A SOCIOLOGY OF KNOWLEDGE APPROACH TO COOPERATIVE KNOWLEDGE GENERATION: IDEOLOGY AND STRUCTURAL TENSION OF NUPEDIA

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Abstract

This paper focuses on the rise and fall of the online encyclopedia Nupedia, the precursor to Wikipedia. It approaches the phenomenon starting with a discussion on the tradition and deficiency of the sociology of knowledge, from the classical Mannheim and Scheler to Berger and Luckmann, Foucault, cultural turn, communicative turn and the new sociology of knowledge in general. By adopting more and different kinds of research methodologies, empirical and historical investigation can help this subfield develop more relevance to social phenomena of this age of knowledge, information and information technology, and with it, debates on the modes of cooperative knowledge generation (CKG) that Wikipedia has sparked. An analysis of the fall of Nupedia reveals a structural tension between its ideology of free information with its mode of production, which originates from the academic institution. Finally, there is a discussion on the maintenance of ideology[1] in Nupedia/ Wikipedia.

Keywords: intrinsic motivation, research on Wikipedia, free information, open content, ideologically driven project

The rise of Wikipedia has attracted the attention of scholars from fields of an exceptionally wide variety[2]. Established in 2001, this online encyclopedia that "everyone can edit" has already reached four million articles (in English) by 2012.

Given the vast scholarly attention the Wikipedia phenomenon receives, it would be astonishing to know that, up to now, there still lacks a systematic sociology of knowledge treatment of this phenomenon that encompasses the full debate on the epistemology of its content[3] and an empirical investigation of its novel cooperative knowledge generation (CKG) process as a social process and an Internet community embedded *vis-à-vis* its historical context. This paper tries to fill this gap and provide a starting point for further

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[1] This use of the word "ideology" here is different from Mannheim's in the absence of politically mandatory overtones.

[2] The ever-building literature on Wikipedia is huge, accumulating in fields such as history (O'Sullivan 2009), business (Tapscott & Williams 2007), social psychology (Zhang & Zhu 2006), education (Ebner, Zechner & Holzinger 2006), sociology and politics (Anthony & Campbell 2011; Anthony, Smith & Williamson 2007, 2009), computation and media (Viegas, Wattenberg & Dave 2004), information science (Forte & Bruckman 2005), computer science (Kittur, Chi, Pendleton, Suh & Mytkowicz 2007), folklore (Westerman 2009) and finally, sociology (Fuchs et al 2010; O'Neil 2011).

[3] A lack of epistemological concern of the validity of assertions[3] would mean that the sociology of knowledge is relatively silent in the *Britannica vs. Wikipedia* argument. Possible discussions and debates on this topic include Mannheim (1954), and as a survey in Mills (1940) and Geary (2009). Many of these standpoints are underdeveloped in later literature, and the debate is inconsequential.

discussion, starting with a review of the sociology of knowledge and then moving on to the precursor of Wikipedia, Nupedia, a failed project that nonetheless laid the grounds for Wikipedia.

The Framework: Sociology of Knowledge and Knowledge Generation

The social reconstructionists (as in the discussion of Mannheim's ideology/utopia) following Mannheim and Scheler (Becker & Dahlke 1942) represent the early frontiers of the sociology of knowledge, or its "classical" age. Following a critical tradition or perhaps a reaction to it in various ways, Mannheim studied ideology/utopia as in how everyday beliefs can mask the truth and sustain the powerful while intellectuals could have the power to oppose these prevailing beliefs. On the other hand, social assertions and ideas exist in temporal and spatial dimensions and hence are to be understood within the social context (Mills 1940) in which they are produced. Mannheim has long discussed this relationism so that determination of validity of assertions has to take "structural relationship to a given social situation" into account (Mannheim 1954 1970).

Since then, there has been heavy criticism of Manheim's approach (e.g. Geertz 1973, 1983:152; von Shelting 1936), from its relativism (later changed to relationism) to its insistence on the search for validity or optimal validity while the notion validity is at stake. While debates surrounding Scheler and Mannheim's own ambitions are less relevant to the present day's research on CKG and Internet communities, their work does have the effect of forcing a wider definition of knowledge and moving this subfield into philosophical, religious and cultural domains. For example, Scheler's (1970a, 1970b) classification of knowledge as well as world views and motives for which people approach knowledge involves religion, metaphysics and science, as well as myths, mathematics, technology and so on.

Unfortunately, time did not wait for these theories of classical sociology of knowledge to develop into schools and traditions before the sociology of knowledge entered the age of fragmentation just as other subfields in sociology.   Next came Merton's "pragmatization" of the German sociological theories, phenomenology following Berger and Luckmann (1967), Foucault on power and discourse, Edinburgh's strong programme (Barnes, Bloor & Henry 1996; Latour 1999), the cultural turn (McCarthy 2007), communicative turn (Goffman 1986; Habermas 1987; Habermas & McCarthy 1985; Meyer 2006) and various turns and misdirections common in sociology. A new sociology of knowledge (Swindler 1994) has emerged, investigating a vast array of academic and lay phenomena from scientific knowledge to power, authority and organization of academic institutions to collective memory (Swindler 1994) and incorporating elements from other disciplines and subfields such as cultural studies, the history of science (Secord 2004), political science, as well as sociology of education, organization and culture.

While the sociology of knowledge has been largely marginalized in sociology (Panofsky 2003) and has a vague definition, if at all, its central theme revolving around knowledge (and the beliefs, perceptions, consensus, process and organization of knowledge production, as laid down by the classical theorists and those later) places it at the core of sociology.   To say that other sociological works should be classified into sociology of knowledge is a matter of definition. Thinking in the opposite direction, the essential question remains: what theoretical tradition and empirical investigation does the sociology of knowledge possess that could contribute not just to the understanding of social phenomena surrounding knowledge and knowledge generation in this age of information technology, but to sociology as a whole?

Sociological research on the nature and development of academic institutions and knowledge generation goes far back, at least to perhaps Popper ([1935]), and there has been a resurgence of research in the age of fragmentation towards late 20th century, for example, on academic organizations (Crane 1976; Kuhn 1969; Wuthnow 1987, 1989) and their power structures (Asad 1973; Foucault 1983; MacKenzie 1981). Academic institutions interest sociologists and alike, noting works in the sociology of education, the sociology of culture and the history of science. Knowing thyself is fun, and there is a joy and sense of novelty in attaching "sociology of" onto other disciplines, providing criticism but nearly always without solutions. While there has been a critical assessment of the academic world and the knowledge it produces, from social constructionism to the more radical post-modernism, society moves forward silently into the age of the Internet and its empowerment of people. The new wave of CKG, characterized by Wikipedia, has attracted criticism from the academics, in defence of their well-established tradition.

Wikipedia's method of knowledge production is strikingly unacademic, and academics have been critical of its accuracy including the famous article by Britannica editor-in-chief McHenry (2004). Wikipedia offers no peer review, no requirements on education, qualification or training for its editors, and does not pay them. It relies on the members of the public to contribute voluntarily, riding on the wings of information technology, for example the wiki software. This thriving age of information technology is changing so quickly that academic research would need time to catch up, which brings up new research opportunities and, concurrently, calls for theories and research methodologies to cope with these changes. To emphasize its phenomenological roots more, which focus on everyday lives while keeping the focus on institutional organizations in mind, it would be tempting to see how the sociology of knowledge could help with the empirical and investigation of Wikipedia's "layman" cooperative knowledge generation (CKG) in the historical context of the early 21st century. Panofsky has raised a similar point in a different context by suggesting a shift of focus on "other venues of knowledge production in marginal institutions or outside of institutions altogether" (Panofsky 2003).

Structural Tension and Ideology

Wikipedia generates knowledge driven by the ideology of free information. Free information is the ideology of the social movement against intellectual property laws, but, rather than generating knowledge that supports the movement, Wikipedia is more like an experiment to show the possibility of knowledge generation driven by and providing services that adhere to this ideology. Unlike traditional political ideology which is mandatory and predominately unidirectional starting from the top, Wikipedia starts off as a free-to-join project with the idea of free information and needs to attract large numbers of volunteers sharing the same standpoint. By free-to-join, it is implied that volunteers can come and go without much social and political pressure, a situation that social movements share. In other words, Wikipedia is an on-going experimentation of an **ideologically driven project**, stemming from its founders' ambition but constantly requires the help of the Wikipedia community. Going back a little bit to understand the encyclopedia's roots, there is a need to look at its less-radical precursor, Nupedia, which embraced free information yet maintained much of the academic tradition of knowledge generation. To see how and why Nupedia took shape and fell, let us first examine the historical background that gave its founder Jimmy Wales the necessary ideology that characterizes this encyclopedia[4].

The rise of the Internet created an extremely low-cost and efficient way of exchanging ideas. However, the need for not just information but *accurate* information and knowledge remains an essential part of education, business and academic research. A convenient encyclopedia could provide these services. On the other hand, attempts to further regulate the Internet such as expanding intellectual property laws also raised concerns over the future of the Internet, and movements and proposals that countered these expanding laws appeared accordingly, including the free sharing of scientific knowledge (Echeverri & Abels 2008), and, more in the realm of technology users, the open source movement (Berry 2004) and the free software movement (Stallman 1999). Together these and other movements in support of sharing form the concept of "free information" as a counterpart to intellectual property laws, upholding the benefits of sharing and consumers' rights. This establishes the ideology that Nupedia upheld that must not be overlooked if we are to understand the development, policy changes and social dynamics of Nupedia and consequently Wikipedia.

As his first experiment in open-content encyclopedia, Jimmy Wales established Nupedia in 2000 as an attempt to implement an expert-written encyclopedia that supports free information; hence, all of its contents

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[4] From the departure of Nupedia from the traditional encyclopedia (symbolically, Britannica) and its transformation to the ultimate (for the time being) Wikipedia, there is a trend of knowledge generation that downplays the elite and "rise of the mass". The rise of the masses is more evident after the first few years of Wikipedia (Kittur et al., 2007). Due to scope limitation, this paper will not go into details of this and hopefully it will appear in our future publications.

would have to be free[5] of charge and absent of various restrictions on its use. There was a need to conform to the ideology of free information throughout the whole project, from design to preparation and from production to the use of end results. As an ideologically driven project, it immediately faced the dilemma between the pursuit of an ideology that was, by its very nature as something still in development, neither institutionalized nor legitimatized, and its nature as participating in well-established traditional modes of production. Here, let us discuss a structural tension resulting from this dilemma.

Structural Tension: Nupedia and its Academic Roots

Traditionally, experts write encyclopedias. From the *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des metiers* to Britannica, experts' professional integrity perpetuates the ongoing generation of accurate information or knowledge.

Nupedia's adoption of an extensive expert-written (*Technology Quarterly* 2008) expert peer-reviewed process was reminiscent of the old way of encyclopedia writing as it had always been. This notion of the necessity of experts operating in an institutional setting with its own reward system and social dynamics leading to acceptance and rejection of ideas (Crane 1976; Kuhn 1969) originated from Europe's monasteries and now undergoing fragmentation/professionalization with expanding complexity and hierarchy, had been firmly established as the *de facto* model of knowledge generation. Following Europeans' interaction with other parts of the world, there has been criticism of the dominance of this type of knowledge generation, mainly coming from disciplines interested in cultural variations such as anthropology (e.g., Turnbull 2000).

However, the structural tension between this academic institutional tradition and a free-content project is evident in the **misplaced reward system** and the lack of motivation that follows. Extrinsic motivation for experts to generate knowledge by establishing credentials and on-going publications one leading to another in a cycle, was largely absent in Nupedia. The extent to which these professionals would volunteer for a free-content project which amounted to little in their academic credentials was potentially limited, not to mention their small number.

In addition, the intrinsic motivation to contribute is also limited because articles would receive much criticism from an expert peer-review system. Zhang and Zhu (2006) have shown the demotivational effect on the original author in Wikipedia of article-editing by other people. This effect could be more substantial in Nupedia, given its top-down, expert peer-reviewed system that resembled academic journal article rejection and the humiliation that comes along.

Motivations to contribute to free/open-source software are of four kinds: social, personal use, career, and ideological (Ghosh 2005; Lakhani & Wolf 2005). This gives some insight into Wikipedia, which shares some characteristics with free/open software projects; no monetary rewards are involved, for example, and contributors share the ideology of free information and, as in both social movement and volunteer work, of "doing something". This ideology consists of an interest in contributing to academic knowledge, much like scientists (Forte & Bruckman 2005). Shirky (2008) mentioned three motives when he first tried editing Wikipedia articles: "to exercise some unused mental capacities", "making a mark on the world", and to "do a good thing" (p. 131-132). On the other hand, a study by Johnson (2007), who interviewed Wikipedia editors, found that many editors started as readers only and proceeded to correcting small errors in articles.

These motivations are intrinsic and hence at odds with academic institutions, in which, although academics might have their own ambitions and interests in their own research, institutionalization nonetheless requires a reward system for promoting and creating extrinsic motivation. The structural tension that results lies in each and very level, from the individual (motivation, perception and acceptance of ideology) to the community (interaction between editors and between editor and founder) to the website's policy (editing privileges supposedly based on merit). Given the complexity of the issue, it is evident as to why research on Wikipedia

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[5] While the contents of Nupedia and Wikipedia is free of charge for users, the word "free" in free information takes on a different definition: the absence of restrictions by the government.

comes from so many disciplines. Just as the sociology of knowledge could have been the core of sociology, sociology could also act as a medium for these disciplines to meet and achieve theoretical integration.

Maintenance of Ideology

Given that the whole business of Nupedia/Wikipedia is to create free content, its policy has to conform to this ideology both in its CKG process and in the use of its content. Unlike academic institutions, which have a long tradition regarding its practices and "commitments to training programs, technologies, standards, and vocabularies" (Star 1989:22), changes in policy in Wikipedia could be highly risky, given the lack of forerunners and the complex and intricate interactions between its founders and its volunteers.

Policy setting would require this website's developers to constantly observe and participate in both emotive and rational discussions in the Wikipedia community. Again, this brings Wikipedia closer to social movements than to academic institutions. Free information as an ideology of a social movement must be seen in the context of the ideology of intellectual property laws of the society in the early 21st century, a relationship much like that between a sub-culture and culture. The former is reactionary and critical, while the latter is dominant and taken for granted, at least for the time being. Mannheim's ideology/utopia offers an intellectual perspective on their relationship, while interest and strain theories (outlined and criticized by Gertz, 1973) and socialization theory (Wood & Hughes 1984) offer a standard psychological and sociological treatment—that people uphold ideology to pursue power or flee anxiety (Gertz 1973) or because they learn it from social interactions.

These theories fail to explain vastly divided ideologies in people from similar backgrounds (Oberschall 1993). In fact, public opinions can polarize even in people with similar socializations. In the context of Wikipedia, there can be widely divided opinions among editors in edit wars and controversies (O'Sullivan 2009) regarding policies such as editing privileges and blocking trouble-making editors.

For a better understanding, theoretical integration is needed from social psychology and rational choice theory (Oberschall 1993) in the interpersonal level to organizational sociology on the community level and perhaps with hints from political science on the international level. The ideology of social movements are even more complicated given its constant interaction with the "greater", opposite societal ideology that it tries to win over. For example, free information advocates' naming of intellectual property law giants' tactics as Fear-Uncertainty-Doubt (FUD) points to these giants' irrationality and soft violence as they expand laws for their self interest. This maintains the free information ideology by the rejection of the rationality behind intellectual property laws and, at the same time, places the free information movement within the opposite end of the spectrum.

Conclusion

Nupedia failed on the grounds that it had incorporated institutional systems that could not possibly merge. The structural tension between free information and its mode of knowledge generation originated from the academic world, which, in turn, generated both its decline and the establishment of Wikipedia as the next phase of experimentation. While Wikipedia continues to enjoy its popularity, the experiment is still ongoing with an expanding community, but possible discontent in its community[6] and public scandals[7] continue to push its founders for policy changes.

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[6] O'Sullivan (2009) and Westerman (2009) provide some examples of policy controversy.

[7] E.g. the Seigenthaler incident (Ferris & Wilder, 2006).

The study of implications of the Wikipedia phenomenon is still in its infant stage. On the one hand, it is a revolutionary approach to encyclopedia construction. On the other hand, there is always the danger of overemphasizing its external validity to the academic/scientific world because the latter is institutionalized for research activities and formal education, neither of which Wikipedia does. As an encyclopedia, it is by its nature an effort to gather knowledge from information as raw material, and, in this sense, is distant from original research[8]. Also, what it offers is informal rather than formal education, and is open for creative use by netizens from vastly diverse backgrounds and deeply penetrative into people's everyday lives. While remote from original research, Wikipedia does have implications for educational practices (e.g., Boulos, Maramba & Wheeler 2006; Duffy & Bruns 2006).

The Internet and the knowledge generation techniques it brings about are changing quickly. This has implications not just on the amount of knowledge people possess following an information explosion, but also on the perception and generation of knowledge to meet these ends. In view of these rapid changes and the rise of the need for and hence control of information/knowledge, there is much for the sociology of knowledge to do as an inter-subfield or interdisciplinary battle ground and from empirical research for the integration of relevant theoretical perspectives.

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[8] In fact, it is Wikipedia's policy to exclude articles of original research.

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