

EMERGENCE IN NASCENT ONLINE COMMUNITIES: AN AFFORDANCE PERSPECTIVE

Research-in-Progress

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Abstract

Online communities like Wikipedia have the potential to transform our global society. Despite their growing importance, however, the extant literature has theorized only little about how member contribution behavior in a nascent online community emerges in interaction with the materiality of the technology platform. Studying this is critical for understanding the important early stage evolution of online communities. Without a rich history, the platform's materiality is almost the only thing that members can use to make sense of the online community. We investigate this question by applying a mixed-method approach to a longitudinal case study of AshokaHub, a nascent global online community of social entrepreneurs. We use an affordance perspective and our findings to date suggest that the materiality of the technology platform plays an important role in the emergence of member contribution behavior in the nascent online community. Moreover, they suggest extensions to the concepts of affordances and imbrication.

Keywords: Online communities, socio-technical approach, grounded theory

Introduction

Online communities (OCs) like Facebook, Wikipedia or Stackoverflow have become a ubiquitous phenomenon in today's world and have the potential to significantly transform our global economy and society. An OC can be defined as "a large collectivity of voluntary members whose primary goal is member and collective welfare, whose members share a common interest, experience or conviction and positive regard for other members, and who interact with one another and contribute to the collectivity primarily over the Net" (Sproull and Arriaga 2007 pp. 248–249). From a research standpoint, understanding OCs is becoming increasingly critical because, as organizational boundaries turn ever more fluid and permeable with advances of Internet technologies, much of organizational work and behavior is likely to play out in OCs (Faraj et al. 2011). From a practical standpoint, OCs are increasingly important for companies that strive to drive open source innovation (cf. von Hippel and von Krogh 2003; von Krogh and von Hippel 2006) or build stronger customer relationships (cf. Nambisan and Baron 2010).

Yet, the potential benefits of OCs come at a cost. In fact, most OCs already fail in their 'infancy'. As Hagel & Seely Brown (2012) argue: "[When] it comes to building a space online that people want to visit regularly and contribute to, well, most of us never get there, and for good reason. It's really hard." AshokaHub, a nascent OC run by Ashoka, a global association of over 2,500 leading social entrepreneurs, experienced how difficult building a thriving OC can be. Despite it being a 'grass-roots' project initiated by Ashoka social entrepreneurs (so-called 'Fellows') themselves and the strong trust among Ashoka Fellows, despite senior Ashoka leadership buy-in and a committed management team, contributions to AshokaHub were rather limited after its first year of operating. A common explanation for the non-emergence of contributions is that critical mass is not reached. Existing research suggests that OCs have a core/periphery structure in which a core of a few people accounts for the vast majority of contributions and is sufficient to create critical mass (Dahlander and Frederiksen 2012; Lakhani and von Hippel 2003). At AshokaHub, there were few but according to the core/periphery logic enough active Ashoka staff members and Fellows but, still, critical mass was apparently not obtained.

We argue that the extant OC literature cannot fully explain this phenomenon for three reasons. Firstly, current OC studies have neglected the initial phase of an OC's evolution that lays the foundations and rules for later collaborative behavior. Instead, they have implicitly assumed a mature, 'steady state' OC where member contributions have already reached critical mass and (only) need to be sustained (cf. Faraj et al. 2011). Secondly, the extant literature has theorized only little about how collaboration actually happens in OCs (Faraj et al. 2011). With only few notable exceptions (e.g., O'Mahony and Ferraro 2007), OC researchers largely focused on investigating the motivational factors for member participation or the structural features of their underlying networks in a 'snapshot' fashion. These 'snap-shot' investigations of OCs were conducted at one particular point in time, often using one-time surveys of members (cf. Nambisan and Baron 2010; Wasko and Faraj 2005). Studies that focus on the process of how different factors affect member contributions over time have thus rightly been called for (cf. Faraj et al. 2011). Finally, research has not studied what role the material characteristics of the technology platform underlying the OC play for the dynamics unfolding on it (Faraj et al. 2011). Especially in a nascent OC without a rich history and rules of behavior, the materiality of the platform is almost the only thing that new members can draw on to make sense of the OC. Moreover, the platform enables and constrains behavior but also records and tells the story of the OC through discussion threads or through problems and solutions posted.

We thus aim to explore this understudied area and answer the following research question: *How does member contribution behavior in a nascent online community emerge in interaction with the materiality of the technology platform?* To this end, we applied a grounded theory approach combining qualitative and quantitative methods to a longitudinal case study of AshokaHub.

At the current stage of our research, we find indicators that the materiality of the technology platform indeed plays an important role for the contribution behavior of AshokaHub members and, in doing so, we identify affordances and imbrication as helpful concepts to make sense of this interplay between material and human agencies. This paper aims to contribute to the literature on technology in organization studies more broadly by extending the affordances and imbrication concepts into the realm of OCs in three ways: Firstly, we argue that members see an OC in the context of the 'virtual landscape' of OCs that they are

already engaged in. This influences the affordances they perceive and hence their contribution behavior. Secondly, we argue that contribution activity leaves ‘traces of activity’ on the OC platform, which, in turn, OC members draw on when interpreting the OC platform. Finally, due to the voluntary nature of OCs, members can ‘drop out’ and thus potentially decrease the variety of contribution behavior and corresponding ‘traces’ and thus affordances that members can perceive. This paper also aims to contribute to the OC literature more specifically by adding to the understanding of how and why contribution behavior happens in OCs (Faraj et al. 2011).

Theoretical Context

In line with the choice of a grounded theory approach, theory entered the research process at a later stage to anchor the findings emerging from the data in the literature (Tracey et al. 2011 p. 64). In accordance with conventions in presenting findings from management research, these theoretical concepts are presented *before* the method and empirical data. However, it is important to note that the use of these theories is a result of the study itself (cf. Suddaby 2006).

As we attempted to uncover what people were doing in the OC and why, we found over time that the material characteristics of the technological platform underlying the OC were critical in understanding the collaborative dynamics in the OC. The OC platform was consistently referred to by users as enabling and constraining their changing activities in the OC. Moreover, the platform itself was being adapted over time in response to user feedback. In the light of these findings, we found the concepts of affordances and imbrication useful to make sense of the materiality of the OC platform and its interaction with the human agency of members.

Although technology and its materiality have only played a minor role in organizational studies, there are, by now, different approaches to the role of technology in organizing (Orlikowski and Scott 2008). The assumption that organizations and technology are independent, discrete entities where the impact of latter on the former could be studied with variance models was dominant in the early days of the field. However, numerous researchers now seem to have moved on from these assumptions to a more complex view of the socio-technical phenomenon. Orlikowski and Scott (2008) argue that two other research streams have emerged in response to this earlier perspective. On the one hand, there is the perspective of mutually dependent ensembles where the core assumption is that technology and organizations are “interdependent systems that shape each other through ongoing interaction” (Orlikowski and Scott 2008 p. 457). This includes, for instance, Barley’s (1986) seminal work on the influence of CT scanners on organizations or the concept of affordances for organizing proposed by Zammuto et al. (2007). On the other hand, there is the perspective of sociomaterial assemblages where the core assumption is that technology and organizations “exist only through their temporally emergent constitutive entanglement” (Orlikowski and Scott 2008 p. 457). This includes, for instance, Pickering’s (1993) notion of the ‘mangle of practice’ and actor-network-theory (cf. Latour 2007).

Out of these three perspectives, we found the second perspective most promising to study our research question. On the one hand, the more static variance models employed by the first stream seem less suited to understanding the process in which the materiality of the technological platform influences member contribution behavior in OCs and vice versa. On the other hand, while certainly drawing much attention, the third perspective currently still lacks proven methodologies and frameworks to guide empirical studies. Finally, the second perspective, and in particular the affordances and imbrication concepts associated with it, fit very well for three reasons: Firstly, they explicitly incorporate the notions of perceptions of technology held by groups of users with different goals and background, which links well with the themes emerging from our data. Secondly, it is inherently focused on process studies of interaction between technology and organizations over time. Finally, a more rigorous body of concepts that can support empirical studies has emerged recently (cf. Faraj et al. 2011).

Following Markus and Silver (2008 p. 622) and Leonardi (2011), we define *affordances* as “the possibilities for goal-oriented action afforded to specified user groups by technical objects”. In this context, technical objects are defined as “IT artifacts and their component parts” (Markus and Silver 2008 p. 620). The important thing to notice here is that affordances are relational in the sense that one technical object can be used “in myriad ways and have multiple effects on the organization of work” (Leonardi 2011 p. 153). This is because users interpret technologies through their goals for action. Depending on her goals for

action, a user may perceive one affordance in the technical object or another. *Constraints* are the flipside of affordances. Users may not only see affordances but may also perceive that a technical object constrains “their ability to carry out their goals” (Leonardi 2011 p. 153).

Leonardi (2011) builds on these concepts to develop an understanding of how affordances and constraints lead to changes in organizational routines and technologies over time. He proposes the concept of *imbrication*, which is defined as the process of “interweaving of human and material agencies” (Leonardi 2011 p. 150). In this process, *material agency*, or “the capacity for nonhuman entities to act on their own, apart from human intervention” (Leonardi 2011 p. 148), is interwoven with *human agency*, or “the ability to form and realize one’s goals” (Leonardi 2011 pp. 147–148). Such imbrications produce *infrastructure* in the form of routines and technologies. This infrastructure then becomes taken for granted and forms the framework within which people work. As they work, people “draw on this infrastructure to construct a perception that a technology either constrains their ability to achieve their goals, or that the technology affords the possibility of achieving new goals” (Leonardi 2011 p. 147). Over time, imbrications and the infrastructures they produce accumulate so that people construct perceptions of affordances and constraints based on a growing ‘stack’ of past imbrications and infrastructures. Looking at these past imbrications can then help explain how human and material agencies may imbricate in the future.

Although Faraj et al. (2011) have proposed the affordances concept as a suitable perspective to study the influence of the technology platform on collaboration behavior in the OC, they do not elaborate on how this could work in detail. Moreover, examples of this use in a longitudinal case are scarce. Therefore, we propose an approach for using the affordance and imbrication concepts in the OC context.

Firstly, in order to make sense of the OC platform’s material agency that gradually emerged from our data, we found it most insightful to look at the platform’s functionality at a slightly more abstract level instead of looking at individual IT components of the platform (such as the functionality of creating a post). We thus suggest to look at *aspects* of the *functionality architecture*. For instance, while both Twitter and Facebook allow users to collaborate, their functionality architectures are quite different. While Twitter is very open and allows users to add any user or contribute to any topic by using the appropriate user names and hashtags, Facebook requires users to go to a certain group’s page and post the comment there.

Secondly, in order to make sense of the OC users’ human agency that gradually emerged from our data, we found again a more abstract level of analysis most insightful and chose the concept of technological frames of reference (TFRs) as a theoretical lens. The TFR concept aims to help understand how organisational members make sense of IT and how these interpretations influence their IT-related actions (Davidson 2006). Drawing on Gioia’s concept of frames (Gioia 1986), Orlikowski & Gash (1994 p. 178) defined TFRs as the “subset of members’ organizational frames that concern the assumptions, expectations, and knowledge they use to understand technology in organizations. This includes not only the nature and role of the technology itself, but the specific conditions, applications, and consequences of that technology in particular contexts.” While TFRs are cognitive structures held by individuals, they can be shared by a group of individuals (Davidson 2006), when cognitive categories and content overlap to a significant extent (Orlikowski and Gash 1994). In such a case, TFRs can be thought of as ‘congruent’. If, in contrast, TFRs are ‘incongruent’ in structure or content, “important differences in expectations, assumptions, or knowledge about some key aspects of the technology” may ensue (Orlikowski and Gash 1994 p. 180). These differences may lead to difficulties and conflicts with regard to the development, implementation, and usage of IT, including “contradictory actions, resistance, scepticism, and poor appropriation of IT” (cf. Lin and Silva 2005 p. 25). When TFRs are incongruent, users can engage in interaction and negotiation to reach a common frame (Azad and Faraj 2013). Moreover, the TFR perspective highlights that social meaning attributed to technology is developed and exists only in discourse (Barrett et al. 2013) and that frames are carried by discourse in any form of communicated text (Azad and Faraj 2013), including text on OC platforms. This notion of ‘(in)congruent frames’ fit very well with our data which showed collections of OC members emerging over time that seemed to have similar beliefs about and similar goals in the OC.

The TFR concept also turned out to be particularly helpful because it allowed to subsume the more detailed reasons for certain behaviors that the OC literature had previously found. It helped connect the members’ behaviors to their previous engagement with other OCs and to understand why some reasons were relevant for some members but not for others. There are different reasons or goals for OC behavior identified in the OC literature. On the one hand, OC members can have the goal of just consuming

information from an OC. For instance, members may ‘free-ride’ (cf. Wasko et al. 2009) with the goal of just finding out how other people solved a certain problem without wanting to contribute to the OC themselves. On the other hand, members may want to contribute to the OC. In doing so, however, OC members may have different goals in mind. The first such goal is trivial in the sense that it refers to members contributing to adhere to their job profile. This applies to the OC management team if it exists. The goals for the voluntary members may be more complex. Researchers have extensively studied the reasons for member participation and contribution, which has led to a growing consensus about what motivates members to contribute to OCs (Faraj et al. 2011). While factors of passion, or the member’s devoted enthusiasm for the OC’s goals, work or ideology (Faraj et al. 2011; Markus et al. 2000; Stewart and Gosain 2006) and altruism, or enjoying to help others (Markus et al. 2000; Wasko and Faraj 2005), have been found to be relevant, this paper focuses on three other perspectives of particular importance (Nambisan and Baron 2010): social capital, social exchange and social identification. Firstly, members may have the goal of contributing to build or maintain social ties (social capital perspective). *Social capital* is usually defined as “resources embedded in a social structure that are accessed and/or mobilized in purposive action” (Wasko and Faraj 2005 p. 38; cf. also Lin 2002). Such social capital is suggested to enhance members’ sense of responsibility towards the community and their feeling of obligation to help other community members (Nambisan and Baron 2010). Secondly, members may have the goal of contributing to learn (Nambisan and Baron 2010) or build their reputation (von Hippel and von Krogh 2003; Markus et al. 2000; Wasko and Faraj 2005) (social exchange perspective). This perspective is derived from social exchange theory, which posits that individuals only engage in social exchange with others if the benefits of the exchange outweigh the costs (Nambisan and Baron 2010). Finally, members may have the goal of contributing to enhance their sense of belonging to the OC or a sub-group within the OC (social identification perspective). Social identity theory posits that “people tend to classify themselves and others into various social categories, such as organizational membership, religious affiliation, gender, and age cohort” (Ashforth and Mael 1989 p. 20). *Social identification*, or “the perception of oneness with or belongingness to some human aggregate” (Ashforth and Mael 1989 p. 21) has thus been found to improve member support of the community and drive higher levels of participation in activities that benefit the community (Dholakia et al. 2004; Nambisan and Baron 2010).

Underlying these reasons for contribution to the OC is the notion that their respective strengths are at least partially driven by the size and interconnectedness of the OC network in which the member participates. For instance, a bigger and more interconnected OC network may offer more and stronger ties to, and thus a stronger sense of responsibility for, other members (social capital perspective), more potential for learning and reputational gains (social exchange perspective) and a higher chance of finding similar members and groups to identify with (social identification perspective). Related to this is the notion of *critical mass*. It posits that some threshold of engagement or participation must be reached before a social movement may emerge (Wasko et al. 2009). One can thus hypothesize that a sense of responsibility, potential for learning and reputational gains as well as identification with other OC members may only emerge if a critical mass of certain activities or certain types of OC members is obtained.

Method

Investigating the phenomenon of OC member contribution emergence is, however, a challenge. OCs are considered “fluid organizational objects” (Faraj et al. 2011 p. 2) which require new methods that “can grasp the new realities of knowledge collaboration, no matter how emergent, complex, and ephemeral” (Faraj et al. 2011 p. 12). To address these challenges, a grounded theory approach with both qualitative and quantitative data is used to investigate the longitudinal case study of AshokaHub.

Ashoka describes itself as “the global association of the world’s leading social entrepreneurs”, aiming to shape “a global, entrepreneurial, competitive citizen sector” (Ashoka 2011). Ashoka strives to achieve this mission by building and nurturing a network of currently more than 2,500 social entrepreneurs, so-called Fellows, who have developed non-profit, for-profit, and hybrid ventures to achieve social and environmental impact. With the Fellowship growing, building a real, global community for Fellows became increasingly complex. AshokaHub was thus conceived as a solution to these challenges. Initiated by a group of Fellows in 2008 and developed initially from 2009 to 2011 by a joint team of Ashoka staff and Ashoka Fellows, AshokaHub is a limited-access online space which aims to enable users to find and

contact one another easily, share up-to-date information about their work, and exchange resources and knowledge with one another (Ashoka Hub 2012). The platform is envisioned to create self-organized collaborative action that lowers the “high cost of sharing actionable, real-time knowledge” among social entrepreneurs and reduces the “challenges to achieving economies of scale by deploying shared resources toward shared goals” (Ashoka Hub 2012). In first phase, the AshokaHub platform offered functionality that was less sophisticated but similar to other social networking platforms. This included private messaging, searching for users, and user profile pages. Users could create events, post problems as ‘needs’, ‘offer’ solutions to each other, and start discussions around these ‘collaboration objects’. Finally, users could tag events, needs and offers, and customize their ‘newsfeed’ by following tags, events, needs, offers, and people. In the first phase, however, users could not create groups on the platform.

Grounded theory emerged as an appropriate method to study AshokHub because it is fundamentally aligned with the research question. Grounded theory aims to develop new theory from data (cf. Suddaby 2006; Glaser and Strauss 1967) and can be seen as the kind of ‘messy and holistic method’ that is needed to study the complex nature of OCs (Browning et al. 1995; Faraj et al. 2011). However, to be fully effective, the grounded theory approach needed to integrate both qualitative and quantitative data to comprehensively capture the multi-faceted nature of the emergence of member contributions in a nascent OC. This is novel because, so far, OC research has generally relied on either qualitative data from ‘netnographic’ studies (e.g., Jarvenpaa and Lang 2011) or on quantitative data, for instance historical network data (e.g., Ransbotham and Kane 2011; Singh 2010). Although it has not yet become a mainstream methodological strategy (cf. Mingers 2003), combining quantitative and qualitative methods is generally encouraged (cf. Suddaby 2006) and has been put forward as a promising approach (Tashakkori and Teddlie 1998). Such a multi-method approach promises to help “gain richer and more reliable research results” (Mingers 2001 p. 243). Although grounded theory is generally associated with qualitative data (cf. Suddaby 2006), it can indeed be used to combine qualitative and quantitative data as long as there is a ‘true interplay of methods’, in which the “qualitative should direct the quantitative and the quantitative feedback into the qualitative in a circular, but at the same time evolving, process with each method contributing to the theory in ways that only each can” (Strauss and Corbin 1998 p. 34).

We subscribe to this view. The result is a circular research process with four stages that runs in several iterations. Depending on the state of theory development, each iteration can encompass two quantitative (exploration and pattern analysis) and two qualitative methods (netnography and interviews). In the first stage, explorative quantitative methods are employed to visualize and describe certain dynamics unfolding in the AshokaHub OC on an aggregate level. Essentially, a timeline is used that records different activity metrics such as knowledge collaboration intensity on a weekly basis. Knowledge collaboration intensity is measured as the length of contributions (i.e. comments) to AshokaHub collaboration objects, such as offers, needs, and events. In the second stage, interesting patterns are analyzed in more detail. For instance, the growth of contribution activity by AshokaHub members versus the AshokaHub management team can be studied over time to see whether this growth has a systematic cause. If interesting patterns are found, they become part of the theorizing. In both ‘quantitative’ stages, findings are considered (partial) observations of OC activity and thus recorded in field notes along with their respective context and timing to make these data accessible to grounded theory coding methods. In the third stage, netnographic methods (Kozinets 2002) are used to investigate the context and history of a particular sub-realm of the AshokaHub OC that demonstrates an interesting pattern. This includes observations of behavior in the OCs, for which field notes are taken (cf. Jarvenpaa and Lang 2011). Finally, semi-structured interviews with Ashoka Fellows from the US, Europe, Africa, Asia, and Central America and with members of the AshokaHub team are conducted to get rich insights into their interpretations of concepts or relationships identified earlier in the research. Interviews are conducted in English, German and Spanish via telephone, tape-recorded, translated and transcribed (cf. Bryman and Bell 2003). Each new iteration of this research process takes a different shape due to the theoretical sampling conducted after each stage. Theoretical sampling not only defines *what* to study next but also *which methods* to use to that end (Strauss and Corbin 1998). The goal of all iterations is *theoretical saturation*, defined as the point at which “no new properties, dimensions, or relationships emerge during analysis” (Strauss and Corbin 1998 p. 143).

Following the grounded theory tradition, data gathering and data analysis are performed at each stage of the cycle. In particular, data analysis is done using constant comparison and appropriate coding methods,

that is open and axial coding in NVivo qualitative analysis software (cf. Strauss and Corbin 1998). Following, Tracey, Phillips & Jarvis (2011 p. 64; cf. also Gioia et al. 2010) this iterative approach moves “among data, emerging patterns, and the literature” and aims to reach “a synthesis anchored both empirically in [the field] data and theoretically in the literature.” To ensure analysis validity, this process is accompanied by critical scrutiny of potential biases in interview responses (e.g. interviewees following a cultural script or giving politically motivated answers) (Alvesson 2003) and continuous reflection on whether and how existing conceptualizations influence the analysis (Suddaby 2006).

So far, we have gone through several iterations of this circular research process. We have conducted two major phases of interviews and are currently in the third phase. The first set of 13 interviews with prospective AshokaHub members and its management team were conducted before the OC’s launch in August 2011. The interviews focused on baselining and covered the interviewees’ expectations of AshokaHub and why they would use and contribute to it. The second set of 21 interviews were conducted one full year after the launch. They covered the process and reasons for member contributions as experienced by the interviewees during the first year. The current third set of interviews with OC members, the management team and regional community curators, of which five have been conducted so far, focus on how the process and reasons for member contributions have changed after the AshokaHub team relaunched the platform with new functionality and a new strategy for community curation in early 2013. Between the three interview phases, platform activity data and additional netnographic data were gathered and analyzed as part of the exploration and pattern analysis stages of the research process.

Initial Analysis

Although data gathering and analysis are still ongoing, we can briefly present the current state of the analysis. This description focuses on data gathered until early 2013 (see Figure 1).

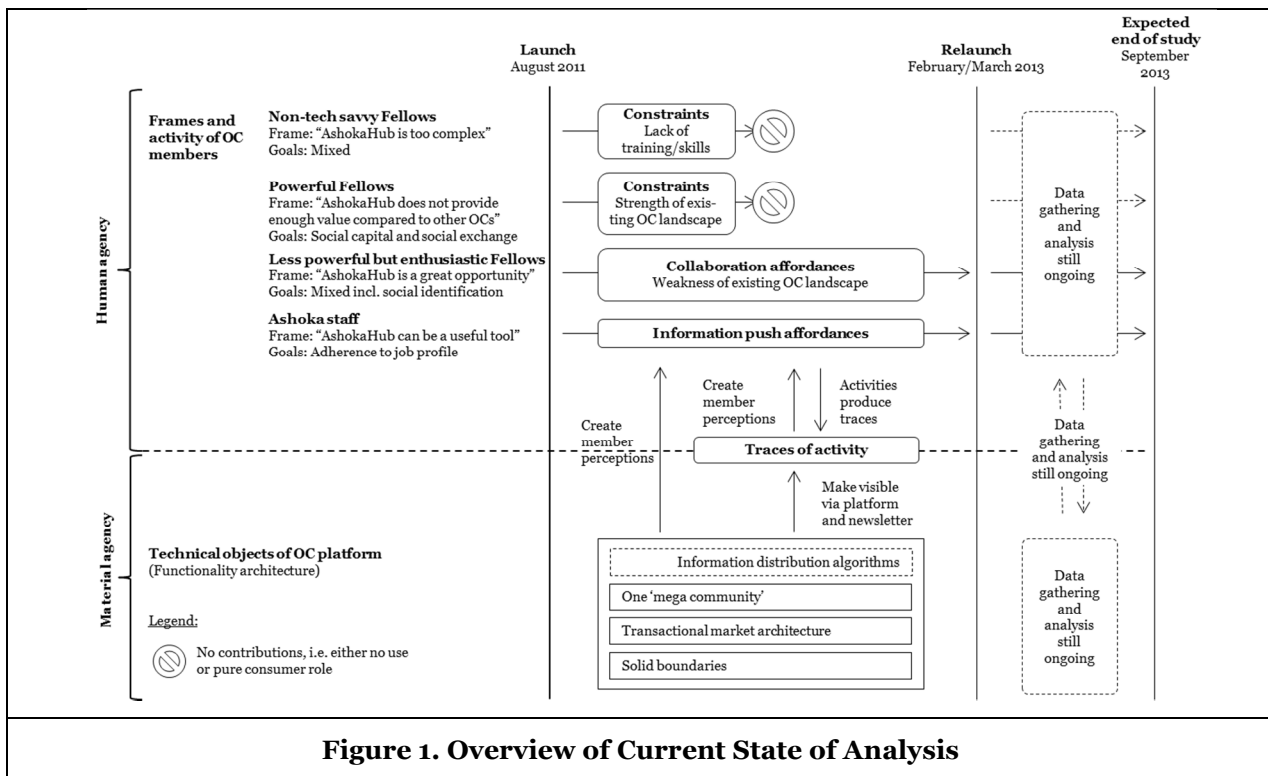


Figure 1. Overview of Current State of Analysis

When iteratively analyzing the data, we identified (at least) four different groups of OC members. Each of these groups appeared to have congruent frames regarding AshokaHub as well as very similar goals, which led to their perceiving similar affordances. The first group consists of the non-technology savvy Fellows. Ashoka has elected Fellows since the 1980s, which means that a considerable proportion of them

is older. While they seemed to have mixed goals, they did share the common frame of AshokaHub being too complex. They were almost excluded from using the platform right at the beginning because they had only limited skills in using information technology and OCs and because training was only provided to a limited degree. Perceiving only constraints to their goals and no means of or interest in changing the platform, these users thus dropped out of the OC quite soon. The second group consists of powerful Fellows. These Fellows were mainly from developed countries and were perceived as powerful by others because they were very successful with their ventures and thus often had a big network of resources and contacts at their disposal. Given their status in their particular field of work, other Fellows wanted to connect with them on AshokaHub. Powerful Fellows were likely to have a 'business mindset' and pursued goals of benefitting their venture via social exchanges or nurturing existing social ties on AshokaHub. Their shared frame can be seen as AshokaHub not providing enough value compared to other OCs. These Fellows were quite technology-savvy and extensively used OCs and social media in general to develop their ventures further. Drawing on their extensive 'virtual landscapes' of OCs, they tried using AshokaHub in creative ways that fit into this landscape. For instance, one Fellow wanted to use his AshokaHub as a sounding board for new ideas for his venture. As these imported and creative uses did not find the expected response, they perceived constraints rather than affordances on AshokaHub and dropped out of the OC. The third group consists of less powerful Fellows. These Fellows were mostly from developing countries and felt enthusiastic about AshokaHub. Their common frame revolved around AshokaHub being a great opportunity. They did not see the material characteristics of the platform as constraints. Rather, driven by their identification with Ashoka and only a weak existing OC landscape, these Fellows viewed AshokaHub as an opportunity for them and saw affordances for collaboration. The final group consists of Ashoka staff whose goal was mainly to adhere to their job profile, which, often enough, did not explicitly contain work on AshokaHub or rules for engagement with Fellows. Their shared frame revolved around AshokaHub's potential to be a useful tool. Given this perceived uncertainty, most Ashoka staff members did not fully engage on AshokaHub, e.g. through discussions, but rather only pushed information to Fellows.

These shared frames, goals and affordances of OC member groups seemed only partially based on pre-existing beliefs and assumptions. We found indications that they were indeed shaped by two material aspects of the OC platform. On the one hand, there is the functionality architecture consisting of the coded, technical objects of the platform that dominated the first phase between the launch and the relaunch in early 2013. Firstly, AshokaHub was designed as one 'mega community', which means that like Twitter AshokaHub enabled users to contribute offers, needs, or events not to a specific group or sub-community but to the global community as a whole – only using tags to specify their intended audience. Secondly, AshokaHub had a 'transactional market architecture', which means that the focus was not on social, including personal, interaction via direct messaging or the posting of photos or other stories. Rather, it was built around the idea of transactional exchanges of resources and knowledge. Thirdly, AshokaHub had 'solid boundaries' in the sense that the community was only accessible for Ashoka Fellows, staff and some external members and in the sense that it was difficult for users to automatically have information pulled into AshokaHub from their own OCs or pushed out to them from AshokaHub. This functionality architecture shaped the perceptions of OC members. Powerful Fellows, for instance, who were used to sophisticated OCs with customizable subgroups in their existing 'OC landscapes' felt that AshokaHub's vastness impeded their goals of efficient, value-driven interaction:

I just think the idea that one big mega network of everybody just gives you a richer ecosystem of opportunities is wrong - it gives you a richer ecosystem but then it looks like a very, very busy or empty or difficult to navigate space. I'd rather take my canoe into a nice, small lake than into the Atlantic Ocean. And the AshokaHub is the Atlantic Ocean. (Ashoka Fellow, UK)

On the other hand, there are the traces of activity that OC members produced through their engagement with the platform. This refers to the needs, offers and events objects that OC members co-created through initial posting and subsequent commenting and also to 'meta information' such as success stories of previous AshokaHub activity or the information about who were the most active users. These traces showed not only *what* to share on the OC but also *how* to use the platform. Like the functionality architecture, these traces shaped the perceptions of OC members. In contrast to the functionality architecture, however, these traces were not as readily perceivable to OC members. Indeed, it was the OC platform's set of algorithms that determined which other members, offers, needs, and events as well as comments to these objects were shown to users and in what form. Given that traces of activity transport

the crucial information of what level and kind of activity there is and who is active, the material agency of the platform arguably had significant influence on members' perceptions rendering certain things visible and others invisible.

As argued before, the emergence of member contributions was limited after the launch of AshokaHub. The usual explanation is that critical mass was not achieved. But why, given the positive starting conditions for this community, was it not achieved? Our current data suggest that indeed the materiality of the OC platform played an important role in this process. The solid boundaries limited other users from joining the OC from the very beginning and the complexity of the transactional market architecture excluded more potential contributors early on. Rather ineffective information distribution algorithms and an overwhelmingly complex one-mega-community architecture caused potentially important traces of activity to go rather unnoticed. As powerful Fellows dropped out, the perceived value of the community deteriorated further. Although less powerful Fellows were enthusiastic, they did not have the gravitas of powerful Fellows to attract many others and, again, the limited transparency of activity constrained the reach of the traces of their collaboration activity. Finally, adhering to their job profiles, Ashoka staff mainly contributed information without inviting much contribution behavior by Fellows. Eventually then, use seemed to have converged around a directory and bulletin logic, which did not require the activity of others on AshokaHub.

Initial Discussion and Outlook

Data gathering and analysis are still ongoing and will extend these findings. One potential future avenue could be the investigation of the narrative networks (Goh et al. 2011) emerging on AshokaHub as users enact new roles. Even so, we believe that our findings already suggest that the materiality of the technology platform plays an important role in the emergence of member contribution behavior in nascent OCs. Moreover, they suggest three extensions to the concepts of affordances and imbrication.

Firstly, we argue that members see an OC in the context of the 'virtual landscape' of OCs that they are already engaged in. This influences the affordances they perceive. This extends Leonardi's (2011) concept of imbrication by seeing it not necessarily as a tidy, linear sequence where affordances and constraints are perceived only in the light of the previous imbrications related to the same piece of technology. It may also extend the TFR concept (cf. Orlikowski and Gash 1994) by suggesting how users bring their existing frames into a new setting and how this relates to the perception of affordances. As we find in our case, OC members often already live, work and engage in a 'virtual landscape' of OCs. When they enter a new OC, they draw on their very own and individual infrastructure to make sense of the technical objects of this OC and perceive either affordances or constraints. This 'virtual landscape' influences perceptions on two levels. On the one hand, the OC's functionality is seen relative to the functionality experienced in other OCs. On the other hand, the OC is expected to be embedded in the virtual landscape and become a conduit of information in this landscape. Hence, we propose that, in the context of OCs, it is not enough to look only at the previous imbrications with the *same* technology but also at how similar it is to the other technologies in the user's existing technology landscape and how well this technology fits into it.

Secondly, we argue that user activity that enacts certain affordances leaves 'traces of activity' on the OC platform, which, in turn, are drawn on when perceiving affordances or constraints of the OC platform. The visibility of these traces depends, however, on the material agency, and in particular the information distribution algorithms, of the platform. Hence, we propose that, in the context of OCs, human and material agency may co-create and eliminate affordances.

Finally, due to the voluntary nature of OCs, members can 'drop out' and thus potentially decrease the variety of contribution behavior and corresponding 'traces' that members can use to perceive affordances. The assumption often made in studies of affordances (cf. Leonardi 2011) and TFRs (cf. Azad and Faraj 2013) that the 'workability in practice' of a technology is a desirable goal that is often enforced by management does not hold in the context of OCs. As we find in our case, OC members can decide not to use the platform anymore. This may have significant implications for the collaboration dynamics in OCs as the dropping-out not only decreases the number of contributing OC members but also the range of traces of activity available to others. Hence, we propose that, in the context of OCs, perceived constraints may lead to members stopping using the platform, which may cause significant changes in collaboration dynamics.

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