improve FS/OS products of other developers" (39.8%), "participate in a new form of cooperation" (37.2%), and the idea that "software should not be a proprietary good" (37.9%). Most FLOSS developers were not driven by financial or otherwise materialistic incentives, as can be seen from the fact that reasons to "make money" and "get a reputation in the OS/FS scene" received the lowest rankings. Thus, although the developers initially aimed to increase personal skill level with a smaller but still significant intent to share information, their motive shifted to place greater emphasis on information sharing, cooperation, and improvement of Free/Open Source projects as their involvement in FLOSS continued¹⁰.

SETI@home

The motives to share information, collaborate, and improve project quality were also emphasized by participants in the Search for Extraterrestrial Intelligence (SETI) at home volunteer poll. Similar to Wikipedia and FLOSS, SETI@home relies on the collaboration of thousands of decentralized participants from over two hundred countries across the globe. These participants contribute to a distributed computing project that analyzes data from the Arecibo radio

telescope in order to identify possible evidence of radio transmissions from extraterrestrial intelligence¹¹. Unlike FLOSS and Wikipedia, however, SETI@home works by utilizing idle CPU cycles of the participants' computers by completing computations while the computer is not in use, in the form of a screen saver. Nevertheless, the operation of SETI hinges on the commitment of its volunteers.

According to a poll conducted on the SETI@home website, 58.51% of 139,254 poll respondents indicated that their main reason for running SETI@home is to "find ET for the good of humanity"¹². "To keep my computer productive" was the second most popular reason, with 17.44% of respondents. Over 18% of the poll participants selected "other" and formulated their own reasons for contributing to the project. Most responses encompassed a desire to contribute to the good of humanity, further scientific research, participate in a large collaborative project, and support an experiment in distributed computing¹³. Very few (less than 6%) of respondents chose selfish reasons such as "Find ET and become famous" or "Get my name on the top 100 list on the website".

Informal Survey of NYU Students

A pilot survey was conducted throughout the New York University Campus. This survey aimed to gather suggestive data about respondents' willingness to contribute to Wikipedia, identify the types of edits they are willing to make, and pinpoint the reasons why they are willing or unwilling to contribute. The survey also includes a few questions about the participants' average frequency of use of Wikipedia, as well as their age, gender, field of study, and contribution to other online projects. The surveyed students consisted of 37 females and 65 males, enrolled in undergraduate, Master's and PhD programs in over 20 different majors at New York University¹⁴.

First and foremost, the survey data points to respondents' overall willingness to contribute content to Wikipedia. Over half of the survey participants indicated that if they knew some information that was not covered by Wikipedia, they would either add it to an existing article or create a new article on the subject matter. Furthermore, more than 81% of the respondents stated that they would correct an error, such as a spelling or grammatical mistake, false or bias information, or offensive content in Wikipedia. Respondents were significantly less willing to correct the same types of errors in printed sources, as only 16% of respondents said they would contact the publisher if they noticed a mistake in print¹⁵.

Willingness to contribute to Wikipedia correlated with respondents' frequency of Wikipedia use. Of the students who used Wikipedia once or twice in their lives, less than 15% indicated that they were willing to add information to an existing article or create new articles. However, as many as 50% of the weekly and daily users indicated that they are willing to add information and create articles. This trend suggests that people who consult Wikipedia on a regular basis are more likely to add content to Wikipedia than people who only use it a few times in their lives¹⁶.

Of the respondents who stated that they are willing to contribute to Wikipedia, about half (48.89%) indicated that their main reason for doing so would be to "educate humanity/raise awareness", followed by the motivation to "feel like I'm making a difference" (17.78%), and "to give back to the Wikipedia community" (15.56%). Very few participants selected selfish reasons such as the desire to "establish a credible online reputation for myself" (1 response) or to "brag to my friends" (1 response)¹⁷. This data indicates that respondents are willing to contribute to Wikipedia because they want to share information, as well as to reciprocate to the Wikipedia community and acquire a sense of satisfaction from contributing.

Of the participants who indicated that they were not willing to contribute to the Wikipedia project, 51% said their primary deterrent was a lack of time, and 19% stated they "did not feel qualified to write a Wikipedia article". Only 11% of the respondents cited unfamiliarity with the Wiki markup language as the main reason for not contributing. Of the 14% of respondents who marked "other", more than half indicated that laziness prevented them from contributing¹⁸. These responses suggest that the primary reason for not contributing is the lack of time or knowledge of subject matter.

MOTIVATIONS: CONCEPTUAL INVESTIGATION

The majority of contributors to collaborative online projects cited motivations that focus on information sharing, learning new skills and communal collaboration. This section identifies five values that underlie these motivations

Altruism

In *Commons-Based Peer Production and Virtue*, Benkler and Nissenbaum discuss altruism as a virtue that is similar to benevolence, charity and generosity. According to their definition, "benevolence and generosity require not only that the good of others be furthered, but that a cost be borne by the generous individual alone"¹⁹. Furthermore, altruism emphasizes a

concern for the good of others over one's own personal welfare. Thus, a person who acts out of altruism aims solely to benefit others without any intent to promote a gain or improve his or her situation.

Most constructive contributions to Wikipedia benefit a wide range of people, including people who rely on the added information for research, individuals who are curious about subjects covered by Wikipedia, and other Wikipedians who have less work to do once an edit is made. Clearly, many contributions to Wikipedia can be characterized as altruistic acts. Wikipedians who are motivated by pure altruism invest time and effort into their work without any desire for compensation except for the satisfaction of giving²⁰. However, although the majority of participants in the FLOSS, SETI@home, and the pilot NYU survey cited information sharing as their primary motive for contributing, the motivations of Wikipedians are often grounded in values other than pure altruism.

Reciprocity

Reciprocity is the process by which a person who commits an altruistic act receives a benefit in return, perhaps at a later time. Reciprocal altruism is a behavior in which an individual commits acts that are advantageous to others without any immediate gain for him or her self. For instance, an individual who gives a birthday present to his friend because the friend will buy him a gift in return is engaging in reciprocal altruism. In fact, according to Robert Trivers, most forms of altruism among humans are later reciprocated, including sharing food, sharing knowledge, helping the sick, helping in times of danger, etc.²¹

In *The Evolution of Reciprocal Altruism*, Trivers presents a model of reciprocally altruistic behavior and suggests that this type of behavior has an evolutionary advantage for the survival of the altruistic species. He describes the symbiotic relationship between host fish and their cleaners as an example of such behavior. In this relationship, smaller fish "clean" the host fish by eating ectoparasites that reside in the host's mouth and gill chambers. Stomach analysis of host fish show that hosts almost never eat their cleaners, although the host is free to swallow the cleaners once they have completed their job. Trivers proposes that this form of altruism is evolutionarily advantageous to hosts because it enables them to be "repeat customers" and receive good service from the same cleaners in the future. Trivers extends this theory to human behavior, suggesting that altruistic individuals who interact over a long period of time mutually benefit from their altruism. Trivers' model of altruistic behavior includes three conditions that increase the chances of reciprocity. The first condition is a long lifetime as it "maximizes the

chance that any two individuals encounter many altruistic situations"; the second is a low dispersal rate- the rate at which individuals leave or enter a community, for it guarantees that "an individual will interact repeatedly with the same set of neighbors"; and the third is the interdependence of individuals on each other for resources or survival, since it "increases the probability that they will encounter altruistic situations together"²².

All three conditions- long lifetime, low dispersal rate, and interdependence are satisfied by the Wikipedia community. Wikipedians are presumably human, so they live for many decades and their involvement in the Wikipedia project is likewise long. Although new members constantly join the realm of Wikipedia, most users interact with the same set of individuals over the course of months and years, often forming niche sub-spheres and smaller communities within Wikipedia. Finally, Wikipedians depend on each other for the maintenance, growth and development of the Wikipedia project and must cooperate to achieve their goals. Over time, collaboration fosters reciprocity between Wikipedians.

The most apparent long-term benefit of contributing is the development of accurate articles that Wikipedians can reference for their personal needs. Other, less obvious benefits include learning about subject matters that were previously inaccessible or unknown and receiving aid from other users at a later time. Furthermore, by contributing to articles on a particular subject, users elicit debate and discussion, which expands their knowledge of that topic. Thus, it is often the case that the motivation to share information is founded upon an explicit or subconscious expectation of reciprocity.

Community

Reciprocity in turn facilitates the creation of a community- a group of people who regularly interact with each other and share a common set of values and needs. According to Benkler and Nissenbaum, a community is characterized by "a conception of the self as part of a collective, and of one's efforts as a part of a collective effort"²³. Wikipedia, as a collective project, inevitably creates a community of contributors who work towards a common goal- the development of a reliable and free encyclopedia. This large community is subdivided into hundreds of smaller spheres that unite people by area of interest, background, age, political opinion, etc. Wikipedians discuss the content, propose necessary changes to articles, and divide into teams to tackle different tasks. Through this collaboration and discussion, Wikipedians feel needed. They acquire a sense of common purpose and belonging that unites

them into one community. This community in turn fosters a motivation to contribute by sharing information and thus helping the collective to which one belongs.

Reputation

Whether they are politicians, scientists, teachers, or housewives, people in all fields strive to be recognized for their work. Wikipedians are no different. Registered contributors develop online identities in order to be respected, trusted, and appreciated by their peers. A reputable identity is truly rewarding for it signifies success and accomplishment. Users who have a reputation for making many edits are appreciated by other Wikipedians. It is this desire to be recognized and valued that often motivates people to contribute significant content to Wikipedia.

Autonomy

Finally, autonomy- the freedom of independent decision making- attracts many to the arena of Wikipedia. Unfortunately, most aspects of the real world are governed by rules, limits and regulations. At work, employees must answer to managers and executives, at home, people are preoccupied with endless chores and errands. Responsibilities are dictated by authority figures, and most projects must be completed within strict deadlines. Wikipedia offers an escape from this rigid routine: Wikipedians are free to pick their tasks and complete them at any pace. This self-selection is liberating, for it enables Wikipedians to be creative and productive on their own terms. Hence, the desire for autonomy often leads people to participate in the Wikipedia project.

WIKI TECHNOLOGY: A TECHNICAL INVESTIGATION

Although the Wiki technology undoubtedly supports altruism and reciprocity through its ease of use and quick navigation, these values are predominantly fostered by the Wikipedians themselves. Community, reputation, and autonomy, however, are also deeply embedded in the technology.

Community

The Wiki technology entails many tools that bring Wikipedians together. "Community Portals"²⁴- online pages that focus on one subject or time period- allow Wikipedians with similar goals to coordinate tasks and work on articles that cover their topics of interest. Portals implement communal "To Do Lists" that describe what tasks need to be done. "Collaborations"²⁵ fulfill an analogous function, but target one specific article. People who want to develop or improve a particular article organize a Collaboration Page and set a deadline for when this article should be completed. All

Wikipedia users are encouraged to join Portals and Collaborations and work together to achieve a common goal.

In addition, every Wikipedia article includes a Discussion Page that allows users to talk about any aspects of the article, determine which content is appropriate, and propose future work on the subject. Discussion Pages facilitate conversation and debate among members, opening their eyes to each other's backgrounds, goals, and points of view. Thus, Portals, Collaborations and Discussion Pages encourage users to work together, thereby causing them to meet other members with similar interests. Through this cooperation, Wikipedians develop a connection to other contributors and begin to feel needed by the Wikipedia community.

Reputation

When users register for a Wikipedia account, they essentially create an online identity that will represent them throughout the Wikipedia community. All registered users can develop elaborate online profiles in their User Pages. Many Wikipedians tend to include links to articles they have previously worked on, allowing other users to quickly navigate to these pages and learn about each other's interests and levels of expertise. Furthermore, Wikipedians are often formally recognized by other members of the community. Users can nominate each other for Wikipedia awards that honor distinguished work, and vote to determine the award recipients. Outstanding articles can be nominated as candidates for "Featured Articles"²⁶- articles that are featured on the front page of Wikipedia. Portals are also acknowledged in the same way, with the well-maintained and useful portals listed as "Featured Portals"²⁷. Wikipedians who contribute to Featured Articles and Featured Portals acquire a respectable reputation as their work is rewarded by the community.

Autonomy

The Wiki technology promotes autonomous behavior. All content is accessible to the users who are free to edit nearly any page they want. There is no authority figure to control the quantity, quality or frequency of contributions, and Wikipedians are never "fired", demoted or even reprimanded for a lack of work. Consequently, contributors have the freedom to work on any number of tasks and subjects. Of course, there are some limits to these freedoms, since Wikipedia first and foremost strives to fulfill its function as a reliable encyclopedia. Not all changes are permitted or preserved, and users who frequently vandalize articles are blocked from editing Wikipedia. Furthermore, some articles that cover controversial subjects such as the Wikipedia entry on George W. Bush are temporarily

“protected”, by imposing limits on who can edit them. Although such limits inevitably constraint the freedoms of Wikipedians, the overall editing process nevertheless remains autonomous.

CONCLUSION

The primary purpose of Wikipedia is to create a comprehensive, free and reliable encyclopedia. People from all around the world connect with this goal and choose to contribute to the expansion of human knowledge. The virtual realm of Wikipedia rewards its participants in ways that are unmatched by most establishments in the non-virtual world. Wikipedians enjoy a sense of accomplishment, collectivism, and benevolence, while working with exceptional freedom and ease. The values of reputation, community, reciprocity, altruism and autonomy are fostered both by the people and the technology, effectively creating a near-utopian society in which individuals voluntarily collaborate and learn together.

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"One small step for Man. One giant leap for Mankind."
“#1 [find ET for the good of humanity] and to be a part of the biggest collaborative project ever undertaken by mankind”

“#1[find ET for the good of humanity] of course, plus I am very interested in (co-operative) distributed processing”

“A combination of keeping my computers productive, finding ET for the good of humanity and proving life thrives out there (the two latter has highest priority)”
“A good example of distributed computing”

¹⁴ Kuznetsov, Stacey, “An Informal Survey of New York University Students”, April 2006, pg. 1.

¹⁵ Kuznetsov, pg. 2.

¹⁶ Kuznetsov, pg. 3.

¹⁷ Kuznetsov, pg. 7.

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²⁰ Paraphrased from Benkler and Nissenbaum, pg. 22.

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