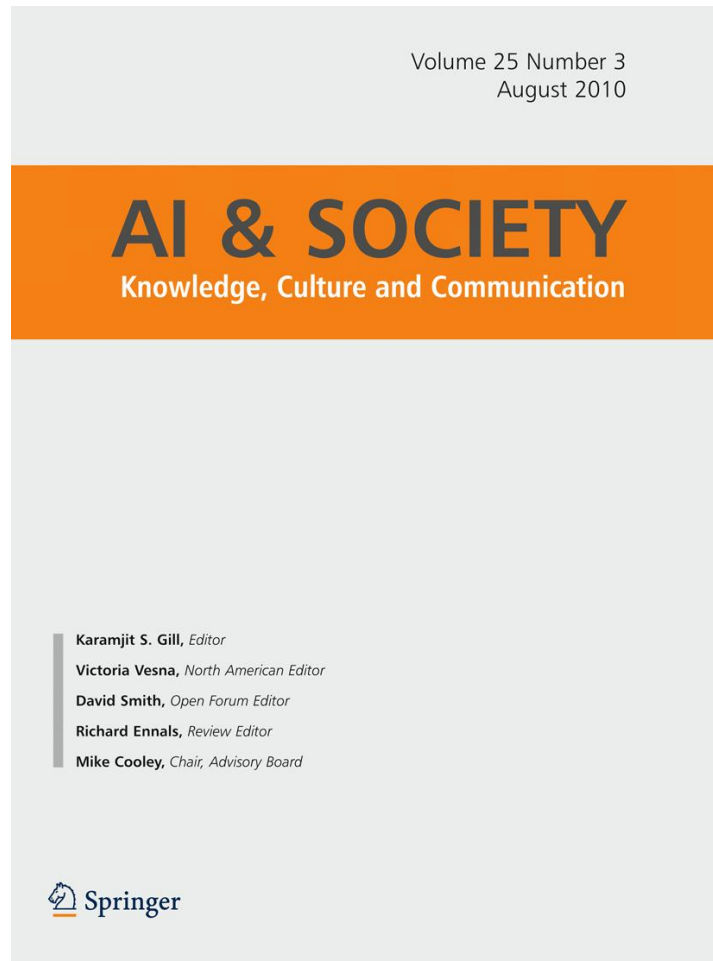


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Reconstructing civil society with intermedia communities

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Abstract A healthy civil society is essential in order to deal with “wicked” societal problems. Merely involving institutional actors and mass media is not sufficient. Intermedia can play a crucial complementary role in strengthening civil society. However, the potential of these technologies needs to be carefully tailored to the requirements and constraints of the communities grown around them. The GRASS system for group report authoring is one carefully tailored socio-technical system aimed at unlocking this potential. Such systems may help to develop stakeholder communities that are more productive in societal conflict resolution.

Keywords Authoring systems · Civil society · Conflict resolution · Intermedia · Virtual communities

1 Introduction

Globalization and (un)sustainable development are but two of many very complex phenomena presenting a host of problems that are almost insurmountable by modern society. The problems include many environmental, socio-economic, and political conflicts, ranging from pollution, resource depletion and habitat loss to poverty, migration issues, and even wars. Such complex, situated and inter-related problems are also known as “wicked” problems (Rittel and Webber 1973). Wicked problems are very hard to solve, because they have no definitive formulation and there is no single right or wrong solution. Addressing them

requires a careful exploration of their context and interdependencies in so-called issue nets (Conklin and Begeman 1989). Too often, however, policy makers hamper societal decision-making by asking the wrong questions, limiting the scope of and participation in required discussions and not taking into account the larger context of the particular problem at hand.

Key decision-makers include government and the corporate sector. Still, there are many other stakeholders who do or should influence the societal decision-making process, such as non-governmental organizations, academia, and certainly individual citizens who are directly affected by policies. John Locke already recognized the importance of this *civil society* as a defense of human society against the power of the state and the inequalities of the marketplace (Frederick 1993). Civil society has been characterized as the main source of communitarian virtues, while also being the domain of interest group conflict, the most important arena for public deliberation, and the authentic home of participatory democracy (Levine 2001). Thinking on an even larger scale, the world urgently needs a global civil society, which does not shy away from dispute, but entails non-violent, legally sanctioned power-sharing arrangements among many different and interconnected forms of socio-economic life that are distinct from governmental institutions (Keane 2003).

Clearly, the function of civil society being an intermediary for societal conflict resolution is very important. However, civil society is a fuzzy and ill-defined concept. Often, only a tiny proxy of civil society is involved in key stakeholder debates. This is to a certain extent inevitable in large societies, where some sort of representative communication mechanism is necessary for efficiency reasons (Keane 1991). Instead of involving all stakeholders continuously, just a subset is therefore often invited to be

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involved in an official participation “process” for a limited period of time before decision-making takes place. However, this particular approximation of civil society unfortunately leaves out many voices and also fails to provide the permanence required for careful calibration, monitoring, and linking of individual opinions and policy decisions. This results in suboptimal solutions, frustration, embittered cynicism, and entrenchment of stakeholders in their re-fortified positions, e.g., (Drushka 1999).

To remedy this situation, communities have long been recognized as an important contributor to a democratic and fair society. De Tocqueville described in detail the vibrance of American civil society in the early 1800s, composed as it was of numerous, interconnected civil and political associations (de Tocqueville 2000). Similarly, Habermas envisions a re-energized, activist, engaged citizenry working together to create new small-scale communicative associative institutions that over time may either merge into larger ones or at least join forces (Froomkin 2003). Such communities of cooperation can do for the public good what markets currently do on behalf of aggregated private interests (Barber 1995). Much community capacity has been lost over the past decades because of a range of socio-economic and political pressures (Etzioni 1993; Putnam 2000). However, communities have discovered the bottom-up use of cyberspace, as a space of distributed power, to transform society (Sassen 1998). Virtual communities can partially replace lost communities and partially venture into new community space which has not been explored before. A powerful example of how the Internet can help regenerate community is virtual communities of indigenous peoples, in which they join forces in their fight for recognition and keeping their identity. A good example is K-Net,¹ which supports community building using a wide range of ICTs within and between First Nations in Canada. Still, not only does the Internet allow existing communities to be reinvigorated, but it also enables completely new types of community. For example, in virtual communities of rulemaking practice, the Internet allows the general public to actively participate in the interpretation of the effects of legislation and the formulation of socially acceptable rules (Noveck 2004).

To realize this new community potential, many non-trivial issues such as access, social inclusion, and the development of a “democratic commons” need to be addressed (Roundtable for Australian Civil Society 2003). The main question is: how can virtual communities contribute to building a healthier civil society? Of necessity, many of these communities are comprised of adversarial stakeholders representing different interests. How can such

communities ever work on joint solutions? True, some interests will be disjunctive and cannot be completely reconciled. However, another element of conflict in adversarial communities is caused by *communication inefficiencies*: breakdowns in communication caused by process failures rather than interest incompatibilities. Such inefficiencies include unclarity about how to define the real issues and to prioritize positions taken. Another example is the lack of trust between community members. Trust, even among adversaries, can grow by prolonged, transparent, and fair interactions (Axelrod 1984). Virtual adversarial collaborative communities, in which opposing stakeholders try to explore joint solutions, can help reduce communication inefficiencies provided they have the right mix of technologies and social checks and balances (de Moor and Weigand 2006). The focus in these communities is on how to resolve the tension between opposing stakeholder interests and shared objectives, and by building common ground while preventing and resolving conflict. Virtual political communities are a major class of such communities, as these are where the hard work of contrasting opinions and preparing fair compromises needs to be done before legitimate policy decisions can be made. One function of such a community can be to help assess the amount of consensus that exists on a particular policy proposal. Yet, although they are to play an essential role in society, they are also very fragile and hard to construct (Davis et al. 2002; Volgy 2001). Their design and nurturing therefore require combining subtle insights from many different fields and disciplines.

Much of the literature on virtual communities focuses on the microlevel or meso-level: what makes virtual communities tick, what kind of technological support do they require, how to organize their knowledge management, and how do and should these communities evolve over time (Brazelton et al. 2003; Gongla and Rizzuto 2001; Schubert and Koch 2003). In this article, however, we also adopt a macro-view by positioning virtual communities in a larger societal context. We are interested in their societal impact and are driven by the question how civil society can use networked technologies strategically? (Surman and Reilly 2003). We do not focus on the role of institutional actors such as established non-governmental organizations. Instead, we concentrate on the role of interpersonal, cross-organizational communities of diverse stakeholders and on how to grow these emergent communities around Internet technologies.

The purpose of this article is to examine how virtual communities may contribute to a healthier societal debate. First, we need to understand their societal role. Then, we have to examine the make-up of the socio-technical systems formed by these communities and their supporting Internet-based communication systems. Finally, we need to

¹ <http://www.knet.ca/>.

address the process in which such crucial but complex socio-technical systems can be developed legitimately.

In the next section, we examine the need to complement the mass media with intermedia. Section 3 describes GRASS (Group Report Authoring Support System) as one example of an intermedia system aimed at stakeholder consensus assessment. In Sect. 4, we examine how virtual communities can be developed around intermedia. We end the paper with conclusions.

2 From mass media to intermedia

Involvement of civil society in societal decision-making debates traditionally occurs in two ways. First, there is the inclusion of selected stakeholders in official negotiation processes, which, as we have seen, raises many problems. Second, a wider and more diffuse debate takes place through the mass media.

A crucial role of the mass media is to inform the public. These media thus have an important agenda-setting function. Through exposure to the same information and interpretation of events, the public focuses on the same issues (Martin and Chaudhary 1983). This can be useful for concentrating societal attention and resolve in order to address issues. However, the mass media have many pitfalls. One issue is the fragmentation and discontinuity of public discourse (Postman 1985). Often, public debate is conducted in many media simultaneously, with records being very hard to access. A second, possibly even more serious issue is the concentration of media channels. The telecommunications markets currently so much in vogue restrict freedom of communication by generating barriers to entry, monopoly, and restrictions upon choice and by shifting the prevailing definition of information from that of a public good to that of a privately appropriable commodity (Keane 1991). Consequences of this market model are selective and biased reporting and the ignoring of criticism. Sometimes, there is outright manipulation of these controlled media (Palast 2003; Solomon and Reese 2003). Many distortions are not intentional, however, but caused by forces and constraints inherent in the Western mass media system (Herman and Chomsky 1988; Hulteng 1986).

The Internet has great potential to at least partially address these issues. The main difference with the mass media is that the Internet allows for distributed control of communication channels, by being embedded in civil society (Keane 1991). Still, *the* Internet is only an overarching, abstract concept. Internet communication channels in practice are enabled by many instances of different communication technologies like mailing lists or web fora. To stress the media role of specific Internet tools, we prefer to speak about *intermedia*. We define intermedia as those

Internet technologies that are used to facilitate societal discourse. In contrast to the mass media, intermedia allow for public communication to become more interactive, international, interdisciplinary, and interorganizational. Still, different intermedia have different characteristics. A mailing list is an example of a push technology that allows a list member to distribute a message to all other members. An organizational public website, on the other hand, is a pull technology that permits anybody to access its information if and when desired, while the content is completely controlled by the site owner. These variations in functionality make that the particular technologies have different affordances and constraints for supporting discussion.

Intermedia can perform different functions to alleviate the weaknesses of the mass media, thus contributing to a greater legitimacy of decisions. We distinguish four important functions of intermedia:

- (1) They allow for more intensive *participation* by a greater number and diversity of stakeholders than afforded by the mass media.
- (2) Decision-makers can get better *feedback* on decisions, not only in the form of hearings at the beginning and end of an official process, but also on different intermediate deliverables of finer granularity, such as specific questions asked during the process.
- (3) The societal effects of the implementation of public decisions can be *monitored* much more easily, think of the powerful watchdog function of blogs. Relevant information and stakeholder positions preceding decisions, as well as the relevant actors themselves, are much better accessible by affected parties who, for instance, signal deviations from the agreed policies.
- (4) Because intermedia enable the creation of tailor-made communication fora, they can facilitate *trust building* between adversaries. Trust develops when there is a history of favorable past interactions that leads participants to expect positive future interactions, for which sustained communication opportunities are essential (Preece 2002). Intermedia provide many such opportunities. Key to such trust building between adversaries is that the proper communication norms are designed into the intermedia so that, for example, the neutrality and transparency of their communication processes can be guaranteed (de Moor and Weigand 2006).

Figure 1 shows the role of intermedia in societal conflict resolution. Wicked problems, such as deforestation, generate a wide range of issues. These issues are addressed in official negotiation processes by decision-makers like governments and corporations and selected representatives from civil society, such as NGOs. The mass media form the main communication conduit to the rest of civil society, but are

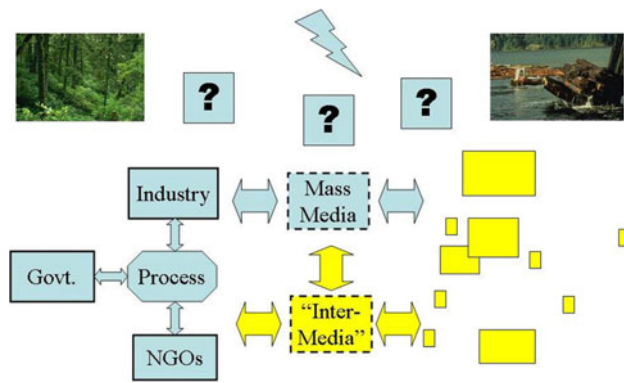


Fig. 1 The role of intermedia in societal conflict resolution

complemented by intermedia. Furthermore, there is a mutual relationship between mass media and intermedia, which influence each other in many subtle ways. For example, topics discussed in the mass media often lead to passionate discussion in intermedia, while many journalists scan mailing lists and discussion fora to get ideas for new stories, thus giving intermedia an agenda-setting role in the mass media.

In this article, we focus on adversarial collaborative communities that use intermedia to bridge the gap between informal civil society and its formal NGO representatives on the one hand and societal decision-makers such as governments and the corporate sector on the other hand. One way for adversarial collaborative communities to use intermedia more productively is in the authoring of group reports on societal issues (Heng and de Moor 2003; de Moor and Weigand 2006). Group reports are prime examples of dialogic text. This type of text, contrary to traditional collaborative texts, reflects the involvement of multiple authorial voices (Harrison and Stephen 1992). This means that conflicting opinions all find their way in the text, not covered up as compromises, but retaining their original form and strength. In that case, any joint statements can be considered as having been produced in true consensus. This allows—or forces—policy makers to make more explicit and well-argued choices, instead of them being able to hide behind compromise reports that can mean anything to anybody.

We next outline the GRASS project, which aims at developing a carefully tailored socio-technical system for mediating the writing of such group reports.

3 The GRASS group report authoring support system

The purpose of the GRASS project is to develop an arena for credible societal discourse on the Internet. Its aim is to build an intermedia system that allows its users 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 could play an important role in consensus assessment and catalyzing societal conflict resolution. In (Heng and de Moor 2003; de Moor and Weigand 2006; de Moor and Aakhus 2006), we describe the objectives, design principles, process models, functionality, and initial user experiences with GRASS in more detail. In these articles, we also position the system with respect to related systems grounded in the issue-based information systems' paradigm (Kunz and Rittel 1970). Here, we only give a brief summary of the design principles and functionality of the system as our focus in the current article is on the role that intermedia systems like GRASS could play in a larger societal context.

4 Design principles

Our view on the reduction of communication inefficiencies is grounded in Habermas's theory of communicative action (Habermas 1984). Habermas distinguishes two important types of social action. Strategic action entails that participants in an interaction are mainly interested in the pursuit of their own goals. Communicative action, on the other hand, implies that opponents, although not necessarily agreeing on everything, share at least an interest in developing common ground in the form of shared situation definitions. For communicative action to flourish, an *ideal speech situation* is desired. This situation requires a well-grounded argument in an open forum, which is governed by a set of clear discourse ethics rules for discursive equality, freedom, and fair play. Such rules provide a very different rationality from the mechanistic calculative rationality that governs many modern expert-driven debates that leave many stakeholders and their concerns unrepresented (Dreyfus and Dreyfus 1985). In contrast, communicative rationality is all about how to involve the widest possible relevant audience in the most intensive way.

The ideal speech situation is what it says, an *ideal* situation. In the messy reality of daily and political life, such a situation may not be naively assumed to exist. However, the discourse ethics can be summarized by a set of design principles that form a system of checks and balances to approximate the ideal situation as much as possible. Each of these design principles is operationalized in a set of communication *norms*, which can be used in the design and implementation of the functionality of the socio-technical system. Following are the design principles embodied in GRASS, as well as some of their associated communication norms:²

² A more in-depth treatment of these norms is given in (de Moor and Weigand 2006).

1. GRASS is to be an open forum.
 - Everybody may be an author.
2. Editors should increase the effectiveness and efficiency of the authoring process.
 - Editors must summarize contributions in conclusions.
 - Editors must trigger authors to post contributions.
3. Editors should be prevented from developing power positions.
 - Every author may be an editor.
 - Multiple authors may play a particular editor role.
4. The aim is not to make decisions but to achieve true consensus.
 - The report should not focus on decision-making but on issue exploration.
 - Differences in positions and their rationale should be clearly presented. Commonalities can then be considered to be real, not imposed.
5. The document produced should be neutral and transparent.
 - All positions and arguments must be represented in the report.
 - All discussion and report elements must be visible to anybody.
6. Participants should be motivated to take on responsibility.
 - Authors must be notified of changes to relevant report elements.
 - Authors must be guided to the relevant functionalities for the particular task at hand.

5 GRASS functionality

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*. Each key question is addressed in its own section.

The sections form the body of the report, in which the actual discussion takes place. Each section comprises a *section introduction*, the *key question* (or issue) to be examined as well as one or more *positions* that authors can take on this question. For each position, an author can indicate whether she supports, rejects, is neutral to it, or

takes no position at all. 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 on the key question are summarized. Figure 2 gives an example of a high-level section structure (excluding section introduction and conclusion, and individual positions taken by the authors).

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

In order to become a report author, a user has to register. Several editor roles have been defined. One or more authors can fulfill each editor role. Every author may 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 add new positions and arguments pro or contra positions and other arguments. Positions taken can be modified continuously, reflecting a change of opinions held. Position descriptions and arguments, once made, cannot be modified, however, 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. At the moment, HTML and PDF formats of the full reports have been implemented, but these features could easily be extended to generate tailor-made summary reports. Such customized reports could, for example, list all issues that cause much discontent, as measured by a large variation in positions adopted, or by large, opposing argument threads. Reports could also be organized according to the stakeholder roles played by the authors, for example, the positions adopted by environmental organizations versus those taken by logging companies. The system also has a basic notification

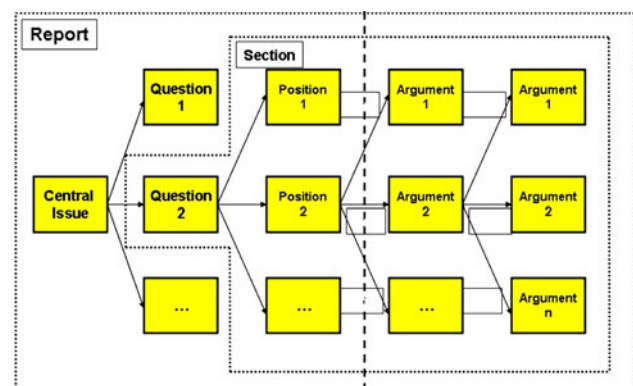


Fig. 2 The structure of a section in a GRASS report



Fig. 3 The GRASS Tool

functionality, indicating changes to the report, thus increasing awareness and participation.

6 GRASS in action

From 1994 to 2004 various versions of GRASS have been developed³ (Fig. 3). The latest Web version, for the first time, included all of the basic GRASS functionalities described above. It has been used in several student experiments. It is our intention to create an updated version and do experiments with other use cases, so that the functionality can be refined and extended, driven by requirements emerging from the use cases.

In the Fall semester of 2004, 15 Tilburg University Information Management students taking a course in Quality of Information Systems used the GRASS tool to jointly author a report, instead of writing the usual individual or small group-papers. To make the student assignment as realistic as possible, they were told to write a group report about a topic then very much in the public debate: for years, most Dutch large construction companies turn out to have been involved in semi- or completely illegal cartel practices. This resulted in major cost overruns in public infrastructure projects such as railway construction. Dutch parliament had therefore asked a parliamentary investigative committee to write a report about how to prevent such multi-billion euro fraud in the future.

In parallel with the parliamentary investigation, the students were asked to use GRASS to make an analysis of specifications and quality aspects of a hypothetical 'Parliamentary Research Information System for Public Investments' (PRISMA, in Dutch). To this purpose, the students were to collect links to relevant Web documents, discussions and so on, and discuss them on a set of project

weblogs. After the first 2 weeks of weblog discussion, they were then to start writing their joint group report on PRISMA, using GRASS. The weblog discussion lasted from Week 1 to 7 of the project, the GRASS authoring from Week 3 to 8, with the writing of the conclusions in Week 7, and the finishing of the report in Week 8. In parallel, from Week 1 to 7, a set of questions needed to be answered related to the theory treated in the course, so that theory and practice could reinforce one another. In Week 9, the results of their evaluations were summarized and discussed in the final lecture (Fig. 4). All students were asked to evaluate the project after the report was finished.

Students were each assigned section editor roles for a number of sections. They also had to add a minimum number of positions and arguments and agree with their fellow section editors on the section conclusions at the end of the authoring process.

We will not give a full evaluation of the experiment here. Rather, we aim to illustrate that the tool has shown a potential for being useful in practice by discussing some of the key results.⁴

The quality of weblog and GRASS contributions, such as a created position or argument, was scored by the lecturer. All students had to collect at least 50 points to be able to take part in the exam. The score itself did not influence the final grade, however. Interestingly, out of 15 students, 14 scored more than the minimum number of 50, with an average of almost 80, and scores ranging from 51 to 157. Thus, even though doing only the bare minimum would not have influenced their final grade in any way (as the exam was a set of multiple choice questions), students were really motivated to participate, in both the weblogs and in GRASS.

The qualitative evaluation results from the survey and the classroom discussion showed that students in general really liked the idea of writing a report on 'issues that matter' and to have a systematic overview of the evolving argumentation structures associated with particular positions. One drawback mentioned by many was the complexity of the tool. The learning curve is still quite steep. Still, once the basic principles were understood, the tool was generally considered insightful. For example, the idea of being able to quickly get an overview of the variation in positions taken was appreciated (Fig. 5). Each position in a section has a bar associated with it, with particular colors indicating the percentages of authors supporting (green), rejecting (red), being neutral (yellow), or not having taken a position (white). At the time, there were no real alternatives to writing with many authors on a document simultaneously, other than using a structured, workflow-

³ <http://grass-arena.net>.

⁴ The full report can be seen at <http://grass-arena.net/report-overview.php?reportid=7>.

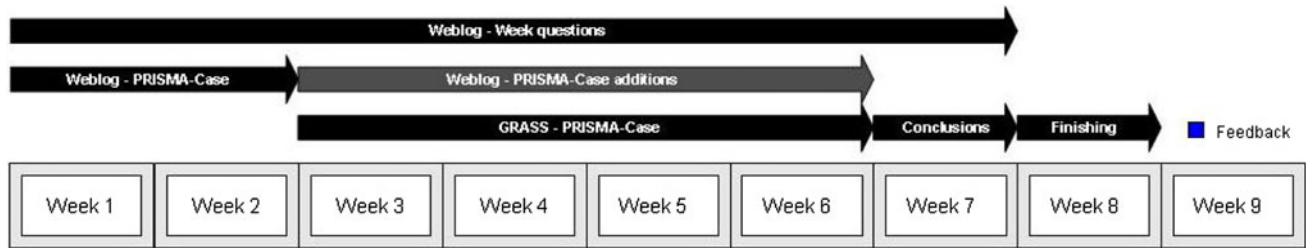


Fig. 4 The structure of the embedded authoring process

driven approach like GRASS. The idea of writing such complex, multiple perspective documents by sending unstructured Word documents back and forth between dozens of authors (or many more, in real-world cases) was too scary to contemplate for many students.⁵ Still, students would prefer to have had more process support offered by GRASS, for example, for being notified when new blog posts were available to be included in the authoring process (de Moor 2008). Another requested feature was to automatically notify an author when a contribution that she is waiting for (like a still to be created position by another author that she is to add an assigned argument to) has indeed been submitted. Such workflow and discourse dependencies will be the focus of attention in future work.

In sum, the experiment suggests that people indeed can be motivated to contribute on issues that matter to society and that group report authoring tools can play a useful role in supporting their interactions, provided that issues of technical and process complexity are properly addressed. Due to other priorities, development of an experimentation with GRASS has been halted since 2005. However, we are hoping to revive the project as soon as possible.

7 Building virtual communities around intermedia

Adopting a macro-view, in this section, we will argue that intermedia like GRASS could contribute to a healthier and more vibrant civil society through the virtual communities being built around them.

Issue networks are a good starting point to explore the relation between civil society, intermedia and virtual communities. In the traditional issue-based information system literature, issue networks refer to the issues, their interdependencies, and associated positions and argumentation (Conklin and Begeman 1989). Marres and Rogers (2000),

⁵ In the meantime, wikis have become quite popular for collaborative authoring. Although they have great potential, most wikis are currently still lacking a structured approach to coordinating the complex, interdependent workflows needed to produce high-quality documents that need to satisfy a range of specific checks and balances. It would therefore be interesting to see to what extent the GRASS design principles could be reimplemented in a wiki.

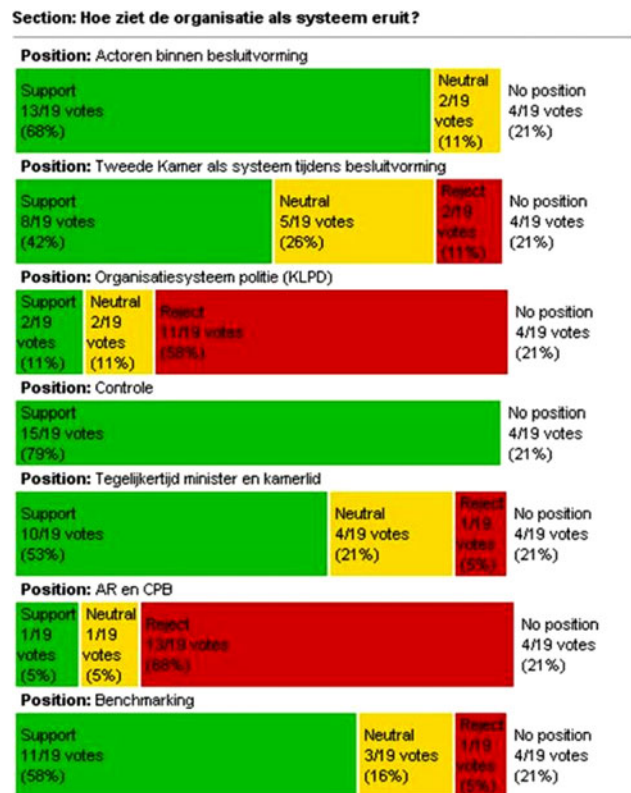


Fig. 5 Consensus assessment in GRASS

however, define an issue network as a Web of [possibly opposing] organizations that (a) discuss a common issue, (b) acknowledge one another, and (c) interconnect by multiple routes. The first definition stresses the semantic dependencies between issues, the second, the way issues can be used as focal points for interorganizational network building. Our definition is an amalgam of these two: an *issue network* is a set of semantically inter-related issues embedded in one or more virtual communities in which the issues are created, linked, and interpreted. Note that our definition goes beyond organizations as the main actors in issue networks, as a strength of virtual communities is that they cut across organizational hierarchies. Often fluid and open, virtual communities are potentially well suited as operational forms of civil society and able to conduct the extensive issue

definition and exploration stage that should precede and succeed any societal decision-making stage.

Group report authoring embedded in virtual communities could act as a catalyst for developing these issue networks. Different group reports could be initiated by different stakeholders, on issues that matter most to them. A group report requires a healthy community for it to be written, while at the same time, it gives a virtual community a focal point from which to grow. Over time, existing reports could spawn other reports, initiated by possibly very different stakeholders. Links between reports will develop, as new reports build on information gathered in previous reports. The reports themselves do not need to be large. Rather, they could act as societal indices to a wide array of documents, such as government reports, web sites of involved organizations, and discussion fora and mailing list archives. In this way, they provide a credible filter to those societal resources that are most relevant to a specific issue.

Intermedia communities collaborate on joint goals, which in the case of GRASS are group reports, yet they are also adversarial, in the sense that the interests of their members at least partially disagree (de Moor and Weigand 2006). It would be naïve to assume that such complex and potentially fragile communities will form and become successful without special care. To make the case that collaboration among adversaries is possible, at least in principle, we first take a closer look at virtual community governance, before examining a case on a societal debate on logging practices in the Canadian Pacific province of British Columbia in greater depth.

8 Virtual community governance

Collaborative communities represent a wide range of stakeholder interests. In community case studies discussed in the literature, interests of members are often quite closely related, such as in patient self-help communities (Arnold et al. 2003). In adversarial collaborative communities, however, interests are often strongly opposed. Why then would anybody wish to participate in such a community? One reason may be the genuine need for integrative negotiation: having the joint objective of arriving at an acceptable solution for everybody (Walton and McKersie 1965). Assuming that a credible arena for societal discourse such as GRASS exists, a stakeholder may be interested in initiating a report in order to investigate an issue or to explain its position on this issue to others. What if other relevant stakeholders do not want to participate? In that case, the credibility of the positions of those who are willing to be held accountable in a fair debate is increased, provided the supporting process and system are of high enough quality to prevent manipulation and that a global

audience has easy access to relevant report elements. Accusations by the opponents of authors that their points of view are mere propaganda then become more difficult to maintain, as accountability results in an increase in status and prestige of the party willing to argue—and be scrutinized—publicly. One way to reduce this status difference is for the opponent to also be willing to enter the discourse arena. By fostering these kinds of subtle dynamics, while guaranteeing discourse quality through the functionality and the checks and balances of a system like GRASS, stakeholders may become more motivated to join and participate in the discourse community.

Given that there is the willingness of stakeholders to use intermedia to, if not resolve, then at least examine their differences, there still is the problem of ensuring that their interactions proceed in an effective and efficient manner. Key to fostering the voluntary online cooperation between strangers or even adversaries in virtual communities is to ensure the emergence of trust. This is the implicit set of beliefs that the other party will refrain from opportunistic behavior and will not take advantage of the situation (Ridings et al. 2002). This holds all the more true in adversarial communities. Adequate community governance directing what people can or should do and what they should not or cannot do (Preece 2000) is therefore essential. Part of this governance is embedded in creating clear design principles and norms shaping the socio-technical system (de Moor and Weigand 2006). However, these norms are only a necessary condition for the community to become successful. Additional *processes* are needed, both to ensure community member participation in the adaptation of the socio-technical system and to manage any conflict that may still emerge.

Participation of users in the configuration of the functionalities and rules of engagement for their intermedia systems is essential for them to become a success. Virtual communities develop their own set of shared group norms over time. It has been shown that when members become actively involved in community moderation and standards setting, these virtual social networks can become self-sustaining (Andrews 2002). However, adapting their socio-technical system requires support for the subtle negotiation process between many stakeholders in the community. Examples of approaches that provide such support are classic socio-technical systems design methods such as Soft Systems Methodology and ETHICS (Hirschheim and Klein 1994). Another approach that is often cited in the domain of communities is legitimate peripheral participation (Lave and Wenger 1991). An example of a more formal approach is RENISYS. This is a knowledge-based method for legitimate user-driven systems development in virtual communities by ensuring the meaningfulness and acceptability of specifications of the community information system (de Moor and Weigand 2007).

Despite all these preventive methodological measures, conflict still may arise. Members may dislike the online community structure, see a lack of appropriate topics, or do not see their interests reflected in the community's purposes (Andrews 2002). Furthermore, there will always be members who intentionally misbehave by purposefully breaking the rules of civilized online behavior, for example, by flaming discussions or spamming (Sternberg 2000). Still, there are several ways to resolve it. Three basic strategies for resolving disputes, in descending order of desirability, include: reconciling interests, adjudicating rights, and exercising power [Uri, Brett, and Goldberg in (Duval Smith 1998)]. Duval Smith (1998) describes three types of third-party procedures that can be used to create an effective system of conflict management in an online community: mediation, factfinding, and arbitration. These procedures can be designed to reduce the dependence on power contests by first attempting to reconcile interests or adjudicate rights. Mediation is negotiation assisted by a third party who facilitates the disputants' agreement on a solution to their conflict. Factfinding is a quasi-judicial process in which the neutral conducts an evidentiary hearing and issues a report. Factfinders have the authority to decide the facts of a dispute and may also have the authority to make recommendations for resolution. Arbitration is also a quasi-judicial process. It differs from factfinding in that arbitrators issue decisions which, by prior mutual agreement of the parties, are final and binding (Duval Smith 1998). Such insights from disciplines like law should be built into the socio-technical systems of intermedia communities, either in the form of functionalities or in procedures, norms, and attitudes regulating their interaction. Exactly which elements to incorporate is still an open question, but a question that needs to be asked, since technologies alone will not be sufficient to catalyze debates.

So far, the argument for the need for intermedia in civil society and the role of virtual communities has been theoretical. However, community informatics, although informed by theory, should be firmly grounded in practice. Our PRISMA-case is an illustration of the use of intermedia for critical societal debate, but was still limited to a pseudo-realistic classroom setting. The following case describes the roots of the GRASS project, and a more realistic setting for experiments with how intermedia communities could contribute to healthier debate on a larger, societal scale.

9 Scaling up support for the public debate in British Columbia

The GRASS project emerged out of problems experienced in the British Columbia Forests and Forestry Group

(BCFOR) project. The BCFOR Group was formed after a government decision to allow for clear-cut logging in the Clayoquot Sound watershed on Vancouver Island in 1993. This decision was hotly contested. The conflict culminated in the arrest and conviction of criminal contempt of court of more than eight hundred people who non-violently blocked the logging roads (MacIsaac and Champagne 1995). Obviously, there was a heavy public interest in the case.

In the BCFOR group, Canadian and international members discussed issues related to B.C. 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, from 1993 to 1994, turning the initially loose group into a rather tight community. The community consisted of a range of stakeholders, including timber industry consultants, government officials, and environmentalists. Initially, only a mailing list discussion was conducted in which issues raised by participants were discussed. However, given the 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 more 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. Several generic tools, such as a mailing list and a web-based discussion forum were tried, but none was satisfactory. It was therefore decided to develop GRASS. The design principles and functionality presented in this paper directly stem from many discussions and meetings with community members and others.⁶

GRASS is not just a technology, but also a socio-technical system. The current operationalizations of its design principles are not absolute, but should continue to be carefully tailored to the evolving requirements of its particular communities of users. The design principles and basic GRASS functionality form only the "constitutional" framework that ensures the credibility of the forum. Many degrees of freedom are still left, however, that could be used to experiment with different workflow processes to make the functionality really useful. For instance, one suggestion was to superimpose a consensus seeking discussion process that is used by the people of the Nuu-Cha-Nulth tribes of Clayoquot Sound to resolve thorny conflicts.⁷ Broad issue exploration is at the heart of their discourse process. Such a specific discourse process model could inform the selection of functionalities offered, the flow of the authoring process, and the rights associated with the authoring roles involved.

⁶ A detailed account of the co-evolution process of practices and tools leading to GRASS is given in (de Moor and Aakhus 2006).

⁷ Karla Point, personal communication.

For example, in an issue exploration-focused consensus seeking process, the tool could automatically assign authors to write a contra argument for their own pro arguments or to write a pro argument for a contra argument that somebody else added. This then would force authors to reflect more on their own and alternative views. In turn, such socio-technical mechanisms could help build more understanding for the positions of adversaries and thus lead to building bridges between opponents.

Analyzing the context in which tools like GRASS are to be effectively used is all-important. In (Kleef and de Moor 2004), we describe a layered model that can be used for such context analysis. It starts with *discussion processes* as the actual exchanges in which the argumentation between participants takes place, such as the taking of a position or the creation of an argument. *Support processes*, like discussion moderation, then focus on the organization of the discussions between the participants. *Authoring processes* concern the production of the structured document. This level deals with the creation of, for instance, sections and conclusions. Finally, the *collaboration processes* have to do with the purpose or pragmatics of the documents: what are they used for, what is their societal role? An example would be to define the roles that journalists play in defining or investigating the key questions of a report. With such a layered analytical model, the role of intermedia and their associated communities could be examined much more precisely.

Different communities may (and probably will) come up with different interpretations of what their legitimate discourse processes—and the socio-technical support systems these require—should be. Thus, for GRASS to become really useful, a participatory community-centered development process is required, in which experiments can be done with, for example, which discussion protocol to use and if and how to enforce such a protocol (Preece 2002).

Summarizing, much has been achieved in terms of identifying the need for intermedia, developing core functionalities and processes, and initial testing. Time has now come to reach out, in terms of cases, experiments, and functionality-building projects.

10 Conclusions

A healthy civil society is essential in order to deal with the wicked societal problems that abound in our globalizing world. Merely involving institutional actors and mass media in tackling these problems is not sufficient. Intermedia can play a crucial complementary role in strengthening civil society. Quoting Hirschheim and Klein:

At the level of individuals and organizations, the traditional values of a free press link to what we

called the communicative function of IS. Once extended to the new information media, they will raise fundamental challenges to the role of IT in modern democracies. To meet these challenges, the communicative function of IS will have to assume a higher moral priority than its purposive rational function, at least in principle if not in practice as has been the case with the older information and communication technologies (Hirschheim and Klein 2003).

For this communicative function of intermedia to be realized, the technologies used need to be carefully tailored to the context of the virtual communities built around them. GRASS is a continuously evolving, carefully tailored socio-technical system aimed at unlocking communicative potential by offering a credible arena for societal discourse in the form of group report authoring. However, it is only one of a whole class of systems. There are many related methods and technologies charting similar conceptual waters: from a host of new microblogging tools like Twitter, via generic discussion tools and mailing lists to fully developed communication systems specifically aiming to foster democratic discourse.⁸ Most of these tools vary not so much in the basic argumentation and discussion functionalities used, which are often quite similar, but in how these approaches deal with their widely different social contexts of use. Very little is known so far about what critical success factors and context parameters make ICT successfully mediate a healthy societal debate, not in the lab, but out there in the real world. Instead of trying to produce one ultimate tool, the development of an experimentation with a wide diversity of tool *systems* should therefore be encouraged.

The current version of GRASS is only the beginning of a continuously de-refining and refining of the functionalities, procedural checks and balances, incentives for use, and especially applications at the community and societal level. Now that the core ideas have been formulated and implemented in relative detail, the hard—and fascinating—work of putting them to good use can begin.

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⁸ For example: issue-based discussion systems like gIBIS, QuestMap, Compendium (<http://www.compendiuminstitute.org/>); document production and annotation systems like the D3E digital document discourse environment (<http://d3e.sourceforge.net/>) and FreeText (<http://www.drostan.org/projects/faq/>); configurable discourse facilitation environments such as Unchat (<http://www.unchat.com/>) and Dito (<http://zeno8.ais.fraunhofer.de/zeno/>), and Web 2.0 style argumentation support systems like Cohere (<http://cohere.open.ac.uk/>) and DebateGraph (<http://debategraph.org/>).

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