Collaborative Search and Communities of Interest:

Trends in Knowledge Sharing and Assessment

Pascal Francq
Universite Libre de Bruxelles, Belgium

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Chapter 2
From Virtual Communities to Project-Driven Mediated Collectives:
A Comparison of Debian, Wikipedia and the Open Directory Project

Christophe Lejeune
Université Libre de Bruxelles, Belgium

ABSTRACT

The lay notion of a virtual community is not satisfactory as, strictly speaking, depicted phenomena (Internet-coordinated collectives) are neither communitarian nor virtual. Moreover, the idiom embraces too wide a range of situations. For these reasons, we propose the narrower notion of mediated collectives. Previous ethnographies of Debian, Open Directory and Wikipedia help to define the notion based on empirical observation.

PHENOMENA

Lay Internet users, newspapers, commentators and politicians speak of *virtual communities*[1]. Intuitively, we all understand quite clearly what this idiom refers to. This huge interest is not merely a passing fashion. According to some of the best-known software programmers (Torvalds, 2001; Raymond, 2001), The Internet was more of a social phenomenon than a technical innovation. It therefore comes as no surprise that even social researchers are busy with *virtual communities*. But, as stated by some of them (Proulx & Latzko-Toth, 2005), the notion lacks conceptualization. We propose here to help clarify these issues.

CONCEPT

The notion of *virtual community* was not created by researchers. It came from the relevant actors, in other words the people actually involved. Such a vernacular idiom has to be defined before it can be embodied in scientific concepts (Pareto, 1935; Mounin, 1995). This can be achieved in two ways. Either it is considered a vernacular label[2]. This implies that the researcher must describe precisely how the actors define the notion; this way

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of defining a notion is specific to social sciences (whose subjects include languages and cultures). Otherwise the notion becomes a professional concept, whose content is defined by the researcher[3]. The terms alone are not enough. In the case of *virtual communities*, no such terminological task has yet been achieved.

The following sections deal with the two separate terms that make up the idiom.

Virtual

The term *virtual* was coined by IBM when it introduced a virtual memory device. This subsequently led to the creation of such idioms as *virtual reality* and *virtual community* (Rheingold, 1991; Rheingold, 1993).

Virtual communities are social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in [...] the conceptual space where words, human relationships, data, wealth, and power are manifested by people using CMC [computer mediated communication] technology. (Rheingold, 1993)

Despite this original definition, the notion remains vague. One of its common sense meanings is similar to simulation. According to this meaning, the virtual is opposed to the reality. A second meaning describes how, with cognitive artifacts, information is no longer attached to a support; the virtual then refers to disembodiment, as opposed to materiality. A third (philosophical) meaning defines the virtual as what could be actualized. As a matter of possibilities and becomings, the virtual is then opposed to the actual (Deleuze & Parnet, 2002).

Some Internet analysts oppose the virtual to categories. According to them (Lévy, 1998; Lévy, 2000), categories are about frontiers, whereas the virtual is about crossing barriers. Categories thus resemble clear-cut and impermeable containers or classes that delimit, divide or enclose. Inherited from the past, they are structures that determine history once and for all. Reticular ideology (Parrochia, 1993) breaks with such a tradition: interactions are more likely to actualize on-line, in an open, liberated way, similar to the horizontal, immanent, continuously moving relations enabled by hypertext.

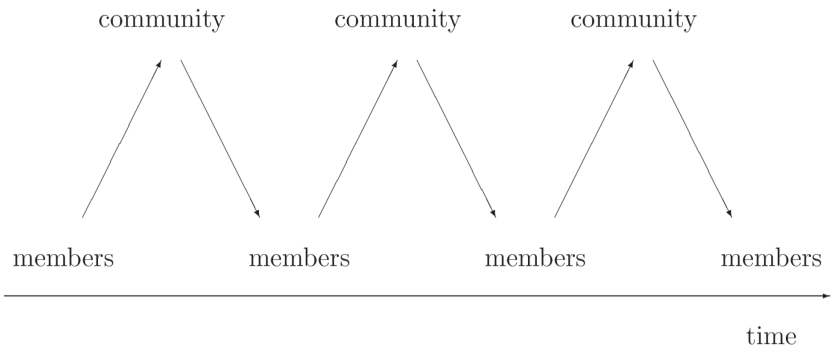
Community

Community forms part of the classical set of sociological notions: most of the founders of social sciences refer to community: Durkheim, Weber, Marx, Simmel, Le Play (Nisbet, 1993, quoted by Guerin, 2004). The etymological and semantic roots of *community* refer to "what is in common" (Winkin, 1981; Proulx & Latzko-Toth, 2005).

Traditionally, community is opposed to society. The former refers to traditions, belief, trust, value, kinship, village and family while the latter concerns innovation, rationality, interest, interaction, city and industry (Weber, 1980). The epistemological background of this classical opposition by Tönnies betrays a nostalgia for the Ancien Régime, which values *community* to the detriment of *society*. Many attempts have so far been made to scientifically define this notion (Moreau de Bellaing, 1990, quoted by Guerin, 2004). George Hillery made an inventory of 94 definitions without any common feature (Hillery, quoted by Guerin, 2004). This ambiguity can be seen as the root of the problem (Geiger, 1959; König, 1972; Minar & Greer, 1979; Poplin, 1972; Sherer, 1972, quoted by Guerin, 2004) but it also explains why the term has become so popular.

As the virtual, community can be compared to category. Both include affiliated elements called *members* (in the field of social sciences, these members are known as actors). Both community and category are membership devices. But membership is declared differently. The members of a community themselves declare that they belong

Figure 1. Mutual constitution of community and members



this community. Community membership can be declared, claimed or refuted, but cannot be imposed by someone else. It requires members to feel deep down that they belong. For categories, things work differently. A category can be attributed. It is commonly achieved in social surveys (through socio-professional groups), ordinary judgment or everyday conversation (Sacks, 1992; Hester, 1997).

What category and community have in common is that the relationship with their members is not deterministic: members do not unilaterally define the device no more than the device determines what the members are (or do). Members and community (or category) are mutually constituted. The involved phenomena are numerous and complex: membership motivated by the assignment of labels, everyday normalization and normativeness inside a community (Tajfel, 1972; Moscovici, 1984), strategical, programmatic or performative definition - by members - of a new class identity (Boltanski, 1987). Relations between members and community (or category) are complex and reciprocal. However, contrary to the diagnostic by Simmel (1908), mutual constitution is not circular, namely because it evolves with time (see Figure 1). A community (or category) can grow or dwindle; the role a member occupies can move from centrality to periphery. For community, the limit extends to the whole of humanity (which implies that the notion looses its distinctive feature). For a member, the limits are central authority or departure (which imply losing membership).

COMMUNITY COMPOSED IDIOMS

Proposed Solutions

In the previous section, we underlined existing comments on relations between the category, on one hand, and the virtual and the community, on the other hand. The category resembles the community in terms of membership but is opposed to the virtual in relation to boundaries. These remarks should not lead us to conclude that *virtual community* is an oxymoron, because the tension is based on two different aspects (membership and boundaries). The former concerns the 'vertical' affiliation of members and community, while the latter is about the permeability of the "membrane" (between inside and outside the community). However, these dimensions are neither orthogonal nor independent of each other: according to specific internal rules, some memberships facilitate connections with the outside, while others hinder them.

Sensitive to ambiguities and difficulties raised by the virtual characterization, a range of researchers propose concepts such as *on-line communities*, W*eb-based communities*, *communities of inter-*

ests, *communities of practices (*Wenger, 1998) or *epistemic communities* (Haas, 1992; Cowan, et al., 2000; Conein, 2004).

These proposals all aim to keep the notion of a community, which is combined with another dimension (on-line, Web-based interest, practices, epistemic). In a way, such proposals assume a relevant intuition (that the phenomenon is not accurately depicted by the sole invocation of *community*). From an analytical point of view, these community-composed idioms, however, complicate the issue, by introducing conceptual tensions. For instance, *community of interests* refers both to "hot" communitarian features (deep feelings, values, trust) and "cold" societal features (strategies, calculus and rationalities).

An Unresolved Problem

These idioms tend, moreover, to underestimate the differences between various meanings of *community*. There are at least two (a weak and a strong) meanings of community. In its minimal, weakest sense, community expresses that members have something in common (it is then close to category, in its broader sense). In its strong meaning, community refers to a conscious gathering of persons interacting with each other.

While "identifying communities of interest", computer sciences rely on similar traces of activities such as logs, common hyperlinks (URL), shared documents and the like. Such a "identified community" matches the minimal meaning of the concept. Indeed, even people that do not interact at all can be said to constitute a community of interest provided they share a common interest, common behavior or common practices. For social sciences, however, a common feature is not sufficient in order to refer to community (Weber, 1980). Indeed, social sciences communities are closer to the strong definition of *community*. Idioms such as political community, cultural community or anthropological community describe a range of people interacting (and socializing) with each other, independently of their interests in common features. Such communities (as described by Tönnies) correspond to the stronger notion of community. Anyway, in a number of social researches, *community* is also used in an intermediate meaning. In this later (intermediate) variation, *community* is considered a relevant contribution to members' socialization (even if no direct interactions occur). Being a member of a political community implies acting consistently with what members acknowledge to be politically-oriented behavior.

Interdisciplinary Collaboration

According to the scientific orientation (computer or social sciences), the term *community* does not designate the same phenomena. In the former case, the researcher collects similar traces of activity; he himself determines how people are brought together, independently of people's perceived identities. In a way, the community results from these scientific investigations. In the latter case, people gather by themselves, deliberately, while the researcher diagnoses this social gathering. The community thus "preexists" the social research.

Although the depicted phenomena (the minimal and strong senses of the community) are not exactly the same, they are, however, not incompatible. Identifying similar on-line practices and analyzing social mediated interactions are complimentary research programs. We furthermore argue that such a collaboration between computer sciences and social sciences can be fruitful. However, for successful interdisciplinary work, we need a precise definition of the concepts used. Basing the collective scientific effort on shared concepts without elucidating their differences would be misleading. The present argument is thus far from condemning interdisciplinary research. On the contrary, it aims to establish strong foundations to such interdisciplinary researches by shedding light on the difference between the definitions of (and phenomena designated by) the

community, before proposing an alternative free from unfounded assumptions.

MEDIATED COLLECTIVES

From Community to Collective

As we have seen with the compounds discussed above, the adjunct of a supplementary dimension to community can be misleading. Firstly, *community* introduces ambiguity, as it is understood differently according to various disciplines. Secondly, *community* assumes a bundle of traditional features (also misleading). For instance, community assumes trust among members. However, in many situations, members do cooperate through on-line interactions because it is in their interest to do so, knowing that it is in the interest of other members not to violate such a tacit contract. Resting on encapsulated interests, such behaviors are about trust, but a kind of (societal) trust - sometimes called confidence - that has nothing to do the (communitarian) trust shown to friends or family members (Lejeune, 2009).

More generally, there is nothing to indicate that on-line social interactions are communitarian. With reference to ethnographic elements collected on the subject of on-line cooperation (see below for further information), we therefore argue that there is no reason to assume that these phenomena have more to do with community than society. The adjunct of a supplementary dimension is thus not sufficient to deal with problems linked to these communitarian assumptions. From a sociological perspective, *community* is thus too narrow a concept. For these reasons, we propose abandoning the notion of community. It would appear more accurate to speak of a *collective*. A collective can be made up of either community or society-style relationships.

From Virtual to Mediateness

A common feature of collectives that have been the focus of current research is that they are Internet-based. It is precisely for this reason that they are said to be *virtual*. It must be stressed that the virtual is considered synonymous with becomings (as opposed to actual), simulations (opposed to reality) and disembodiment (opposed to materiality). Unfortunately, none of the meanings of *virtual* help to describe the specific phenomena of Internet-based collectives.

The former (philosophical) meaning is quite easy to dismiss. If Web-based collectives involve becomings, they would generate only likely, *possible* interactions. Such becomings would have a chance of actualizing in another space and time. Arguing that social initiatives can be catalyzed through on-line mobilization, this meaning provides fruitful metaphors for political discussion (Lévy, 1998). But, despite this analogical virtue, such an argument simply fails to make sense: some events, encounters and mobilizations do occur on-line, it is not just about becomings.

In the scope of Internet-based collectives, the second meaning sounds equally strange. On-line collectives do not simulate off-line socialization. Even if critics of the Internet might argue that computer-supported interactions are less real that face-to-face conversation, this argument is insufficient to conclude that Internet-based collectives work at building *unreal* interactions. Their number and strength testify that these interactions (though perhaps specific) are real.

Considered as the prototype of interactions, face-to-face conversations are embodied. Compared to such co-present relations, on-line interactions are disembodied. The lack of visual feedback conflicts with mutual regulations. Inside such collectives, people indeed interact (on discussion forums, via email or instant messaging) mostly though language without any direct visual contact. When non-co-present people interact remotely, they are likely to adopt a rather specific language,

which is free of non-verbal expression. Thus, as shown by a range of studies (Herring, 1996; Yates, 2001), on-line communication is rather specific.

While there is no sociological reason to distinguish on-line interactions (as not-yet-actualized or unreal), there are thus strong communication reasons to isolate on-line interactions as *mediated*. From a communication perspective, it would therefore be more accurate to speak of *mediateness* than *virtual*. For this reason, we speak of *mediated collectives*.

PRODUCTION ORIENTED MEDIATED COLLECTIVES

A mediated collective is therefore a collective. It is actually composed of interdependent relations between people. A collective is indeed the result of multiple mutually-oriented interactions (Weber, 1980). One single accurately accomplished interaction is thus not sufficient.

When the main channel for such relevant, mutually fine-tuned interactions differs from face-to-face conversation, the collective is mediated. Mediated collectives are thus defined as sets of mutually-oriented interactions using technology-mediated communication. This definition is indeed close to the definition that Howard Rheingold (1993) originally gave to *virtual community* (see above quotation). Our definition, however, avoids the confusion associated with these terms.

Based on this definition, while CB radio collectives and the free software movement differ from a communication perspective, this is not necessarily the case from a sociological perspective. As we have already discussed, mediated collectives can be either communitarian or societarian.

While the notion of *mediated collectives* more accurately describes the Internet-based social phenomenon, it could, however, potentially cover a range of phenomena as broad as *virtual community*, including, for instance, dating clubs, programmer teams, groups of cookery fans or gatherings of martial arts practitioners.

Most of these collectives are on-line spaces where meetings and discussions take place or tips can be exchanged. Only a few collectives provide deeper social collaboration. The former focus on communication while the latter bring together people who focus their efforts on the realization of a common production. Although such collaborative practices do not constitute a *community*, they still constitute a relevant factor for the isolation of a class of project-driven mediated collectives. Pursuing a common purpose, these collectives imply collaboration on a collective production. Most of the time, these specific mediated collectives require their members to purposely interact.

Free software initiatives are instances of such project-driven mediated collectives. But free software is not the only possible product of Internet-based collaboration: literary, content or editorial works can also be collectively achieved through Internet. In the following sections, empirical elements from ethnographic investigations of such initiatives will help to further specify the notion of project-driven mediated collectives.

EMPIRICAL GROUNDS

The fact that analysts still speak of *virtual communities* in a wide range of situations has helped to under-determine it: the notion qualifies discussion forums, dating sites, social networks, multiplayer on-line games or collaborative projects. But case studies - in linguistics, anthropology and communication - show that these configurations are radically heterogeneous. Underspecification thus had the advantage of encouraging numerous detailed ethnographies, helping to better understand various concrete phenomenal realities than a disembodied concept.

We propose to take advantage of these studies (including our own investigations) in order to give

content to the specific notion of *project-driven mediated collectives*. We start from descriptions of Debian, Open Directory Project and Wikipedia collectives. These empirical ethnographic elements help to establish the common ground of collectives involved in free software or free content elaboration.

Targeted Productions

Common Features

All studied initiatives have the purpose of releasing a collective production. The Debian collective designs software, which forms part of an operating system. Members of the Open Directory Project work on the collation, description and organization of web site addresses into a hierarchical thematic directory. Wikipedia contributors prepare articles for a generalist encyclopedia.

These collective productions have a high degree of dematerialization and largely consist of computer files. Moreover, due to their low finiteness, they require regular maintenance and are never completed.

Differences

Historically, people gathered on-line in order to collectively produce software before content: the GNU operating system project was launched by Richard Stallman in 1983 and Linus Torvalds launched Linux kernel in 1994. When the Open Directory Project was launched in 1998, the model for such a collaborative project moved from software design to the sphere of content edition. GnuHoo, the first name given to the directory makes this inspiration explicit. Since then, similar initiatives unite people (who are not computer specialists) for the realization of language resources (such as dictionaries - FreeDict - or thesauri - WordNet) or cultural information (such as an encyclopedia - Wikipedia - or a directory - Open Directory Project).

Contributors

Common Features

Those taking part in the initiative are mainly volunteers; they contribute either occasionally or on a regular basis. Users participate occasionally (which means that many users are involved). Moreover, such user contributions take a variety of forms. They can consist of bug reports (when the targeted production is software) or reference submissions (for a directory) or the correction of typographic misprints (in the case of an encyclopedia).

In order to contribute on a regular basis, users are encouraged to apply spontaneously. Most of the time, applications focus on a part of the targeted production: a software feature (or package), a directory rubric (Lazaro, 2008; Lejeune, 2006). If the application is accepted, the contributor becomes accountable for the dedicated part and becomes a member of the collective (such as Open Directory *editors* or Debian *developers*). Such a division of labor implies that any member is not allowed to work directly on any part of the production. Initiatives (such as Wikipedia) where any member can work on any part without any prior application are thus marginal.

In selected cases, supplementary prerogatives are added to membership, such as - typically - the ability to work on any (not necessarily explicitly entrusted) part of the product. Wikipedia's *administrators* and Open Directory *meta-editors* are instances of such a position. As membership, such supplementary responsibilities are delegated on a voluntary and meritocratic basis and usually attributed though a co-opting procedure (Auray, 2003a).

Differences

The voluntary character of the commitment can be variable (in selected cases, contributors may be salaried). Company initiatives (such as StarOf-

fice, initiated by Sun MicroSystem) often involve salaried contributors. In other cases, collectives are initiated by individuals and ask companies for support at a later stage (these companies may then assign some of their staff to this project - as America Online did for the Open Directory Project or Andover for Slashdot). Other successful initiatives (such as Wikipedia) also secure sufficient funding to hire some of their contributors. Very different configurations may follow within the same project. For instance, a software suite first initiated by a company (Netscape) was later released as a community-driven open source project (under the Mozilla name), which gained a huge number of volunteers and subsequently created an eponymous foundation (owning the Firefox and Thunderbird trademarks), which now hires some of its contributors.

Regulation

Common Features

Given that targeted productions are dematerialized, contributors can be coordinated through on-line communication devices (in particular, Usenet groups, instant messaging, discussion forums and emails). Modalities of regulation are similar to direct democracy: any member is invited to take part in every discussion inside the project (Lejeune, 2002).

Differences

When the ability to close the discussion happens to be reserved to some members (Lejeune, 2010), the role distinctions bear some similarity to a hierarchy (Lazaro, 2008; Lejeune, 2006). Contrary to what has been said by some early commentators on on-line phenomena (Lévy, 1997), collective phenomena are thus not necessarily less structured, organized and hierarchical because they are *virtual*.

Peak Moments

Common Features

Mediated collectives are punctuated by peak moments (Boltanski, 2006). Such events have a limited duration (an evening, a couple of days or a week). During such an event, contributors are encouraged to combine their efforts in order to correct any remaining imperfections in their collective production. Such defects can result from lack of time from the members responsible for the concerned part or from particularly difficult problems. By reallocating the remaining tasks, peak moments provide solutions to these situations.

In the Open Directory Project, members inspect all references submitted by users that are not yet edited so that these submissions can be included in the public directory. Given that the editor interface features submitted references as green hyperlinks, the peak moments are known as *greenbuster* parties. Thanks to these parties, the directory is as up-to-date and as user-concerned as possible.

In software programmer collectives, members are invited to correct defects (known as bugs) existing in software (Auray, 2003a). The *bug squashing parties* stands for these peak moments. These parties ensure that the distributed software is as bug-free as possible.

In both cases, peak moments provide an opportunity for active members to intervene on parts that are not necessarily assigned to them. Peak moments thus interrupt the ordinary division of labor described above. For members going beyond their usual sphere of activities, peak moments therefore represent an opportunity to demonstrate that they are ready to apply for further responsibilities in the collective.

Differences

In some cases, the peak moments are motivated by a major release. Motivated by a quality concern,

collectives dedicated to software programming aim to ensure that there are as few errors as possible in the product that they distribute to the vast majority of users. For this reason, they do not distribute the continuously contributed (and thus modified) version of their work but, instead, a double-checked, error-free version. At least two different versions can thus be distinguished: a development version (with ongoing modifications) and a production version (distributed to users)[4]. Before releases, the latter version is widely tested, improved and corrected, precisely through peak moments such as bug squashing parties.

Unlike free software development, collectives involved in free content development (such as Wikipedia and the Open Directory Project) continuously provide each user with the one and only v of their production (no development version exists). In these cases, development is thus not punctuated by releases.

However, there are even some differences between content production collectives. Under Wikipedia, user contributions are publicly available as soon as they are submitted. The configuration of the Open Directory Project is somewhat intermediate: although there is no development version, user contributions are, however, not directly available to the public. They are first submitted to a private space, for approval by an editor (through the above-mentioned appearance of green hyperlinks). Although there is only one version of the directory (as for Wikipedia), user-contributions are first examined before being distributed as a reliable production (which is also true of Debian).

CONCLUSION

Fruitful interdisciplinary researches cannot be based on loose definitions. In the first part of this chapter, our discussion of academic literature showed the implications of terms like *community* or *virtual*. In order to identify what each discipline can contribute, we have explicitly isolated the phenomena investigated under these terms. This exploration reveals inaccurate assumptions. In order to avoid these undesired assumptions, we propose the notion of mediated collectives.

The ethnographies of the Open Directory, Debian and Wikipedia therefore suggest a class of these mediated collectives. Such project-driven mediated collectives belong to collective apparatuses, whose members are involved in the concrete production of content or software. Each voluntary member of the collective applies to become responsible for one part of the overall production. Coordination is based on discussions, but regulation is not strictly based on direct democracy, given that more committed members can be entrusted with some decision-making prerogatives.

As showed by these empirical elements, the social organization of mediated collectives is not necessarily communitarian, in the strong sense typically used in the social sciences. This, however, does not prevent us from identifying traces of activities (logs, for example) from this social collaborative distribution of on-line labor. These clarifications aim to provide solid foundations for collaboration between computer and social sciences within the scope of the scientific study of mediated collectives.

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ENDNOTES

[1] The author is thankful to Yana Breindl and Pascal Francq for their comments to a preliminary version of this chapter. Thanks to David Ward for helping to revise the preliminary version and correct the English text.

[2] Importing common sense notions into scientific terminology is nothing but usual, while researchers share language and culture with lay members (Rose, 1960).

[3] In such a case, the definition is thus conventional.

[4] In many case, the situation is even more complex. For instance, the Debian Project provides an experimental stage, a development version, a testing version and a stable (production) version (Lazaro, 2008).