

## From Community to Text and Back On Semiotics and Ant as Text-Based Methods for Fleeting Objects of Study

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**Abstract** This article illustrates a case study where the adoption of epistemological assumptions and data analysis techniques borrowed from both semiotics and ANT have enabled the researcher to transcend the limits that characterise traditional studies on online communities underpinned by a “sociology of the social” approach. Today, the very concept of “online community” seems to be at stake, to the point that it is no longer clear whether there exist online ties that are specific enough to be called “communitarian”. In order to analyse such an opaque and unstable object of study, innovative methods specifically developed to study fuzzy objects have to be devised and some epistemological questions have to be addressed. Approaches like semiotics and ANT turn out to be useful exactly because they use texts as “handles” to grasp heterogeneous, transient, objects of study. This article discusses in details a “funnel-like” method of analysis in a research field that has too often forgone the critique of epistemological assumptions inherited from other disciplines.

**Keywords** online communities; information systems; method; semiotics; ANT

### Introduction

Drawing upon the methods developed as part of the *Tracing Back Communities* research,<sup>1</sup> this article illustrates a case study where the adoption of epistemological assumptions and techniques of data analysis borrowed both from semiotics and Ant have enabled the researcher to transcend the limits that usually characterize studies on online communities underpinned by a “sociology of the social” approach (Latour 2005a).

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<sup>1</sup> *Tracing Back Communities. An Analysis of Ars Electronica’s Digital Communities archive from an Ant perspective* is the title of author’s doctoral dissertation at University of Milan-Bicocca. The dissertation was discussed in March 2009.

Traditional sociological approaches to online communities (OC) have often paid with arbitrariness the heterogeneity and fuzziness of similar objects of study. Early studies from the nineties, for instance, took the dichotomy “virtual Vs. physical realm” for granted and concentrated on whether OC might be compared to real ones, or on the indicators that help distinguish “true” communities from other types of looser aggregations.

However, about fifteen years later the same concept of “online community” seems to be at stake, to the point that it is not longer clear whether there exist online ties that are specific enough to be called “communitarian”. In order to analyse such an opaque and unstable object of study as current online techno-social communities, innovative methods specifically developed to study fuzzy objects have to be devised and some epistemological questions have to be addressed.

A similar methodology should enable the researcher to refrain from *a priori* postulating specific types of grouping, to deal with the transient, unstable nature of social ties, especially online, to extend agency to non-humans, to recognize innovation in emerging forms of interaction. As a matter of fact, similar epistemological assumptions are embodied by text-based approaches like semiotics and Ant.

According to those social sciences which aspire to hardness, semiotics is charged with being a discipline that *only* deals with texts: on the contrary, by trying to avoid the blind alleys wherein many researches on online communities ended up, semiotics and the specific strand of Ant developed by Bruno Latour turned out to be useful *exactly* because they use texts as “handles” to grasp heterogeneous, transient, fuzzy objects of study.

This article shows how a text-based approach makes possible a different method of analysis in a research field that has too often forgone the critique of epistemological assumptions inherited from other disciplines (i.e. computer sciences and economics). By discussing a method underpinned by the dialogue between Ant and semiotics, this article outlines a path for those who do not want to produce another research which aims at distinguishing “true OC” from “mere aggregates”, but aim at adopting a performative definition of “community”.

§ 1. enumerates the epistemological constraints posed by transient, fuzzy techno-social communities, and the limits of prior methods of analysis. § 2. deals with the choices made on an epistemological level to face those constraints, while § 3. and § 4. respectively show the solutions adopted as far as the choice of the sample and the techniques of data analysis are concerned. Furthermore, § 5. illustrates some research applications that can help throw light on the method proposed. Finally, § 6. draws some conclusions.

## **I. Interrogating Fuzzy Objects**

Any research on OC carried out in the first decade of the twenty-first century must face some pieces of evidence that tend to make the object of study opaque and fuzzy. First, since 2000 developments in the economy of Internet (see Anderson 2006; Benkler 2006; Carr 2005a, 2005b; Formenti 2008; Lovink 2007) and in

the politics of information (see Goldsmith and Wu 2006; Lessig 2001; Shirky 2003) have called into question a considerable amount of the utopias that the digital community paradigm inherited from cyber-culture and from counter-culture (Pelizza 2009). More generally, in their discussion on the three theoretical bridges at the confluence on communication studies and Sts, Boczkowski and Lievrouw (2008) have showed how over the last two decades the “continuity view” about the social effects of media has been overcoming the “revolutionary rhetoric” and the “new technologies, new society” discourse.

The shift from the prairie to the battlefield has been promptly documented by scholars from diverse disciplines (see among others Lovink 2003, 2007; Lovink and Rossiter 2005; Pasquinelli 2008; Turner 2006). Similarly, some authors agree in arguing that the “digital information revolution” has been incrementally replaced by achievements in security, reliability, and ease of use (Graham 2004; Herring 2004; Lunenfeld 2004).

Despite the different approaches, these authors have all argued that many of the postulates that the communitarian, non-profit Internet culture has inherited from cyber-culture cannot be taken for granted, when they are not overtly disproved by evidence. As a consequence, some academic commentators have renounced to acknowledge the digital existence of peculiar social aggregates kept together by communal ties, and influent sociologists that have opened the field of Internet studies have replaced “communities” with “networks of individuals” (Castells 2001; Wellman 2001).

Second, it might be said that while the cyber-culture paradigm underpinning the notion of “virtual community” is showing its limits, other domains are taking over this notion. We are witnessing the explosion of the *gemeinschaft* well beyond the domain of sociology and computer science – towards economics and management, as well as beyond academic institutions – towards market and corporate media. It has crashed the boundaries of social sciences and urban planning to shore on the crowded coast of business, Internet companies and media discourse. As Woolgar (2002) has pointed out, the discourse behind all the narratives of the “virtual” as opposed to the “real” is characterized by hyperbole: terms like “virtual” and “remote” are applied to activities and institutions in order to attribute them an appealing image.

As a consequence, an ever-widening meaning of community is ascribed to the meaning of OC. There is a clear etymological trend in the successive variations of this expression: it goes from the most specific meaning of the early underground scene to the most comprehensive one (Wellman 2001). “Online communities” have been ranging up to include almost every form of aggregation through ICT: collaborative tagging, blogging, bookmarking associate objects as well as digital *personae*. This evidence questions the distinction between human beings and objects, and asks whether it is possible to extend agency to technological artefacts.

Third, OC have been growing in popularity as the range of potential shared interests has widened. If the Berkshire Encyclopaedia of Human Computer Interaction indicates digital divide's reduction, open access to ICT, community empowerment and revitalized democracy as issues that were addressed by “cybercommu-

nities” during late nineties, with social networking sites (SNS) it has become hard to identify an explicit interest focus that expands beyond sociability itself. If early OC were glued together by a common mission, today “the interest focus cannot be considered a prolific category for research” (Mascio 2003). Likewise, Boyd and Ellison (2007) argue that SNS mark a shift from interest-centred networks to me-centred networks, and that this shift mirrors a new organizational structure of OC.

Fourth, pervasive computing and smart mobs (Rheingold 2002) show much more variegated ways to articulate the dichotomies /individual Vs. collective/ and /physical Vs. virtual/ than it was postulated by early research on OC. In early works from the nineties, in fact, even a context-oriented approach like virtual ethnography (Hine 2000) tended to focus on online practices as the primary field of investigation, without taking into account their overlapping with off-line practices. On the contrary, more recent empirical research has shown that the introduction of computer-mediated technologies can stimulate activities in the “physical” domain (Nettleton *et al.* 2002).

As a consequence of these movements, in the last few years OC are becoming more and more difficult to be delineated and their boundaries have become fuzzy. Early researches in the nineties could quite straightforwardly not only postulate specific definitions of OC as starting points, but also classify them according to their attributes, the type of technology used, their relationship to physical communities and their degree of “boundedness” (Lazar and Preece 1998). Today, on the contrary, this proliferation gets to the point that drawing a list of all the types of grouping subsumed under the term “online community” appears an impossible task.

In other terms, it is not clear anymore whether there exist ties that are specific enough to be labelled “communitarian” and that can be assembled together in constituting a special assemblage. “Community” seems to be watered down: it is diffuse everywhere and yet nowhere in particular.

These features of the object of study converge in enlightening an “opacity” of OC, a sort of resistance to being “grasped”. Differently from earlier studies carried on in mid nineties, today the researcher interested in digital social assemblages encounters more and more problems in setting the boundaries of her object of study. The main epistemological constraints arising when starting a scientific work on online social aggregates can be resumed as the following.

First, the semantic proliferation of the term “online community” means that *a priori* drawing a list of all the types of grouping subsumed under this notion would be an arbitrary task. When groups proliferate, objectivity has nothing to do with the *a priori* selection of one better group to start with, but rather with the observation of different contrasting selections. To retain a scientific approach, it is necessary to avoid defining the type of online group that is supposed to be relevant to the analysis *before* beginning the research. As Ward (1999, 96) has pointed out, research on computer-mediated assemblages needs to avoid “holding any preconceived ideas concerning the existence of community”. Following similar concerns, Teli *et al.* (2007) wonder how we can define online groups by avoiding the dichot-

omised discourse of the “virtual lexicon”, and propose to replace it with a “cyborg lexicon”.

Second, while mid nineties’ studies on OC took for granted the existence of a specific “communitarian” substance distinguishing OC from other types of techno-social assemblages, today the appropriation of the term by business operators makes it evident that one cannot postulate the existence of peculiar solidarity-based aggregates definable as “online communities”.

Third, online social assemblages are not established once and for all. As studies on the high percentage of lurkers in online discussions demonstrate (Nielsen 2006), boundaries are so hazy and the number of those that cross them regularly so high that one should better admit that stability and order are rare exceptions. Therefore, a research dealing with online social assemblages needs to constantly address the fleeting nature of social ties and to focus on the means whereby elements are kept assembled.

Fourth, what is difficult when dealing with those techno-social assemblages commonly subsumed under the umbrella term “online community” is precisely to disentangle the technological dimension from the human one. As a matter of fact, where is the threshold between the social and the technological set when it is the software interface that rearranges the regimes of access and visibility?<sup>2</sup> To account for the fact that “software is political science in executable form”, it is necessary to avoid deterministic explanations of the relationship between technological artefacts and social ties as a simple relation of cause-and-effect and explore more flexible definitions of agency.

Fifth, the importance of avoiding the reduction of online forms of collaboration to simple patterns of interaction is crucial when considering that for years OC have been a site where innovation of product and innovation of process were jointly led. Appealing to established and restricted sets of agency or grouping could thus lead the research to an even thicker opacity and to disregard innovation; conversely, avoiding arbitrary closures will give the enquiry much more freedom of movement to trace innovations.

## 2. A Bottom-up Epistemology for Ephemeral Assemblages

In order to address these constraints, the *Tracing Back Communities* research developed a specific method which starts from the epistemological level (i.e. definition of the objective and choice of a performative method of classification) and continues to the operative level (i.e. selection of the dataset and techniques of data analysis). In this paragraph I am going to describe the first set of solutions.

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<sup>2</sup> As Internet commentator Clay Shirky points out, “social software is political science in executable form. [...] designers of social software have more in common with economists or political scientists than they do with designers of single-user software, and operators of communal resources have more in common with politicians or landlords than with operators of ordinary web sites” (Shirky 2003).

Most research on OC concentrated on the extent to which a digital assemblage might be considered a community rather than a fleeting transaction, thus disregarding the same complexity in postulating “community”. On the contrary, the *Tracing back Communities* research borrowed some epistemological insights from Sts: Ant, in particular, was intended to deal exactly with opaque, unstable objects of study. Notably, three are the elements derived from the specific strand of Ant developed by Latour that helped to address the constraints listed above.

First, Latour’s understanding of Ant starts explicitly from taking into account the main constraint discussed above: there are no groups more legitimate to start an inquiry with than others.

It seems that the most important decision to make before becoming a social scientist is to decide first which ingredients are already there in society. [...] [On the contrary,] there is no relevant group that can be said to make up social aggregates, no established component that can be used as an incontrovertible starting point. (Latour 2005a, 28-29)

According to Latour, no social groups can be postulated at the beginning of the investigation: they can rather be found at the end, as the result of the analysis of the accounts provided by social actors themselves.

Second, according to approaches focused on situated action, the presence of the social needs to be demonstrated each time anew and cannot be assumed once and for all. In particular, Latour stresses the fact that social groups are not inertial, but they need to be constantly kept up by group-making efforts: he brings into question the same notion of “society” as a kind of substance in itself, separated from other domains like economics, politics and culture. Rather than a stable entity, the “social” is “a movement that can be seized indirectly when there is a slight change in one older association mutating into a slightly newer or different one” (*ibid.*, 36).

Under this perspective, the traditional sociological distinction between *gemeinschaft* and *gesellschaft* loses its meaning. If there exist no *homogeneous* ties that are peculiar to a substance named “society”, similarly it is unlikely that there exist homogeneous elements that are peculiar to a substance labelled “community”. This consideration frees any research on OC from the incumbency to look for homogeneous, solidarity-based ties that can be named as “communal”.

Third, while Human-Computer-Interaction (HCI) has historically focused on “immediacy” as a key concept for the evaluation of interfaces (see Nielsen 1999; Norman 1988; Visciola 2000), Latour distinguishes “mediation” – a relationship that constitutes actors while taking place, from “intermediation” – a relationship where a tool just transports agency from one pre-existing point to another pre-existing point. While in intermediation the inputs are enough to define the outputs, mediation exceeds its inputs and cannot be reduced to a relationship of cause-and-effect (Latour 1999; 2005a).

The main theoretical opposition between the two disciplines implies two completely different approaches towards agency. According to HCI, on the one hand, agency pertains to a full-blown subject endowed with intentionality. On the other hand, by calling into question the same notion of intentionality, Ant sees action as

distributed throughout an assemblage, a network of hybrid actants.<sup>3</sup> In this sense, for Ant, objects too can be participants in a course of action: it is sufficient that they make a difference in some other agent's action.

Latour's approach to agency as distributed action *in potentia*<sup>4</sup> can be explained by recalling Greimas' notion of "competence" as a *being-able-to-do* and a *knowing-how-to-do* (Greimas and Courtés 1979, 65). In Greimas' Narrative Schema,<sup>5</sup> competence is acquired during the qualification stage that logically precedes the performance: before performing an action, an actant needs both pragmatic (*being-able*) and cognitive (*know-how* or *implicit knowledge*) skills that make the action possible. In a similar way, when saying that "things might authorize, allow, afford, encourage, permit" etc., Latour is acknowledging that they are providing a being-able-to-do and/or a knowing-how-to-do.

Accounting for the fact that software design is "political science in executable form" means to get rid of the notion of agency as related to intentionality and to acknowledge that code too can participate in a course of action. Since digital interfaces re-organize the associations that constitute the socio-technical network wherein they are included, they may be conceived of as mediators in their own right and not mere intermediaries. Under this perspective, it is clear how Ant provides any research on OC with the pliability necessary to undertake an analysis that aims at investigating how empowerment proceeds from information technologies.

## 2.1. Objective of the research

Since its inception, the research on OC has concentrated on the relationship between access to ICT and changes in the societal structure. According to the cyber-culture utopia underpinning the OC paradigm,<sup>6</sup> this relationship has often been conceived of as one of direct correlation: access to digital media was supposed to increase the quality of life of community members. "Empowerment" has thus been a key concept in the development of the digital communitarian perspective: it has acted as the missing link in the relationship between ICT and social ties, the ele-

<sup>3</sup> In his works, Latour uses the term "actant" as a substitute of "actor" in order to gain higher pliability with respect to figuration. In semiotics an actant is a narrative function that on a discursive level gets embodied into an actor endowed with a figuration. Latour explicitly borrowed this distinction from semiotics, where it corresponds to the deployment of agency respectively on the narrative level (actants) and on the discursive level (actors). See Greimas and Courtés (1979, 5).

<sup>4</sup> "There might exist many metaphysical shades between full causality and sheer inexistence. In addition to 'determining' and serving as a 'backdrop for human action', things might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid, and so on" (Latour 2005a, 71-72).

<sup>5</sup> See Greimas and Courtés (1979), "Narrative (Schema)".

<sup>6</sup> As demonstrated by Mattelart (2001), cyber-culture utopias can be traced back to Norbert Wiener. In his 1948's work *Cybernetics: or Control and Communication in the Animal and the Machine* Wiener postulated information as the source of a second industrial revolution bearing the promise of emancipation for the citizenry. For an extended discussion, see Pelizza (2009).

ment transporting the revolutionary effects from the technological domain to the social one.

However, recent developments in the economy of Internet (i.e. the Dotcom burst, first, the development of UGC platforms harnessing the social potential of the Net, then – see Lovink 2003, 2007, O’Reilly 2005) and in the politics of information (i.e. the territorialisation of the Net – see Formenti 2008, Goldsmith and Wu 2006) have called into question a considerable amount of the utopias that the digital community paradigm inherited from cyber-culture. As a consequence, the correlation between access to ICT and empowerment cannot be taken for granted anymore. Instead of postulating a definition of “empowerment”, a study carried out in the last decade should investigate the patterns of self-empowerment that have underpinned the development of computer-mediated groups in the last decade.

To move along with this goal it is necessary to recognize that the concept of “empowerment” brings with it a strongly deterministic understanding of the relationship between technology and society. Along its history the discourse on OC has witnessed the well-known struggle between two deterministic explanations. Both the technologically-driven position which argues that assuring access to digital media would straightforwardly empower marginalized actors, and the sociologically-driven argument that sees the design of participatory tools on the Net as “reflecting” the needs of local communities are based on a simple cause-and-effect pattern of interaction that shrinks the number of possible relationships between technological artefacts and social ties.

On the contrary, with OC it is impossible to disentangle the technological dimension from the human one. It is thus evident that a research dealing with transient techno-social assemblages would rather need a theory of action that goes beyond the simple relation of causality, and that takes into account a multiplicity of modes of action between technological artefacts and social ties. To do this, a relativist, bottom-up approach was chosen. As Bruno Latour argues,

in situations where innovations proliferate, where group boundaries are uncertain, when the range of entities to be taken into account fluctuates, [...] it is no longer enough to limit actors to the role of informers offering cases of some well-known types. You have to grant them back the ability to make up their own theories of what the social is made of. [...] [You have to] try to catch up with their [actors’] often wild innovations in order to learn from them [...] which accounts could best define the new associations that they have been forced to establish. (Latour 2005a, 12)

As a consequence, the research’s objective was further developed: “to investigate the diverse patterns of self-empowerment that have underpinned the development of computer-mediated social groups” integrated a bottom-up perspective and became “to describe how social actors involved in online aggregations themselves account for the empowering potential of technological artefacts”.

Far from being an approach “only” concerned with the discursive aspects of empowerment and disregarding “actual” improvements, a similar objective takes into the greatest account one of Ant’s and semiotics’ common principles: that accounts not only “reflect” groups, but literally “de-cribe” them: bring them into

existence. Therefore, a similar objective suggests a hypothesis: that different narratives of empowerment are supposed to bring different groups into existence. In paragraph 5 we will test this hypothesis.

### 2.2. “Platonic” VS. “Wittgensteinian” classification

Coming back to early studies on OC, durability over time, regularity of the rhythm of interaction, presence of one or few shared interests were usually used as indicators to distinguish “successful” communities from other types of looser social aggregations (Jones 1998; Kim 2000; Smith 1992; Smith and Kollock 1999; Taylor 1987).

From an epistemological viewpoint, these approaches adopted a Platonic method of classification. Platonic classification, in fact, numbers the features an object needs to comply with in order to be classified as a token of a concept. Only cases showing all the features numbered in the prior concept definition are seen as occurrences of that concept (Fig. 1).

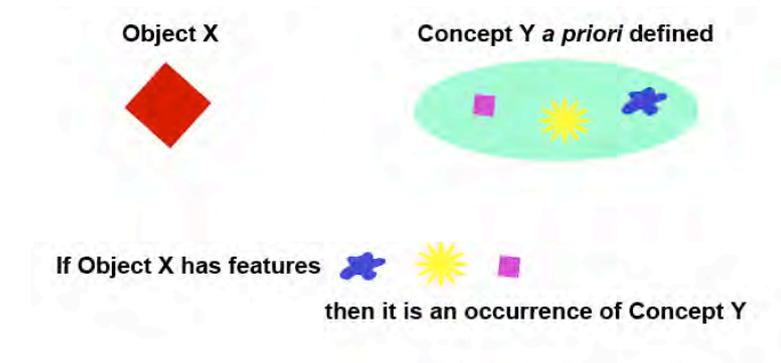


Fig. 1. Platonic classification.

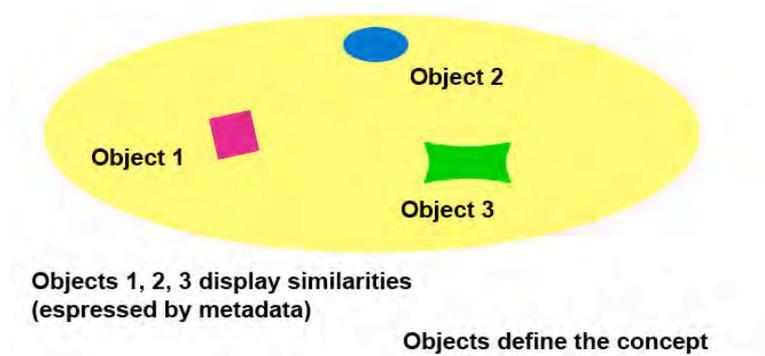


Fig. 2 – “Wittgensteinian” classification.

However, as we have seen, what is difficult when researching about online forms of aggregation is exactly individuating a closed list of features that are specific to transient OC. In order to transcend this paradox, the *Tracing back Communities* research chose to proceed the other way round. It did prefer to adopt an epistemological approach – that could be labelled “Wittgensteinian”<sup>7</sup> – according to which a concept is not defined as a starting point, but rather *a posteriori*, as the result of clustering together online groups seen as occurrences of OC (Fig. 2).

While Platonic epistemology postulates an essence common to all the occurrences subsumed under a general substantive, Wittgenstein substituted Platonic Form with “family likeness”: “we are inclined to think that there must be something in common to all games, say, and that this common property is the justification for applying the general term “game” to the various games; whereas games form a *family* the members of which have family likeness” (Wittgenstein 1958, 17 – *Italic in the text*).

Similarly, Latour introduces a distinction between “ostensive” and “performative” definition. According to him, since they need to be constantly kept up by group-making efforts, social aggregates cannot be the object of an ostensive definition, but only of a performative one. “The object of an ostensive definition remains there, whatever happens to the index of the onlooker. But the object of a performative definition vanishes when it is no longer performed” (Latour 2005a, 37).

In all these dichotomies, to the *a priori* adoption of essence-based definitions, another dynamic method of defining concepts is opposed. According to family resemblance and performative definition, concepts are defined on field through the *recognition* of objects as members of a cluster: “they are made by the various ways and manners in which *they are said* to exist” (*ibid.*, 34 – *Italic by Author*).

Following this epistemology, recognition may be conceived of as a distributed situated action, “social” in Sts’ terms, since it is the result of the cognitive performances operated by multiple actors. This is why to overcome the main epistemological problem in defining online groups based on solidarity ties, the *Tracing back Community* research adopted the principle that OC exist only inasmuch as they are recognized and acted upon by people.

The following paragraph explains how the *Tracing back Communities* research proceeded from these epistemological choices to the selection of the sample of analysis.

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<sup>7</sup> I wish to thank Prof. Dieter Daniels for the suggestion of this label during my intervention at the “Community Vs Institution” panel organized by the Boltzmann Institute Media.Art.Research during the *re:place* Conference in Berlin, 14-18 November 2007.

### 3. Selection of the sample. Ars Electronica's Digital Communities competition as a space of controversy

For what has been said right now, when it came to identify the sample of analysis, the *Tracing Back Communities* research selected as case studies those cases that had been recognized as occurrences of the concept “online community” by a network of social actors. The network was the International Advisory Board of the world's leading competition for OC, the Prix Ars Electronica in Linz (At).

Projects participating in the competition had been jointly recognized as occurrences of OC by the community spokespersons who submitted them to evaluation, by the competition's International Advisory Board who proposed additional entries, and by the independent jury who excluded those projects that did not fulfil the requirements.<sup>8</sup> The resulting *corpus* of projects' compliance with a performative definition of OC was assured by the fact that, far from being established once and for all, each year requirements are overtly negotiated among jury members throughout the whole process. The research thus analysed a dataset made by the entry forms submitted to the competition from 2004 to 2007.

Three are the aspects according to which the Prix Ars Electronica's Digital Communities competition could constitute an adequate source of data. First, study regarded competition as a peculiar form of controversy. Bringing together Latour and Greimas, it can be argued that the situations where the social is made visible and graspable are those where meaning emerges from comparison and “polemic structures”:<sup>9</sup> meetings, trials and plans in science labs, distance in time or space, breakdowns and fractures, but also archives and museum collections, fiction.<sup>10</sup> Prix Ars Electronica's Digital Communities competition could be seen as a space for controversy because competitions constitute a primeval form of polemic structure: an arena where meaning emerges from comparison, contrasting logics are made explicit, black boxes are re-opened.

Second, like controversies (Latour 2005a, 52-58), competitions present some recurring elements like a spokesperson, anti-groups, boundaries and accounts. It might be said that competition is the place where online networks hit representation: it constitutes a moment in an unstable process of social innovation when a spokesperson must emerge and – together with her – self-representations, identity and opponents. Since competition catches online assemblages in the moment in which they struggle to crystallize into the form “online community”, entry forms are forced to make theories of action explicit.

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<sup>8</sup> More precisely, I took into account the projects participating in the competition from the second phase onwards. The reason for this selection is that not all the projects submitted were recognized as instances of online communities by the International Advisory Board and the jury: some of them were excluded at the preliminary stage.

<sup>9</sup> Greimas and Courtés (1979) – see “Polemic” – define polemic structure as the dualistic principle (subject/anti-subject) on which any human activity is based. Since they can be also contractual (agreement, cooperation, etc.) and not only hostile (blackmail, provocation, open struggle, etc), polemic structures lie at the core of any form of narration.

<sup>10</sup> These situations are numbered in Latour (2005a, 79-82) and Akrich (1992a).

Third, in order to grasp controversies accounts are needed: agencies and actors are made visible only into accounts. While not all Sts approaches share the understanding of artefacts as “texts”,<sup>11</sup> an overlap between Ant’s “account” and semiotics’ “text” may be recognised. It is true that for semiotics “text” is an *a posteriori* reconstruction of a set of relations (Marrone 2010) made possible by pertinence criteria, while for Ant accounts are descriptions, not necessarily constructed *a posteriori* by the analyst. However, it is also true that both semiotics and Ant rely on the notion of “text” as the unit of analysis:

Textual accounts are the social scientist’s laboratory and if laboratory practice is any guide, it’s *because* of the artificial nature of the place that objectivity must be achieved on conditions that artefacts be detected by a continuous and obsessive attention. [...] If the social is something that circulates in a certain way [...], then it may be *passed along* by many devices adapted to the task – *including* texts, reports, accounts, and tracers. It may or it *may not*. Textual accounts can fail like experiments often do. (Latour 2005a, 12 – italic in the text)

Like semioticians, Latour is well aware of the “constructed” nature of texts, and accounts are always texts for which the pertinence issue is addressed in terms of “accuracy” and “truthfulness”:

Foregoing the word “textual” in textual accounts remains dangerous however because, for people unaware of science studies and of semiotics, texts are often construed as “stories” or, even worse, as “just stories”. Against such a blasé attitude, I will be using the expression “textual account” to mean a text for which the question of its accuracy and truthfulness has *not* been put aside (*ibid.*, 126 – italics in the text).

Rather, what seems different in semiotics’ text and Ant’s account is the role of the analyst. For semiotics, it is the analysts that holds the right to handle the pertinence criteria and to set the boundaries of a text. On the contrary, for Ant the analyst is only one of the professionals whose texts can bring an assemblage into existence:

For the sociologists of associations, any study of any group by any social scientist is part and parcel of what makes the group exist, last, decay, or disappear. [...] [Sociologists] are on par with those they study, doing exactly the same job and participating in the same tasks of tracing social bonds, albeit with different instruments and for different professional callings. (*Ibid.*, 33-34)

It is Ant’s equivalence between texts reconstructed by analysts and texts as accounts by social actors that suggested me to consider the entry forms submitted by participants to Prix Ars Electronica’s Digital Communities competition as textual accounts about what participants themselves conceived of as OC.

As a consequence of these choices, the research adopted techniques of textual analysis. Next paragraph is going to explain the techniques of data analysis selected.

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<sup>11</sup> In his work about user configuration, for instance, Woolgar (1997) considers “text” as a metaphor of the machine, and does not conceive of the machine itself as a text.

#### 4. Techniques of data analysis

At an operative level, the epistemological choices so far discussed were translated into two main tasks and as many techniques of textual analysis, by blending Ant and semiotic analytical categories. The choice of the techniques was led by two constraints.

The first constraint dealt with the high number of entry forms recorded in the Ars Electronica archive.<sup>12</sup> Since the dataset was constituted mainly by qualitative data, I had to devise reliable techniques of data analysis for vast datasets. I faced this problem by planning two distinct moments of the analysis. The first moment – corresponding to task 1 – took into account the whole dataset (N cases) and used quali-quantitative co-occurrence techniques provided by a textual analysis software (Leximancer), while the second moment (task 2) concentrated on a selected number of case studies (n cases) and analysed in more depth texts' stratification of meaning.

Second, according to the epistemological approach discussed so far, it was necessary to avoid postulating categories in advance and, rather, to identify the categories used by the authors themselves. To face this constraint, when analysing the whole dataset (N cases) I used Relational Analysis, a method based on measuring how often concepts occur close together within the text. According to Relational Analysis, categories that are relevant for a document can be inferred from the co-variation amongst the high-frequency words in the text.

The most remarkable aspect of the overall methodology was that the results of the preceding task could be re-used in the following one. So, proto-themes extracted in task 1 by means of software tools were further investigated through text browsing functionalities provided by the same software. By so doing I identified some full-blown themes and different figures associated to them. In task 2 I used a template to deepen the description of how the figures were articulated in different texts. I called this way of proceeding *funnel-like model*. Not only it enabled me to rely upon previously tested results, but also to concentrate on n cases only after the analysis of N cases had provided me with a full array of themes and figures. The following sub-paragraphs describe tasks and techniques in more details.

##### 4.1. Task 1 – To identify relevant themes emerging from the dataset

Task 1 was aimed at identifying matters of concern emerging from the whole dataset through the automatic extraction of concepts and the analysis of co-

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<sup>12</sup> Originally there were 1411 submissions; of these, some were blank entry forms, while some others were excluded from the competition by the International Advisory Board and by the jury as non-communities. 920 participating projects and related entry forms resulted after this preliminary selection.

occurrence patterns. Then, by analysing the co-occurrence lists extracted by the software I identified some figures and narratives related to those themes.

To extract relevant themes, I used the Automatic Concept Selection technique provided by Leximancer. Leximancer is a data-mining tool which performs Relational Analysis; it can analyse the content of vast collections of textual documents and to visually display it. Information is displayed in a map that provides a bird's eye view of the main concepts extracted from the dataset, and of their relationships.

Some Leximancer features turned out to be useful to devise a method of analysis that was coherent with the epistemological assumptions discussed above. First, it allows both quantitative and qualitative analysis: while the conceptual map and the ranked list summarize the main concepts extracted, the browsing function allows the researcher to navigate through the instances of a concept or of a co-occurrence between two concepts.

Second, Leximancer supports the visual display of the main concepts and their relations. The graphical representation of the semantic associations shows the advantage of defining a concept not by any essence, but by a list of associations (see § 2.2).

Third, Leximancer performs concept extraction without forcing the researcher to define key concepts in advance, nor it assumes them from a predefined generic dictionary. Concepts in Leximancer are collections of words that generally travel together throughout the text: a term is said to be part of a concept if it often co-occurs with it and occurs not so often with other concepts. By inferring the categories present in the texts from the co-variation amongst the high-frequency words, Leximancer's rationale allowed me to avoid the *a priori* formulation of categories.

I obtained a map displaying the most relevant themes and the configurations of minor concepts related to them. Of course, it would have been naïve to consider "objectively relevant" the themes extracted in this way. I thus deemed them "proto-themes", the starting point of the analysis. I then carried out a deeper analysis of the textual instances associated with them. Only for those that the further analysis recognized as full-blown themes, I passed to look for the figures associated to each one of them (see § 5).

## 4.2. Task 2 – Analysing the stratification of texts

Task 2 was aimed at analysing in depth the different theories of action underpinning the OC participating in the competition. Notably, task 2 focused on the comparison of the projects participating in the competition as far as the role of technological artefacts was concerned. In order to do so, I privileged the textual analysis of a smaller number of entry forms so that more associations might emerge and narratives might be deployed in much more depth than I could do when addressing the whole dataset. I took into consideration those OC that from 2004 to 2007 deserved a Golden Nica (first prize) or Award of Distinction (second prize).

To fulfil this task, I carried on an analysis that could account for the stratification of texts. Texts were thus analytically split up into units and subjected to a set of questions gathered in a template. To elaborate the template, I adapted a four-steps method suggested by Pozzato (2001).

1) Preliminary identification of the question	
2) Question enrichment	Development of a theoretical background suggesting broad interpretative categories
3) Methodology test	Elaboration of descriptive and operative categories; sample selection; test of the template on 1/3 of the sample
4) Operative phase	Coding of the text according to the template

Tab. 1. Method for template elaboration (Pozzato 2001).

The preliminary question was about how social actors involved in OC themselves account for the empowering potential of information technologies (see § 2.1). The first part of the question was already solved thanks to the choice of the sample; therefore, the questions to submit the texts to became as the following: “what are the different theories of action that underpin the entry forms? Which is the role attributed to technological objects in the course of action?”.

As to the question enrichment, given the research’s epistemological perspective discussed above, it avoided to adopt any theoretical framework. I thus evaded this stage and passed to the identification of descriptive and operative categories.

I borrowed descriptive categories and operative questions from both Greimas and Latour. Notably, from Latour the template borrowed the list of traces left behind by activities of group formation, and the distinction between mediator and intermediary. First, since the list of groupings composed of social aggregates is potentially infinite, it is easier for social enquirers to substitute it with the more abstract list of the elements which are always present in controversies about groups. These elements are: 1) a spokesperson who speaks for the group existence, defines it and argues for its uniqueness; 2) some anti-groups that can be compared with the group of interest, so that its consistency may be emphasized; 3) an element that originates the group boundaries, so that they are rendered durable and taken for granted. Usually limes are provided by appeals to tradition, law, nature, history, freedom, etc.; 4) professionals (social scientists, journalists, statisticians) who speak for the group existence. Any account by these professionals is part of what makes a group exist or disappear (see Latour 2005a, 30-34).<sup>13</sup>

<sup>13</sup> On the performative role of journalists and pollsters in making social actors (for instance the “public-opinion”) exist, see also Landowski (1989).

The second element that the template borrowed from Ant was the fundamental distinction between *mediator* and *intermediary*. A mediator is an actant that translates, transforms, modifies the elements it is supposed to carry; it does not determine, but makes someone do something, it triggers further actions and activates new participants; every time a mediator appears, it introduces a bifurcation in the course of action and the output is never predictable starting from the input. On the contrary, an intermediary only transports agency from an input to an output without transforming it; the output can therefore be easily predicted. With intermediaries, elements are usually linked through relationships of cause-and-effect and the chain transporting action is thus short, often made of only a couple of elements (exactly the cause and the effect).

From Greimas and semiotics the template borrowed the notion of “competence”, the distinction between actants and actors and the definition of sender and receiver (see § 2) in a process of communication.<sup>14</sup>

Finally, I tested the template on 1/3 of the sample before moving to the proper analysis. The final template is reported in Tab. 2. With reference to semiotics’ generative path, both descriptive and operational categories in Tab. 2 lie on a discursive level, as the surface clues that could help the researcher to trace the stratification of text.

Once I obtained the template, I moved to the proper operational phase. I thus coded textual extracts as if they were answers to the operational questions. At the end of each session, I used to index all extracts according to the last column on the right in the template.

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<sup>14</sup> These latter do not correspond to the sender and the receiver of Information Theory, since this early approach did not take into consideration the dynamic constitution of the subjects of communication. This is indeed the main difference between Information Theory, on one side, and Ant and semiotics, on the other side. Of course I cannot account here for the immense literature dealing with subjectivity and communication from the fifties onwards. As Mattelart (2001) has pointed out, this literature traces indeed the history (and controversies) of what is meant by “Information Society”. A good account is provided by Boczkowski and Lievrouw (2008).

Descriptive categories	Operational questions	Index
<b>Project objective(s)</b>		A
Goals	What is the goal(s) that the project aims at achieving?	A1
Source of boundaries	To what element does the entry form appeal in order to depict the community as a stable, taken for granted assemblage?	A2
<b>Actors involved</b>		B
Sender	Is there any entity that designed/developed the project?	B1
Receiver	Is there any identifiable target of the action of the Sender? Are Sender and Receiver clearly distinguishable?	B2a B2b
Anti-groups/anti-actants	Are there anti-actants that interfere with the course of action in a negative way?	B3
Actants as mediators Vs. intermediaries	Is there any entity that contributes with some competences to the course of action? Does the actant trigger further actions/mediations? Does it activate new participants? Does it introduce a bifurcation in the course of action? Does it 'transport' (shift) or 'translate' (modify) what it is supposed to carry? Is the output predictable starting from the input? Does the actant determine some other event? How long is the chain of action? How many passages can be counted?	B4 B4a B4b B4c B4d B4e B4f B4g
Professional mobilized	Are there professionals (journalists, social scientists, statisticians) quoted as part of what makes possible the durable definition of the community?	B5
Spokesperson	Do the spokespersons that speak for the group existence – namely, the author of the entry form – appear as agents in the account?	B6

Tab. 2. Template



“information”, “local”, “government”, “services”, “city”, “human”, “development”, “youth”, “including”, “map”, “life”, “members”, “created” appearing in similar contexts.

Not all proto-themes represented full-blown themes, though: some of them were aggregates of rarely co-occurring concepts whose closeness in the map was hardly significant. Conversely, some others seemed to reveal meaningful associations and deserved further investigation. Among these, “information” co-occurred frequently with some of the concepts appearing in its cluster: “local”, “development”, “government”. I thus analyzed its pattern of co-occurrence more deeply.

By comparing the relative strengths of minor concepts co-occurring with “information”, I came to identify a full-blown theme “local development through information sharing” and some associated figures. In counter-tendency with the dominant Internet discourse on de-territorialization, “information” registered the emergence of a territorial topic. In the whole co-occurrence list for “information”, among the five concepts most frequently co-occurring with it, three displayed a semantic reference to a territorial dimension (“local”, “government”, “rural”), while another one (“site”) connoted both a physical and a virtual (website) portion of space (Fig. 4). The territorial topic was also present in the co-occurrence scheme for “development”, the fifth item in the list.<sup>15</sup>

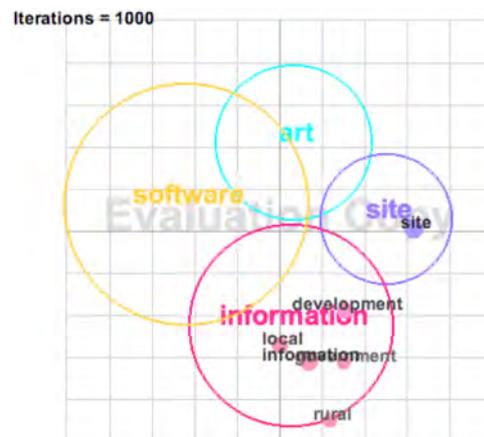


Fig. 4 – Co-occurrence map for “information”.

Browsing through the textual extracts indexed as instances of co-occurrence for “information” and “local”, a recurring figure might be recognized: local development was supposed to happen thanks to the spread of information technologies which are seen as empowering means for disadvantaged, rural communities:

Namma Dhwani is an initiative which has created a space for different rural social groups to utilize [...] digital technologies to put in place a local information and communication network owned

<sup>15</sup> The most frequent item co-occurring with “development” was “local”, followed by “information”, “site”, “software” and “technology”.

and operated by members of the local community. [...] Namma Dhwani has enabled poor semi-literate, women, farmers, labourers, school drop-outs and other community members to use information & communication media & technologies [...] The network successfully addresses local information needs and has had a visible impact on local development and governance. (*Namma Dhwani* submission, 2004)

However, this was not the only figure articulating the “local development” theme. Beside the one clustering around “information”, another completely distinct pattern of relationship between territory and ICT was visualized in the map, a urban-centred one. As a matter of fact, the concept “city” never occurred with “rural”, “site” or “government”, and only once with “development” and “information”. “City” showed an absolutely peculiar semantic context aggregating around the urban territory, and a specific “metropolitan” use of information technologies. While “city” did not occur with any of the other territorial concepts (except “local”), conversely it showed a strong co-occurrence with “mobile” and “map” (Figure 5).



Fig. 5. Co-occurrence map for “city”

Analyzing more closely the textual instances, they depicted a figure different from the previous one: here “local development” was meant as bottom-up regeneration of a sense of place, and hit the ground in the form of geo-reference mobile systems allowing the creation of unconventional maps of the urban space:

Everyone in Leeds can read and write a Citypoem, experiencing and contributing to an enriched sense of their own place from wherever, and whenever, they are in the city. The Citypoems biography is made new by every reader, turning the pages in the order of their own daily lives as they move through the city, and transforming mobile phones into books with an infinite number of blank pages waiting to be filled. (*Citypoems* submission, 2004)

In these two theories of action articulating the “local development” theme, different roles for information technologies were associated with different types of local territory. As shown by a deeper analysis of the textual instances, in the first case ICT were seen as empowering tools fostering the development of disadvantaged areas, mainly rural, in partnership with local governments, by sharing information through websites. In the second case, information technologies became mobile and crossed the city. They were conceived of as representational tools that allow the creation of subjective maps of the urban space, of collectively generated psycho-geographies. Here, the mythological local community at the core of early online communities’ discourses hit the ground in two different forms, each of which attributed a different role to digital media.

### **5.1. ICT and developing countries**

Taking into account the first figure associated with the “local development” theme identified by means of co-occurrence analysis, in task 2 I further deepened the analysis by selecting fewer case studies and by using the template discussed above (Tab. 2).

The case studies I am going to discuss in the following sub-paragraphs do not represent the totality of the winning projects, but only those whose goals dealt with empowerment of disadvantaged populations and considered the belonging to the so called “Global South” as a distinguishing element. By analysing four cases in depth, I am going to show how online communities facing similar issues can develop opposite narratives, and thus come into existence in very different ways, according to the actantial role attributed to information technologies.

#### **5.1.1. *Tonga.Online*. Or of rivers, dams, antelope horns and digital music**

An amazingly rich case of proliferation of mediations was provided by the *Tonga.Online* entry form. This project was an offspring of a cultural exchange program between Austrian and Zimbabwean artists and NGOs which has been running for more than ten years.

The *Tonga.Online* project has established the first community-based Internet and Computer Centre in one of the remotest areas of Zimbabwe. The project is now striving to reach out to other villages and across the waters of the Zambezi River into Zambia. The Tonga community – only fifty years ago forcibly *divided by the advent of modern technology and the building of Kariba dam* – has taken up the chance to use the most advanced communication technology for *rebuilding and improving links within the community and with the world abroad*. [...] One could perceive the Tonga people as a digital community per se because of their music. [...] Their unique *Ngoma Buntibe Music* is a kind of binary or digital music in its own sense since one musician is mastering one note only by contributing a short blow on an antelope horn to an incredible storm of sound and stamping movements. *Robert*

*Bilek* (a journalist with ORF / Vienna) after an encounter in 2001: “The music of the Tonga could be perceived as a system of binary individual decisions, sound or silence, 1 or 0, within the matrix of a creative group performance. *Through this sound, through this seemingly wild and chaotic order, the community reassures itself of its coherence...* It appears that the *Tonga people’s understanding of digital technology has its roots in their musical tradition*”. There is a *smart gadget which has proved to be very helpful in expanding the project beyond the centres. It is a mobile device called Alpha smart*, a kind of expanded keyboard run on batteries. [...] [The Alpha smart online posts] address *stakeholders* and the general public. (*smart X tension/Tonga.Online* submission, 2004 – author’s italic).

This account wonderfully testifies the flamboyant life of mediators. From Austrian journalists to dams on the Zambezi River, from modern technology to the Ngoma Buntibe Music, from mobile devices to Cuban doctors, all these entities take part in the course of action whose goal is “rebuilding and improving links within the community and with the world abroad”. The extension of the project across the waters of the Zambezi River into Zambia provides the figuration into which the goal – the unity of the Tonga people – gets embodied. Fifty years earlier this unity was dismantled by “the advent of modern technology and the building of Kariba dam”: two anti-actants in their own right which are endowed with figurations borrowed from the ranks of Modernity.

In this account, three of the four kinds of traces left behind by the formation of groups enumerated by Latour are present. Apart from the spokesperson – the one that submitted the entry form for evaluation – a professional enters the network in order to make possible the durable definition of the community: Austrian journalist Robert Bilek’s account is itself part of what makes the group exist. As to the third trace left behind, boundaries are created and rendered durable by appealing to tradition and cultural heritage. It is the cultural heritage and the ways of communication that define the Tonga community as a stable entity, that make it hold against the centrifugal force exerted by the harsh living conditions and that ferry the community into the digital age.

Actually, the theory of action underpinning the project’s vision of the digital community is overtly expressed through the journalist’s voice: it is the traditional Ngoma Buntibe Music that acts as a powerful mediator and translates agency from the “short blow on an antelope horn” into a binary, digital sound. The Ngoma Buntibe Music is not only what keeps the Tonga people united in spite of the diaspora started by modern technologies, but also the actant that carries this assemblage into the computer era.

Once the Tonga assemblage has shored on the quieter coasts of digital post-modernity, other helpers get to march side by side with the Ngoma Buntibe Music to realize the goal of extending the project over geographical boundaries. Notably, the mobile device Alpha Smart “proved to be very helpful in expanding the project beyond the centres”. Here, information technology allows the project leaders to activate new mediators: “messages and digital reflections” that, in turn, create new

associations with geographically dispersed actants (stakeholders,<sup>16</sup> pupils, the fishermen etc.).

The Tonga.Online – smart X tension project is an exemplary case where mediators proliferate and the chain that translates agency stretches out in many directions. Nonetheless, this is a peculiar case: it may happen that the chain is arbitrarily short-cut before agency be fully unfolded, as I am going to show immediately.

### 5.1.2. Empowerment as a cause-and-effect relationship

Very differently from the Tonga.Online project, the *Akshaya* submission characterized itself for a low number of mediators involved in the course of action. This project was developed in Kerala (India) to address Digital Divide, and was implemented by the Government of Kerala and run by local entrepreneurs.

In the entry form three objectives and relative theories of action were mentioned. The first goal (“Universal IT Access”) aimed at setting and maintaining 4500-6000 Akshaya e-centres. In this case only one mediator was involved: entrepreneurs running the centres relied on e-literacy courses to assure self-sustainability to each centre. Other technological entities – broadband wireless, computers, scanners, printers etc. – appeared as mere intermediaries, since their presence did not affect the outcome.

The second objective (“E-literacy”) aimed at familiarizing people with IT and at improving their computer skills. There also existed a meta-goal: to “create a 100% literate state”. Here, the theory of action was underpinned by an overtly causal relation: “the process of providing the skill sets shall lead to the creation of a long lasting relation between the Akshaya centres and the families in the catchment, which on a macro level will generate a state wide data warehouse and repository”.

In these words, it is not clear through which means the process of providing skills was supposed to cause a stable relationship whose ultimate outcome is a data repository. As Ant has pointed out, in the social domain stability is a costly exception: face-to-face, unequipped interactions using only basic social skills pertain to a very limited sphere, namely to baboons (Strum and Latour 1987). Unequipped interactions alone cannot bear the weight of maintaining stable relationships that need to be ceaselessly negotiated. It is objects that allow long-standing relationships. However, in the Akshaya account there were no traces of the means where-

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<sup>16</sup> What a better definition for the term “stakeholder” than “someone who participates in a course of action”? From the synonymy of stakeholder and mediator, the anti-democratic character of the (extended) use of this term follows. By using “stakeholder”, in fact, one may refer to an assemblage and still avoid making explicit who/what that assemblage is made of. Since “politics” refers in half part to the procedures whereby groups are assembled and mediators legitimized to take part in that assembly (Latour 2005b), the use of the term “stakeholder” relieves the one who uses it from publicly arguing who and what is to be included in that assembly. Conversely, in the Tonga.Online submission stakeholders are endowed with a list of figurations (pupils, fishermen, etc.).

by the long lasting relation between the centres and the families was supposed to be maintained.

A similar lack of mediators also characterizes the third (“Creation of Micro ICT Enterprises”) objective. Here again, the theory of action was immediate: entrepreneurs from the local community were seen as lending their “entrepreneurial spirit” to the “total development” of community. No mediators intervened either in the emergence of the entrepreneurs from the community, or in the opposite translation of this spirit from entrepreneurs to communities.

In the Akshaya account there were some intermediaries and only one mediator. Agency got stopped after few passages and might not rely on entities that translated the initial inputs. As a matter of fact, there were few references to local communities, and the relationship between technology and social ties was explained in terms of cause-and-effect, as one of “empowerment” immediately proceeding from e-centres to families.

A less deterministic theory of action characterized *Projeto Cyberela – Radio Telecentros*, a Brazilian initiative started in 1990 by the NGO Cemina as an initiative aimed at “developing female communitarian leadership as an agent of social transformation”. Since this early commitment, the (analogue) radio was deemed a strategic adjuvant, a media(tor) enabling women to promote human rights and gender empowerment.<sup>17</sup> However, with the advent of digital information technologies new challenges arose and new mediators were needed. The new goal became to include women into the new digital realm:

el cenário impuesto por las nuevas tecnologías de información y comunicación (TIC) presento un gran desafío para Cemina: o las mujeres hacen parte de ese proceso o serian una vez mas excluidas de la participación igualitaria de la sociedad. Incluir las mujeres en el universo de la informática y de la internet, sin dejar de utilizar el medio radio, passo a ser prioridad para la institución. (*Projeto Cyberela – Radio Telecentros* submission, 2006)

On one hand, the change of the strategic goal from “developing female leadership” to “including women in the computer and internet domain” marked a major shift in the role of information technologies: from being mediators, ICT were transformed into “skills” and became the main goal (“prioridad”) of the course of action.

On the other hand, gender-focused attention got transformed, as well: from being the result of sensitization policies it became an intermediary (in the form of “contents”) that could attract women. Notably, if the (digital) radio continued to act as a mediator, it was because it made gender-related contents available: “www.radiofalamulher.com ayudo a intensificar la estrategia de *traer* las mujeres para ese universo con la disponibilización de contenidos de radio con foco de género y derechos humanos en internet”. If the internet radio “helped”, and was thus a mediator, there was no further specification about *how* contents – apart from be-

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<sup>17</sup> “El medio rádio fue escogido para esa finalidad por ser el medio de comunicación mas simples y barato, y que atinge 98% de la población, siendo que la mujeres son las mayores oyentes”.

ing available – transported/caused (“traer”) women to be included in the digital realm. This transformation can be summed up with a scheme (Tab. 3).

	Before the advent of the digital domain	With the advent of the digital domain
<b>Radio</b>	(Analogue) Mediator	(Internet radio) Mediator
<b>ICT</b>	(correspond to analogue radio)	(Seen as “skills”) Goal to be reached
<b>Gender and human rights commitment</b>	(Attention) Result of policies	(Becomes “Contents”) Intermediary

Tab. 3. *Proyecto Cyberela* – Radio Telecentros. Variations in the role of radio, ICT and gender commitment following the advent of digital media.

The project’s great interest in the digital domain lied on the principle that ICT are causing major transformations in every field of human activity: “el surgimiento de las tecnologías de información y comunicación (TIC) ha transformado las relaciones sociales, la educación, el trabajo, la economía y hasta el comportamiento”. As a consequence, access to ICT was seen as a necessary condition for development. On the contrary, the entry form quoted statistical data depicting women as deeply excluded from access to ICT,<sup>18</sup> to the point that the United Nations recognized women access to ICT as strategic. That is, the gender perspective was legitimized by appealing to statistical data: statistics provided the boundaries around which the group “disempowered women” to which the project was addressed was made to exist.

The fourth community I am going to describe used statistics as a source for setting up group boundaries, as well. *The World Starts With Me* focused on young Ugandans between 12 and 19. This project was a digital learning environment about sexual and reproductive health education and AIDS prevention. Its goal was double: to “improve the sexual health of young people in East Africa while providing [computer] skills relevant to the job market”.

Here, too, entering the digital age by acquiring computer skills was one of the objectives. Nonetheless, differently from *Proyecto Cyberela*, in this project ICT skills were not only a necessity to enter the job market, but something that “stimulates curiosity to learn more”. That is, computer skills were not merely conceived

<sup>18</sup> “Lo mas interesante es que mismo las mujeres siendo la mayoría de la población en el mundo (y también en la población brasileña) el perfil del usuario de Internet aún es prioritariamente del hombre blanco que habla el idioma ingles, tiene cerca de 35 años, es de nivel universitario y de clase A e B”.

of as the point of arrival, but as a competence that was supposed to trigger other actions (“stimulates”).

What was striking about this project was exactly the number and assortment of the mediators mobilized to reach the goal of “giving young people self confidence and control over their own lives”. Public schools, foundations, clinics, NGOs, counselling services were assembled with software, students, artists, peer facilitators, people from the slums in an aggregate that blended formal institutions with informal ties.

Summing up the results of the descriptions (Tab. 4), two types of digital communities aiming at empowering disadvantaged populations could be devised.

This deeper analysis showed that the source of boundaries is a crucial element for identifying a project’s theory of action and the character of the resulting community. On the one hand, projects that addressed disadvantaged groups whose existence appealed to administrative or statistical boundaries displayed narratives of empowerment according to which target groups are pushed to acquire ICT skills in order to enter the information age. According to these theories of action, ICT skills and access to the digital domain are conceived of as the final goal. The relationship between digital technologies and social ties is often one of cause-and-effect: access to technical facilities (and occasionally literacy courses) is supposed to immediately lead to better living conditions. As a consequence, the chain that transports agency is very short, with few mediators and some intermediaries. Paradoxically, in these accounts ICT themselves are conceived of as “technological facilities” that act as intermediaries.

Furthermore, in these accounts the roles of sender and receiver are easily distinguishable: there is one entity – the initiator of the project – that acts as sender in a communication process (classes, service provisioning, etc.), and a community which is supposed to be the receiver of this process. In these cases group identities pre-exist to the course of action described and boundaries are stabilized: the community has already been black-boxed. In Akshaya, for instance, there are entrepreneurs, who implement the e-centres, and the local communities, the target which benefits from the activity of the entrepreneurs. Similarly, in Proyecto Cyberela – Radio Telecentros, after the advent of digital technologies of information, the role of Cemina as core team got distinguished from that of the radio-makers who stopped to act as local leaders and became the audience of Cemina’s classes.

	Tonga.On-line	Akshaya	Proyecto Cyberela – Radio Tel.	The World Starts With Me
<b>Source of boundaries</b>	Cultural heritage and traditions (Tonga people)	Geopolitical/administrative (local communities in Kerala)	Statistics (gender)	Statistic (age and, partially, gender)
<b>Role of digital ICT</b>	Mediators (Alpha Smart triggers “msg and digital reflections” creating associations with dispersed actants)	ICT-skills and data repository as goals. Wireless net, computers, scanners etc. as intermediaries	ICT-skills as goals. Technical facilities as intermediaries	Pc as intermediary (may be substituted). But ICT-skills as a competence. WSWM is a mediator
<b>Role of other technologies</b>	Music as mediator that translates the cultural heritage into the digital age	/	Radio as mediator	Low-tech objects (i.e. paper&pencil, local materials) as intermediaries
<b>Mediators/Intermediaries</b>	Many mediators, agency chain extends in many directions	One mediator, some intermediaries. Very short agency chain	Few human mediators, some non-human intermediaries	Many mediators
<b>Professionals</b>	Journalist	/	/	Teachers
<b>Relationship Sender/Receiver</b>	No distinction	Clearly distinct (Service delivery business)	Fairly distinct after the advent of digital media	Only during course: students who finish it become facilitators

Tab 4. Summary of the theories of action associated with “empowerment”.

On the other hand, the second model is exemplified by the Tonga. Online project. This does not deal with statistical boundaries, but rather borrows its source of identity from the cultural heritage. Here, ICT are seen as one of the many types of mediators participating in the course of action. Mediators, in fact, are not only human beings, but also digital devices and traditional music. Every mediator in-

roduces a bifurcation in the course of action and triggers new participants. The chain that transports agency extends in many directions, and includes also a journalist mobilized in order to make the group exist. The “empowered” community that emerges is the result of all these transformations. As a consequence, in this dynamic techno-social assemblage distinguishing the project initiator from the target becomes meaningless: community is an open gathering of heterogeneous elements.

Lastly, *The World Starts With Me* is located among these two types of OC. Like the first type, it appeals to statistics in order to legitimize the focus on disadvantaged youth, and regards computers and technical facilities as intermediaries that may be replaced by paper and pencil. On the other hand, many mediators – both human and mechanical, institutional and informal – are involved, and the acquisition of ICT skills is not only seen as a goal, but as a competence that triggers other courses of action. In addition, actors undergo transformations: through the experiential learning model, former students may become peer facilitators, that is, mediators in their own right.

## 6. Conclusions

This article has described a method that uses Ant and semiotic insights, and coherently proceeds from epistemological assumptions to operational techniques of data analysis. The results obtained by means of this method<sup>19</sup> put into question some of the black boxes traditionally associated with OC – like “cyber-culture”, “empowerment” and “online community” itself – and some leading sociological positions.

As far as the key notion of empowerment is concerned, for instance, results show that in the dataset analysed it hits the ground in a much more multi-faceted way than emerging from the “revolutionary” discourse on information technologies. Depending upon the type of source of boundaries and the role (mediator/intermediary) attributed to digital artefacts, “empowerment” can embody either a deterministic theory of action, or a well-deployed one.

Furthermore, task 2 found a correlation between the length of the chain of action (i.e. in Ant, the proportion of mediators against intermediaries), and the attribution of the roles of sender and receiver to specific actors. So, for instance, a project like *Akshaya* – whose entry form showed a brief chain of action, that is, a deterministic cause-and-effect relation between ICT and society – tended to exclusively attribute the role of sender to the actor “Government Agency” and that of receiver to the collective actor “rural communities”, which did not have any possibility to give feedback. In other words, in the dataset technologically deterministic theories of action were associated with black boxed communities where roles were

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<sup>19</sup> I cannot, of course, account here for all the results found as part of the *Tracing Back Communities* research. For a complete discussion see Pelizza (2009).

stabilized, while accounts showing a well deployed chain of action tended to associate the roles of sender and receiver in a more dynamic way.

If this correlation cannot be deemed an indicator of “actual” empowerment, at least it is an indicator of an open Vs. close discourse where communities are taken for granted. In this sense, close discourse might be conceived of as a clue of extraneousness of the spokesperson towards the disempowered community s/he claims to represent.

The method traced in this article displays two reasons of deserts. First, it demonstrates that the combination of qualitative and quantitative techniques of data analysis is a profitable and expanding field of research. Far from requiring the renounce to some form of discipline-related integrity, a savvy combination of qualitative and quantitative techniques of textual analysis may not only help to deal with vast datasets made of qualitative data, but also to devise themes and figures (for N cases) that can be further analysed in depth (for n cases).

Second, this case study has tried to trace possible overlaps between two methods and related disciplines – Ant and semiotics – that, after an initial intensive dialogue (Akrich 1992b; Akrich and Latour 1992), lost touch with each other (Mattozzi 2006). An exemplary overlap between Ant and semiotics can be found in the correlation between length of the chain of action and roles of sender and receiver above mentioned. This little example argues for the necessity to re-consider the many overlaps between semiotics and Ant, not only in order to revitalize the dialogue between these disciplines, but especially to foster the development of anti-essentialist, relational methods of social inquiry. Today, similar methods are much needed to face the challenges posed by the “not-anymore-modernist” age, where unstable, fleeting objects of study are not exceptions.

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