



MEDIA@LSE
Department of **Media** and **Communications**

MEDIA@LSE MSc Dissertation Series

Compiled by Dr. Bart Cammaerts, Dr. Nick Anstead and Ruth Garland

The impacts of design on voluntary participation: case studies of Zimuzu and Baike

Li Zeng,
MSc in Media and Communications

Other dissertations of the series are available online here:

<http://www.lse.ac.uk/media@lse/research/mediaWorkingPapers/ElectronicMScDissertationSeries.aspx>

Dissertation submitted to the Department of Media and Communications, London School of Economics and Political Science, August 2013, in partial fulfilment of the requirements for the MSc in Media, Communication and Development. Supervised by Dr. Alison Powell

The Author can be contacted at: azengli109@163.com

Published by Media@LSE, London School of Economics and Political Science ("LSE"), Houghton Street, London WC2A 2AE. The LSE is a School of the University of London. It is a Charity and is incorporated in England as a company limited by guarantee under the Companies Act (Reg number 70527).

Copyright in editorial matter, LSE © 2014

Copyright, Li Zeng © 2014.

The authors have asserted their moral rights.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission in writing of the publisher nor be issued to the public or circulated in any form of binding or cover other than that in which it is published. In the interests of providing a free flow of debate, views expressed in this dissertation are not necessarily those of the compilers or the LSE.

The Impacts of Design on Voluntary Participation: Case Studies of Zimuzu and Baike

Li Zeng

ABSTRACT

Unlike traditional organizations which utilize contracts or monetary rewards to guarantee individual's participation, voluntary collaboration is, as Zhao and Zhu indicate, "easy to flourish, and easy to decay" due to lack of incentives and constraints, and therefore a feasible research direction is to investigate the impacts of peer production design on participation. Inspired by Haythornthwaite's theory, this research uses Baike (Chinese version of Wikipedia) as an example of crowdsourcing and Zimuzu (Chinese Subtitle Translation Groups) as a case of virtual community to explore this issue.

On the basis of Butler's resource-based model, this research employs size, fluidity and activity as three key measurements of design and member's contribution, benefit received and identity formation as three vital components of participation. Based on interviews of 16 participants from Baike and Zimuzu, this study suggests the existence of differences in member's participation. Firstly, in terms of contribution, the less fluid Zimuzu obtains longer contribution length from junior members and less time is needed to turn a newcomer into a dedicated member. Secondly, in reference to benefit, higher level of fluidity and larger size give Baike greater resource availability while also due to its large size, some members are discouraged by no or inadequate feedback. However, Baike establishes a game-like environment to "create" benefit for members. Thirdly, concerning identity, new contributors perceive Baike more as a platform with open access rather than a collective to identify with. Furthermore, frequent interaction among Zimuzu participants makes emotional commitment more influenced by interpersonal relationship whereas dedicated devotion in Baike stems more from commitment in building a better online encyclopedia. Finally, this research discusses inadequacies about findings and offers suggestions for further research.

INTRODUCTION

The development of networks dramatically reduces the cost of interaction with strangers online and with it a new phenomenon emerges: thousands of people who do not know each other work voluntarily towards a common goal. Peer production, dissimilar to traditional way of production which relies on commands from higher authorities or monetary incentives, depends largely on volunteers whose motivations include but not limit to enjoyment, curiosity, reputation and career opportunities (Benkler, 2006; Moglen, 1999). Greatly inspired by successful examples such as Wikipedia, Linux, SETI@home and Apache, scholars regard peer production as a way to a more autonomous, liberal and democratic future (Benkler, 2006; Raymond, 2001; Williams & Tapscott, 2006). However, other scholars are not that optimistic (Duguid, 2006; Magrassi, 2010). Though he supports the idea of peer production, Magrassi (2010) also contends that counting on volunteers alone may not be an effective way of corporation especially when there is an expansion of people getting involved. Duguid (2006) raises the key issue of quality control facing peer production, objecting the famous Linus's Law that "given enough eyeballs, all bugs are shallow" through questioning the relationship between quality and quantity.

Considering that peer production is not an abstract concept but a category with various kinds of cases, it is inappropriate to make an arbitrary and generalized evaluation about whether it is successful. Rather, a more beneficial direction of research is to carefully examine different cases and explore how to achieve success and avoid failure. Unlike traditional organizations which utilize contracts or monetary rewards to guarantee individual's participation, voluntary collaboration, on the contrary, is "easy to flourish, and easy to decay" due to lack of incentives and constraints (Zhao & Zhu, 2012, p. 12). 80% of open source projects failed owing to shortage of volunteer participation (Fang & Neufeld, 2009) and other researchers demonstrate that lurkers constitute 98% of Slashdot (Katz, 1998) and 82% of software community (Nonnecke & Preece, 2001). To tackle these problems and to probe the route to success, many scholars stress the influence of online environment design, for example size, interaction among participants and reward system, on member's participation, productivity and innovation (Butler, 2001; Haythornthwaite, 2009; Lin & Lee, 2006; Pedersen et al., 2013; Zhao & Zhu, 2012). Since participation is considered to be the precondition for productivity and innovation, this research aims to investigate the impacts of peer production design on voluntary participation.

Haythornthwaite (2009) classifies collaboration design of peer production into crowdsourcing and virtual community, which differ in more than ten aspects like contributor size and openness. Crowdsourcing utilizes contribution from thousands of unconnected participants to solve a societal or institutional task while virtual community is formed by strongly connected individuals with shared interest. The well-known example of crowdsourcing is SETI@home, which exploits unoccupied computer time on more than 3 million users' computers to search for extraterrestrial intelligence, and the long-standing case for virtual community is academic community, within which strongly connected academics review works for each other (Haythornthwaite, 2009). Haythornthwaite (2009) indicates that differences in collaboration forms lead to distinctions in member's behaviors, for instance contribution type and commitment.

In this research I will use Baike (Chinese version of Wikipedia) as an example of crowdsourcing and Zimuzu (Chinese Subtitle Translation Groups) as a case of virtual community, to study the influences of structure design on voluntary collaboration. I choose Baike and Zimuzu for two reasons. Firstly, Baike is an online encyclopedia launched in 2006 by Chinese biggest search engine Baidu and it has more than 3,000,000 contributors and over 5,000,000 articles at the time of writing¹. Zimuzu is the online community comprising volunteers who translate and distribute Chinese subtitles for foreign programs through peer-to-peer file sharing. Though there are many subtitle groups varying in size and program preference, comparing with Baike, their number of members is usually below 300 (Meng & Wu, 2013) and they are merely open to people who pass tests. Based on Haythornthwaite's theory, I assume that differences in design will exert impacts on members' behaviors and thus I choose these two cases with different design. Secondly, Baike and Zimuzu are comparable. Haythornthwaite describes the design of peer collaboration forms as a continuum, with examples as SETI@home at the far end of crowdsourcing and academic community at the end of virtual community while Wikipedia is located somewhere near the middle for the behaviors of senior members resemble that of virtual community. If we compare two extreme cases like SETI@home and academic community, the differences in contribution type, interaction and commitment and so on will be so huge that we cannot detect the minor influences exerted by structure design. Hence Baike and Zimuzu are selected as my cases.

Many scholars have investigated the impacts of design on members' participation. Faraj, Jarvenpaa and Majchrzak (2011) argue that fluidity is the fundamental feature of online

¹ Available from <http://baike.baidu.com/>, [Accessed on 1 August, 2013]

community and Franzoni and Sauermaun (2012) highlight the significance of openness in maintaining crowdsourcing. Yet most of the research focuses either on crowdsourcing or virtual community rather than the comparison of them. Also an appropriate measurement system is lacking. Therefore this research tries to respond to Haythornthwaite's (2009) call that "the future belongs to those who recognize...different nature of each (cathedral and bazaar) to motivate, sustain, and reward human contribution" (p. 10) and hopes to propose a suitable system of measurements. This research is not an experimental one and I cannot say that the impact of design on participation is causal; however, at a minimum this research can provide existing theories with some empirical evidence.

LITERATURE REVIEW

This literature review contains four parts: crowd-sourcing and virtual community, the resource-based model, measurements of design and measurements of participation.

Crowd-sourcing and Virtual Community

Crowd-sourcing is coined by Howe (2006), defined as a company or an organization making an open call to a large quantity of people to perform an institutional or societal task in a corporative way. Virtual community is characterized as a virtual group consists of members who "share a common interest, identity, and set of expectations" (Nevo & Furneaux, 2012, p. 3) and in comparison with crowd-sourcing, the main characteristics of virtual community is relatively small size, clear boundary and strong connections between members (Marquis & Battilana, 2009). Haythornthwaite (2009) summarizes more than ten differences between crowd-sourcing and virtual community, including anonymity, rule-making, qualification for participation, hierarchy, openness of membership, recognition mechanism (based on quantity versus on quality) and so forth.

While Haythornthwaite's summary is very comprehensive, I find it unsuitable to copy this list in my research. Haythornthwaite (2009) draws her conclusion based on extreme examples of crowdsourcing (SETI@home) and virtual community (academic community), which makes some criteria inappropriate for my cases. For example, in terms of recognition mechanism, Haythornthwaite (2009) contends that evaluation on results of crowdsourcing is based on quantity since the task of crowdsourcing is simple. Nevertheless, the tasks of Baike range from changing typos to establishing a new article and thus the recognition

mechanism relies both on quality and quantity. To my knowledge, other researchers focus either on crowd-sourcing or virtual community, rather than the comparison of the two, and accordingly in this research I will try to figure out some comparable criteria for them. Although crowd-sourcing and virtual community are perceived as two different forms of collaboration, many scholars put them in the continuum of a looser defined concept “online collective” (Kane, et al., 2009; Ren, et al., 2007), which extends from a group of people with repeated interaction to a less stable collective of individuals who may join and quit at their will without strong attachment to the group (Ren, et al., 2007). For the ease of discussion, in this research I will use “online collective” as the general term for crowd-sourcing and virtual community.

Part Two: the Resource-Based Model

A number of scholars study the optimal design of online collective. Preece (2001), a widely cited author, proposes four key components of online community, including people, a shared purpose, policies and computer systems (p. 10). Doan, Ramakrishnan and Halevy (2011) divide the elements of crowd-sourcing into 10 dimensions and Murray and O'Mahony (2007) suggest that access, disclosure, and rewards are the three most important parts of open innovation model. Because of limited space, I am not ambitious to cover all key measurements of design regarding online collective in this research. As indicated by many researchers that although goals vary from one online collective to another, one aim unchanged is to promote sustained participation (Butler, 2001; Ehls and Herstatt; Joyce and Kraut, 2006; Sun, Fang, & Lim, 2012; Zhao & Zhu, 2012) and to sustain, member retention is the key indicator of successful online collective (Lin & Lee, 2006; Pedersen, et al., 2013). For this reason this research will center on measurements that may influence participation instead of covering all possible factors.

While Benkler (2006) thinks highly of voluntary peer participation and hopes that it will lead us to a more autonomous and liberal world (pp.1-35), many scholars look into peer production and suggest that individuals will balance contributions and rewards between themselves and the group (Butler, 2001; Joyce & Kraut, 2006), though different from traditional way of production, rewards may not be monetary benefits. Based on social exchange theory, people will only continue participation when contribution is paid back (Dwyer, Hiltz, & Passerini, 2007). Thus this research considers Butler's (2001) “resource-based model” of online social structures particularly suitable in this regard. The core assumption of resource-based model is that the sustainability of online collective relies on its ability to gain, integrate and retain resources and its capability to turn these resources

into beneficial results to its members. Butler then puts forward two key dimensions of design: size and activities that can affect the benefits that members get. Size of online collective can be both beneficial and detrimental since large size on the one hand brings affluent resources but on the other hand lessens the resources each member can get (Butler, 2001). For example, it would be harder for participants to build strong ties with other members through activities. “Without resources, it is impossible to provide benefits, and without benefits, it is not possible to attract and retain members” (Butler, 2001, p. 348). Therefore, in the following sections I will utilize this model to build measurements of design, which may have impacts on participation and further explore measurements of participation.

Measurements of design

The resource-based model uses size and activity as the pivotal measurements of design, but both size and activity are the relatively static aspects of online collective. Activity may be seen as the dynamic side of online collective, yet it underlines interactions within group rather than emphasizes the process of online collective change. As Faraj et al. (2011) indicate, one characteristic that differentiates online collective from tradition organization is its fluidity, which generates resource exchange in and out of online collective and Lewis, Belliveau, Herndon and Keller (2007) summarize four kinds of tension that membership change can bring to online collective. For this reason, I would like to add fluidity to the resource-based model.

Membership size

Large membership size has positive effect on group resource availability, which is prerequisite for members' benefits. This is why Butler perceives members as the essential source of all group resources. Primarily, members can bring in new resources as well as provide “audience resources” (Butler, 2001). Getting replies and feedbacks from audience is of vital importance since insufficient responses will reduce individuals' enthusiasm to continue participation (Joyce & Kraut, 2006). In addition, community growth can diversify content inputs, increase participants' variety as well as augment resource types, which are helpful to the sustainability of online collective (Ren, et al., 2007). Early researchers such as Markus (1987) even regard quantity of participants involved as one absolutely positive factor to build up online collective.

Nonetheless, large size is not always beneficial. While the growing size provides participants with ample resources, it may also decrease individuals' chances of using the resources and consequently, the resources brought by size cannot be transformed into benefits (Butler, 2001). When contents brought and produced by members' increase, the likelihood of individual content being noticed is lowered, which may result in high membership turnover (Ren, et al., 2007). While the Internet is abundant in various resources, "attention" becomes more and more scarce (Dahlgren, 2005). Through analyzing more than 2.65 million posts of 600 Usenet newsgroups, Jones, Ravid and Rafaeli (2004) demonstrate that participants tend to respond to simpler messages and may cease active participation if they are bothered by information overload. Besides, with increasing membership size come difficulties of coordination. The continued growth of Wikipedia articles and editors reflects the activeness of the site, but the cost is that it is harder to manage submission and control quality (Bryant, Forte, & Bruckman, 2005). Last but not least, Haythornthwaite (2009) points out that to coordinate enormous unconnected contributors, the rules of crowdsourcing are authority-defined and are external to participants. On the basis of Ostrom's (2000) empirical work, norms evolved from community are more effective tool of achieving coordination than external regulations (p. 147).

Fluidity

Faraj et al. (2011) argue that the fundamental feature of online collective is fluidity and suggest that being fluid may cause five tensions, including "passion, time, socially ambiguous identities, social disembodiment of ideas and temporary convergence" (p. 1227). Fluidity per se is not a good or bad characteristic; what matters is that organizers should be aware of the trade-offs caused by fluidity (Jarvenpaa & Lang, 2011). For instance, Ranade and Varshney (2012) contend that the fluidity of crowdsourcing gives participants freedom to choose tasks that attract and fit them most and these self-motivated people have more passion to devote to work they like and this passion may further encourage actions from other members (Faraj, et al., 2011). Nonetheless, for a less fluid online collective, contributors will devote more time and energy to the virtual space, contribute valuable ideas and interact with other members (Faraj, et al., 2011).

While fluidity, like community growth, can diversify content inputs, increase participants' variety as well as augment resource types, it exerts negative impacts as well. In reference to social disembodiment of ideas, though online collaboration promotes integration of ideas, on account of differences in social context and "ontological assumptions", later comer may misunderstand former contributor's idea and apply it wrongly (Faraj, et al., 2011, p. 1229).

Duguid (2006) challenges the mode of peer production by saying that enough eyeballs cannot assure the quality of Wikipedia since later version may contain more errors than the former edition. In addition, the direct costs of anonymity and absence of constraints on individuals' actions, which offer participants freedom to stop and leave at their own will, are lacking in consistency and reliability (O'Neil, 2010). Moreover, fluidity leads to high membership turnover. The research of Usenet group estimates that 68% newcomers leave the group after posting once (Arguello et al., 2006). Though Ren et al. (2007) contend that newcomers can contribute to online collective via bring in new resources, diversify viewpoints and knowledge, Faraj et al. (2011) hold the view that it is not the more resources the better.

Activity (Interaction)

In Butler's research, activity and interaction are interchangeable terms both referring to all kinds of association among members, so I will also use them in an interchangeable way in my research. In general, scholars perceive active interaction among participants as an indicator of successful online collective (Arguello, et al., 2006; Bryant, et al., 2005; Butler, 2001; Ganley, Moser, & Groenewegen, 2012; Joyce & Kraut, 2006). Activity is beneficial in the following ways.

In the first place, only through activities can group resources be converted into members' benefits. Butler suggests that there is a positive relationship between the amount and diversity of activities presented in the group and the benefits members get. Consequently, "communication volume and variation are related to the benefits that arise from that communication activity" (Butler, 2001, p. 350). In the second place, interactions with other group members have a big influence on participants' sustained involvement. Research of newsgroup demonstrates that around 61% of newcomers get a response to their first post and their possibility of posting again is increased by 12%, from 44% to 56% (Joyce & Kraut, 2006). In addition, making newcomers isolated exerts bad impacts on participation because it is harder for them to familiarize themselves with group norms as well as broader environment to situate their effort, which is vital to coordination within online collective (Bryant, et al., 2005). Furthermore, intensive interaction may establish strong ties among members, stimulating higher level of commitment to the group they belong to (Haythornthwaite, 2009; Lin & Lee, 2006).

However, while activity is the key process of generating benefits, it is also the main source of costs for contributors in online collective. Any form of activity requires various level of

devotion from members and even merely being an audience incurs cost of time. Accordingly, senior members who benefit more from activities also experience more loss and a sustainable online collective is the one that can provide more positive outputs than negative results (Butler, 2001).

Measurements of participation

The core hypothesis of resource-based model is that every contributor will weigh their costs of participation against the benefits they gain, which is not necessary material rewards but can also be enjoyment, knowledge accumulation and so on (Butler, 2001). Scholars provide multifarious criteria to measure effects brought by online environment design, for example trust, social ties establishment, group influence, etc. (Mayer, Davis, & Schoorman, 1995; Zhao & Zhu, 2012), but this research chooses to focus on participation as the only measurement for quality of design. Kane et al. (2009) contend that for a fluid online collective, individuals do not share the same motivation and the corresponding benefit also varies according to every individual. Yet as Joyce and Kraut (2006) suggest, despite the various measurements, member's continued participation alone indicates their contentment with the online collective and the more their needs are satisfied, the stronger sense of attachment they will develop. In addition, since participation is considered to be the basic requirement of sustainability and precondition for productivity and innovation, this research will use participation as the key measurement for effects of design.

Based on the resource-based model, contribution and benefit are two sides of participation: if benefit outweighs contribution, people will continue participation (Butler, 2001). Therefore I will employ contribution and benefit as two indicators of participation. However, Fang and Neufeld (2009) give a broader definition of participation, describing it as "vehicle through which one's...identity is brought into being" (p. 13). The research on differences between newcomers and the more committed Wikipedians suggests that although their actions take place in the same site, due to self-identification, senior participants (the Wikipedians) perceive their activities as closely related with community development, different from peripheral participants, who focus mainly on their own articles (Bryant, et al., 2005). Thus this research utilizes three indicators to measure participation: contribution, benefit and identity.

Contribution

Contribution includes two parts: length as well as level of contribution. Regarding length of contribution, continued participation is crucial to the success of online collective; however, there are always members who loaf or leave after several times of participation and Zhao and Zhu (2012) take an interest to explore what happens during their participation process. In terms of contribution level, Ganley et al. (2012) divide it into three layers, deeming it as to some extent suitable for all types of online collective: “community citizenship behavior”, referring to the conduct of taking initiative to act toward community building, such as rule-making and goal-setting; content provision, meaning contributing new content for collective good; and audience engagement, which indicates merely utilizing information offered by others (p. 3459).

Empirical researches offer evidence for various levels of contribution. Ehls and Herstatt’s (2013) study of open source project identifies two stages of participation: in the first stage, newcomers lurk to learn about the group, including norms and values; in the following stage, they attempt to report bugs as well as make suggestions. The research of Wikipedia finds that Wikipedians’ usage of technology of the site, for instance building up and maintaining their profile and personal page, differs from that of novices, who make use of the searching box most frequently (Bryant, et al., 2005). In addition, a process harder to be recognized is the psychological change a Wikipedian experiences: unlike newcomers, Wikipedians create meaning for their practice. For example, while they are editing an article, they feel responsible to provide high quality products to audiences as well as contributing to the reputation of the community (Forte, Larco, & Bruckman, 2009). Quality of content is closely linked with providers’ engagement (Pedersen, et al., 2013).

Benefit

According to Butler (2001), at the core of resource-based model is the possibility of members gaining benefit from resources of online collective through feedback loop. On the basis of this assumption, benefit is composed of two parts: receiving feedback and acquiring expected resources.

In the specific context of online collective, Cheshire and Antin (2008) define feedback as “the interactive process in which information is returned in response to a contributor’s action” (p. 711). While scholar thinks that providing material rewards is a good way to reduce free-ride (Oliver, 1980), for members of peer production who are self-motivated to

devote, an efficient way to tackle this puzzle is to offer social psychological feedbacks instead of material rewards. Cheshire and Antin (2008) sort feedback into synchronous and asynchronous feedback and also categorize social psychological feedback into gratitude, reminder of member's history of contribution and relative ranking of one's contribution, which all have impacts on member's behavior.

Regarding acquiring expected resources, Nevo and Furneaux (2012) apply three commonly recognized measurements to evaluate the outcomes of online collective: "knowledge access, trust, and bridging ties to team performance" (2012, p. 1). While this criterion is widely used, there are still other types of benefits, such as pleasure, recognition, reputation and career opportunities (Fang & Neufeld, 2009; Hertel, Niedner, & Herrmann, 2003; Lakhani & Wolf, 2003). Nonetheless, Sun et al. (2012) bypass this discussion through stressing subject assessment of outcome and Pedersen, et al. (2013) divide outcome into factual outcome and perceptual outcome to emphasize the importance of subjective satisfaction about results. No matter what kind of benefit is, attaining expected benefits is crucial to sustained participation.

Identity

Hogg and Terry (2000) define identity as a sense of self derived from engagement with the online collective they join and other scholars underline "self-perception of belonging" (Piyathasanan, Patterson, De Ruyter, & Mathies, 2011, p. 2). Collective identity formation is regarded as the determinant to the success of online collective since it exerts influences on members' level of engagement (Ganley, et al., 2012; Jarvenpaa & Lang, 2011). Participants who perceive themselves as part of the online collective are more willing to devote, cooperate with each other and obey collective values and norms (Fang & Neufeld, 2009; Piyathasanan, et al., 2011). While a variety of motivations can be the reason for initial participation, sustained participation relies heavily on collective identity (Ehls & Herstattm, 2013).

Ellemers, Kortekaas and Ouwerkerk (1999) suggest that collective identity formation is composed of two stages. The first is self-categorization, which means that individuals see themselves as part of the collective. Collective identity is socially generated rather than naturally formed and it comes partly from boundary construction (Eisenstadt & Giesen, 1995). The second is emotional attachment, indicating a feeling of affective commitment and involvement with the group (Ellemers, et al., 1999). As we can see from previous

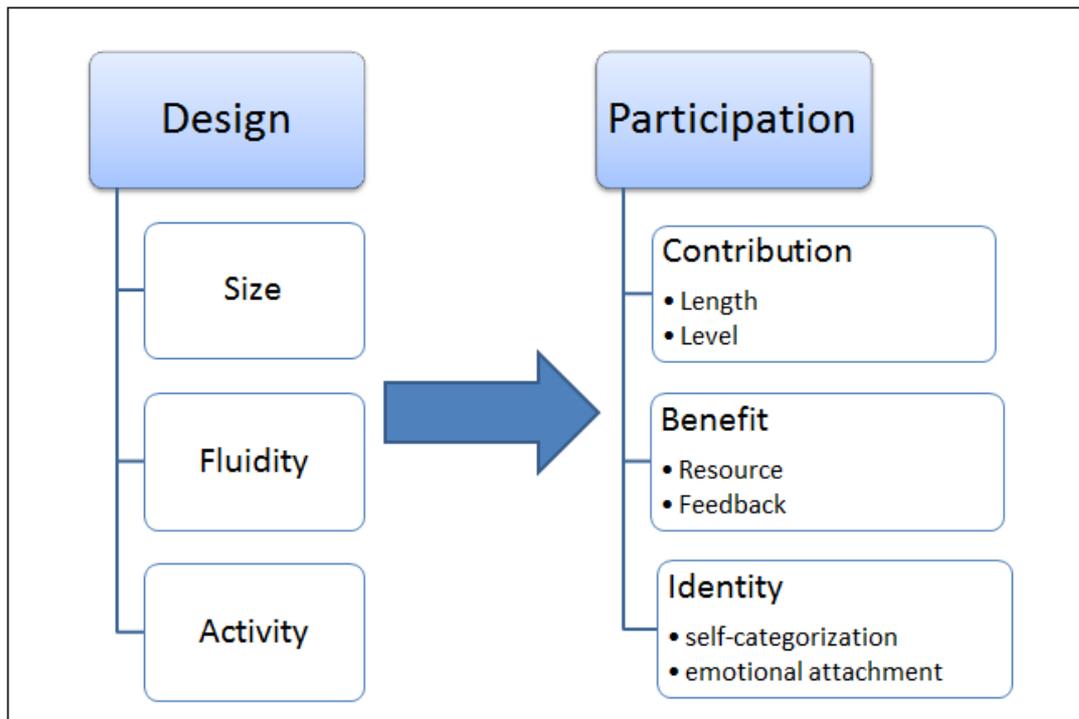
discussion, there is an affinity between emotional attachment and commitment with the collective.

Conceptual framework and research objective

To investigate the impacts of design on participation, I find Butler's (2001) resource-based model, of which the core assumption is that the sustainability of online collective relies on its ability to gain, integrate and retain resources and its capability to turn these resources into beneficial results to its members, especially suitable. Although goals vary from one online collective to another, one goal of vital importance to the success of online collective is individuals' continued participation and the key to individuals' continued participation is whether the benefits they get outweigh their contributions.

In line with his assumption, Butler (2001) utilizes size and activity as the measurements for online collective design since size exerts influences on collective resource availability and activity affects the benefits members can get. For both size and activity (or interaction) are the relatively static aspects of online collective, this research adds fluidity to the resource-based model to explore the impacts of resource exchange in and out of online collective. As for participation, Butler (2001) regards contribution and benefit as the two sides of participation: if benefit outweighs contribution, people will continue participation. In this research I will employ identity as the third measurement of participation since as stated in literature review, there is an affinity between collective identity and commitment with the group (Fang & Neufeld, 2009).

According to literature review, this research also specifies the components of contribution, benefit and identity. For contribution, contribution length and contribution level are employed as key components; in terms of benefit, on the basis of Butler's (2001) theory, feedback and acquiring expected resources are two main parts of benefit; regarding identity, based on Ellemers et al. (1999) I will divide it into self-categorization and emotional attachment. Conceptual framework of this research is summarized in Figure 1 (see overleaf).

Figure1. Conceptual Framework

In this research, size is defined as the number of contributors involved; fluidity is characterized as the ease of participants' joining and leaving (Kuk, 2006); and based on Butler (2001), activity and interaction are interchangeable terms in this model, referring to all kinds of association among members.

Research objective

This study endeavors to explore the impacts of design on participation and the research question is “regarding peer production, how will the design (including size, fluidity and activity) of online collective influences member’s participation (including contribution, benefit and identity)”? Due to lack of contracts or monetary rewards to guarantee individuals’ participation, many researchers emphasize the importance of design in promoting voluntary contribution. However, most of the researches focus either on crowd-sourcing or virtual community rather than the comparison of them and an appropriate measurement system is also lacking. This research will use Baike (case of crowd-sourcing) and Zimuzu (example of virtual community) as two cases to probe the impacts of design on participation, hoping to contribute to existing literatures with some empirical evidence.

RESEARCH DESIGN AND METHODOLOGY

I will apply semi-structured interview to answer my research question. This part will provide justification for interview and further semi-structured interview.

I prefer interview to other approaches because it allows researchers to gain access to interviewee's own interpretation of the topic of interest. According to Kvale (1983), the aim of interview is to "to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomena" (p. 174) and in terms of my research; evaluation of participation can be a matter of subjectivity. For instance, as Butler (2001) indicates, benefits are valued differently rather than equally by participants, and therefore we should listen to respondents' own voice about how they perceive their contribution. In addition, by means of diverse and deep conversations between investigators and respondents, interview (especially semi-structured and structured interview) is a good way to conduct in-depth research of a phenomenon (Crouch & McKenzie, 2006). Moreover, it may reduce misunderstanding between interviewer and interviewee since researcher would have a chance to clarify equivocalness (Oatey, 1999).

Interview ranges from highly structured interview to wholly unstructured ones and along the continuum semi-structured interview is the best way to obtain answers with richness and still keep the conversation on track (Kvale, 2008, p. 80). Completely structured interview may be too tight and allows little room for depth whereas wholly unstructured interview is time-consuming and may lose comparability between data. Thus in this research I choose to do semi-structured interview which can draw comparison between respondents while still allow room for unexpected findings.

Modes of interview

There are four most commonly used modes of interview, including face-to-face, telephone, Instant Messenger such as MSN and e-mail interviews (Opdenakker, 2006). Face-to-face interview is the most productive way of interview, during which observation of non-verbal information is also possible. But due to geographical constraints, I prefer to contact my interviewees through Skype, an effective means of telephone interview that allows interviewers to do recording in the meantime. The advantage of telephone interview is that you can still capture interviewees' tones, pauses and other verbal cues. One interviewee

refuses to talk through Skype and I have to contact him via Instant Messenger QQ (QQ is Chinese version of MSN messenger). Interview through instant messenger sacrifices the possibility of observing social cues and compared with telephone interview, the relatively asynchronous communication in time may give interviewee some time to prepare for answers, which may result in less spontaneousness (Opdenakker, 2006). Yet as Carolyn (2001) suggests, it is advisable that we do not persuade interviewees to change ways of interview since the quality of interview is also linked with participant's personal choice. Hence this research utilizes telephone and instant messenger interview as two modes of interview.

Selection of interviewees

Snowball sampling strategy, as a useful technique to find hidden targeted respondents through networks of known respondents, is applied to recruit interviewees (Atkinson & Flint, 2001). Since its establishment in 2006, Baike has attracted more than 3,000,000 contributors whereas the number of senior members is still very small². For Zimuzu, each of the four major Zimuzu YDY, YYeTS, TLF and 1000FR in China contains less than 300 members (Meng & Wu, 2013). Thus members of these two online collective are to some degree the "hard-to-find population" and accordingly snowball sampling is a feasible approach to reach respondents.

Research suggests that senior members' participation is different from that of newcomers (Bryant, et al., 2005) and to explore the influences of design on participation, both types of members should be recruited. Besides, newcomers are lack in experiences of sustained participation while senior members can provide materials for both initial participation and sustained participation, so I decided to recruit more senior members. There exists no generally acknowledged distinction between newcomers and senior members in Zimuzu and Baike, and therefore I decided to recruit members of various levels of contribution while still inclined to recruit members with longer length of participation. I posted a tweet in Weibo and informed almost every Weibo friend I know offline to ask if they know any member from Zimuzu and Baike. Through this process, I found 4 members from Baike and 5 members from Zimuzu. I then asked these respondents to introduce more participants to me and finally I recruited 16 respondents in total with 8 from Baike and 8 from Zimuzu. Respondents of Zimuzu are not from the same Zimuzu community but from various groups. Firstly, it is hard for me to recruit 8 people from the same group. Secondly, I think although

² Available from <http://baike.baidu.com/view/1.htm>, [Accessed on 1 August, 2013]

they are from different Zimuzu groups, I assume that they share more or less the same pattern of participation, which may be different from that of Baike members and thus I think it will not be a big issue to recruit members from several Zimuzu communities. More detailed information about respondents is summarized in Table1 and Table 2.

Table1. Respondents from Baike

Interviewees from Baike	Details of Contribution
Baike1	Edited 1 article
Baike2	Edited 3 articles
Baike3	Edited 3 articles
Baike4	Edited around 35 articles
Baike5	Edited around 120 articles
Baike6	Edited for around 2 years, numerous articles
Baike7	Edited for around 4 years, numerous articles
Baike8	Edited for around 4 years, numerous articles

Table2. Respondents from Zimuzu

Interviewees from Zimuzu	Details of Contribution
Zimuzu1	Contribute for 4 months, still in Zimuzu
Zimuzu2	Contribute for 6 months, not in Zimuzu now
Zimuzu3	Contribute for 7 months, not in Zimuzu now
Zimuzu4	Contribute for 1 year, still in Zimuzu
Zimuzu5	Contribute for 2 years, still in Zimuzu
Zimuzu6	Contribute for 2 years, not in Zimuzu now
Zimuzu7	Contribute for 3 years, still in Zimuzu now
Zimuzu8	Contribute for 4 years, still in Zimuzu now

Interview procedure

I followed standard interview procedure as suggested by Gillham (2005). Firstly I explained my research objective to interviewees and thanked them for their cooperation. Also I promised them that their responses would be kept confidential and be used for academic purpose only. Then I told them that the interview would take around 30 minutes and asked for their permission to record the conversation. During the interview, I followed my topic

guide (see Appendix I). To draw a comparison between different data, I utilized the same topic guide for Baike and Zimuzu, only making a few changes when necessary. Topic guide is not strictly followed since I would like to allow more room for unexpected results and in-depth conversations with interviewees. After the interview, I transcribed all the records and one translation of transcript is provided in Appendix II. Thematic analysis, a method to identify themes through repeatedly reading data (Fereday & Muir-Cochrane, 2008), is employed. This research relies mainly on theory-driven deductive approach to deal with data while also utilizes data-driven inductive approach to analyze unexpected results.

RESULTS AND INTERPRETATION

The interview results indicate that there exist differences between members' contribution, benefits acquired and identity construction due to dissimilarities in membership size, fluidity and activity between Zimuzu and Baike. However, before I continue, two points should be put forward. As stated previously, this is not an experimental research and therefore it is inappropriate to perceive the impacts of design on participation as causal. In addition, it is advisable for us to keep in mind that "there is a gap between model and the reality" (Berry, 2008, p. 365). Although membership size, fluidity and activity are employed as three distinct measurements of design, they are interrelated in reality, for fluidity may influence size and size may affect activity. Thus when one measurement is thought to have impacts on contribution, benefit and identity, I purely mean that it is the main influencing factor.

Contribution

Interview results suggest that there exist differences in member's contribution length and contribution level between Zimuzu and Baike.

Contribution Length

Difference between Junior Members

According to Table1 and Table2, we can see that though contribution lengths of senior members from Zimuzu and Baike are both very long, that of junior members differ. For Baike, three members quit after edited less than 4 articles.

When I was in my postgraduate study, I edited one article for promotion of our institution, the Institute of History. When finished, I never edit again. (Baike1)

I was doing a research about my hometown at that time and when I searched for materials, I found that some information about my hometown in Baike is wrong. Thus I just changed it. I edited two more articles afterwards because I was not busy during that time. (Baike2)

You know, Baike is a well-known platform to disseminate information, though the quality of articles is not that good. Anyway, I set up three new articles for my company to promote a travel agency. (Baike3)

The word “platform” mentioned by Baike3 offers an explanation about why junior members quit. As Gillespie (2010) says, the term “platform” per se indicates a sense of openness or in other word, fluidity, which suggests a feeling of easy joining and leaving. Hence these three interviewees can initiate and terminate contribution at their own will. Nonetheless, this is not the case with Zimuzu, of which the shortest contribution length is 4 months. Compared with Baike, Zimuzu shows a lower level of fluidity, for instance high entry threshold and requirements on minimum length of contribution, which exerts impacts on member’s participation.

I studied the rules of Zimuzu for several hours before I submitted my application. They have many rules concerning participation. For instance, you should have at least 10 hours spare time every month and the minimum length of contribution is 3 months. Furthermore, you should make sure that you are available for the next month once you submit your application because they will test you after receiving your submission. I had other plans in April, so I applied in May. (Zimuzu1)

Though internet is “anonymous” and you can do whatever you want, but I still cannot take it easy. I just feel that it is not a place that you can come and go on your own will. I intended to apply for a more famous Zimuzu, but they did not recruit new members at that time, so I had to apply for another one. It is hard to reenter the group and if you do not do well, they will kick you out, so I strictly followed their requirements. (Zimuzu2)

Difficulty of Reenter

Fluidity causes tension for contribution length, which is closely linked with member s’ retention and reenters. A less fluid online collective makes members stay longer due to high cost of reenter while a more fluid one may have a positive effect on contribution length since participants can pick up their work whenever they want. According to previous analysis, the

less fluid online collective Zimuzu seems to obtain more contributions, however in terms of member's possibility of returning, Zimuzu is on a disadvantageous condition.

I quitted after 4 months' participation in Zimuzu since I did not have a chunk of free time at that time. Yet when I was not busy I did not go back since they dismissed me from the QQ group. You need to take a lot of tests to return. (Zimuzu2)

While from a contributor who participates in Baike for around 2 years, we can identify the merit of a more fluid online collective.

I edited one article in 2011 for my project and it was not until July 2012 that I started to edit again. I was crazy about a superstar then and I edited all the related pages. (Baike6)

Contribution level

Ganley et al. (2012) divide contribution into three types, ranging from audience engagement to "community citizenship behavior" which means that members devote more time and energy for the good of online collective. My interview indicates that senior members from both collectives make a lot of contribution to the group they belong to.

I read three books on medicine before editing because I wanted to provide high quality articles for Baike. (Baike8)

I was once addicted to Baike and during that period I gave up games and TV dramas. I scanned the front page of Baike community frequently to see what's new as well as to find out what I could contribute. You may not believe, but I could not help thinking about it even when I was eating. (Baike6)

I remember that when I was translating for "Prison Break", I asked for a leave from my company. I know a friend who continued working even when he was sick. People call us "Robin Hood". (Zimuzu6)

Yet for newcomers, it is not the case. Dissimilarities in contribution level contain two parts: low contribution level and community citizenship behavior.

Low contribution level

On account of small size and convenience of communication among participants in Zimuzu, there is less time for lurking and consequently, time needed for increase of contribution

level is shorter. Though this may also be caused by specialty of Zimuzu task, which means that subtitle should be released shortly after the TV serial broadcasted, from my interview we can still notice the impacts of size and interaction between members. Due to small size and convenience of communication, Zimuzu2 has to take in more work.

I remember that once our group took in too many tasks and we ran shortage of contributors, the team leader contacted me directly via QQ and gave me one more task. (Zimuzu2)

And owing to intensive interaction among members, anonymity is less possible, which exerts pressure on participants.

The group is not large enough for you to be anonymous. If you do not do your job well, everybody may notice that and you will feel humiliated. The first day I joined the group I could not take my own job lightly. (Zimuzu4)

Nonetheless, contribution level of newcomers in Baike may remain low and this is partly affected by insufficient activity and anonymity, which is closely related with big size of Baike.

I know there exists a Baike community and I signed up the first time I edited an article. But I seldom come back again for around a year until I occasionally met some enthusiastic “Baikers” (senior Baike members). If you have people to interact with online, you may be more willing to come back. (Baike8)

It is a big platform and nobody knows you. Who cares how you do your job? (Baike2)

Community citizenship behavior

For members of Baike, influenced by the big size, it is hard for them to establish a sense of community, as indicated by Baike5

Community? What community? I only focus on my own article. How should I care about the development of Baike? I do not even know them. I do not think people will feel attached to such a big organization. (Baike5)

However, we can clearly see from Zimuzu contributors the impacts of activity and interaction among members on their emotional attachment to the group, which affects their level of devotion. In Zimuzu4’s group, publication of photo is set up as a routine to promote interaction.

The recruitment requirements clearly state that every newcomer should disclose his or her “high definition codeless photo”. This routine has many benefits. For example, you can familiarize yourself with other members because when you disclose your photo, people will interact with you and praise you. Moreover, knowing your look makes you not a total stranger to other members and I think this is good for cohesion of a group. Though still around one third of members come and go, at least I feel I wanna stay. (Zimuzu4)

For Zimuzu3, influenced by intensive interaction with group members, she experienced the change from a less committed member to a more devoted contributor.

I joined Zimuzu out of pure interest at first. However, the deeper I interact with other members, the more I am committed to it. My friend is a fan of “Downton Abbey” and before her birthday, I asked the team leader if at the beginning of the episode they could add one sentence of birthday wish. They agreed and I was very much moved. For such a harmonious group you definitely would like to do your work well. I took in more tasks afterwards. (Zimuzu3)

Benefit

According to Butler (2001), at the core of resource-based model is the possibility of members gaining benefit from resources of online collective through feedback loop and initially I planned to divide this section into resource availability of online collective and feedback system. Via interview I found that Baike is capable of attracting large number of contributors whereas on account of big size, it is not good at providing feedback, which discourages many contributors. In addition, even for resource availability, big size causes tension between resource abundance and loss of control. Regarding benefit, it seems that the model of crowdsourcing is on a disadvantageous position, but what we witness in reality is the growing size of “Baikers”. If as indicated by Butler (2001) that imbalance between cost and benefit will lead to reduction in contribution, then what motivated “Baikers” to continue participation? Through in-depth interview with some “Baikers”, I found that Baike establishes a game-like environment via ranking of contribution, which is less in need of direct interaction among members, to “create” benefit for members. Accordingly, I add “collaboration versus game-like environment” as the third part to this section.

Resource availability

With higher level of fluidity and bigger size comes greater resource availability, indicating that an open online collective is more likely to attract larger amount of and more diversified participants. Resource availability is a double-edged sword, causing tension between resource abundance and loss of control and furthermore influencing the benefit members get.

Compared with Zimuzu, the open platform Baike has greater resource availability. By August 2013, the number of contributors in Baike has surpassed 3,000,000 and the amount of articles exceeded 6,000,000³ while in contrast, each of the four major Zimuzu YDY, YYeTS, TLF and 1000FR in China contains less than 300 members (Meng & Wu, 2013). One interviewee complained about the size of Zimuzu.

I take in tasks regularly. On the one hand, I enjoy it and would like to do more for our group. On the other hand, we are in shortage of contributors. Our group is relatively small and sometimes we have to give up excellent TV serials. (Zimuzu5)

However another interviewee is in favor of controlling size.

Too many members can cause some problems. Firstly, members need more time to familiarize themselves with the group. Some participants even do not know each other. Secondly, bigger group has more complex structure and may induce hierarchy, which will damage equality. It (translating subtitle) is voluntary work and I do not think the culture of hierarchy fits here. (Zimuzu6)

While Baike is good at attracting contributors, loss of control causes troubles for participants, among which the most common problem is debasement of article quality.

I am really upset about other contributors changing my article. The problem is that they change it to a worse edition. I selected some beautiful pictures and someone changed it to a really ugly one. (Baike5)

Many contributors are sent by commercial companies. As a dentist, I use the internet frequently to search for materials. I found that many contents on Baike are wrong, so I spent a whole night to correct them with professional knowledge. A week later, I found that all of them were changed. From my perspective as a dentist, I am sure that these contents were edited by people from commercial hospitals. (Baike8)

³ Available from <http://baike.baidu.com/>, [Accessed on 1 August, 2013]

The debate on Baike forum also suggests that senior members are concerned about the trade-off between quality and resource availability.

The fiercest debate on Baike forum is about whether we should have less but more professional contents or more contents covering wider topics but with lowered quality. There is still no conclusion. (Baike6)

Feedback

Feedback is vital for the sustainability of a group. As De Jong and Elfring hold (2010), providing feedback is a good way to help members and compared with online collectives that do not provide feedback, the ones that respond to participants have more returners, who will stay for a longer time (Moon & Sproull, 2008). On account of difference in size, feedback acquirement varies in Zimuzu and Baike.

Due to limited size of Zimuzu, getting feedback is not a big issue.

We have approximately 80 members in our QQ group and the five main team leaders are always online. Even if they cannot respond to you instantly, other members, if they know, will answer your questions. (Zimuzu4)

They not only provide you with simple feedbacks, but also detailed suggestions about improving skills of translation. I think translation is more or less a subjective thing and it is necessary for us to discuss what suits characters of certain TV serials most. I learn a lot. (Zimuzu3)

Nonetheless for Baike, many members are discouraged by no or inadequate feedback. A feasible approach for a large collective to tackle the difficulty in coordinating numerous contributors is to set up strict rules defined by authorities (Haythornthwaite, 2009). Yet among my 8 interviewees, 6 of them complained that this mechanism is not efficient in providing feedbacks. When I asked one interviewee about the reason for ceasing contribution, she said,

I do not know their process of quality control. The pass rate of your work is very low and I once tried 20 times to get my article admitted. And you know how they responded to me? They just wrote that the content was not attractive enough. What is attractive? Their response is too general. (Baike2)

Another interviewee questioned about their criteria of quality control.

I do not need to care about the quality of my article. You know why? Their feedback system is very bad since they will not tell you exactly why your edition failed. I just need to make some minor changes and submit an almost similar version again and they will give it a pass. I have no idea why they give it a pass or a fail. (Baike5)

Moreover, large size also makes getting feedbacks from other members difficult, which reduces members' level of satisfaction.

I was trying to improve articles on universities in Baike at that time. I found that someone constantly changed my articles to worse and therefore I contacted him several times, hoping to discuss with him. But he never responded. I felt annoyed and upset. (Baike6)

Two Kinds of Benefit: Collaboration versus Game-Like Environment

Based on previous discussion, it seems that the model of crowdsourcing is on a disadvantageous position due to lack of proper feedback mechanism. To encourage participation, Baike establishes a game-like environment through ranking of contribution, which is less in need of direct interaction among members, to provide or more precisely, to "create" benefit for members. As Franzoni and Sauermann (2012) contend, even the simplest task can be enjoyable and rewarding if it is designed as a game-like environment.

While I admit the existence of other kinds of benefit in Baike, such as development of friendship, my interview results do suggest ranking of contribution as an important incentive, especially for senior members.

It was a coincidence that I joined Baike. Four years ago I filled in one of their questionnaires and luckily won their lottery. I edit many articles and my rank is very high now. I do not mean that I am not interested in editing and sharing knowledge per se, but high rank itself can be rewarding. The higher you rank is, the better prize you can get. The phone I am using now is the prize I got a year ago. (Baike7)

I summarized skills needed to edit a good article and I contributed mainly to gain levels. There are some tricks you can play. For example, edit articles of a kind. Once you have edited articles on apples and pears, you know the format of articles on all sorts of fruit. (Baike4)

However, members of Zimuzu gain more benefit from interaction with each other, development of friendship and support.

The majority of the conversations in our QQ group are about interesting topics, such as cooking, shopping, work and jokes. I am always online while working and these conversations give me a lot of fun. (Zimuzu7)

That was a crazy night. We wanted to release the first edition of Chinese subtitle of “The Vampire Diaries” since being the first gives Zimuzu a lot of benefit. Thus we six people worked together from 9:30 till 16:00 in the afternoon, for 6.5 hours. Our version of subtitle was downloaded around 10,000 times and I know one version which was three hours later was downloaded less than 1,000 times. It was very tiring but rewarding. I really appreciate support from my team members. (Zimuzu7)

IDENTITY

Ellemers et al. (1999) regard self-categorization and emotional attachment as indispensable elements of collective identity and this section is composed of dissimilarities in these two dimensions. As far as self-categorization is concerned, influenced by less fluid structure in Zimuzu, contributors may easily categorize themselves as a member of the group once get admitted whereas as a platform, the entry threshold is much lower and the boundary between members and outsiders is blurred in Baike. When it comes to emotional attachment, I find a slight difference on collective identity between dedicated senior members. In Zimuzu some members’ attachment to the group stems mainly from relationship with other participants while in Baike, collective identity is more likely to be affected by commitment to the enterprise of building an excellent online encyclopedia. I do not mean that members in Zimuzu have no interest in providing high quality Chinese subtitle or contributors of Baike pay no attention to interaction with others; rather, it is not a question about ones and zeros, but about what affects them more.

Self-Categorization

Differences on self-categorization exist mainly among newcomers from two collectives. As mentioned before, new contributors perceive Baike more as a platform with open access rather than a community to identify with. When I asked one interviewee (Baike5) if she cares more about the development of Baike than her own articles, she said that it is only a place to kill time and she does not perceive herself as one of the “Baikers”. In addition to fluidity, lack of interaction may be another obstacle for identity formation. One senior contributor (Baike6) said that he devoted more time to Baike after being encouraged by

some enthusiastic editors, who have faith in build the future for Baike. But due to large size of Baike as well as lack of chances to interact with others, it is hard for every newcomer to form this sense of commitment.

Nonetheless, for participants of Zimuzu, it is easier for them to categorize themselves as a member. Small size and more chances of interaction are two reasons for identity formation.

There are around 20 people in our Zimuzu and I have many good bothers there. Online community is a virtual space and there is no real boundary that helps you to identify with a group. However, I think emotional link with other members is a tool for identity formation. (Zimuzu5)

What worth mention is that intensive interaction between senior members may also be an obstacle for self- categorization of newcomers.

I had a few chats with other members when I joined the group because the team leader invited me to introduce myself. Later on except for taking in tasks, I seldom speak. It is not that I do want to but I do know what to say. They seem to know each other very well and they chat about boyfriend's bad temper, salary increase and so forth. One interesting thing is that once they were having a very heated discussion on what to eat tonight and I interrupted by asking another question, nobody responded to me... (Zimuzu1)

Some scholars demonstrate that newcomers may feel more welcomed in new groups since for a group where members constantly interact with each other, newcomers may find difficulty in joining the conversation owing to lack of knowledge of other group members (Moreland & Levine, 1989).

Interpersonal relationship versus building enterprise

For old members of Zimuzu and Baike, causes of emotional commitment vary and this further influence member's motivation for sustained participation. Frequent interaction among Zimuzu participants makes emotional commitment more influenced by interpersonal relationship.

It is like that you have many friends, though they are online. Our QQ group is most bustling between 17:00 and 18:00 when most of us are off-work or finishing class. We have various topics and it is a lot of fun. I like high-tech and some members in the group also like it, so we communicate a lot. (Zimuzu8)

As we can see, their personal relationship is more based on the traits of the person and they have various off-topic contents in QQ group. However, for Baike, nearly all of the discussion topics in online community are about the development of Baike and formation of “friendship” relies more on evaluation about others’ contribution or views about Baike.

There is one contributor who influences me the most. He has been actively editing articles for 5 years. As far as I know, most people quit very soon and some people may contribute longer but eventually quit for various reasons. I tried to contact him to inquire some questions and he replied. It is my honor to learn from such a respectable person. (Baike6)

This difference further influences member’s motivation for sustained participation. Scholars contend that sustained motivation, which is more affected by commitment to collective, differs from initial motivation which is more about personal choice (Butler, 2001; Fang & Neufeld, 2009). For Zimuzu, some members feel that responsibility to group members weighs more than interest.

At first I came because I was interested in soap operas and I also wanted to improve my English. However, I think responsibility weighed more the deeper I communicated with them. The senior members taught me a lot and also I got along well with other members. I left after 7 months, but I told them a month in advance and I even recruited a new member for them. (Zimuzu3)

Nevertheless, for members of Baike, interest in building a better online encyclopedia counts most.

I think the values promoted by Baike fit mine. I am inspired by the idea about combining personal progress with serving others. I prefer to choose harder and more controversial topics and I also hope Baike can be more professional. (Baike8)

In my point of view, Baike is still not an authoritative online encyclopedia. Compared with Wikipedia, it is of low credibility. I suggest that Baike should attract more experts. I would also like to do my best to make every word I say with a reliable source. (Baike6)

CONCLUSION

On the basis of Butler's (2001) resource-based model, this research employs size, fluidity and activity as three key measurements of online collective to explore the impacts of design on voluntary participation, which comprises member's contribution, benefit received and identity formation. Through comparing two types of peer production, Baike as an example of crowdsourcing and Zimuzu as a case of virtual community, this study suggests the existence of differences in member's participation.

Firstly, in terms of contribution length and level, dissimilarities mainly occur between newcomers. While the less fluid Zimuzu seems to obtain longer contribution length from junior members, it is on a disadvantageous condition considering member's possibility of returning, which has an effect on length of participation. Yet regarding contribution level, less time is needed to turn a newcomer into a dedicated member in Zimuzu.

Secondly, in reference to benefit, higher level of fluidity and larger size give Baike greater resource availability whereas Zimuzu can take better control of available resources. In addition, due to large size of Baike, some members are discouraged by no or inadequate feedback. However, Baike establishes a game-like environment through ranking of contribution, which is less in need of direct interaction among members, to provide or more precisely, to "create" benefit for members.

Thirdly, concerning identity, new contributors perceive Baike more as a platform with open access rather than a community to identify with, but on account of small size and more chances of interaction, it is easier for Zimuzu contributors to categorize themselves as a member. What is worth mentioning is that intensive interaction between senior members may also be an obstacle for self-categorization of newcomers. Furthermore, frequent interaction among Zimuzu participants makes emotional commitment more influenced by interpersonal relationship whereas dedicated devotion in Baike stems more from commitment in building a better online encyclopedia.

Through comparison of two successful cases of peer production, this research hopes to respond to Haythornthwaite's (2009) call for investigation on different nature of crowdsourcing and virtual community to promote voluntary participation. The aim of this study is not to stress one mode of peer production as superior to another; instead, what's worth scholars' attention are the trade-offs among various design choices, for example the tension between resource abundance and loss of control induced by large size, and successful practices carried out by various groups, such as setting up a game-like environment as Baike does to create benefit. While I think this research offers some useful insights, there are still

many inadequacies. Primarily, three measurements of design are not sufficient to characterize peer production, upon which elements such as hierarchy, type of task and social environment may all exert impacts. Next, this study selects two successful cases, but I contend that we may also learn from unsuccessful ones. For instance, possessing more or less the same features in size, fluidity and activity, why some Zimuzu groups succeed and others fail? Lastly, due to constraints in time and energy, conclusion of this research is based on interviews of 16 participants and considering the far more complex reality, we should be careful about generalization of the results. Future researches can improve these problematic aspects through proposing more complex models as well as investigating more diversified cases via application of more methodologies.

ACKNOWLEDGMENTS

I would like to express my deep gratitude to my supervisor Dr. Alison Powell, who offered me many constructive suggestions about planning and developing my topic. I would also like to thank my friends, without whom recruiting 16 interviewees would be impossible.

REFERENCES

- Arguello, J., Butler, B. S., Joyce, E., Kraut, R., Ling, K. S., Rosé, C., & Wang, X. (2006). *Talk to me: foundations for successful individual-group interactions in online communities*. Paper presented at the Proceedings of the SIGCHI conference on Human Factors in computing systems.
- Atkinson, R., & Flint, J. (2001). Accessing hidden and hard-to-reach populations: Snowball research strategies. *Social research update*, 33(1), 1-4.
- Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven: Yale University Press.
- Berry, D.M. (2008). The Poverty of Networks. [Review of books *The Wealth of Networks*, *Decoding Liberation and The Exploit*]. *Theory Culture Society*, 25(7-8), 364-372.
- Bryant, S. L., Forte, A., & Bruckman, A. (2005). *Becoming Wikipedian: transformation of participation in a collaborative online encyclopedia*. Paper presented at the Proceedings of the 2005 international ACM SIGGROUP conference on supporting group work.
- Butler, B. S. (2001). Membership size, communication activity, and sustainability: A resource-based model of online social structures. *Information systems research*, 12(4), 346-362.
- Carolyn, F. C. (2001). A critical exploration of face-to-face interviewing vs. computer-mediated interviewing. *International Journal of Market Research*, 43(4), 361-375.
- Cheshire, C., & Antin, J. (2008). The social psychological effects of feedback on the production of Internet information pools. *Journal of Computer-Mediated Communication*, 13(3), 705-727.
- Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social science information*, 45(4), 483-499.
- Dahlgren, P. (2005). The Internet, public spheres, and political communication: Dispersion and deliberation. *Political Communication*, 22(2), 147-162.
- De Jong, B. A., & Elfring, T. (2010). How does trust affect the performance of ongoing teams? The mediating role of reflexivity, monitoring, and effort. *Academy of Management Journal*, 53(3), 535-549.
- Doan, A., Ramakrishnan, R., & Halevy, A. Y. (2011). Crowdsourcing systems on the world-wide web. *Communications of the ACM*, 54(4), 86-96.
- Duguid, P. (2006). Limits of self-organization: peer production and “laws of quality”. *First Monday*, 11(10). Retrieved January 12, 2013, from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/1405/1323>.
- Dwyer, C., Hiltz, S. R., & Passerini, K. (2007). *Trust and privacy concern within social networking sites: A comparison of Facebook and MySpace*. Paper presented at the Proceedings of AMCIS.
- Ehls, D., & Herstatt, C. (2013). *Open Source Participation Behavior-A Review and Introduction of a Participation Lifecycle Model*. Paper presented at the 35th DRUID Celebration Conference.
- Eisenstadt, S. N., & Giesen, B. (1995). The construction of collective identity. *European Journal of Sociology*, 36(1), 72-102.
- Ellemers, N., Kortekaas, P., & Ouwerkerk, J. W. (1999). Self-categorisation, commitment to the group and group self-esteem as related but distinct aspects of social identity. *European journal of social psychology*, 29(2-3), 371-389.
- Fang, Y., & Neufeld, D. (2009). Understanding sustained participation in open source software projects. *Journal of Management Information Systems*, 25(4), 9-50.
- Faraj, S., Jarvenpaa, S. L., & Majchrzak, A. (2011). Knowledge collaboration in online communities. *Organization Science*, 22(5), 1224-1239.
- Fereday, J., & Muir-Cochrane, E. (2008). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International journal of qualitative methods*, 5(1), 80-92.
- Forte, A., Larco, V., & Bruckman, A. (2009). Decentralization in Wikipedia governance. *Journal of Management Information Systems*, 26(1), 49-72.
- Franzoni, C., & Sauermann, H. (2012). *Crowd science: the organization of scientific research in open collaborative projects*. Paper presented at the 35th DRUID Celebration Conference.
- Ganley, D., Moser, C., & Groenewegen, P. (2012). *Categorizing Behavior in Online Communities: A Look into the World of Cake Bakers*. Paper presented at the System Science (HICSS), 45th Hawaii International Conference on.
- Gillespie, T. (2010). The politics of ‘platforms’. *New Media & Society*, 12(3), 347-364.

- Gillham, B. (2005). *Research interviewing: The range of techniques*. New York: Open University Press.
- Haythornthwaite, C. (2009). *Crowds and communities: Light and heavyweight models of peer production*. Paper presented at the System Sciences, 2009. HICSS'09. 42nd Hawaii International Conference on.
- Hertel, G., Niedner, S., & Herrmann, S. (2003). Motivation of software developers in Open Source projects: an Internet-based survey of contributors to the Linux kernel. *Research policy*, 32(7), 1159-1177.
- Hogg, M. A., & Terry, D. I. (2000). Social identity and self-categorization processes in organizational contexts. *Academy of management review*, 25(1), 121-140.
- Howe, J. (2006). The rise of crowdsourcing. *Wired magazine*, 14(6), 1-4.
- Jarvenpaa, S. L., & Lang, K. R. (2011). Boundary management in online communities: case studies of the nine inch nails and ccMixter music remix sites. *Long Range Planning*, 44(5), 440-457.
- Jones, Q., Ravid, G., & Rafaeli, S. (2004). Information overload and the message dynamics of online interaction spaces: A theoretical model and empirical exploration. *Information systems research*, 15(2), 194-210.
- Joyce, E., & Kraut, R. E. (2006). Predicting continued participation in newsgroups. *Journal of Computer-Mediated Communication*, 11(3), 723-747.
- Kane, G. C., Majchrzak, A., Johnson, J., & Chenisern, L. (2009). *A Longitudinal Model of Perspective Making and Perspective Taking Within Fluid Online Collectives*. Paper presented at the ICIS.
- Katz, J. (1998). Luring the lurkers. Retrieved March, 1(1999), 1999-2015
- Kuk, G. (2006). Strategic interaction and knowledge sharing in the KDE developer mailing list. *Management Science*, 52(7), 1031-1042.
- Kvale, S. (1983). The qualitative research interview: A phenomenological and a hermeneutical mode of understanding. *Journal of phenomenological psychology*, 14(1), 171-196.
- Kvale, S. (2008). *Doing interviews*. London: SAGE Publications.
- Lakhani, K., & Wolf, R. (2003). Why hackers do what they do: Understanding motivation and effort in free/open source software projects. In J. Feller, B.Fitzgerald, S. Hissam, and K. R. Lakhani (Ed.), *Perspectives on Free and Open Source Software*. Boston : MIT Press,
- Lewis, K., Belliveau, M., Herndon, B., & Keller, J. (2007). Group cognition, membership change, and performance: Investigating the benefits and detriments of collective knowledge. *Organizational Behavior and Human Decision Processes*, 103(2), 159-178.
- Lin, H.-F., & Lee, G.-G. (2006). Determinants of success for online communities: an empirical study. *Behaviour & Information Technology*, 25(6), 479-488.
- Magrassi, P. (2010). *Free and open-source software is not an emerging property but rather the result of studied design*. Retrieved January 12, 2013, from <http://arxiv.org/abs/1012.5625>.
- Markus, M. L. (1987). Toward a "Critical Mass" Theory of Interactive Media Universal Access, Interdependence and Diffusion. *Communication research*, 14(5), 491-511.
- Marquis, C., & Battilana, J. (2009). Acting globally but thinking locally? The enduring influence of local communities on organizations. *Research in Organizational Behavior*, 29(7), 283-302.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, 20(3), 709-734.
- Meng, B., & Wu, F. (2013). Commons / Commodity: Peer production caught in the Web of the commercial market. *Information, Communication & Society*, 16(1), 125-145.
- Moglen, E. (1999). Anarchism triumphant: free software and the death of copyright. *First Monday*, 4(8). Retrieved January 12, 2013, from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/684/594>.
- Moon, J. Y., & Sproull, L. S. (2008). The role of feedback in managing the Internet-based volunteer work force. *Information Systems Research*, 19(4), 494-515.
- Moreland, R. L., & Levine, J. M. (1989). Newcomers and oldtimers in small groups. In B.Paul (Ed), *Group processes: Review of personality and social psychology* (Vol. 8, pp. 80-110). Newbury Park, CA:Sage.
- Murray, F., & O'Mahony, S. (2007). Exploring the foundations of cumulative innovation: Implications for organization science. *Organization Science*, 18(6), 1006-1021.
- Nevo, D., & Furneaux, B. (2012). *The Power of Communities: From Observed Outcomes to Measurable Performance*. Paper presented at Thirty Third International Conference on Information Systems.
- Nonnecke, B., & Preece, J. (2001). *Why lurkers lurk*. Paper presented at the Americas Conference on Information Systems.
- O'Neil, M. (2010). Shirky and Sanger, or the costs of crowdsourcing. *Journal of Science Communication*, 9(1), 1-6.

- Oatey, A. (1999). *The strengths and limitations of interviews as a research technique for studying television viewers*. Retrieved August 1, 2013, from www.aber.ac.uk/media/Students/aeo9702.html.
- Oliver, P. (1980). Rewards and punishments as selective incentives for collective action: theoretical investigations. *American journal of sociology*, 22(5), 1356-1375.
- Opdenakker, R. (2006). *Advantages and disadvantages of four interview techniques in qualitative research*. Paper presented at the Forum Qualitative Sozialforschung/Forum: Qualitative Social Research.
- Ostrom, E. (2000). Collective action and the evolution of social norms. *The Journal of Economic Perspectives*, 14(3), 137-158.
- Pedersen, J., Kocsis, D., Tripathi, A., Tarrell, A., Weerakoon, A., Tahmasbi, N., et al. (2013). *Conceptual foundations of crowdsourcing: A review of IS research*. Paper presented at the System Sciences (HICSS), 2013 46th Hawaii International Conference on.
- Piyathasanan, B., Patterson, P., De Ruyter, K., & Mathies, C. (2011). *Social identity and motivation for creative crowdsourcing and their influence on value creation for the firm*. Paper presented at the online [http://anzmac.org/conference/2011/Papers% 20by% 20Presenting% 20Author/Piyathasana](http://anzmac.org/conference/2011/Papers%20by%20Presenting%20Author/Piyathasana).
- Preece, J. (2001). Sociability and usability in online communities: determining and measuring success. *Behaviour & Information Technology*, 20(5), 347-356.
- Ranade, G., & Varshney, L. R. (2012). *To Crowdsourc or not to Crowdsourc?* Paper presented at the Workshops at the Twenty-Sixth AAAI Conference on Artificial Intelligence.
- Raymond, E.S. (2001). *The Cathedral and the Bazaar : Musings on Linux and Open Source by an Accidental Revolutionary* (Rev. ed.). Beijing, Farnham : O'Reilly.
- Ren, Y., Kraut, R., & Kiesler, S. (2007). Applying common identity and bond theory to design of online communities. *Organization studies*, 28(3), 377-408.
- Sun, Y., Fang, Y., & Lim, K. H. (2012). Understanding sustained participation in transactional virtual communities. *Decision Support Systems*, 53(1), 12-22.
- Williams, A. D., & Tapscott, D. (2006). *Wikinomics, How Mass Collaboration Changes Everything*. New York: Portfolio.
- Zhao, Y., & Zhu, Q. (2012). Evaluation on crowdsourcing research: Current status and future direction. *Information Systems Frontiers*, 15(4), 1-18.

Electronic MSc Dissertation Series

The Media@LSE Electronic MSc Dissertations Series presents high quality MSc Dissertations which received a mark of 72% and above (Distinction).

Selected dissertations are published electronically as PDF files, subject to review and approval by the Editors.

Authors retain copyright, and publication here does not preclude the subsequent development of the paper for publication elsewhere.
