BATTLE OVER MEDIA CHOICE: MULTIPLEX TENSIONS IN THE ONLINE COMMUNITY OF WIKIPEDIA

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Abstract

Media choice theories conceptualize decisions people make when they are faced with communication media alternatives to fit a communicative need. In this paper we address two gaps in extant research on media choice. First, we show that media choices may be intimately intertwined with the questions of power. The second contribution comes from situating an online community as the focus of media choice research – a novel combination. We conducted an interpretive case study on how power is intermingled with the choice of Internet Relay Chat (IRC) in the Finnish Wikipedia. We found that IRC was viewed in starkly different ways by different actors. Moreover, the IRC was largely associated with the notions of power. In particular, it was related to accession and ability to influence decision-making in the community. One party perceived IRC as a useful and open channel for quick-tempo collaborations and informal interactions, while others saw it as an arena for "the elite" to scheme against "the proletariat". Overall, IRC was a source of "multiplex tensions": conflicts originating from communication being dispersed into multiple media and from different perceptions towards a medium. The study provides several important implications for theory and practice.

Keywords: Wikipedia, Media Choice, Power, Openness.

1 Introduction

Recent decade has seen a dramatic increase in the use of web technologies for cooperation and collaboration. Those have entered both work and leisure and became a central focus of study within numerous disciplines, including Information Systems (IS) research. Those technologies have allowed new forms of collaboration to emerge; easily connecting people around the globe to work on joint matters. Researchers have praised the democratic and equal nature of such collaboration. These new forms have allowed everyone to contribute, both to the public good and to issues people themselves deem as important. For instance, open source software development relies on individuals who develop the solutions due to their personal need but also voluntarily provide their solutions to be used and further developed by others. The basic values of open source are 'gift giving', 'reciprocity' and 'sharing' (Franke and Shah, 2003, von Hippel and von Krogh, 2003, von Hippel, 2001). The culture of Wikipedia, furthermore, is seen to represent pluralist values (Matei and Dobrescu, 2011), in which people openly share their views (Pentzold, 2011), and act "in good faith" (Reagle, 2010).

However, less attention has been paid to the other side of the coin: to the perceived and actual representation of power. Almost evidently, power is intertwined with any human activity (Dahl, 1957, Patterson, 2014), including these new forms of collaboration (Bennett, 2008, Spears and Postmes, 2015). On the other hand, the influential role of power has been emphasized in IS research throughout

its history – concerning IS impact, development and use (Markus, 1983, Jasperson et al., 2002, Hekkala et al., 2014). As regards online communities, power related research has also emerged. Researchers have acknowledged that not all members are treated equal in online communities: there are people having authority and power and people in more power-weak position. Online communities have leaders and governance structures (O'Mahony and Ferraro, 2007, Aberdour, 2007) and even a surprising amount of control exercised (Di Tullio and Staples, 2013, Ikonen et al., 2010, Gallivan, 2001). In Wikipedia, the particular focus in this study, it has also been revealed that power is a very complex issue. It manifests as influence gained from commitment (Preece and Shneiderman, 2009, Bryant et al., 2005), as access levels of the software (Arazy et al., 2014, Arazy et al., 2015), and as opinionated stances towards stability versus change (Kostakis, 2010, Kane et al., 2014).

On the other hand, it has also been recognized that power is a highly complex concept with a multitude of definitions and influential scholars (see e.g. Hardy and Leiba-O'Sullivan, 1998, Fleming and Spicer, 2014, Jasperson et al., 2002). Here, we rely on the framework of power by Hardy and Leiba-O'Sullivan (1998) that offers a comprehensive review of different approaches to power, including the mainstream, critical, and Foucauldian approaches. The framework has already been proven as useful for studies within our discipline (Hekkala and Urquhart, 2013, Rajanen and Iivari, 2015). In the framework, power is approached from a multitude of angles, i.e. as exercised through the use of different kinds of resources to influence decision making, as access to decision making, as management of meaning and as thoroughly embedded in the very fabric of the system we are all living in and cannot escape from. Here, power is approached particularly from the viewpoint of decision-making, i.e. as ability to access and influence decision outcomes (cf. Hardy and Leiba-O'Sullivan, 1998). This study examines the process of Internet Relay Chat (IRC) entering in the practices of the Finnish Wikipedia community. IRC is a synchronous communications system (i.e. "chat") based on discussion channels on a client-server multi-user infrastructure, originally developed in 1988 (Reid, 1991).

We used media choice theories to make sense of the process. Particularly this study shows how power is intertwined with the processes of media choosing, that is viewed as a multidimensional and dynamic process in line with Jung and Lyytinen (2014). The extant research has already shown that power manifests itself in various ways in Wikipedia. However, research has not assigned concerns of power to media choice. This paper addresses this gap by bringing forward this question: *How is power intermingled with the choice of IRC as a communication medium in the online community of Wikipedia?*

This paper is structured as follows. The next section describes the theory on media choice as the theoretical basis of this study as well as discusses existing power related research addressing the Wikipedia online community. The third section presents the research design involved in this study, including the procedures of data collection and analysis. The fourth section outlines the empirical findings of the study, the fifth section discussing their implications and limitations as well as identifying paths for future work implied by them.

2 Theoretical background

2.1 Media choice

Research on communication media choices has a long history in our field. At least since the influential book *The Social Psychology of Telecommunications* (Short et al., 1976), researchers have tried to capture "an individual's specific decision to use a medium in a particular communication incident" (Trevino et al., 2000, p. 163). In early work, scholars emphasized the universal characteristics of a medium. Theories such as the media richness theory (Daft and Lengel, 1986) tried to predict situations in which a medium serves best. Others claimed that what matters is the fit between the type of task and the type of technology (Goodhue and Thompson, 1995, Straub and Karahanna, 1998). Yet another stream of research focused on social influence, stressing that individual choices are not done in vacuum, but in interdependent social relations (Fulk et al., 1987, Barry and Fulmer, 2004).

In turn, several researchers have emphasized local conditions and self-reflection as important media choice factors, instead of the universal features of a medium. The works of El-Shinnawy & Markus (1997, 1998) are examples of studies that have taken this approach. Mackay and Elam (1992) argued that the user's level of technological expertise determines which medium is chosen and how it is used. Further, Orlikowski and Yates (1994) identified that even a single medium, in their case e-mail, can facilitate a very rich "genre repertoire" of communication. In addition, Leonardi et al. (2012) discussed "redundant communication" by managers who used multiple media to send the same content. In a recent study, Jung and Lyytinen (2014) introduced the concept of *media affordances*: "a user's conceived possibilities for communication as to fulfil his or her dynamic communication needs" (p. 272). This view is relational, a combination of the material aspects of technology and the social aspects of the local setting. They also positioned media choice as a dynamic and multidimensional process and overall argued that "theorising around media choice should also seek to synthesise systemic and emergent patterns of choice processes rather than just identifying generalisable, static factors that correlate with some likelihood with observed choice outcome (p. 283). Here, we utilize this process view of media choice and while doing so, focus particularly on power issues intermingled with it.

Regardless of the long and diverse history of media choice research, the notion of power has been underplayed so far. Power has been either nominal, or it is taken for granted. Many studies concern the media choices of managers (Leonardi et al., 2012, Markus, 1994, Trevino et al., 1987), but consequences of their decisions have not been theorized or empirically addressed in prior research. Another gap is that novel settings of organizing, such as online communities, are rare in this literature. Empirical settings for media choice research tend to be firmly situated in traditional business organizations. However, there are some studies that can be connected with media choice research in the context of online communities. Studies have characterized the multitude of technologies that have been used for communication purposes in online communities. These studies focus on the use of different technologies in online communities and to what purpose these communication technologies are used in these online communities (c.f. Reid, 1991, Ma and Agarwal, 2007). However, the focus of this paper is on processes of making choices of communication media in online communities.

The most usual way to treat media choice in online community literature is to consider the online versus offline interactions (Jacobson, 1999, McCully et al., 2011, Sessions, 2010). It has been argued that if people's interaction with the community is facilitated by various media, this often results in the emergence of intimate, supportive and sustainable *multiplex relationships* (Haythornthwaite, 1996, Haythornthwaite, 2001). Sessions (2010) argues that the development of multiplex relationships "enhances attendees' engagement with the online community as a whole, strengthens ties to other attendees, and contributes to the creation of bonding social capital" (p. 375). However, the dispersity of communication comes with a price. Fleming and Waguespack (2007) stress that when using several media in combination, "it remains impossible for all information within open communities to be shared" (p. 168).

In the following, we will introduce literature specifically addressing the online community of Wikipedia. Albeit media choice theory has not been utilized so far in this context, there are some studies addressing power in the context of Wikipedia.

2.2   Power in Wikipedia

Wikipedia and power is an ironic combination. This online encyclopedia defines its mission to be "the free encyclopedia that anyone can edit". When everybody is granted the freedom to contribute, then doesn't everyone have equal power? Is power even an issue, if everyone is equally empowered?

Regardless that Wikipedia is "an ethos-action community" (Pentzold, 2011) that represents pluralist and non-hierarchical values (Matei and Dobrescu, 2011) where people perform "in good faith" (Reagle, 2010), power is persistently present in various ways. Analyses of power in online communities in general, and Wikipedia in particular, are based on three kinds of related but distinct views. First of all, a common characteristic of online communities is participation inequality (Nielsen, 2006), or a

power-law distribution (Johnson et al., 2014). Non-contributing users tend to represent about 90% of users in any given online community (Arthur, 2006, Li and Bernoff, 2008). In Wikipedia, readers constitute 94% of all users (Okoli et al., 2014). Among the 6% of contributing users, another inequality exists. Ortega et al. (2008) found that in top-ten Wikipedia language editions, "less than 10% of the total number of authors being responsible for more than the 90% of the total number of contributions" (p. 6). Quite naturally, people who are most involved tend to have the most influence. The most deeply committed users are depicted as leaders (Preece and Shneiderman, 2009), or as elders (Li and Bernoff, 2008). While people gain power through longer involvement (Preece and Shneiderman, 2009), the progress is not straight-forward, but involves quite complex career paths (Arazy et al., 2015, Velasquez et al., 2013).

Another aspect of power in Wikipedia are the access levels granted to a user. These levels have been added continuously to Wikipedia as the community has grown. Arazy et al. (2014) identified 12 classes of access privileges. Both Wikipedia participants and scholars have put particular attention on the status of the administrators (Burke and Kraut, 2008, Konieczny, 2009, Baytiyeh and Pfaffman, 2010). In 2003 and onwards, much debate has sprouted due to co-founder Jimmy Wales' often-quoted statement portraying the status of a sysop/admin as "not a big deal" (Reagle, 2007, Burke and Kraut, 2008, Jemielniak, 2014). Wales claimed to dispel "the aura of 'authority'" by granting administrator privileges to "a bunch of people who have been around." Jemielniak (2014), however, argues that requirements for adminship have always been high, and "rise every year" (p. 30). The "not a big deal" claim has been consistently falsified (Burke and Kraut, 2008, Reagle, 2010). However, some non-administrators seem to systematically "mythologize" adminship as a disproportionally big deal. (Jemielniak, 2014)

The third aspect of power concerns the balance between protecting existing content, and enabling change through new contributions (Kane et al., 2014). This is best demonstrated by the two "political parties" within Wikipedia: "inclusionists" and "deletionists" (Kostakis, 2010). The former support a broad, varying, and evolving selection of article themes, while the latter emphasize quality of articles, and thus a more careful filtering for content.

Indeed, power manifests itself in various ways in Wikipedia. However, extant research has not assigned concerns of power to media choice. This may be a result of scholars equating Wikipedia-as-an-online-community with Wikipedia-as-a-technological-platform. However, Forte et al. (2009) have noted that "on-wiki activity only accounts for a portion of governance activity", with "critical decisions discussed in public and private Internet relay chat (IRC) channels, mailing lists, personal e-mail, and other off-wiki communication" (p. 58). This dispersity is mentioned in many other publications as well (Keegan et al., 2011, Sanger, 2006, Pentzold, 2011).

2.3 A guiding framework

As we have demonstrated, media choice research has been conducted in traditional business organizations, while novel contexts of organizing such as online communities have been largely absent. In addition, emphasis on power has been weak in media choice theories and the processual view of media choice has been lacking. Research on Wikipedia has not considered media choice with the concern of power either. Thus, we argue that media choice and power in Wikipedia form a friendly pair when combined. Thus, based on the extant knowledge, we derive an analytical lens to organize our study. We will focus on IRC as an instance of media choice in Wikipedia and we study the entering of IRC into Finnish Wikipedia during a longer time span, involving various stakeholders. This enabled us to examine how the questions of power became intermingled with the process of media choice. Here, the power questions were particularly related to the gaining access to and influence in decision-making arena (cf. Hardy and Leiba-O'Sullivan, 1998). The choice of media was not viewed as a one-time event, but as on-going, dynamic, emergent, situated process, potentially involving negotiating and reconsidering the past choices (cf. Jung and Lyytinen, 2014).

3   Research Method

This study is based on a qualitative interpretivist inquiry (Klein and Myers, 1999). We have done two methodological choices of data gathering: interviews and online materials. The process has been iterative. Collected data has been analysed and then compared to the extant literature, which in turn has offered new insights in interpreting the data.

The Finnish Wikipedia serves as the scene of events for this study. This language edition was started in 2002, but remained quite inactive until 2004. Despite the relative small number of speakers of Finnish (~6 million), and general fluency in English of the Finnish speaking population, it is among the top Wikipedias when the ratio of editors per language speakers is compared. It is the 20th largest Wikipedia edition by amount of articles (352 000), it has almost 80 million page views per month, and is edited about 50 000 times per month (November 2014). Currently it is the only Finnish-language encyclopedia that is updated.

The interviews were conducted by the first author for his doctoral thesis (Lanamäki, 2013). The data collection served a larger research purpose in which this article presents only a fraction. An underlying assumption was that users who have contributed the most, are the best in reflecting on behind-the-scenes issues. In late 2009, 51 of the top Finnish Wikipedia contributors were approached through email. 28 of them did not reply, and eight declined to participate. 16 Wikipedians accepted the request, but scheduling was not successful with three of them. Finally, twelve in-depth face-to-face interviews, and one over Adobe Connect Pro, were done in January 2010. Each interview involved one Wikipedia contributor, lasting between 1.5 to 3 hours each. These interviews provided the first clue that the Internet Relay Chat (IRC) was associated with many conflicts and debates.

In addition to these interviews, another important data source were the discussions we identified on the wiki pages. A search engine was used in locating IRC-related discussions that had taken place in the ten years' history of the Finnish Wikipedia edition. We identified dozens of such instances. We focused on five instances in which IRC was discussed thoroughly, and was not just a passing mention. These discussions were located in various "back narratives" (Faraj et al., 2011): a Nomination for Adminship talk page, the talk page for the IRC information page, and three instances of discussion forum deliberations. Additionally, we initiated discussion about the past and present status of IRC in the Finnish Wikipedia community. This discussion was held on the "Miscellaneous" discussion forum during October 2014. The six pages are summarized in Table 1.

Page type	Topic of discussion	Time of occurance
Discussion forum	How/where to discuss/meet with other Wikipedians, including the role of IRC	June-August, 2004
Discussion forum "Miscellaneous"	Can/should the #fi-wikipedia IRC channel be logged	May-June 2006
"Nomination for Adminship" talk page	Consideration of whether a user should be granted administrator rights	October 2006
Wikipedia "IRC" talk page	Participation on IRC as one of the criteria for granting adminship	October 2006
Discussion forum "Miscellaneous"	Criteria for adminship nomination	July 2007
Discussion forum "Miscellaneous"	Past and present of the role of IRC	October 2014

Table 1.   The most important Wikipedia pages where the role of IRC has been discussed

This study was written collaboratively using an internet-based word processing platform. The platform's comment feature was applied in analysing the data: creating codes and categorizing them. All four authors were involved in data analysis of these texts, individually and collaboratively. First each researcher individually read through the material, coding it through a highly data-driven process. Afterwards, the findings were collaboratively discussed and more general categories and themes identi-

fied. We held several face-to-face meetings, during which we reflected on our interpretations. The main themes emerged were related to the various kinds of interpretations of IRC or users of it in Finnish Wikipedia. The theoretical concepts entered the scene only after the material had been thoroughly examined and the prevalent findings agreed upon. The theoretical concepts of power and media choice and the relationships between them helped us to explain the prevalent findings.

Next, we move forward to presenting the findings of our study.

4   Findings

In this Wikipedia community, a new communication medium IRC (that is located outside the Wikipedia environment itself), had been introduced early on. We found first mentions of IRC in Finnish Wikipedia to originate in 2004. IRC was created already in 1988, but this was the first time when IRC was introduced to Finnish Wikipedia community as a communication tool. Next we will characterize the IRC related discussions emerged in this community.

4.1   Perceptions of IRC – For and Against

Interestingly, the data reveals how numerous kinds of meanings have been attached to this single medium in this community, eventually leading to the expression of conspiracy theories and to overt conflicts between some users and administrators in the community. Generally, the discussions around IRC and its use attribute very divergent qualities to IRC that revolve around the dimensions of openness versus secrecy, and ease versus complexity of use, the latter positioning IRC thus either as handy or as a very complicated tool.

4.1.1   IRC as a handy or a very complicated tool

In the Finnish Wikipedia community the IRC enthusiasts argue that IRC provides an additional, very handy tool for communication purposes in the community:

> "As regards IRC, it is just markedly handier communication media than Wikipedia." [An administrator who has joined in January 2004, *Wikipedia 'IRC' talk page*, on October 4th, 2006]

> "It would be an ideal that all administrators were on IRC. Discussion and decision making would be much handier through it" [An administrator who has joined in April 2005, *Wikipedia 'IRC' talk page*, on October 3rd, 2006]

For these enthusiasts the new tool is familiar and as a real-time application they view it also as a faster communication medium than Wikipedia itself:

> "For me it [IRC] is a natural form of communication, through which I have taken care of communication between different groups and people for over ten years (even relationship and work matters). "[An administrator who has joined in February 2005, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

> "Administrators should be on IRC for example because in that is the fastest way to get the information about vandalism and other rapid response situations." [An administrator who has joined in January 2004, *Wikipedia 'IRC' talk page*, October 4th, 2006]

For others, however, IRC seems to be new as well as too hard to learn to use:

> "I have a very simple reason for not coming to IRC. I just cannot use such a thing. Being this old, it is unlikely that I will ever learn." [A non-administrator who has joined in July 2005, *"Miscellaneous" discussion forum*, July 28th, 2007]

> "No. I haven't been there. I've once seen that someone uses that. But I'm more of an older generation. I mean, I'm not part of the IRC-generation." [A non-administrator who has joined in July 2004, *face-to-face interview*, on January 17th, 2010]

Even if IRC was familiar for a user, there might be technical problems hindering joining in the discussions:

> "I use IRC otherwise, but I cannot use that program that well that I could open several channels in different networks at the same time (for that reason I move only on IRCnet channels and cannot access the Wikipedia channel on Freenode) [An administrator who has joined in July 2006, *Wikipedia 'IRC' talk page*, October 5th, 2006]

Hence, as is evident, in this community clearly two opposing pictures of IRC are painted: one that positions it as a very fast and easy tool for certain kind of action and another one that positions it is a highly complicated tool to adopt and use.

4.1.2   IRC as an open place for anyone to join in versus a nerve center of the inner circle

Moreover, the discussion do not only revolve around complexity versus handiness of IRC and its use, but some even paint a picture of IRC as a closed, secretive place where decisions are made behind people's backs, and where conspiracies arise and prosper:

> "I'm not on IRC. In fact, I think IRC is bad. It's not a good thing to have that channel [#fi-wikipedia] there. Because in Wikipedia, you can trace back any discussion that has ever taken place. In IRC you don't have that possibility. (…) The major problem with IRC is that all that discussion should be held inside of Wikipedia instead." [A non-administrator who has joined in February 2007, *Adobe Connect Pro interview*, on January 21st, 2010]

> "[Using IRC to discuss Wikipedia-related issues] is comparable to big political parties making decisions behind closed doors. It's similar to what happened during the [president Urho] Kekkonen era in Finland. (...) A bad thing." [A non-administrator who has joined in November 2006, *face-to-face interview*, on January 13th, 2010]

The most provocative way of expressing this view is presented here:

> "I have noticed a so-called old boy network in which one tries by all means to help another administrator who is in trouble with a so-called regular contributor. IRC channel is the nerve center of this old boy network." [A non-administrator who has joined in February 2006, *Wikipedia 'IRC' talk page*, on October 3rd, 2006]

Hence, strong accusations are being expressed by some of the members of this community towards IRC (as well as towards administrators) and, altogether, very negative meanings are being attached to the use of IRC as well to its users. These accusations clearly bring in the questions of power in the sense of access to and influence in the decision-making arena in this online community. The suspicions are also supported by the fact that the IRC logs cannot be published:

> "Meta [a Wikimedia website] explicitly denies publishing IRC-logs: *"Although all channels may be privately logged, most have a policy that channel logs must not be published."* As regards the reasons for the prohibition, there is a long discussion in the discussion page (mainly protection of privacy and copyright) [A non-administrator who has joined in January 2006, *"Miscellaneous" discussion forum*, on June 1st, 2006]

On the other hand, there are also members in this community who maintain that IRC is a totally open forum into which anyone can join whenever they wish:

> "(…) we invite people to come [to join the IRC channel]. (…) People say it's a secret society, but how could it be a secret society when it's so public. Everybody can join." [An administrator who has joined in November 2005, *face-to-face interview*, on January 10th, 2010]

> "Anyone can come to follow what's happening [on IRC], and what is most important, to participate in the discussion. It is no bogeyman." [An administrator who has joined in July 2004, *Wikipedia 'IRC' talk page*, October 4th, 2006]

The proponents also emphasise that IRC does not affect decision making in Wikipedia:

> "The [IRC] has no practical influence on Wikipedia, not more than pub discussion." [An administrator who has joined in January 2004, *Wikipedia 'IRC' talk page*, on October 4th, 2006]

> "That what is done in IRC: chatting (sometimes more, sometimes less on Wikipedia topics), asking opinions, wondering things and other totally normal; just like with a group of friends at coffee. In my opinion, hidden decisions are not made on the IRC channel of Wikipedia, because of the simple reason that the decision must be scribed into Wiki also (in a way or another) in order to have effect. Just come to familiarize, it is surprisingly easy: Load an application supporting the IRC protocol, install it, write /server irc.freenode.org in the application, next /nick WantedIdentifier and finally /join #wikipedia-fi." [An administrator who has joined in November 2005, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

4.2 Perceptions of Administrators – For and Against

Not only IRC as a medium has gained various meanings attached to it, but also the people using or not using it. Interestingly, this categorization of users and non-users connects with the issue of power in this community: the users of IRC seemingly are those having more power and authority in the community, i.e. they are the administrators in the Finnish Wikipedia, while the non-users of IRC seem to be regular Wikipedia users who also view IRC as a highly suspicious and complicated tool. Two very different pictures of the administrators also emerge in the associated discussions.

4.2.1 Administrators as evil

Some users paint a mean picture of administrators as misusers of their powers to bring their own opinions and silence the opposite views, this picture being in strong opposition to the noble principles of administrators working neutrally for the mutual good of Wikipedia:

> "Some administrators do not help Wikipedia to be neutral. (…) In general, the administrators group together against a user. They pressure this user to make mistakes, which they then use against this user. In other words, the administrators find weak points from a user and by pressuring and misusing administrative powers (censorship and banning) the user is made to take actions for defending the user's own rights, which are neglected and ridiculed by the administrators. I have to say that when citizens complain about politicians, here users complain about the administrators. (…) Some administrators, who shall remain nameless, only defend their own interests in the articles and define the direction of this article by misusing their administrative powers. (…) I hope those who see themselves in this description feel a sting in their hearts." [A non-administrator who has joined in October 2004, *Wikipedia 'IRC' talk page*, on October 3rd, 2006]

Users also bring up cases when they have felt that the administrators have been actively conspiring against normal users. It is blamed that the administrators support each other against the "normal" users. In addition, it is also argued that they are using the IRC-channel as their dedicated communication centre to coordinate their conspiratorial activities. Users leaning towards the anti-administrator ethos paint IRC as "the nerve center of this old boy network" [e.g. A non-administrator who has joined in October 2004, *Wikipedia 'IRC' talk page*, on October 3rd, 2006]

> The [IRC] channel does not necessarily have anything to do with Wikipedia, but I have heard that there is fascism, provocation, crying etc. other inappropriateness taking place. Particularly they are criticizing the younger users and calling them names, and also singling out some other users than clear vandals. (…) It is an important communication method between administrators. However, I will not copy here any discussions from there, because those discussions are offensive. [A non-administrator who has joined in February 2006, *"Miscellaneous" discussion forum*, on May 31st, 2006]

These conspiratorial activities are also connected with the selection of the administrators: some users criticize that the IRC channel has been used by the administrators to scheme and influence the voting results connecting with the selection of the administrators:

> "It bothered me how [Username] commented that she does not trust people who do not introduce themselves through IRC" [An administrator who has joined in July 2006, *Wikipedia 'IRC' talk page*, on October 4th, 2006]

The users wish to keep all the discussions within Wikipedia instead of being hidden in IRC channel and argue that visiting IRC channel should not have anything to do with Wikipedia administration or contribute positively to the selection of somebody as an administrator:

> "[Visiting IRC] should be only 'additional fun' and (…) should not be related to the administrator status." [An administrator who has joined in July 2006, *Wikipedia 'IRC' talk page*, on October 4th, 2006]

Some users point out that it is very rational for the administrators to scheme the voting results in IRC: this way they can support their own agenda against unorganized normal users:

> "You probably know, as you have been thinking about voting, that strategic voting is beneficial especially when you are facing an unorganized bunch. For this reason, the inner circle or whatever group can further their point very efficiently." [A non-administrator who has joined in January 2006, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

The administrators, however, maintain that no matter what the context is, there is always going to be conspiracy theories, no matter what one has done to try to eliminate the suspicions of the users:

> "These suspicions can never be eliminated. There is always somebody who thinks that there is a conspiracy in the background, no matter what you do" [An administrator who has joined in January 2004, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

Some users, on the other hand, are even able to offer anecdotal evidence to support the view that the administrators want to be secretive and keep the ordinary users away from their 'nerve center':

> "Well, nothing has been done to remove these suspicions [of administrator conspiracy], actually the opposite. The only time I went to the [IRC] channel with my own nickname, one administrator, due to that, suggested a new channel restricted only for administrators. This did not really convince me of openness." [A non-administrator who has joined in April 2005, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

4.2.2   Administrators as trustworthy, active contributors to the community

On the other hand, there is also a clearly different picture of the administrators created inside the same community. Here, the notion of administrators being a group of conspirators against "normal" users is totally rejected: it is maintained that the administrators do not have their own interests regarding Wikipedia, the administrators are not a homogenous group and the administrators are always answerable to their peers for their actions:

> "a) The administrators do not have any "own interests" regarding Wikipedia. b) The administrators are not any kind of homogenous group that would purposefully "pressurize the users to make mistakes". The whole argument is totally absurd. The users are banned only from very serious breaches of Wikipedia rules and the administrators also have a peer review [regarding their actions]. c) The whole argument about "finding weak points [of ordinary users in order to silence them]" and "pressurizing" sounds paranoid. Could it be that in those cases where all administrators or most of them agree that one user misbehaves or breaks the rules it is not about 'administrators conspiring' but rather than there actually might be something wrong in the behaviour of this user?" [An administrator who has joined in March 2005, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

One can find descriptions of administrators and explicit criteria to be used in their selection that paint a beautiful picture of administrators as responsible, trustworthy and active ones in the community:

> "Understanding about Wikipedia policies, activeness in the community, proven trustworthiness. Eventually each Wikipedia users ponders herself whether some user is ready to be an administrator or not. Some factors affecting this pondering (based on which I have noticed that people vote) are e.g. the point-of-view and the number of modifications" [An administrator who has joined in November 2005, *"Miscellaneous" discussion forum*, on July 27th, 2007]

The discussants identified the administrators as having a clear set of required tasks and traits:

> "Prevention of vandalism, certain Wikipedia administration activities and safeguarding articles from modification wars/constant vandalism require in addition to administration rights also maturity, trustworthiness and understanding of Wikipedia practices." [An administrator who has joined in February 2006, *"Miscellaneous" discussion forum*, July 28th, 2007]

Also the criticism expressed against the voting of the administrators is denied and an idealized view of the selection of administrators by democratic voting is expressed:

> "The only rational way to select administrators is by voting and that is exactly what was done here - if the "citizens vote in a wrong way" then what can you do. And when it comes to IRC, it is just much more convenient method for discussion than Wikipedia. Administrator should be in IRC for example to get fastest information about vandalism and other situations where quick response is needed." [An administrator who has joined in January 2004, *Wikipedia 'IRC' talk page*, on October 4th, 2006]

It is hinted if not even admitted that sometimes the administrators do take unanimous action against some individual user, but in that case the actions of that particular user are to blame, and the administrators are not conspiring maliciously against that user:

> "Certainly there has been room for improvement in certain actions of some administrators, like it is the case in all human actions. But if all or most of administrators sometimes unanimously take action against the behaviour of one user, we can assume that the actions of this user might not have been totally appropriate. If you have any concrete examples (with evidence) about misuses of power by some administrator, you can raise the issue within Wikipedia. Comments such as 'Gossiping in IRC-channel and other bullshitting behind ones back' are so paranoid that I do not even bother to comment them further." [An administrator who has joined in March 2005, *Wikipedia 'IRC' talk page*, on October 5th, 2006]

4.3   Epilogue

The role of IRC was a heated topic in Finnish Wikipedia during 2006-2007. These multiplex tensions were also clearly identifiable from the interviews conducted in early 2010. It is interesting to note that we found no evidence of community members from either side achieving to bridge, solve or consolidate these two viewpoints. Consensus was not achieved in the community. The two opposite viewpoints remained open-ended, with no satisfactory conclusion reached.

We did not identify major IRC-related conflicts anymore in the 2010s. We asked about this on the "Miscellaneous" forum in Wikipedia in October 2014. It seemed that the two opposing views still existed, but the topic did not raise any emotions. Users did not seem to have much interest in discussing the role of IRC any further. We will contemplate on this in the next section.

5   Discussion

This study has investigated how power is intermingled with the process of media choice, a topic that has not received much attention in the context of online communities. The current study was situated in the online community of Finnish Wikipedia, a novel setting for media choice research, where we conducted an interpretive case study on how IRC has been perceived and enacted during the past ten

years. Our empirical analysis revealed that a multitude of different kinds of meanings have been attached to IRC in this community. The emerged interpretations of IRC in this community can be characterized along two dimensions: the dimension of complexity versus handiness of use and openness versus secrecy involved with its use.

Based on the empirical results, we claim that media choice is not always a neutral decision made based on objective facts (i.e. considering e.g. the richness of the media or task type to be supported). Choosing IRC as a communication medium in Finnish Wikipedia was clearly not a neutral value-free choice, but instead it was intermingled with conflicting interpretations and political agendas and consequences. In particular, IRC use and being an administrator became intertwined. In this case "the elite", i.e. the administrators, as well as other lead users, had started using IRC to serve their purposes. IRC had provided them a fast and easy tool for communicating urgent matters and for coordinating their work. However, the same tool was not interpreted in a similar way by some "regular" users, i.e. the "power weak", or "the proletariat" in this community. The meanings attached to this medium hugely diverged between these two groups: the users eventually labeled IRC as the nerve center of the old boy network in which regular users were ridiculed and voting for administrators was schemed. IRC was positioned as a highly complicated tool to adopt and use as well as a secretive place in which the discussions could not be logged and published and to which regular users were actually not encouraged to access. These negative aspects were not attached to the wiki environment, which was preferred by the regular users. The counter argument expressed by the administrators was that the IRC channel was open for anyone to join in and follow the discussions. However, this did not remove the suspicions as the regular users complained that they could not join in the discussions and one of them had even encountered a situation in which administrators had reacted negatively in the IRC channel when the user had joined in. All in all, the analysis shows that media choice became very much intermingled with the questions of power in this community: IRC was interpreted as a tool prohibiting access to and influence in decision-making for the 'power-weak' as well as a tool for truly exercising the power of decision for those already having power as well as for those striving for power, i.e. for those wishing to become selected as administrators.

This paper contributes to filling in two gaps in extant research. First, we contribute to the media choice research by showing that media choices can be highly power-laden. We also show how the process of media choices evolves over time, with various meanings attached to the medium in question as well as to its users, involving constant negotiation and overt conflicts among the community members. Additionally, this study applies media choice theory to a novel context of online communities, while the existing media choice research has concentrated mainly on traditional business organizations. Not that surprisingly the study reveals that media choices are being made also in online communities, but the study also highlights their power-laden nature in such a setting. Hence, this way this study contributes also to the Wikipedia and online community research in general, by introducing media choice theory and revealing the power related complexities involved in media choice also in this context. Next the implications of these results are discussed in relation to the existing research.

5.1 IRC: Suffocated by doubt, or overall abandonment?

The finding of this study that various kinds of meanings can be attached to a single medium is not particularly new or new-making, albeit to our knowledge, this has not been revealed particularly in connection with IRC. On the other hand, as mentioned, we maintain that the aspect of power has remained neglected in the existing research on media choice. Related to this, an interesting observation concerns the material and social aspects involved. Jung and Lyytinen (2014) introduced the concept of media affordances, to characterize users' conceived possibilities for communication as to fulfill his or her dynamic communication needs. The affordances need to be seen as a combination of material aspects of technology and social aspects of the local setting. In Finnish Wikipedia it seems that the media choice was originally done mainly based on the technological aspects, such as the possibility of fast real-time communication between administrators in the case of vandalism. The negative social aspects

were not identifiable until the initial media choice was made. The choice of IRC as a communication medium awakened hidden tensions within the community, but only after IRC had already been used for some time. Therefore, the administrators could not have predicted and prepared for the doubt and resistance concerning their media choice among the users. On the other hand, it could be argued that these hidden tensions between administrators and users could have emerged regardless of the technological aspects of the media choice. Possibly the users could have expressed their doubts even if the administrators had chosen some other form of communication medium, such as a discussion forum or instant messaging. On the other hand, the complexities associated with IRC use as well as the impossibility of publishing IRC discussions indicate that features of this medium also played a role.

As regards the consequences of this media choice, the unexpected user backlash against IRC use actually had a demoralizing effect for some of the administrators, resulting in at least one resignation from administrator position when an administrator grew tired and disillusioned of the negative views of users about administrators. In the case examined in this study, IRC usage has also diminished over time. There may be various reasons for that, such as that IRC use has globally been on steady decline. Global IRC use dropped by 60 per cent between 2003 to 2012 (Pingdom, 2012). However, the user backlash in Finnish Wikipedia has also very likely had an effect on IRC use. In other online communities and particularly in OSS projects, IRC is widely used as a communication tool (Bosu et al., 2014, Singh et al., 2011). In the OSS projects that use IRC, it has gained community approval as a central tool for communication – at least no studies reporting otherwise can be found. In the broad picture, the use of the Freenode IRC network, that hosts most of OSS-related channels, has been constantly growing (Pingdom, 2012). Therefore, in these communities one can argue that the media choice of IRC has gained community approval, both as regards the technological aspects and the social aspects. Hence, it seems likely that very divergent interpretation of IRC as a communication tool could also be found when examining different kinds of online communities.

5.2   Multiplex tensions: IRC as the esoteric temple of the Wikipedia cabal?

Wikipedia is a website, but its participants do not limit their communication on that website only. Deeply involved participants may discuss through e-mail, in IRC, or in face-to-face meetings. This communication dispersity among deeply involved Wikipedia participants is noted in several publications (Keegan et al., 2011, Sanger, 2006, Pentzold, 2011). In particular, Forte et al. (2009) have argued that "on-wiki activity only accounts for a portion of governance activity", with "critical decisions discussed in public and private Internet relay chat (IRC) channels, mailing lists, personal e-mail, and other off-wiki communication". However, albeit being common in Wikipedia communities, in our case this communication dispersity appeared as a big problem. Moreover, our analysis pointed out that using IRC and being an administrator were inter-related. When the actions of administrators were criticized, IRC was raised as a potential forum of "scheming", even as regards the selection of new administrators. Similarly, when the use of IRC was discussed in Wikipedia, it was pictured as a dedicated place of "the inner circle" consisting of administrators.

Extant research has offered many narratives of conflict in Wikipedia. Joyce et al. (2011) identified Biographies of Living Persons articles as "flammable materials" where conflict is bound to occur. Yasseri et al. (2012) found, however, that "editorial wars are restricted to a limited number of articles", and "even in the controversial articles, often a consensus can be achieved in a reasonable time". On the other hand, the extant research has shown that some non-administrators in Wikipedia seem to systematically "mythologize" (Jemielniak, 2014) adminship as a disproportionally big deal. These kinds of "anti-administrator" users have "a strong resentment of administrators and their true or imagined abuses of power" (p. 48). In the extreme form, administrators are seen as "a cabal", with the aim of "to rule the community invisibly, coerce it to agree to the cabal's ideas, have their own ends, and also occasionally gang up on the innocent rebels fighting for true liberty" (p. 51). Jemielniak (2014) tells that the conspiracy theory exists in both English and Polish Wikipedias, and our case shows it seems to be in the Finnish version as well.

This leads us to our proposition of *multiplex tensions*. Multiplex relationships are intimate, supportive and sustainable (Tolsdorf, 1976), and essentially facilitated through multiple communication media (Haythornthwaite, 1996, Haythornthwaite, 2001). Previous online community research has identified that people engaged in multiplex relationships become closer to others in the multiplex, but at the same time distance themselves from the broader community (Shen and Cage, 2015, Sessions, 2010). Building on this idea, we define two components of multiplex tensions. First, an important antecedent to the tension is the dispersity of communication in multiple channels. Fleming and Waguespack (2007) have noted that when several media are used in combination it is not possible to share this information community-wide. Second, the tension rises from different, conflicting perceptions attached to the same medium. In our case this medium was IRC.

Related to this discussion, we identify striking similarities to the "iron law of oligarchy" (Michels, 1915). In this iron law, Michels proposed two patterns that lead voluntary organizations into oligarchy over time. First, when organizations grow, their larger size necessitates more formal and complex organizational structure. Then a small group of selected professional leaders will exercise a monopoly over the authority mechanisms. Second, the interests of these leaders will become divergent from the interests of "ordinary" community members. Shaw and Hill (2014) have identified tendencies of oligarchy in peer production. While we do not claim that oligarchy exists in Finnish Wikipedia, some users have definitely had such a perception, and attributed IRC as an oligarch's tool.

To summarize, also in our study the administrator status was seen a big deal. The aura of administrator authority existed and was highlighted in the discussions. In our case, IRC as a media choice became intimately intertwined with the conflict. Likely it could have emerged also with other communication media. However, we found it interesting to observe how a communication technology used by administrators caused hidden tensions between the administrators and users to surface unexpectedly. The topic of a communication medium was quickly turned into expressions of general distrust towards administrators, and of conspiracy theories of how administrators use this communication medium as a tool to conspire against the "ordinary" users. A media choice based on technological grounds and ease of use, as argued by the administrators, was turned as a violation against the community ethos.

6 Conclusion

This study examined how IRC has been perceived and enacted in an online community of Finnish Wikipedia. Media choice theories were used in the sense-making process. Particularly this study shows that power has been intermingled with the process of media choice. The extant research uses mainly the traditional business organizations as the empirical setting, and research within online communities is rare. In addition, the relationship between media choice and power, and the processual view of media choice have not been raised in the literature. Thus, this research contributes to theory by filling in these gaps. We believe that the findings of this paper can be used as a basis for more detailed explanations of these issues of media choice, online communities and power struggles.

This research also contributes to the practice by identifying potential sources of tension in online communities. We proposed *multiplex tensions* as a conceptual device implying that conflicts may originate from communication dispersity, and from incompatible perceptions of the roles of a communication medium. This understanding could give practitioners a possibility to address these issues before tensions emerge and a rift widely. Media choice issues might be dealt with on the policy level.

There are many paths for future work emerging from this research. Naturally, more analyses could be included to examine how power is intertwined with media choices in similar contexts.

References

Aberdour, M. (2007), "Achieving Quality in Open-Source Software", *IEEE Software,* Vol. 24 No. 1, pp. 58-64.

Arazy, O., Nov, O. and Ortega, F. (2014), "The [Wikipedia] World is Not Flat: On the Organizational Structure of Online Production Communities", *Twenty Second European Conference on Information Systems*, Tel Aviv.

Arazy, O., Ortega, F., Nov, O., Yeo, L. and Balila, A. (2015), "Functional Roles and Career Paths in Wikipedia", *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing*, ACM, Vancouver, BC, Canada, pp. 1092-1105.

Arthur, C. (2006), "What is the 1% rule?", *The Guardian*.

Barry, B. and Fulmer, I. S. (2004), "The Medium and the Message: The Adaptive Use of Communication Media in Dyadic Influence", *Academy of Management Review,* Vol. 29 No. 2, pp. 272-292.

Baytiyeh, H. and Pfaffman, J. (2010), "Volunteers in Wikipedia: Why the Community Matters", *Journal of Educational Technology & Society,* Vol. 13 No. 2, pp. 128-140.

Bennett, W. L. (Ed.) (2008), *Civic life online: Learning how digital media can engage youth,* The MIT Press.

Bosu, A., Carver, J., Guadagno, R., Bassett, B., McCallum, D. and Hochstein, L. (2014), "Peer impressions in open source organizations: A survey", *Journal of Systems and Software,* Vol. 94, pp. 4-15.

Bryant, S. L., Forte, A. and Bruckman, A. (2005), "Becoming Wikipedian: Transformation of Participation in a Collaborative Online Encyclopedia", *Proceedings of the 2005 international ACM SIGGROUP conference on Supporting group work*, Sanibel Island, Florida, USA, ACM.

Burke, M. and Kraut, R. (2008), "Mopping Up: Modeling Wikipedia Promotion Decisions", *Proceedings of the CSCW'2008, ACM conference on Computer supported cooperative work*, San Diego, CA, USA, ACM pp. 27-36.

Daft, R. L. and Lengel, R. H. (1986), "Organizational Information Requirements, Media Richness, and Structural Design", *Management Science,* Vol. 32 No. 5, pp. 554-571.

Dahl, R. A. (1957), "The concept of power", *Behavioral Science,* Vol. 2 No. 3, pp. 201-215.

Di Tullio, D. and Staples, D. S. (2013), "The Governance and Control of Open Source Software Projects", *Journal of Management Information Systems,* Vol. 30 No. 3, pp. 49-80.

El-Shinnawy, M. and Markus, M. L. (1997), "The poverty of media richness theory: explaining people's choice of electronic mail vs. voice mail", *International Journal of Human-Computer Studies,* Vol. 46 No. 4, pp. 443-467.

El-Shinnawy, M. and Markus, M. L. (1998), "Acceptance of communication media in organizations: Richness or features?", *IEEE Transactions on Professional Communication,* Vol. 41 No. 4, p. 242.

Faraj, S., Jarvenpaa, S. L. and Majchrzak, A. (2011), "Knowledge Collaboration in Online Communities", *Organization Science,* Vol. 22 No. 5, pp. 1224-1239.

Fleming, L. and Waguespack, D. M. (2007), "Brokerage, boundary spanning, and leadership in open innovation communities", *Organization Science,* Vol. 18 No. 2, pp. 165-180.

Fleming, P. and Spicer, A. (2014), "Power in Management and Organization Science", *The Academy of Management Annals,* Vol. 8 No. 1, pp. 237-298.

Forte, A., Larco, V. and Bruckman, A. (2009), "Decentralization in Wikipedia Governance", *Journal of Management Information Systems,* Vol. 26 No. 1, pp. 49-72.

Franke, N. and Shah, S. (2003), "How communities support innovative activities: an exploration of assistance and sharing among end-users", *Research Policy,* Vol. 32 No. 1, pp. 157-178.

Fulk, J., Steinfield, C. W., Schmitz, J. and Power, J. G. (1987), "A Social Information Processing Model of Media Use in Organizations", *Communication Research,* Vol. 14 No. 5, pp. 529-552.

Gallivan, M. J. (2001), "Striking a balance between trust and control in a virtual organization: a content analysis of open source software case studies", *Information Systems Journal,* Vol. 11 No. 4, pp. 277-304.

Goodhue, D. L. and Thompson, R. L. (1995), "Task-technology fit and individual performance", *MIS Quarterly,* Vol. 19 No. 2, pp. 213-236.

Hardy, C. and Leiba-O'Sullivan, S. (1998), "The Power Behind Empowerment: Implications for Research and Practice", *Human Relations,* Vol. 51 No. 4, pp. 451-483.

Haythornthwaite, C. (1996), "Media Use in Support of Communication Networks in an Academic Research Environment", Toronto, University of Toronto.

Haythornthwaite, C. (2001), "Exploring Multiplexity: Social Network Structures in a Computer-Supported Distance Learning Class", *The Information Society,* Vol. 17 No. 3, pp. 211-226.

Hekkala, R., Stein, M.-K. and Rossi, M. (2014), ""Omega-team is moving to another premise over my dead body…" Power as discursive-material practice in an IS project", *Thirty Fifth International Conference on Information Systems (ICIS)*, Auckland.

Hekkala, R. and Urquhart, C. (2013), "Everyday power struggles: living in an IOIS project", *European Journal of Information Systems,* Vol. 22 No. 1, pp. 76-94.

Ikonen, H., Iivari, N. and Hedberg, H. (2010), "Controlling the use of collaboration tools in open source software development", *Proceedings of the 6th Nordic Conference on Human-Computer Interaction: Extending Boundaries*, Reykjavik, Iceland, ACM pp. 236-245.

Jacobson, D. (1999), "Impression Formation in Cyberspace: Online Expectations and Offline Experiences in Text-based Virtual Communities", *Journal of Computer-Mediated Communication,* Vol. 5 No. 1, pp. 0-0.

Jasperson, J. S., Carte, T. A., Saunders, C. S., Butler, B. S., Croes, H. J. P. and Zheng, W. (2002), "Review: Power and Information Technology Research: A Metatriangulation Review", *MIS Quarterly,* Vol. 26 No. 4, pp. 397-459.

Jemielniak, D. (2014), *Common Knowledge? An Ethnography of Wikipedia,* Stanford University Press, Stanford.

Johnson, S. L., Faraj, S. and Kudaravalli, S. (2014), "Emergence of Power Laws in Online Communities: The Role of Social Mechanisms and Preferential Attachment", *MIS Quarterly,* Vol. 38 No. 3, pp. 795-A13.

Joyce, E., Butler, B. and Pike, J. (2011), "Handling flammable materials: Wikipedia biographies of living persons as contentious objects", *Proceedings of the 2011 iConference*, Seattle, Washington, ACM pp. 25-32.

Jung, Y. and Lyytinen, K. (2014), "Towards an ecological account of media choice: a case study on pluralistic reasoning while choosing email", *Information Systems Journal,* Vol. 24 No. 3, pp. 271-293.

Kane, G. C., Johnson, J. and Majchrzak, A. (2014), "Emergent Life Cycle: The Tension Between Knowledge Change and Knowledge Retention in Open Online Coproduction Communities", *Management Science,* Vol. 60 No. 12, pp. 3026-3048

Keegan, B., Gergle, D. and Contractor, N. (2011), "Hot off the wiki: dynamics, practices, and structures in Wikipedia's coverage of the Tōhoku catastrophes", *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, Mountain View, California, ACM pp. 105-113.

Klein, H. K. and Myers, M. D. (1999), "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems", *MIS Quarterly,* Vol. 23 No. 1, pp. 67-93.

Konieczny, P. (2009), "Governance, Organization, and Democracy on the Internet: The Iron Law and the Evolution of Wikipedia", *Sociological Forum,* Vol. 24 No. 1, pp. 162-192.

Kostakis, V. (2010), "Identifying and understanding the problems of Wikipedia's peer governance: The case of inclusionists versus deletionists", *First Monday,* Vol. 15 No. 3.

Lanamäki, A. (2013), "Collaboration in Online Communities: Exploring Finnish Wikipedia", *PhD Thesis. Department of Information Science and Media Studies*, Bergen, Norway, University of Bergen.

Leonardi, P. M., Neeley, T. B. and Gerber, E. M. (2012), "How Managers Use Multiple Media: Discrepant Events, Power, and Timing in Redundant Communication", *Organization Science,* Vol. 23 No. 1, pp. 98-117.

Li, C. and Bernoff, J. (2008), *Groundswell: Winning in a World Transformed by Social Technologies,* Harvard Business Press, Boston, MA, USA.

Ma, M. and Agarwal, R. (2007), "Through the Glass Darkly: Information Technology Design, Identity Verification, and Knowledge Contribution in Online Communities", *Information Systems Research,* Vol. 18 No. 1, p. 2007.

Mackay, J. M. and Elam, J. J. (1992), "A Comparative Study of How Experts and Novices Use a Decision Aid to Solve Problems in Complex Knowledge Domains", *Information Systems Research,* Vol. 3 No. 2, pp. 150-172.

Markus, M. L. (1983), "Power, politics, and MIS implementation", *Communications of the ACM,* Vol. 26 No. 6, pp. 430-444.

Markus, M. L. (1994), "Electronic Mail as the Medium of Managerial Choice", *Organization Science,* Vol. 5 No. 4, pp. 502-527.

Matei, S. A. and Dobrescu, C. (2011), "Wikipedia's "Neutral Point of View": Settling Conflict through Ambiguity", *The Information Society: An International Journal,* Vol. 27 No. 1, pp. 40 - 51.

McCully, W., Lampe, C., Sarkar, C., Velasquez, A. and Sreevinasan, A. (2011), "Online and offline interactions in online communities", *Proceedings of the 7th International Symposium on Wikis and Open Collaboration*, Mountain View, California, ACM pp. 39-48.

Michels, R. (1915), *Political parties: A sociological study of the oligarchical tendencies of modern democracy,* Hearst, New York.

Nielsen, J. (2006), "Participation Inequality: Encouraging More Users to Contribute", *Jakob Nielsen's Alertbox*.

O'Mahony, S. and Ferraro, F. (2007), "The Emergence of Governance in an Open Source Community", *Academy of Management Journal,* Vol. 50 No. 5, pp. 1079-1106.

Okoli, C., Mehdi, M., Mesgari, M., Nielsen, F. Å. and Lanamäki, A. (2014), "Wikipedia in the eyes of its beholders: A systematic review of scholarly research on Wikipedia readers and readership", *Journal of the Association for Information Science and Technology,* Vol. 65 No. 12, pp. 2381-2403.

Orlikowski, W. J. and Yates, J. (1994), "Genre Repertoire: The Structuring of Communicative Practices in Organizations", *Administrative Science Quarterly,* Vol. 39 No. 4, pp. 541-574.

Ortega, F., Gonzalez-Barahona, J. M. and Robles, G. (2008), "On The Inequality of Contributions to Wikipedia", *Proceedings of 41st Annual Hawaii International Conference on System Sciences*, IEEE, Piscataway, NJ.

Patterson, O. (2014), "Making Sense of Culture", *Annual Review of Sociology,* Vol. 40 No. 1, pp. 1-30.

Pentzold, C. (2011), "Imagining the Wikipedia community: what do Wikipedia authors mean when they write about their 'community'?", *New Media & Society,* Vol. 13 No. 5, pp. 704-721.

Pingdom (2012), "IRC is dead, long live IRC", Pingdom.

Preece, J. and Shneiderman, B. (2009), "The Reader-to-Leader Framework: Motivating Technology-Mediated Social Participation", *AIS Transactions on Human-Computer Interaction,* Vol. 1 No. 1, pp. 13-32.

Rajanen, M. and Iivari, N. (2015), "Power, Empowerment and Open Source Usability", *Proceedings of the ACM SIGCHI Annual Conference on Human Factors in Computing Systems (CHI 2015)*, Seoul, South Korea.

Reagle, J. M. (2007), "Do As I Do: Authorial Leadership in Wikipedia", *WikiSym'07*, October 21–23, 2007, Montréal, Québec, Canada., ACM.

Reagle, J. M. (2010), *Good Faith Collaboration,* The MIT Press, Cambridge, Massachusetts.

Reid, E. M. (1991), "Electropolis: Communication and Community on Internet Relay Chat", *Department of History*, Melbourne, Australia, PhD thesis. University of Melbourne.

Sanger, L. (2006), "The Early History of Nupedia and Wikipedia: A Memoir", in DiBona, C., Cooper, D. and Stone, M. (Eds.) *Open Sources 2.0: The Continuing Evolution*, O'Reilly Media, Inc., Sebastopol, CA, USA, pp. 307-338.

Sessions, L. F. (2010), "How Offline Gatherings Affect Online Communities: When virtual community members 'meetup'", *Information, Communication & Society,* Vol. 13 No. 3, pp. 375-395.

Shaw, A. and Hill, B. M. (2014), "Laboratories of Oligarchy? How the Iron Law Extends to Peer Production", *Journal of Communication,* Vol. 64 No. 2, pp. 215-238.

Shen, C. and Cage, C. (2015), "Exodus to the real world? Assessing the impact of offline meetups on community participation and social capital", *New Media & Society,* Vol. 17 No. 3, pp. 394-414

Short, J., Williams, E. and Christie, B. (1976), *The Social Psychology of Telecommunications,* John Wiley and Sons Ltd.

Singh, P. V., Tan, Y. and Mookerjee, V. (2011), "Network effects: the influence of structural capital on open source project success", *MIS Quarterly,* Vol. 35 No. 4, pp. 813-830.

Spears, R. and Postmes, T. (2015), "Group Identity, Social Influence, and Collective Action Online", in Sundar, S. S. (Ed.) *The Handbook of the Psychology of Communication Technology*, John Wiley & Sons, Oxford, pp. 23-46.

Straub, D. and Karahanna, E. (1998), "Knowledge Worker Communications and Recipient Availability: Toward a Task Closure Explanation of Media Choice", *Organization Science,* Vol. 9 No. 2, pp. 160-175.

Tolsdorf, C. C. (1976), "Social Networks, Support, and Coping: An Exploratory Study", *Family Process,* Vol. 15 No. 4, pp. 407-417.

Trevino, L. K., Lengel, R. H. and Daft, R. L. (1987), "Media Symbolism, Media Richness, and Media Choice in Organizations", *Communication Research,* Vol. 14 No. 5, pp. 553-574.

Velasquez, A., Wash, R., Lampe, C. and Bjornrud, T. (2013), "Latent Users in an Online User-Generated Content Community", *Computer Supported Cooperative Work (CSCW),* Vol. 23 No. 1, pp. 21-50.

von Hippel, E. (2001), "Innovation by user communities: Learning from open-source software", *Sloan Management Review,* No. Summer, pp. 82-86.

von Hippel, E. and von Krogh, G. (2003), "Open Source Software and the "Private-Collective" Innovation Model: Issues for Organization Science", *Organization Science,* Vol. 14 No. 2, pp. 209-223.

Yasseri, T., Sumi, R., Rung, A., Kornai, A. and Kertész, J. (2012), "Dynamics of Conflicts in Wikipedia", *PLoS ONE,* Vol. 7 No. 6.