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Effective Communication in Virtual Adversarial Collaborative Communities[1]

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Abstract

Effective communication helps communities to achieve common goals, but is especially hard to achieve in virtual adversarial collaborative communities. In these communities, the matching of widely differing objectives as well as interests is very complex. We study a case of a virtual adversarial collaborative community in which the common goal was to author reports assessing the amount of true consensus on forestry policies. We use discourse ethics theory to derive communication norms that are a prerequisite for making communication in adversarial collaborative communities more effective. We discuss how these norms can be used in the design of the communication systems supporting such communities.

Introduction

Communities are crucial for defending the public interest. Communities of cooperation need to do for the public good what markets currently do on behalf of aggregated private interests (Barber, 1995). Communities can revitalize public discourse, as Habermas, for instance, argues in his theory of communicative action (Debatin, 2002). These forms of civil society have discovered the bottom-up use of cyberspace, a space of distributed power, as a way to transform society (Sassen, 1998), making them even more important catalysts of societal change.

It is often assumed that communities, virtual or not, are harmonious, at least in intent. A classic example are self-help patient communities, in which patients not only exchange factual information, but also provide emotional support by communicating with others having similar physical and emotional symptoms (Arnold, Leimeister, & Krcmar, 2003). However, especially for communities working for the public interest, this view is too naïve. In many communities, the interests of their members are, to a certain extent opposed. In this case, adversarial collaboration requires participants to come to agreement, and to work effectively together to produce a shared product that reflects the interests of the adversarial parties (Cohen, Cash, & Muller, 2000). These adversarial collaborative communities play a crucial role in civil society. They are the bridges through which the many different stakeholders that need to be involved in finding solutions to complex problems related to sustainable development find common ground. If these communities are to be successful in their common goals, such conflicting interests are not to be suppressed,

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but rather acknowledged. Conflict is inherent in these communities, and communication support needs to be carefully tailored to deal with these potential sources of ineffective communication.

What is a community? Communities are not just aggregates of people, temporarily interacting. A community has been defined as a group of people who share social interactions, social ties, and a common 'space' (Kozinets, 1999); as a social network of relationships that provide sociability support, information, and a sense of belonging (Wellman, 2001), and as a set of relationships where people interact socially for mutual benefit (Smith, 2002). The key seems to be strong and lasting interactions that bind community members and that take place in some form of common space.

Of necessity, because of their international, interdisciplinary, and interactive nature, communities for the public interest are often virtual communities. A virtual community differs from other communities only in that its common space is cyberspace. Virtual communities therefore can be described as the union between individuals or organizations who share common values and interests using electronic media to communicate within a shared semantic space on a regular basis (Schubert & Ginsburg, 2000). In virtual communities, the common space is provided by a suite of collaborative and communicative functionalities, ranging from simple mailers to advanced web applications (Preece, 2000; Wershler-Henry & Surman, 2001). This functionality mostly consists of standard tools or components, so that information systems development becomes more a process of functionality selection than building whole new systems from scratch (Sawyer, 2001).

With the rise of the Internet, virtual communities are gaining importance as a new model for virtual collaboration, as demonstrated by the proliferation of research, education, and trade communities. In an increasingly networked society, with an exploding need for global and flexible ways of professional interaction, virtual communities are natural candidates to fill collaborative gaps in traditional, hierarchical organizations. Research communities were the first to discover the power of the Internet to facilitate their collaboration (Harrison & Stephen, 1996). Likewise, student communities are natural candidates and eager adopters of modern networking technologies (Schubert & Koch, 2003). With the advent of more user-friendly and powerful web applications, business is also discovering the power of virtual communities. For example, virtual communities of consumption are affiliate groups whose online interactions are based upon shared enthusiasm for, and knowledge of, a specific consumption activity or related group of activities. Such communities allow consumers critically to evaluate products and companies to gather valuable data on product characteristics from loyal customers. (Kozinets, 1999).

All communities – physical and virtual - have at least a joint focus, and sometimes, in the case of collaborative communities, common goals. In communities of interest, such as many consumer communities, there is only a diffuse focus, which can be as vague as sharing a willingness to discuss common interests (Carotenuto et al., 1999). The pursuit of common objectives is much clearer in communities of practice. These are defined by a common disciplinary background, similar work activities and tools, and shared stories, contexts, and values (Millen, Fontaine, & Miller, 2002). As well, there is a tight focus on their common set of activities or practices (Carotenuto et al., 1999; Millen et al., 2002). Examples of this are knowledge management communities, which act as custodians for a particular knowledge domain, nurturing the sharing and creation of practices and knowledge that are key to the achievement of both company and personal objectives (von Krogh, Nonaka, & Aben, 2001).

Our focus in this paper is on communities of practice insofar as they can be useful instruments for achieving common goals. More particularly, we explore collaborative communities of practice that focus on the public interest. Many of such communities exist, as for example communities concerned with sustainable development. These consist of a variety of experts and stakeholders, often with conflicting interests. The communities are very knowledge-intensive, under considerable pressures of time; forced because of a regular lack of resources to work most effectively and efficiently; and with rapidly evolving sets of goals, workflows, and organizational structures (Kleef & de Moor, 2004). These communities can take many forms: from relatively uniform NGO communities to heterogeneous issue-networks in which organisations discuss a common issue (such as genetically modified food), acknowledge one another, and interconnect by multiple routes (Marres & Rogers, 2000).

Communication is the lifeblood of communities. As early pioneers in virtual communities already observed: “a cyberspace is defined more by the interactions among the actors within it than by the technology with which it is implemented. (Morningstar & Randall Farmer, 1990)”. Of course,

communication is needed to coordinate actions, but it can also be a core output itself. For example, scholarly communities are facilitators of highly specialized forms of argumentation and debate (Rieke & Sillars, 1984). Communities require a rich diversity in communication forms, from informal chatting, discussing, debating, asking and answering questions, and consoling, to advising and empathizing. (Preece, 2000)

One of the main reasons communication in communities is so important, is the development of trust. Trust is essential social capital in a community. It develops when there is a history of favourable past interactions that lead participants to expect positive future interactions (Preece, 2002). Trustworthiness is not achieved overnight, but grows out of iterative processes of interaction, observation, analysis and judgement in which the actors are local people, outsiders, and outsiders' peers. (Chambers, 1997)

The social norms that define these communities, for example those that help to generate trust, regulate what are acceptable forms of argumentation. The procedures and functionalities of their communication systems therefore need to be carefully adapted to the norms of virtual adversarial collaborative communities. However, although communication theory has provided insights into many aspects of effective communication in communities, these insights are hardly put into practice. And yet again, many communication technologies are being created and practical experiments being done in the field of community informatics which are little informed by or reflective of solid theoretical analysis.

The research objective of this paper is to develop the outline of a theory of communication norms acting as a bridge between the two currently separate worlds of communication theory and communication systems design. We do so by examining the role that communication norms play in public discourse theory on the one hand, and by investigating the role that they could or should play in the design of communication systems on the other hand. We highlight the need for such a bridge between communication theory and practice by analyzing a case on group-report authoring-support systems, a typical example of communication systems of importance to virtual adversarial collaborative communities.

To illustrate the problematic of systems support for effective communication in adversarial collaborative communities, in Sect. 2, we first introduce BCFOR, a group report authoring for environmental consensus assessment case. In Sect. 3, we more closely examine the public interest. Sect. 4 introduces relevant discourse ethics theory and, for illustration, some typical communication norms derived from this theory as implemented in the GRASS tool that evolved from BCFOR. Sect. 5 discusses how communication norms could inform communication systems design for virtual adversarial collaborative communities. We end the paper with conclusions.

Effective Communication: A Case on Group Report Authoring

In this section, we illustrate in more detail what we understand effective communication in virtual adversarial collaborative communities to mean. We do this by investigating the case of a typical class of these communities: those working for the public interest. We first present the case of a virtual community that aimed to produce group reports to assess the amount of consensus on forestry issues, but failed in its objectives due to the lack of appropriate communication support. Next, we focus on the authoring process and the functionality used to support this process. Finally, we take a more theoretical perspective on the coordination of collaborative work in order to show the complexity of collaboration dependencies to be taken into account in communication support.

Case: BCFOR

In 1993, the Global Research Network on Sustainable Development (GRNSD)2 was formed. One of the objectives, stated in its Charter, was “to develop new and creative approaches to increase the quality of research and communication processes related to sustainable development.” Although the network is no longer operational, it spawned a number of groups that have been operational until quite recently.

One of these groups was the British Columbia Forests and Forestry Group (BCFOR). The group was formed after the government of the west coast Canadian province of British Columbia decided to allow

[2] http://web.archive.org/web/20030705061342/infolab.uvt.nl/grnsd/

clear-cut logging in the Clayoquot Sound watershed in 1993. This decision was hotly contested. The conflict culminated in the arrest and conviction for criminal contempt of court of hundreds of people who blocked the logging roads. As such, there was a heavy public interest in the case (Fig.1). To resolve the conflict, the provincial government appointed a Scientific Panel to write a series of reports defining new land-use policies (SPfSFP, 1994-5). The recommendations of this panel were used to partially revise the initial land use decision. However, many claimed that important issues were not adequately addressed in the final version of the reports.

Fig. 1 Demonstration in front of B.C. Parliament Buildings, summer 1993

One particular suggestion for improvement of the research approach used by the Scientific Panel was that there should have been more emphasis on the analysis of contrasting issues (Hammond & Flavelle, 1995). This seems a valid criticism, considering a tell-tale footnote remark in the 4th (March 1995) of the Scientific Panel reports: "The Panel's protocol is characterized by respect for one another, for different values, and for data founded both in scientific knowledge and traditional knowledge. This respect enabled the Panel to be unanimous in its recommendations" (our emphasis). (SPfSFP, 1994-5) However, if the values of the panel members, and the stakeholders they represent, are different, perhaps even incommensurable (Darling, 1995), then it is not clear at all why respect for these values would have to lead to unanimity in a scientific report that aims to make a comprehensive analysis of issues and positions. To the contrary, highlighting such differences of opinion might usefully contribute to further policy deliberation and decision-making about land-use policy.

In the BCFOR group, Canadian and international members discussed issues related to forests and forestry. About 15 core members were quite involved in frequent and intense interactions for at least a year at the peak of the conflict, turning the initially loose group into a rather tight community. The community consisted of a range of stakeholders, from timber industry consultants and government officials to environmentalists. Initially, only a mailing list discussion was conducted on issues as they were raised by participants. However, given their great public and personal interest in finding solutions to the crisis, the group members wanted to do more. It was decided after an intense e-mail discussion that the group should produce tangible outputs that would help improve the quality of the public debate. The common objective would be to write a series of group reports in which forestry policies could be critically analyzed in a systematic way.

Group Report Authoring with GRASS

Group reports are prime examples of dialogic text. Contrary to traditional collaborative texts, dialogic texts reflect the involvement of multiple authorial voices (Harrison & Stephen, 1992). This means that conflicting opinions all find their way into the text, not covered up as compromises, but retaining their

original form and strength. Thus, any joint statements can be considered to have been produced in true consensus. This allows – or forces - policy makers to make more explicit and well-argued choices.

BCFOR was a prototypical virtual adversarial collaborative community, in which trust could easily be damaged. The proposed group report authoring process was therefore required (by the community) to meet two social constraints: to be both neutral and transparent (de Moor & Weigand, 1996). In this context, neutrality does not mean that individual opinions are free of bias. They cannot be. In public scientific investigations, not only are the authors themselves necessarily "subjective", but additional subjective constraints are imposed by society, given that society is largely based on values and value judgments (Lindsay, 1995). This strong subjectivity implies that in discussion and editorial procedures and in the supporting systems, all voices are to be heard throughout, and collaborating authors are not forced into compromise. Transparency means that all processes and their outcomes should be easily observable by all interested stakeholders. Often, although public opinion itself is well known, public opinion formation is unclear (Sachs, 1995). In adversarial communities such nontransparency is unacceptable.

After some relatively unsuccessful attempts, it turned out that using a simple mailing list for group report authoring purposes did not provide sufficient support. The list lacked certain technological functionality, but, perhaps even more importantly, it did not satisfy the complex social constraints of this adversarial community. To develop a better communication system, the GRASS project was conceived (de Moor & Aakhus, 2006; Heng & de Moor, 2003).

The purpose of the GRASS project is to develop an arena for credible societal discourse. Its aim is to produce concise group reports that give their readers an up-to-date and credible overview of the positions of various stakeholders on a particular issue. As such, these reports may play an important role in consensus assessment and catalyzing societal conflict resolution. In earlier papers (de Moor, 2004; Heng & de Moor, 2003), the objectives, process models, functionality, initial user experiences, and plans for the near future were described. We refer to this overview for more details, and only give a brief summary in the subsequent section.

GRASS Functionality

Group Report Structure

Each GRASS group report is subdivided into three main parts: (1) the problem description; (2) the sections; and (3) the report conclusion.

The problem description contains an introduction of the problem domain, the central issue that is the focus of the report, and a list of one or more key questions. The sections form the body of the report, in which the actual discussion takes place. Each section comprises a section introduction, the key question to be examined as well as a number of positions that authors can take. For each position, arguments pro and contra can be entered. An argument can also be linked to other arguments, thus forming an argument tree. A section is ended by the section conclusion, in which the various positions to the key question are summarized.

Each report is ended by a report conclusion, which summarizes the answers to the various key questions, and indicates areas for future research.

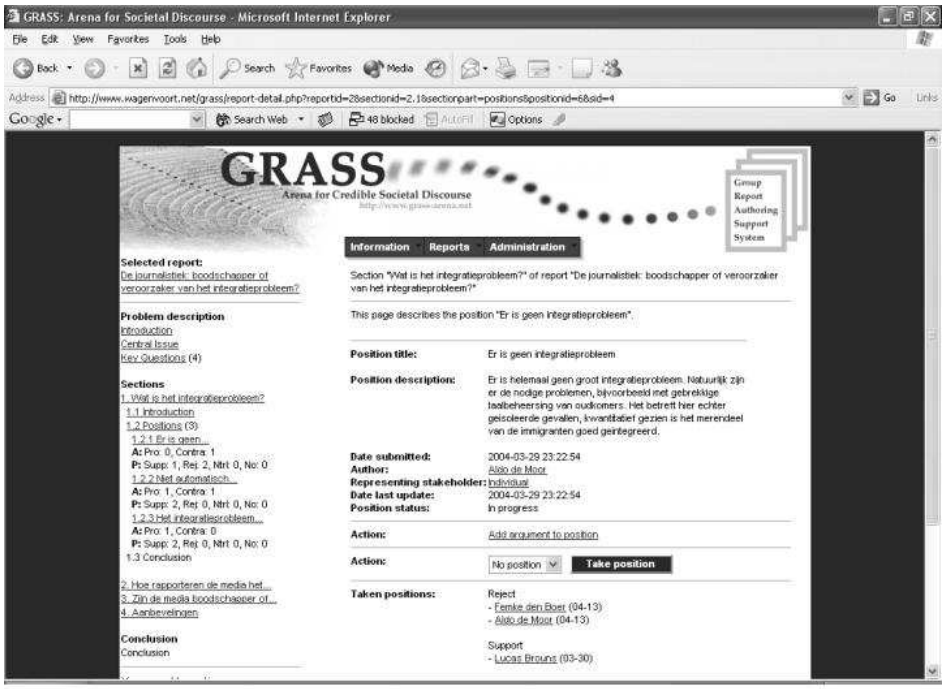

Fig. 2 The GRASS Tool

GRASS Functionality

A user has to register in order to become a report author. Several editor roles have been defined as well. Each editor role can be filled by one or more authors. Every author can become an editor, if desired. An overall report editor is responsible for editing the problem description and report conclusion parts. The report editor can also add new sections. A section editor is responsible for editing the section introduction and conclusion. In each section, authors can adopt or add new positions and add arguments, pro or con positions and other arguments. Positions taken can be modified continuously, reflecting a change in opinions held. Arguments, once made, cannot be changed, to prevent loss of discussion structure. An important feature of GRASS is that it stores all report elements in a database, which can be used to generate group reports in different formats. An example would be tailor-made summary reports listing all issues that cause much discontent, as measured by large variations in positions adopted. Reports consisting of positions and attached argumentation could be further organized according to stakeholder roles played by the authors, for example by presenting positions adopted by environmental organizations versus those taken by logging companies. The tool also has advanced and customizable notification functionality, thus allowing for an increased awareness about changes being made in positions.

GRASS has had a long gestation period, starting from an initial dissatisfaction with the limitations of e-mail for writing reports, via various intermediate prototypes, to the current version which is almost ready for large-scale use[3] (Fig.2). The BCFOR case was ahead of its time, and lacked proper technological support for it to continue its mission. With this authoring technology finally reaching maturity, the time has come to build more systematic use cases. With the new version of the tool, experiments have been done in Dutch and US academic student settings to test and fine-tune the functionality. We are now planning to reach out beyond these rather limited usage contexts to more ambitious, real-world, GRASS-style cases.

Coordinating Collaborative Work

As we have seen, one characteristic of collaborative communities is that they aim to accomplish joint objectives through a process of members working together. Ngwenyama & Lyytinen (1997) provide the following definition of groupwork: “a web of coordinated social actions performed by the participants to

[3] http://grass-arena.net.

achieve a joint outcome." This definition refers to coordinated action. Evidently, there are many kinds of coordination. According to Malone and Crowston (1994), coordination is "the act of managing interdependencies between activities performed to achieve a goal". This is not very different from the other well-known definition of Holt (1988): "coordination is composing purposeful actions into larger purposeful wholes". Coordination thus implies the existence of interdependencies, which can either be pre-given, or derive from the goal-directed effort. Malone and Crowston identify several types of interdependencies and coordination processes that are suitable in addressing these:

Table 1: Classification of dependencies (Malone & Crowston, 1994)

Dependency	***Examples of coordination processes***
• Shared resources	"First come first serve", priority order, budgets, managerial decisions (hierarchy), market-like bidding (markets)
• Task assignments	Same as shared resources
• Producer / consumer relationships	
• Prerequisite constraints	Notification, sequencing, tracking
• Transfer	Inventory management (e.g. "just in time", "economic order quantity")
• Usability	Standardization, ask users, participatory design
• Design for manufacturability	Concurrent engineering
• Simultaneity constraints	Scheduling, synchronization
• Task / subtask dependencies	Goal selection, task decomposition

In a virtual collaborative community, we have to distinguish between two levels of dependencies. First, there are the dependencies between the stakeholders in the outside world that bring them together in the community. In the BCFOR case, this dependency derives from the fact that the forests of British Columbia are a public good, and one way of using these often excludes or at least hampers another use. In other words, there is a single resource available to various actors with different interests. Second, there are dependencies created within the community by virtue of the collaboration. In the BCFOR case, these are dependencies that are part of the collaborative report writing and that can be of various kinds, if we use the Malone and Crowston typology above. The longer people work together, the more of these dependencies will emerge and need to be satisfied by the communication system. For example, when collaborating on a group report, the overall goal is the report as a shared resource, but during the work, there will be a need for solving simultaneity constraints. Also, many producer/consumer relationships will emerge where one actor, e.g. with an editorial role, becomes dependent on another with an author role.

In adversarial collaboration, the interactions aimed at dealing with these dependencies take the form of negotiation. According to Putnam and Roloff (1992), negotiation is a special form of communication that centres on perceived incompatibilities and focuses on reaching mutually acceptable agreements. A common distinction is between distributive and integrative negotiation (Walton & McKersie, 1965). The objective of distributive negotiation is to achieve an efficient compromise. The objective of integrative negotiation is to create a solution that satisfies all parties. Fisher and Ury (1981) made a similar distinction between win-lose versus win-win negotiations and argue strongly in favour of the win-win approach.

Weigand et al. (2003) discuss three types of negotiation, based on the way of communicating: norm-oriented, goal-oriented and document-based. In norm-oriented negotiation, the communication follows protocols or general rules that determine which communicative action is appropriate at a certain moment. In goal-oriented negotiation, the communication proceeds by disclosing and discussing the goals of the participants in an attempt to integrate them. Document-based negotiation makes use of a common

document; the participants do not interact directly, but by contributing to the evolution of the document as for example a business contract or a political press statement.

Combinations of these types are possible, of course. Like many collaborative work systems, the focus in the GRASS system is on document-based negotiation. The reason is that the norm-oriented negotiation assumes that there are fixed protocols with well-defined meanings, which is typically not the case in evolving communities. Although norm-oriented negotiation cannot be primary in adversarial collaboration, this does not mean that it plays no role or that norms are not important. To the contrary, selective usages of norm-oriented negotiation are indispensable in improving the quality and fairness of the collaboration process (we will come back on the issue of norms in section 4). Goal-based negotiation can be quite effective in adversarial collaboration, as it can help the actors to not get stuck in positions by directing them back to the objectives behind the position. However, it assumes that the parties are willing to reveal (part of) their goals; and this willingness is something that can only grow over time. In sum, GRASS is primarily document-based, and in this way helps the opposed stakeholders to focus on a common objective, and thus should be selectively complemented with other negotiation forms.

We have now explored the dimension of objectives in more detail. It is clear that there are many coordination complexities that need to be taken into account in the development of adequate supporting communication systems. However, as already hinted at by the interactions typically forming negotiation, paying sufficient attention to the various interests involved is essential as well. The fact that the public interest features prominently in such communities deserves further treatment.

Defining the Public Interest

A good society recognizes the importance of the public domain, and invests heavily in creating a civil order that reflects good social relations. Notions of production and consumption, however, have obscured the importance of association--the creation of common interests--as the basis of society. This association takes place in a good community, with mutual respect between different groups and lively dialogue about important issues (Jordan, 1989). It is not true that the public interest needs to suffer a tragedy of the commons by default. Very complex normative systems have evolved in many societies. For example, the elaborate system of rights and responsibilities which successfully governed the English medieval common for centuries was capable of preventing and dealing with major conflicts that would have otherwise threatened the public interest (Ridley, 1996).

The question now is: how can successful adversarial collaborative communities for managing the public interest come to be? Why would their participants interact at all given that they all have their own interests and objectives, which somehow have to match for collaboration to emerge?

To better understand how private and public interests can be made to agree, the concept of stakeholder needs to be worked out. Adversarial communities for the public interest are composed of many stakeholders. Stakeholders are those who have an interest in a particular decision, either as individuals or as representatives of a group (Digital Europe, 2003). From this definition, some factors can be derived that complicate effective communication among stakeholders. First, all parties have their private interests to defend. This may lead to actions such as secrecy (not revealing all information to other parties), advocacy (pushing their own position as far as possible), and discovery (strategic revelation of partial information) (Cohen et al., 2000). Depending on the language game being played, such strategic behavior may be legitimate, for example in a commercial transaction or legal dispute. However, stakeholders often defend their private interests in illegitimate ways, sometimes even leading to sabotage of the collaborative process.

Besides there being private interests, there is also a decision or public interest affecting all stakeholders. The public interest will only be safeguarded if an equitable and fair balance between the various stakeholder interests can be achieved (Plender, 1997). However, when has such a balance been achieved? How can the end result be acceptable to all participants? Often, only an unsatisfactory compromise is achieved, in which one of the participants has illegitimately gotten the upper hand (Rieke & Sillars, 1984).

Another factor complicating effective communication in adversarial communities for the public interest is that not all discussants are participating on their own behalf, but instead may represent the

interests of others. This means that additional conflicts may emerge and secondary communication processes may be necessary.

Cohen et al. (2000) claim that in adversarial collaboration the problem is the widely diverging goals. We argue, however, that in adversarial communities the real problem is the disagreement between interests, not objectives. In BCFOR, agreement was reached quickly that writing a joint group report by means of a fair process, was a good way of building common ground. However, it was considered to be very important that the process in which this objective was to be achieved would be legitimate. The main issues of conflict and confusion thus revolved around how to balance the interests.

To position communities for a public interest in which effective communication is important, we classify communities along two dimensions. The first is whether interests of community members are mainly shared or opposed. We call these communities harmonious and adversarial, respectively. The second dimension relates to the objectives. If there is just discussion without collaboration, we call these communities of interest, while collaborative communities aim to accomplish shared objectives, such as the authoring of a group report. Our main focus in this paper is on adversarial collaborative communities, since these are essential for creating win-win situations between opposing parties.

To clarify the classification: we consider each of these two dimensions of interests and objectives to be a continuum: Interests can be more or less shared. At the one end of the continuum, interests are opposed, at the other end they are shared. Similarly, objectives can range from individual objectives only to completely joint objectives.

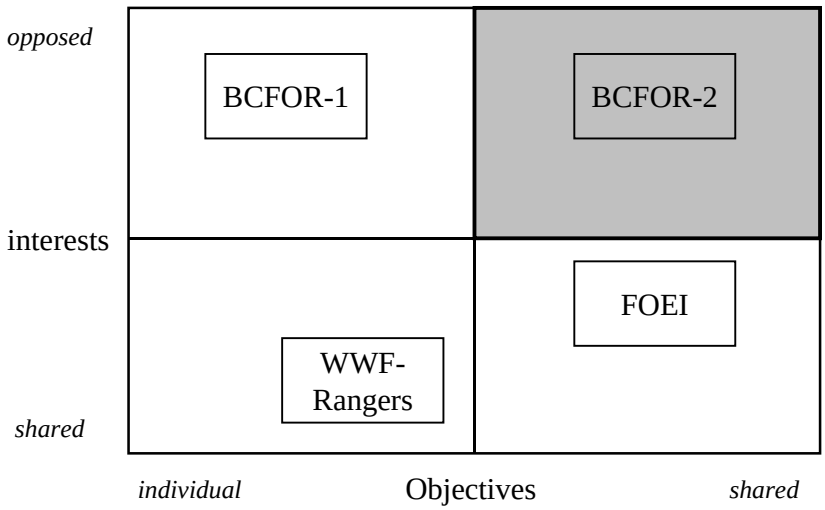

Fig. 3 Positioning adversarial collaborative communities

In Fig. 3, we have positioned four real communities in terms of the two classification dimensions. Ranging from less to more discordant, these are:

Shared interests / individual objectives. These are communities where interests overlap, but no collaboration takes place. A typical example would be the World Wildlife Fund Ranger Club[4]. This is a club for and by children who share an - often passionate - interest in nature conservation. The focus is on information exchange and learning via discussion fora. There are also possibilities to get involved in actions. These are mostly oriented towards individual participation, however. For example, participants can send e-mails or donate money to support a particular conservation campaign.

Shared interests / shared objectives. This is the situation where members have joint interests and collaborate on common goals. In general, these communities are more discordant than the previous type, because the working together leads to dependencies, for example concerning reputation and finances, that

[4] http://www.rangerclub.nl/

may lead to misunderstandings and tensions. A typical example is the Friends of the Earth International (FoEI) campaign communities (Kleef & de Moor, 2004). FoEI is a network of 68 environmental organizations worldwide, each working in its own country with local, community-based groups active in civil society (around 5,000 local groups in total). It is a grassroots network, where decisions are made by consensus, and work and authority are decentralized as much as possible. Campaigns are organized by communities of people working for FoEI member organizations. Thus, they share similar interests related to sustainable development and have common objectives, as many campaigns can only succeed by joining forces. Still, interests and objectives do not completely overlap, as to a certain extent they compete for the same public attention.

Opposed interests / individual objectives. In these communities, there often is the problem of strongly conflicting interests. One such community was BCFOR in its early stage. All members of the community shared their focus on the problem domain of B.C. forestry. They had very little shared interests, however. Also, there were no truly joint objectives, as the group mainly conducted nonfacilitated, divergent discussion.

Opposed interests / shared objectives. This is potentially the most discordant type of community. Not only do interests not agree, but those conflicts of interest will feature more prominently when members - try to - work together on shared objectives. BCFOR in its later stage was an example of such a community. In this stage, their interests were still as opposed as before. However, they now had a common objective: the writing of the group report. When working together, lack of trust is often a major problem.

Having positioned and illustrated communities for the public interest, we can now investigate the norms governing their communication processes in more detail. To theoretically ground this investigation, we look into various discourse ethics theories.

From Discourse Ethics Theory to Communication Norms

As we have seen earlier, Ngwenyama & Lyytinen (1997) defined groupwork to be a web of coordinated social actions performed by the participants to achieve a joint outcome. However, they also claim that the social actions of groupwork are situated within and normatively regulated by the organizational context. Especially in virtual adversarial collaborative communities, where there is potential or actual conflict and many additional problems arise due to limited social context cues because of the medium, it is important to realize what the regulating norms and motives are. In addition, note that "the organizational context" in this case is typically not a hierarchical organization but a loosely coupled community. We said that in adversarial collaborative communities essential interests are conflicting, yet simultaneously there are shared objectives ("mixed-motive tasks"). In such a context, the design of interactions and supporting systems needs to be done very carefully (Whitworth & de Moor, 2003). Harris (1995) discusses some theories of "universal pragmatics", in particular Grice's maxims and Habermas' theory in this area. Harris concludes that the usefulness of Grice's work is limited, and that the work of Habermas is more promising, especially because of its political grounding. This paper follows Habermas' direction.

Discourse Ethics

As is well known, Habermas proposed a series of validity claims which act as a set of general principles on which all communication is based and which where necessary can be called into question and "redeemed" by the other parties. These validity claims are based on comprehensibility (related to linguistic competence), truth (agreement on truth claim with respect to the object world), truthfulness (agreement on speaker's sincerity) and rightness (agreement on normative social rules and relationships). The validity claims presuppose shared understanding (agreement or consensus on a situation definition) as the first premise of communication.

Habermas' concept of discourse ethics (Habermas, 1984, 1990) contains general rules for practical discourse leading to an ideal speech situation, in particular in situations of moral argumentation. The process of moral argumentation is particularly relevant to situations where social conflicts arise and to institutional discourse (Harris, 1995). These rules guarantee discursive equality, freedom and fair play by

not excluding anybody from participating, and by allowing them to challenge anything they deem important, while ensuring that nobody is prevented from exercising these rights. However, an important question is how to translate these ideals into actual support for conversation in the real world (Chambers, 1996; Froomkin, 2003).

Habermas' discourse ethics are grounded in his theory of communication. Interestingly, the communication setting presupposes certain basic rules, even if in practice, we see these rules often violated. As Habermas claims, there is a "common core of morality in the normative pre-suppositions of communicative interaction" (Habermas, 1990). The basic rule is that participants must respect each other as communication subjects. It means that one must be able to give valid reasons for the communicative actions that one performs. This applies to both the speaker and hearer role. The speaker is not obliged to reveal everything she knows or wants, but when asserting something, or requesting some action, she should be able to give a valid reason (for each validity claim). The hearer is not obliged to agree with everything the speaker says, but he should listen and be willing to indicate whether he agrees or not (and why). A further important rule implicit in the communicative setting is that in principle, the communication is to be interpreted in the context of the communication, which sometimes can mean complete confidentiality, in other times giving the whole world access to the discussion. Exporting statements to other contexts cannot be done without the consent of the communicative actors. Within the context, however, communication should always be completely transparent. This list of rules is not meant to be exhaustive, but gives a good starting point for analysis.

Habermas makes a distinction between communicative action and strategic action, although he qualified this distinction in later work. In communicative action, the coordination that is achieved is based on a shared situation definition, whereas in strategic action, the coordination is achieved as a result of the individual actions of the participants pursuing their own goals, taking into account their expectations of the other participants' goals, and the signals they get about these via the actions of the other. Although this distinction makes sense at a conceptual level, it is not so easy to recognize it in practice (Harris, 1995). For one thing, it does not mean that participants in communicative action necessarily pursue a common goal and participants in strategic action private goals, or that the goals are harmonious in one case and conflicting in the other. Also in the case of an adversarial discourse situation, the participants can coordinate their dependencies by means of communicative action. In this respect, we do not agree with Ngwenyama and Lyytinen (1997) for whom negotiation necessarily implies strategic action.

The distinction can also not be based on the linguistic form of the messages, or the use of so-called cooperative speech acts, although these may give indications on the attitude of the participants. However, what we can do is to translate the ideals of discourse ethics into practical rules, and we can check whether these rules (communication norms) are adhered to or not. Therefore we propose the following criterion in this paper: a discourse is called communicative action if it follows the communication norms that are legitimate to the community, and is called strategic action if there is a norm violation. In other words, communication norms, properly defined, are a means by which communicative action can be promoted and strategic action resisted. In the next section, we will illustrate the concept of communication norms through the example of GRASS.

Communication Norms in GRASS

Central in the group report authoring process is that there is some issue or topic being addressed in a process of argumentation between different participants. To ensure that discussion contributes to the common good, and does not become pathological, its social context needs to be clearly understood. After all, public discourse is about making an argument for a point of view, not having an argument (Tannen, 1998). Although discussion and debate may be relatively unproblematic as descriptions of interpersonal communication and opinion formation in small face-to-face groups, these processes need to be carefully designed when applying them to the larger-scale processes of public opinion formation (Price, 1992). Group report authoring, as a key form of interaction in adversarial collaborative communities, therefore requires that the definitions of its design characteristics are sensitive to the social, or even societal context.

Using discourse ethics theory, Heng and De Moor (2003) formulated several key design principles for communications systems for group report authoring. Some of the most important ones are:

DP1: the document should be neutral and transparent, reporting all the undistorted views of all the participants of the discussion.

DP2: participants should take on responsibility.

DP3: the goal is not contrived conclusions, but true consensus.

To operationalize the design principles, explicit communication norms need to be formulated. Such norms on the one hand project the expected patterns for interaction that participants can use to anticipate, understand, and coordinate their interaction. On the other hand, they can be used to implement and exercise normative control. Thus, the norms designed into a communication support system can have a direct impact on the outcomes of the communication and collaboration process (Aakhus, 1999; Lessig, 1999).

In the GRASS case, communication norms define acceptable communication behavior for actors playing a role in the authoring process. Each norm has a deontic effect, indicating whether something may, must, or may not happen. Some norms focus on actor roles, others on document elements, and again others on norms for the interaction processes between actors. GRASS incorporates many communication norms, to implement the various design principles. To illustrate, we describe the norms that implement DP1:

Neutrality

CN1: Any interested user may register as an author.

CN2: Any author may play any editor role.

CN3: If more than one author plays a particular editor role, all authors playing that role must agree before any change to a report element they are responsible for may be made.

CN4: Any dispute related to the authoring process may always be discussed by all authors in a public forum to which every author has access.

CN5: Any common report element (such as report or section conclusions), after having been drafted by its responsible editors, must be approved by every author.

Transparency

CN6: No unauthorized changes may be made to any report element.

CN7: All authors must be notified of any relevant report element changes.

CN8: All reports and their composing elements may be read by any user. This reader does not have to be an author.

In the case that one of these norms is violated, for example, if not all authors are notified of a relevant element change (CN7) or if a user is not allowed to register as an author (CN1), this is an instance of a (conscious or non-conscious) strategic action. One way to avoid strategic action is to implement the norms into the system, so that it is impossible to violate the norms. Of course, this is not possible for every norm, and even if it is possible, it may have undesirable side effects. Still, it is worth keeping in mind that communication systems not only offer technical functionality (writing, e-mailing etc), but, through their functionalities, also can be used as normative systems for guiding behaviour. (Lessig, 1999)

Communication Systems Design

In this section, we first give a brief overview of some communication systems for adversarial collaborative communities. We then briefly discuss the role that communication norms could play in their design.

CSCW and Communication Systems

Traditionally, so-called Computer-Supported Cooperative Work (CSCW) and Group Decision Support Systems (GDSS) failed to take into account the political aspects of group work. (Bannon, 1997). Too often, the assumption was made that group work is always harmonious and information is a neutral concept.

However, most information is subject to strategic misrepresentation and unconscious bias (March, 1991). Disclosing information is also not neutral and it cannot be expected that subjects disclose something if they do not see the benefit of that disclosure for themselves. In a study by Lyytinen et al. (1993) about the use of GDSS tools for diplomats, it was found that the tool had to be used in a non-standard way if it was to be used at all. Firstly, it was out of the question to use anonymous communication, which is often favoured in the GDSS literature for group brainstorming and voting. Secondly, the archival properties of the system should be used with great care, as the participants did not want to make any statement during the discussions if they knew that their explicated views were stored and could be used to pin them down later on what were only intermediate positions.

One step on the way to the design of effective communication systems for adversarial collaborative communities is the idea of issue-based information systems (IBIS). Whereas GDSS focus on supporting the process of group decision making, IBIS allow for the structuring, analysis and elaboration of complex, multiple-perspective issues, all of which is essential for dealing with complex societal problems without clear and singular solutions.

Issues act as organizing principles for collaborative work, transcending individual conversations (Hartfield & Graves, 1991). An IBIS allows its users to identify questions, develop the scope of positions in response to them, and assists in creating discussions (Kunz & Rittel, 1970). Using an IBIS, stakeholders can conduct conversations about complex or 'wicked' problems, by structuring the creation and handling of 'issue nets' (Conklin & Begeman, 1989). Issue nets have three main types of nodes: issues, positions, and arguments. Many refinements of nodes and the types of links have been created in the applications developed. Some IBIS are generic and domain-independent, while others are tailored to the needs of a particular domain.

Examples of early generic IBIS-tools are gIBIS and HyperIBIS. gIBIS is a graphical hypertext system with as its main interface elements a browser and a structured node index (Conklin & Begeman, 1989). HyperIBIS is a simple text version of an IBIS, which can distinguish between deontic issues (should?), factual issues (what?), instrumental issues (how?), explanatory issues (why?) and conceptual issues (definitions) (Isenmann, 1993). One domain-specific IBIS, especially designed for research purposes is the Scientific Collaboration System (Kim, Suh, & Whinston, 1993). SCS pays much attention to representing knowledge. It uses an ordinary database to store this knowledge and make it accessible to its users. Types defined include hypothesis, claim, and argument. It allows research fields to be modeled as object classes, and organizes these fields in a class hierarchy. Issue nets are then mapped to one or more of these hierarchies. Queries on this knowledge base enable, for example, interdisciplinary viewpoints on the same problem to be obtained.

These early IBIS systems focused much attention on developing and using – often complex – representations. Only little attention was paid to the way in which these systems were to be used, let alone how they could be made effective. This is changing, as modern IBIS become more sensitive to their context of use. Zeno, for instance, is a second-generation, Web-based IBIS tool (Gordon, Karacapilidis, & Voss, 1996) which helps to mediate in conflicts. One purported application is that it can be used to democratize public policy making processes. A human mediator indexes documents according to the underlying argumentation model. By allowing for the preferences and value judgments expressed in messages to be modeled and by using a reason maintenance procedure, the tool can indicate which of the alternative solutions proposed meet selected proof standards or decision criteria. Although still using complex representation and reasoning schemes, Zeno pays much more attention to usability issues than the earlier generation of IBIS tools. It meets several practical design requirements: widely available across platforms, inexpensive access, and a very intuitive user interface.

Zeno is a sophisticated tool with the clear purpose of supporting planning processes. In contrast, D3E[5] is a whole kit of functionalities, which allows users to build their own document authoring tools. It supports the creation of sites that can be used to publish web-based documents, and that have integrated discourse facilities and interactive components (Sumner & Shum, 1998).

Along these lines, new, customized forms of online-publication processes can be conceived which involve authors and readers in the review process much more interactively. GRASS can be seen as an

[5] http://d3e.open.ac.uk

another example of this next-generation IBIS tools. Its main contribution is not so much in the discussion and authoring functionalities themselves, but in its capability to be molded to the communication norms of the community. Over the years, GRASS has continuously evolved these norms (De Moor and Aakhus, 2003). The theoretical lens outlined in this paper can help to analyze and further refine these systems, possibly leading to new classes of functionalities-in-context.

Although the Internet has great potential for increasing the quality of democratic life, not much attention has been paid so far to the systematic design of communication systems for the public good. As Noveck states: "There is a marked absence of spaces for deliberative, independent, thoughtful dialogue among 'wired' citizens, confronting new ideas and people in the course of civil conversation." Accordingly, "we need to devise a 'public architecture' in cyberspace to take advantage of the communications potential" (Noveck, 2000).

Our call for basing communication systems on key design principles and derived communication norms could be helpful in drawing up such an architecture. Granted, we only outlined elements of the theoretical lens, its translation into design principles and communication norms, and its implementation into concrete communication systems. Our point was not to come up with a fully developed, operationalized, and tested theoretical framework for spanning the communication theory-system design practice divide. Rather, our more modest goal was the necessary, preceding step: making the case for the need for such a bridge between communication theory and systems design, listing its elements and sketching a possible approach for its construction. Future research will have to address many detailed issues: what communication theories are relevant for virtual adversarial collaborative communities? Can universal design principles be distilled out of these theories or is their design mostly situated? How to map between design principles and communication norms? How to deal with conflicting communication norms? Can the functionalities of communication technologies be classified according to how well they satisfy such norms? How to use such new kinds of classifications to inform the research and development of new categories of communication systems? And so on.

The newer generations of communication tools are getting increasingly sophisticated in their support for adversarial collaborative communities. However, the theoretical grounding for many of these methods is still unclear. By analyzing their implicit communication norms using a discourse ethics-like theoretical lens, potential sources of conflict and communication distortions can be detected. This may help improve the diagnosis of existing systems ("why did this collaboration fail?") and the design of new systems that better match communicative ideals (Hirschheim & Klein, 2003).

We have only presented a small sample of 'constitutional' norms, which are directly derived from Habermas' discourse ethics. Many other 'bylaw' norms could be conceived, for example to deal with the drawbacks of efficiency and time-constraints, which discourse ethics does not address. One efficiency norm could be to allow only a limited amount of space to make one's argument, or a certain deadline before which an argument must have been made. Other issues, such as group cohesion, leadership, and socio-emotional issues also need to be represented in norms and ensuing designs in order to build truly useful systems. Group dynamics theory and the literature on computer-mediated communication (e.g. (Forsyth, 1983; Sudweeks & Rafaeli, 1996)), amongst much other work, can be a source for these additional design constraints. These efficiency, group, and design aspects, however, are outside of the direct scope of this paper, although they need to be addressed in future work.

Design choices will not be trivial and often difficult trade-offs will be necessary. For example, traditional GDSS systems often favour anonymous discussions, to increase productivity and sometimes also to de-politicize the discussion. In adversarial communities, anonymity must be used with care, however. For example, in an IBIS kind of system, it may be possible to anonymize the issue list, since every participant is allowed to raise an issue, and if it is deemed relevant by one participant, that is sufficient for including it. However, anonymizing the claims can severely hamper effective discussion, because if someone makes a claim, he or she should be ready to support it. This also applies to counter-arguments. This example makes clear that the design of a complex communication system that is both useful and legitimate is not straightforward.

We already stressed the trust-building function of legitimate public communication systems. This trust is not only important for making public discourse more credible. It can also benefit the standing of the participating stakeholders. Legitimacy and accountability of participants in societal debates, such as non-

governmental organizations, requires a careful design of their information and communication systems. Careful analysis of which norms to apply and how these norms are to be embedded in concrete system functionality is essential for this purpose (Vedder, 2003; Whitworth & de Moor, 2003).

Of course, there is a potential danger in prescribing communication behaviors through rigidly designed systems (Suchman, 1994). However, provided that sufficient criteria are given for which norms to make explicit, and that degrees of freedom are left where possible, making norms explicit can actually promote emancipatory discourse by improving legitimacy, accountability, and usefulness in communication systems for distributed discourse (Noveck, 2000; Vedder, 2003; Winograd, 1994).

Although we have focused on virtual communities for the public interest, lessons learnt here should have wider applicability. For example, adversarial communities also exist in legal conflicts, where lawyers of different parties often have to work together on resolving a dispute. An interesting case is also formed by the so-called Alternative Dispute Resolution initiatives that try to mediate in a conflict between individuals before it must be raised to the legal level. Virtual adversarial collaborative communities, and their properly designed communication support systems, may be very useful for supporting such initiatives.

Conclusions

We started this paper by acknowledging the importance of virtual communities for the public interest. In these types of communities it is important to clearly identify the degree to which objectives and especially interests of community members agree. Based on these dimensions, communities can range from the harmonious to the adversarial, and from communities of interest to truly collaborative communities. In this paper, we focused on adversarial collaborative communities, as these are essential instruments for societal conflict resolution and change.

We claim that to assess the value of communication systems for virtual communities, it is not sufficient to merely look at functionality. First, it is necessary to determine the characteristics of the collaboration required in the community. Subsequently, key design principles and selected communication norms need to be made explicit and used to inform the design and diagnosis of the communication systems for such communities. We illustrated our ideas by examining the role communication norms played in a case study on group report authoring support systems,

Much attention in Community Informatics is paid to closing the Digital Divide. However, the Theoretical-Empirical Divide is receiving much less attention. Community theorists and practitioners still live in different worlds. Instead of seeing each other as alien species, however, they need to work together much more closely. Reflection needs to meet lived experience. By systematically linking communication theoretical analysis with practical systems design, implementation and evaluation activities, more effective communication systems can be built. Though not sufficient, this definitely is a necessary condition for more successful virtual adversarial collaborative communities. We hope that our proposed outline of a "meta-theoretical" approach can also inspire others to start thinking about how to better let theory meet practice.

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