

Distributed deliberative citizens: Exploring the impact of cyberinfrastructure on transnational civil society participation in global ICT policy processes

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Abstract

This study explores the impact of a virtual organisational structure called a 'policy collaboratory' on a transnational NGO network participating in the UN World Summit on the Information Society (WSIS). A collaboratory is a 'center without walls', which uses computer-mediated communication (CMC) tools to support geographically distributed knowledge work (Wulf 1989). The interdisciplinary conceptual framework draws primarily on Roger's (1995) diffusion of innovation thesis. To explore the conceptual framework, we asked four 'grand tour' research questions: (1) How is a policy collaboratory introduced into a transnational policy network?; (2) how is the collaboratory used?; (3) what impact does it have on participants?; and (4) to what degree can it be institutionalised? Using the second phase of WSIS as the setting for this longitudinal mixed-methods study, we purposefully selected the participants from the active WSIS civil society networks. After collecting baseline data in December 2003, we designed and implemented the collaboratory in January 2004, continuing to collect multi-modal data (surveys, interviews, email, computer logs) until shortly after the Tunis WSIS in November 2005. Key findings include: (1) training and a visionary change-agent are critical to successful diffusion; (2) participants may not utilise the full potential of the collaboratory; (3) even with limited use, the collaboratory can help to empower network members, especially those from developing countries, (4) institutionalisation of the collaboratory requires at least medium-term commitment and financial support. The study points to some of the challenges and opportunities of using the Internet and CMC tools to enhance geographically distributed participation in global governance processes.

Keywords

multistakeholder
participation
global governance
virtual collaboration
WSIS
cyberinfrastructure
collaboratories

Introduction

Since 1945, the United Nations has played a central role in convening the majority of world's governments to address problems of global concern. These have included such diverse issues as war, poverty, gender equality and outer space. The organisation has grown from the original 51 member nations to the current 192. The diversity of membership includes both

developed and developing countries, and a range of governmental and economic systems. For most of its history, the formal policy processes associated with the issues addressed by the UN have been largely state-centric. Non-governmental organisations (NGOs), when they participated at all, were relegated to the sidelines and to alternative venues. Frequently, they have seen their best strategy as using these alternative venues as platforms from which to protest against and contest the deliberations occurring in the *official* UN-sponsored meetings.

However, in recent years, two parallel developments have occurred. The UN has started to increasingly recognise the important role of information and communication technologies in socio-economic development, and the emergence of a global information society. Simultaneously, there has been a growing recognition by the UN that non-state actors, such as NGOs and the private sector, can play a critical role in helping it to achieve its mission. As a result of these two developments, the UN has been exploring ways to broaden participation in its global policy processes by non-state actors and civil society in particular (Cardoso 2004).

This 'multistakeholder' approach, as it has become known, was given a significant boost when in December 2001 the United Nations General Assembly approved the World Summit on the Information Society (WSIS). WSIS was heralded as a major step forward in the inclusion of diverse multistakeholder actors in global policy formulation processes (UNGA Resolution 56/183). In fact, the structure of WSIS was explicitly multistakeholder, and attempted to facilitate participation by governments, private sector and civil society in its multi-year deliberations (Klein 2004).

However, effectively including the diverse and heterogeneous voices of transnational civil society actors into these deliberative UN processes is not easy, even when the efforts to do so may be completely genuine (Cogburn 2004). Most UN meetings are highly structured and designed to facilitate governmental participation. They are not designed to incorporate the participation of civil society, or the private sector. Although specifically designed as a multistakeholder summit, WSIS provided numerous examples of how the structure of these meetings does not facilitate active civil society involvement. For example, a world summit almost always includes a multi-layered, multi-year preparatory process, including global and regional Preparatory Committee (Prepcom) meetings. Frequently, these meetings are held in expensive cities like Geneva, Switzerland, often lasting for two or more weeks. The structure of most governments is designed to handle this process. They have embassies, consulates, and diplomats based in these cities, and even with limited numbers are capable of attending many of these planning meetings.

On the other hand, civil society organisations, for the most part, are not structured in this way. Most of them do not have offices and staff based in Geneva, and it is very expensive for them to field a delegation capable of attending and participating actively in a series of three, two-week preparatory meetings, which was the case in both phases of WSIS.

Even further, during the meetings, there are numerous examples of where the structural processes of WSIS made it very difficult for transnational civil society organisations to participate actively in the process. For

example, during the 3rd Prepcom for the Geneva WSIS, the civil society sector (as well as the private sector) were allowed only 10 minutes per day (five minutes in the morning, and five in the afternoon) to speak to each section of the draft documents being negotiated. In contrast, governments could take the floor at any time to address any point, or sub-point they desired. Further, civil society delegates were not allowed to participate fully in some of the working group meetings where key, and sometimes contentious, issues of the draft *WSIS Declaration of Principles* and the *WSIS Action Plan* were being discussed. Frequently, civil society delegates were actually asked by some governments to 'please leave the room'.

These systematic limitations on and exclusion of civil society input into the deliberations marred the much-vaunted 'multistakeholder' approach and led to considerable frustration within the sector. One analysis of civil society participation in the WSIS preparatory process argued that more than 60 per cent of the civil society recommendations to the final declaration had been completely ignored (Global Contract Foundation 2003).

As a result of these developments, many were calling the WSIS preparatory process a failure, and there were continued suggestions that civil society should disengage from the process and refuse to continue being 'pawns' in a multistakeholder process that would not fully consider and integrate their perspectives.

Another way of looking at WSIS was that it served as a catalyst to stimulate the creation of dense, robust, transnational NGO networks amongst developed and developing country civil society. From this perspective, even with limited civil society impact on the final summit documents, it was not a failure. However, to be effective, these new civil society networks would have to create new transnational institutional forms capable of engaging in sustained policy.

Purpose

The purpose of this article is to explore the potential of these new, networked institutional forms by reporting on a strategic intervention into the WSIS processes. This was based on a collaborative action research model (Oja and Smulyan 1989; Whyte 1991). The aim was to explore the extent to which computer-mediated communication tools and collaboration practices could be used to enhance the ability for civil society and developing countries to participate effectively in these global information and communication technology (ICT) policy formulation processes (Cogburn 2004). From previous work, we understand that 'participation' alone (simply showing up) in an international conference is insufficient to effectively influence outcomes. A range of strategic measures must be pursued during key phases of a global ICT policy process, which include preparatory committee meetings (PrepComs), during the conference, drafting committees, conference follow-up, and presence in key nodal cities for global ICT policy also has a role to play (Cogburn 2003, 2004). In order to address each of these areas, this study was specifically created to design, develop and introduce a new virtual organisational form – a 'policy collaboratory' – into a transnational social network of NGO actors participating in WSIS. The aim was also to explore the impact of the

collaboratory on the administrative capacity, research productivity, conference preparation, and outreach, of those involved.

Research questions

As a strategic intervention, it is hypothesised that the policy collaboratory will have a significant effect on the ability of members of civil society from both developed and developing countries to organise amongst themselves and to engage in the complex knowledge work required for effective preparation and participation in WSIS. Drawing heavily on theories on the diffusion of innovation (Rogers 1962), our goal was to design, develop, deploy, and evaluate the impact of a policy collaboratory on four areas that our conceptual framework would suggest are critical to the effective transnational NGO participation in a global policy process (see Table 1, p. 40). As such, four broad research questions, and several subsidiary questions, guided this study:

- RQ1: To what extent can the socio-technical infrastructure of a collaboratory be introduced into a transnational NGO network and what factors hinder or promote this introduction?
- RQ2: How is collaboratory infrastructure used within a transnational NGO network?
- RQ3: What impact does the collaboratory have on the character and structure of a transnational NGO network, especially in the following four areas: (1) administrative capacity, (2) planning and conducting of research; (3) capacity building; and (4) outreach.
- RQ4: In what ways can collaboratory infrastructure be institutionalised within a transnational NGO network?

Structure

In the next section, we outline the analytical framework for the study, followed by a brief overview of the research design and methods. In the penultimate section, we present the findings from the study, organised by the research questions. Finally, we discuss these findings and point to future research.

Analytical framework

This study is grounded in an interdisciplinary literature that includes: political science, international relations, communication, information studies, and computer-supported cooperative work. From political science and international relations we draw upon the literature on global governance (Gourevitch 1978; Keohane and Nye 1989; Krasner 1983; Keohane 1984; Axelrod 1985), especially on international regime theory (Krasner 1983; Rittberger 1995), and specifically work on the international telecommunications regime (Drake 1989; Cowhey 1990; Zacher and Sutton 1996; Frieden 1996). This literature helps us to understand the role that a conference like WSIS plays in facilitating the 'convergence of expectations of actors' taken as indicating the emergence of an international regime (Krasner 1983; Hasenclever, Mayer and Rittberger 2000). We see the WSIS process as an explicit international regime formation

process into which, the United Nations has injected a ‘multistakeholder’ dynamic.

From the literature on transnational civil society networks and policy actor networks (Young 1995; Slaughter 2001; Keck and Sikkink 1989; Bockman and Eyal 2002), we understand better the potential dynamics of civil society participation in these international conferences. Specifically, this literature helps us to focus on the importance for these transnational networks to identify and mobilise knowledge resources within these policy processes, as well as linkages with epistemic communities (Haas 1980, 1990). Of these stakeholders, civil society is seen as a highly diverse and heterogeneous actor, with significant knowledge and information resources, but with very limited financial resources. Since civil society did not have the institutional resources of national governments (even developing country governments, meaning, embassies, consulates, etc), nor the combined financial and institutional resources of the private sector (e.g. highly organised international structures, such as the International Chamber of Commerce, coming into the process), they were at a significant disadvantage.

We have also drawn upon the literature on deliberative democracy (Bonner 2005; Button and Ryfe 2005; Gastil and Levin 2005), and particularly the Habermasian concept of the public sphere (Bohman 1988; Habermas 1991). This literature has helped us to conceptualise what types of activities might be helpful for the networked organisation to engage in regarding the policy formulation processes. The structural limitations of the WSIS processes were biased in support of governments, and hindered the ability for civil society to participate fully in the physical WSIS processes. As such, civil society actors had to maximise every opportunity for input into the process. Those civil society actors that were more organised and tapped into their global knowledge resources the best, including harnessing expertise from both developed and developing countries had the highest likelihood of being successful in the policy formulation processes. Given that most of civil society was organised around loose, diverse, transnational networks, which used mostly e-mail to communicate and organise their work, new virtual organisational structures might better enable them to harness their knowledge and information resources.

Finally, to help us consider the possibilities for designing the technology infrastructure for the policy collaboratory, we turned to the voluminous literature on computer-supported cooperative work (CSCW) and computer-mediated communication. In particular, we drew upon the interdisciplinary literature that explains the design and evaluation of collaboratories (Wulf 1989; Finholt and Olson 1997; Finholt 2001). This literature shows that working in a distributed environment poses numerous challenges (Olson and Olson 2000), some of which include building trust and common ground (Rocco 1998); coordinating the activities and communications of distributed teams (Kiesler et al. 1984); and discussion control (Kraut et al. 1982). With the inclusion of participants from both developed and developing countries, these problems are further complicated, by for example: managing inter-institutional and cross-national cultural differences (McCroskey 1990) and differential experience with computer-mediated communications (CMC) tools (Gersick 1988). We

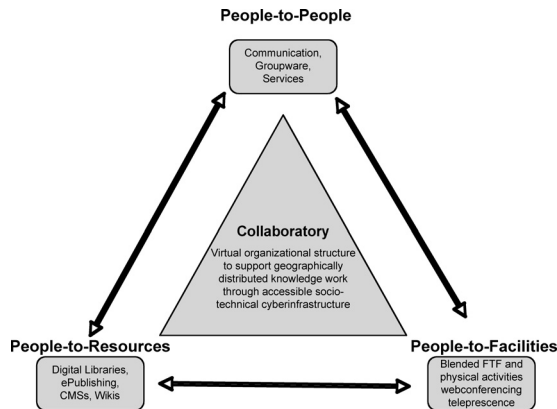
drew upon this literature to assist with the design and evaluation of the technical infrastructure for the collaboratory.

Researchers studying collaboratories have identified three overarching domains of activity around which many collaboratories have coalesced. We characterise these domains as: (1) people-to-people; (2) people-to-information; and (3) people-to-facilities (see Figure 1). We believe that each of these domains is critical to the needs of transnational civil society networks, and have designed the cyberinfrastructure for the World Federation of United Nations Associations (WFUNA) Collaboratory to address each of these three domains.

However, the work of Everett Rogers (1983) points to the significant challenges of technological diffusion into social networks. Rogers sees diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system. In his approach, Rogers identifies six steps in the innovation development process: (1) need or problem identification; (2) research; (3) development; (4) commercialisation; (5) diffusion and adoption; and (6) consequences (Rogers 1983: 135–147). These six phases may not occur sequentially, and some of the phases may not be present, depending upon the innovation (Rogers 1983). In this study, our research questions are designed to assess the degree to which these six steps identified by Rogers are present in the WFUNA Collaboratory project.

Research design and methodology

This study uses the second phase of UN World Summit on the Information Society and its preparatory processes as the setting for longitudinal, mixed-methods, qualitative-dominant research (Cresswell 2002). This is an in-depth case study of the design, implementation, and evaluation of a virtual organisational structure for a civil society network engaged in WSIS. The qualitative-dominant design for this study allowed us to harness the richness of in-depth ethnographic research to explain the participant’s experience of the intervention, while drawing upon limited



Source: Adapted from www.scienceofcollaboratories.org

Figure 1: Typical domains of collaboratory activity.

Source: www.scienceofcollaboratories.org

quantitative data to aid in description. Initially, we planned for an elaborate quasi-experimental design, with multiple policy collaboratories and control groups. However, in the end, the complexity and political challenges of working in the field forced us to limit our study to only one collaboratory for one transnational NGO network. Obviously, this approach limits our ability to generalise much beyond our sample, but it did enable us to deepen our engagement with our case and we feel the lessons learned from this empirical study will provide meaningful insights relevant for other transnational NGO networks active in global policy processes.

Procedure

After securing approval from the University of Michigan (and subsequently Syracuse University) Institutional Review Board (IRB), the committee that approves university-based research involving human participants, we purposefully selected the participants from amongst the multiple transnational NGO networks active in the WSIS processes.¹ After collecting baseline data through surveys, interviews, participant observation, and content analysis, in December 2003, we designed and implemented the collaboratory in January 2004, continuing to collect multiple forms of data (e.g., participant observation, interviews, e-mail archives, computer logs, and focus groups) until the Tunis WSIS in November 2005. An unexpected opportunity emerged in February 2006 to conduct a follow-up focus group of all Task Force members in Copenhagen.

Participants

The participants chosen for this study are the thirteen members of the World Federation of United Nations Associations (WFUNA) participating in a Task Force on WSIS and its attendant preparatory processes (Preparatory Conferences, or PrepComs, and Regional Meetings). The United Nations Association of Denmark coordinated the WFUNA Task Force. Partial funding for the Task Force (and the Collaboratory) came from the Danish International Development Agency (DANIDA) and their support is gratefully acknowledged. The thirteen task force members come from eleven different countries, both developed and developing: Denmark, Switzerland, Finland, China, Pakistan, Kenya, Uganda, Mozambique, Venezuela, Ecuador, and the United States. Members of the WFUNA Task Force were active in the WSIS processes from their inception.

Findings

This study was organised around four grand tour research questions. We will now explore those four questions by analysing the available data.

Diffusion of the collaboratory innovation

Our first research question asks: To what extent can the socio-technical infrastructure of a collaboratory be introduced into a transnational NGO network and what factors hinder or promote this introduction? To answer this question, we will first provide context by describing the overall structure of the WSIS civil society.

1. A large number of civil society organizations were involved in the WSIS processes. We used flyers distributed at the WSIS preparatory committee meetings to inform NGOs about the policy collaboratory project, and to invite them to information sessions. From amongst those interested NGOs, we selected our participants.

Since the policy issues addressed by WSIS were so diverse, the corresponding civil society organisations it attracted were equally assorted. Unlike the private sector, they did not come into the WSIS processes with pre-organised institutional structures (the private sector participation in WSIS was organised by the International Chamber of Commerce). On the contrary, the structures used by the WSIS civil society emerged more, or less, organically over time. As a result, they were somewhat complex, messy, and chaotic. These structures include multiple caucuses and working groups, which were 'self-constituting', meaning that they organised themselves around various themes addressed in the WSIS process, and became formalised as long as someone was willing to volunteer to lead the caucus.

Some examples include: the 'Cultural and Linguistic Caucus', the 'Human Rights Caucus', and the 'Environment and ICTs Working Group'. In addition, the broader, administrative structures that evolved were the Civil Society Plenary, a mailing list that was seen as the highest authority in the WSIS civil society, and the Civil Society Content & Themes Working Group (C&T), which was responsible for collecting, aggregating, and integrating input from the diverse working groups and caucus statements into a coherent civil society statement. The one major exception to these organic emergent structures was the civil society bureau (CSB), which was imposed upon civil society by the governmental organisers of WSIS, who operated through a governmental Bureau. Their desire was to have one civil society 'structure' with which to engage on a 'Bureau-to-Bureau' level, and found the complex, plethora of structures too difficult to deal with. For an overview of these structures, please see <http://www.wsis-cs.org/caucuses.html>.

While this complexity reflects the diversity and nature of civil society, it makes it particularly difficult for the sector to organise itself for effective participation in an equally complicated global ICT policy process. This difficulty is compounded by the more limited financial resources available to civil society delegates, relative to other sectors such as the Coordination Committee of Business Interlocutors (CCBI) representing global and multinational corporations (Cogburn 2004).

However, we hypothesised that many of these apparent liabilities could perhaps be turned into assets through the use of collaborative tools and practices. Also, according to the note on basic structures for civil society at WSIS, the first principle for the sector is that 'there must be multiple avenues and means for participation, and that all civil society entities can select the nature, level and extent of participation according to their needs and interests' (Ó Siochrú Kleinwaechter and Bloem 2003). We believed that the collaborative would be seen as one such means for participation.

Previous research on scientific collaboratories has shown that one of the most important indicators of potential success of a collaboratory is 'collaboration readiness' (Olson and Olson 2000; Olson, Finholt and Teasley 2000; Olson et al. 2003). This concept of *Collaboration Readiness* has three important dimensions: (1) *Collaboration Orientation* Readiness; (2) *Collaboration Infrastructure* Readiness; and (3) *Collaboration Technology* Readiness. In general, *Collaboration Orientation* refers to the willingness

and desire on the part of participants in a collaboratory to work together. *Collaboration Infrastructure* readiness tries to identify the degree to which the network has some existing collaboration tools and techniques for collaboration. Finally, *Collaboration Technology* readiness tries to measure the degree to which the participants are experienced in various kinds of information and communication technologies. These skills could be utilised or built upon in the collaboratory, so the pre-existing skills are an important predictor of success as well.

Based on our baseline data collection, particularly our survey and interviews, both of which contain items specifically measuring these three dimensions of collaboration readiness, the overall WSIS Civil Society Sector has a high degree of collaboration readiness on all of these dimensions. However, as we will see below, the degree of readiness for the collaboratory was perhaps highest amongst the selected group of participants, the WFUNA Task Force.

Recruitment of participants: presenting the concept:

In order to introduce the members of the WSIS civil society to the concept of the collaboratory, a series of high-profile presentations and meetings were organised during the WSIS preparatory meetings and the Summit itself. The first major recruitment/informational meeting was held in Geneva, Switzerland on 12 November 2003 during Prepcom 3 WSIS Geneva. The organisational meeting was held at the International Telecommunication Union (ITU) and organised by Cotelco and International Possibilities Unlimited (www.ipunlimited.org), a non-governmental organisation in consultative status with the United Nations Economic and Social Council (ECOSOC). Flyers were distributed to invite prospective participants to the meeting.

This initiative was presented as a compliment to the excellent efforts already underway within the civil society sector to use some ICT tools to support their work. These efforts were supported, in large part, by organisations such as the Association for Progressive Communications (APC). The overall goal was to enhance the effective participation of civil society actors from around the world – those actively involved in global policy processes, and those who were yet to participate in the multiple and complex processes of global governance.

Our approach to the policy collaboratory focused on a user-centred design approach. This approach allowed the researchers to develop a deep understanding of users' needs in order to design and deploy the appropriate socio-technical infrastructure. We envisaged that the socio-technical infrastructure of the collaboratory could enable real-time collaboration between civil society members geographically distributed around the world. Participants were told that the specific features of the collaboratory would be developed in consultation with the participants.

The meeting in Geneva was accompanied by an online meeting, using a commercially available webconferencing tool (Centra Symposium) provided by Cotelco. Space in the virtual seminar room was open to the first forty participants from around the world. Unfortunately, and a major lesson learned from this project, the webconferencing application was only

2. Those using Macintosh computers, or running Solaris or Linux operating systems could not participate; Macs running Virtual PC could participate, but with a fairly substantial degradation in performance.

compatible with the Windows operating system.² Not only did this Windows-only application frustrate some civil society stakeholders who would otherwise have liked to participate, but it laid the foundation for an ongoing and simmering conflict within the project. Some advocates of free and open source software later opposed the project on ideological grounds, even when we switched to a webconferencing application (Elluminate Live) that was cross-platform, and capable of accommodating Microsoft Windows, Mac OS X, Solaris, and several variants of Linux. Later, during the Summit program in December 2003, the lead author delivered two formal presentations on the collaboratory; one was during *WSIS-Online Networkshop*, under Multi-stakeholder Events (Plenary Session 5), and another during the session on Online Negotiations on 12 December 2003.

Two civil society leaders from United Nations Association of Denmark (UNA-Denmark) attended the initial collaboratory meeting during Prepcom 3, and every subsequent project meeting. UNA-Denmark had started planning for a Task Force on WSIS that brought together civil society leaders from both developed and developing countries. All of the participants in the Task Force represented their national United Nations Associations (UNAs), which hold membership in WFUNA.

Rogers' (1983) framework for the diffusion of innovation suggests that 'need or problem identification' is the first step towards initiating the diffusion. This stage seems to have been significant in terms of the collaboratory diffusion to the WFUNA Task Force. From the creation of their transnational network, the Task Force organisers (including the second co-author on this paper) recognised the challenge of building such a geographically distributed network, which would be effective in the WSIS processes, and with only a limited budget. These Task Force leaders were interested in using online tools to enhance democratic deliberation and participation of their Task Force in the WSIS processes, especially to more actively include participants from developing countries. For example, despite a basic common political point of departure (working for the realisation of the United Nations Charter) the group members had specific national interests and identities, and were geographically and culturally very diverse (spanning five continents and numerous time-zones). In addition, the group faced limitations in terms of financial, technical, and human resources. These obstacles led the Task Force organisers to recognise the potential for the collaboratory to enhance the Task Force's internal group dynamics and democratic deliberations, and in turn, to strengthen the overall impact of the Task Force on the WSIS processes. They then engaged in the second step of Rogers' diffusion model, which was to conduct research to look for solutions to their problem. After attending the collaboratory presentations, and internal deliberation, they agreed to participate in the study.

Developing the collaboratory infrastructure

The third stage of the Rogers diffusion model is development. This stage also played an important role in the diffusion of the collaboratory model to the WFUNA Task Force. From the beginning, the study was designed in the collaborative action research model, so intensive consultations began with the Task Force leadership about their objectives for the collaboratory,

and how their transnational network was structured. We also administered a web-based survey to collect baseline data on the Task Force members, which included measures of all three dimensions of collaboration readiness.

Training is a critical component in the introduction of a collaboratory, so several training sessions, both face-to-face and online, were conducted with the Task Force coordinators to prepare them for the introduction of the collaboratory, and to help them continue to envision how the collaboratory tools and approaches might assist them in meeting their objectives for the Task Force during the WSIS processes.

Initial development of the socio-technical collaboration infrastructure for the virtual organisation, collectively known now as *cyberinfrastructure* (Atkins et al. 2004), included the principled assembly of several synchronous and asynchronous tools. The cyberinfrastructure supporting the WFUNA Collaboratory used cross-platform, low-bandwidth, and open source software to the greatest extent possible. These tools were integrated into the existing Task Force collaboration infrastructure (which consisted mostly of email listservs), and supported the three overarching domains of collaboratory activity identified above: (1) people-to-people; (2) people-to-resources; and (3) people-to-facilities. While the specific instantiation of the cyberinfrastructure was intended to be dynamic, and evolving through iterative evaluation, it included the following components.

1. People-to-people – this component of cyberinfrastructure is designed to enhance the awareness of colleagues amongst distributed network members, as well as the ability to engage with each of them individually, and in small groups, in real time, using text, voice, and video over the Internet. To meet these objectives, our infrastructure development focused on *presence awareness packages and listservs*.

Easy and regular communication between individual Task Force members and small project teams was an important goal of the project. To facilitate this first level of people-to-people interaction, we developed an integrated strategy for the use of presence awareness (instant messaging – IM) systems. Centralising on Yahoo!, for IM communication, IDs were collected and disseminated amongst the Task Force members. This IM strategy was designed to compliment the ongoing use of email listservs within the Task Force.

2. People-to-resources – this component of cyberinfrastructure is designed to focus on the acquisition and dissemination of knowledge and information throughout the distributed network, through the storage and access of digital information and knowledge resources. To meet these objectives, our infrastructure development focused on building a *content management system* (CMS) for the network.

To serve as the primary entry point for the WFUNA Collaboratory, we developed a portal using an open source content management system (DotNetNuke). The goal of this web-accessible portal was to serve as the primary data repository for the Task Force and to maintain all of the

digital artefacts generated by the project (e.g. data sets, drafts of manuscripts, proposals, planning documents, schedules, contact lists, recordings of sessions, photos, working space for teams, and shared calendars). The CMS was designed with public access to an overview of the project and some of its public documents; and with granular access control on the rest of the site for Task Force members and Cotelco researchers based on their involvement in the project.

3. People-to-facilities – finally, this component of the cyberinfrastructure is designed to focus on enabling virtual participation in Task Force meetings, both planned and ad hoc. The goals here were to allow the Task Force to meet regularly, to develop strategies and written inputs into the WSIS process, and to allow those limited number of Task Force members able to participate physically in the WSIS meetings and preparatory processes to report back, in real time, to the remaining members of the network. To meet these objectives, our infrastructure development focused on *web-conferencing*.

To enable the high levels of interaction and geographically distributed collaboration (both people-to-people and people-to facilities) desired by the Task Force, we developed a coherent strategy for the use of web-conferencing. These tools allowed us to create a rich-media, web-based environment for synchronous communication and collaboration. The initial capacity of the web-conferencing server was up to 40 persons who could be virtually 'present' in the room at any given time. Connecting to the server required only a 28.8 kbps Internet connection. Once in the room, participants could communicate using voice or video over IP, they could 'see' who was speaking at any given time, raise their hands to gain the floor, and use quick voting or polling to aid in decision-making. In addition, participants could collectively see PowerPoint slides, mark-up those slides or a shared white board, share any application on participating computers, or go into break-out rooms for separate working group meetings.

Implementation, training, and iterative re-design

The first major collaborative meeting of the WFUNA WSIS Task Force took place during the first Preparatory Meeting (Prepcom 1) for the Tunis Phase of the WSIS. Prepcom 1 took place in Hammamet, Tunisia from 24–26 June 2004. At that time, the platform for webconferencing, which started with Centra, was switched to Elluminate. The main reason for this change was the limitation of Centra as a Windows-only platform. As the Task Force members were using various computing platforms, and to be more politically acceptable to the Task Force members (and to the larger WSIS civil society community), a cross-platform software solution was necessary. During the transition, the lead co-authors conducted several rounds of training, troubleshooting, and comparison between the features of Centra and Elluminate.

From 11–13 February 2005 a major breakthrough occurred for the Task Force. In preparation for Prepcom-2 for WSIS Tunis, the first face-to-face meeting was scheduled. Held in Maputo, Mozambique, the two-days

of Task Force meetings were supplemented with presentations from the lead author on the collaboratory concept, and included two hands-on training sessions on the collaboratory tools.

However, due to a failure of the local Internet Service Provider, the session could not be conducted 'live' online. Instead, through the creativity and innovation of the organisers and participants, the training was conducted offline, using screenshots inserted into PowerPoint slides, and individual laptops. Nearly all of the Task Force members attended the Maputo meeting, and asserted that the training sessions and presentations helped them to become much more comfortable with the collaboratory tools and approach. During the Maputo meeting, recorded interviews were organised with Task Force participants.

The Maputo meeting was followed by five of the Task Force members and the project director traveling to Geneva for the Prepcom 2 of the WSIS Tunis phase from 17–25 February 2005. Following the training in Mozambique, these members were in far greater control of the technologies, and were able to have several successful sessions linking members of the Task Force who were unable to attend the Prepcom, with events on the ground in Geneva. In fact, during one of these meetings, one of the members from Asia was finally able to communicate with and 'see' another member from Latin America, for the first time.

Another series of major Task Force collaboratory meetings took place during Prepcom 3, from 19–30 September 2005, at Geneva. Issues of Internet governance dominated this Prepcom, and the Task Force wanted to engage the debate. Building on relationships developed by the lead authors, the Task Force decided to co-sponsor a Global Deliberative Dialogue on Internet governance (<http://tinyurl.com/ys8gen>), which was a huge success. Over 143 persons from 53 different countries registered and participated in the two-week online event, which combined synchronous and asynchronous tools to facilitate a robust policy discussion about the numerous and complex issues of global Internet governance.

Using the WFUNA collaboratory

The second research question asks: how is collaboratory infrastructure used within the Task Force? Based on our literature review and conceptual framework, we identified at least four areas in which the collaboratory could be of use to the Task Force: (1) administrative capacity; (2) planning and conducting research; (3) affiliate capacity building; and (4) enhancing outreach capacity. Examples of these areas are illustrated in Table 1, p. 40.

Our analysis of the focus group and observation notes, survey data, meeting recordings, and computer logs, revealed that Task Force members had a fragmented perception and usage of the collaboratory tools. For example, one area that indicated a high level of variance was in access to the Internet. One Task Force member indicated that they 'had to go 3 km from his office to a cybercafé where he could use the email [Internet], which was very slow'. This is in contrast to some members of the Task Force that had relatively high-speed connections to the Internet in their offices and at home. Beyond this basic Internet access, a similar disparity existed amongst

Table 1: Key collaboratory impact metrics/objectives.

Transnational Network Objectives	Illustrative Collaboratory Activities
1. Administrative Capacity	<ol style="list-style-type: none"> 1. Holding distributed meetings 2. Deliberative and decision-making processes 3. Drafting of project documents 4. Training for the participants
2. Planning and Research	<ol style="list-style-type: none"> 1. Collaborative knowledge sharing within the network 2. Hosting seminars for the benefit of the network 3. Drafting of research documents and articles
3. Affiliate Capacity Building	<ol style="list-style-type: none"> 1. Knowledge acquisition 2. Technical skill and ability 3. Identification with the network 4. Density of collaboration within the network
4. Enhancing Outreach Capacity	<ol style="list-style-type: none"> 1. Hosting seminars to involve other in the network 2. Hosting public meetings to increase involvement 3. Expansion of participation in network conferences

those members who had a fairly detailed knowledge of the various tools being used in the collaboratory and felt comfortable using them, and those that had very little familiarity with these tools. Nonetheless, we expected to find collaboratory activity in each of the four areas described above. We will now review our findings in each of these four areas.

Administrative capacity

The expected collaborative activities in this area were: holding distributed meetings, deliberation and decision making, drafting of project documents, and conducting training for the participants. An examination of listserv and webconferencing records show that the members have surpassed our expectations in this regard. Members have used the collaboratory for a wide range of activities such as communicating with other members on the progress of work and forthcoming events, intimate preparatory processes, discussing the structure of forthcoming events (Prepcom 3), scheduling a meeting, invitations to join the listserv, circulating guidelines on how to submit a proposal, briefing absentees on the outcome of webconferencing, collecting addresses for instant messaging, exchanging ideas on the issues to be discussed in side events, circulating documents as attachments to mails, sending monthly updates on various UNA activities, travel organisation, providing information on hotel booking, providing fellow Task Force members with technical support to attend collaboratory meeting, slogan creation, updating other members on

visits/meeting/preparation of papers, negotiation for decision making, invitation to attend meetings, giving directions for hotel and venue. As the Tunis Summit approached, the listserv became a particularly useful forum for communicating travel related information, discussing and finalising events in the summit and preparing and sharing important documents and brochures.

In addition to the listserv, the webconferencing facility was been used to conduct seven meetings of WFUNA Task Force members, since January 2005. In addition the tool has been used to conduct training sessions and to interview several of the Task Force members, in an earlier data collection process. One of the Task Force members has expressed the following opinion:

The communication within the Task Force has been much improved as a result of both the listserv and the collaboratory tools. However, we still need to step up our communication and work on including everyone in the collaboratory.

Comments like these coming from Task Force members help to emphasize the point that the collaboratory, while useful in many respects for the Task Force members, requires ongoing training, iterative development and patience.

Planning and conducting research

Generally this area stresses knowledge sharing within the Task Force and various ad hoc teams and working groups, hosting seminars for the benefit of the research teams, drafting of research documents, and articles. As mentioned earlier, the extensive use of this platform to create and share documents relevant to the WSIS preparatory processes can be viewed as an indicator that the Task Force members have successfully developed the culture of creating and sharing knowledge within their network.

Affiliate capacity building

In this area, we explored the extent to which members of the Task Force used the cyberinfrastructure to acquire knowledge and information and to develop technical skills and abilities. From the data available we are able to determine that members of the Task Force did enhance their own knowledge, skills and abilities by participating in the project, and frequently 'taught each other' as they extended their own newly acquired technical skills to others in troubleshooting connectivity problems and other matters. A few of the members also introduced new collaboration technologies into the network and started their own websites, thus opening a new channel for communication.

In an unexpected development, several of the Task Force participants requested the opportunity to participate in the *Global Graduate Seminar on Globalization and the Information Society*, convened by the lead author. This seminar uses some of the same collaboration tools and involves graduate students from South Africa, the United States and around the world. The addition of these Task Force members was a phenomenal, mutually beneficial, experience as they learned more of the theoretical

approach to WSIS and shared their invaluable practical experiences with the students.

Enhancing outreach capacity

We had expectations that the cyberinfrastructure would be used to involve the Task Force members in academic seminars (as above), to host public meetings, and to expand participation of Task Force members in the WFUNA annual conferences and other Task Force activities. Thus far in our analysis, there is growing evidence that the Task Force has indeed engaged in many of these types of activities, though not quite at the level we had predicted. In addition to their participation in the Globalization Seminar, few other formal requests emerged for participation in other academic seminars. However, the Task Force coordinator, a co-author on this article, has been able to engage in more academic discussions about the project. Also, a number of the Task Force members have used their individual positions to talk about the collaboratory, during formal and informal presentations around the world. In particular, one participant from Latin America was able to showcase the collaboratory approach at a major academic conference in the Andean region.

Impact of the WFUNA collaboratory

The third research question asks: what impact does the collaboratory have on the character and structure of the WFUNA Task Force, including its ability to meet stated objectives, and on the collaboration practices of participants? Here, we were again interested in the four areas mentioned in the previous section: (1) administrative capacity; (2) planning and conducting research; (3) affiliate capacity building; and (4) enhancing outreach capacity. To fully answer this question goes beyond the scope of this article. However, briefly, we have found that in each of these areas, there was a noticeable increase in the confidence of the WFUNA Task Force members to plan and organise their work in a geographically distributed manner. For example, in terms of administrative capacity, they moved from primarily using email lists to communicate all administrative matters, to holding virtual business meetings using the webconferencing tools provided by the collaboratory. Being able to make decisions in synchronous/real-time was of huge benefit to the administrators, including decisions about project funding, and priorities of the network. The ability for the Task Force to use the collaboratory tools for planning and conducting research also proved to be important. They were able to utilise both the synchronous meetings, paired with the listserv for asynchronous policy discussions, as the network prepared its written inputs into the WSIS policy processes. Each of the affiliate members of the Task Force reported increasing confidence in their ability to work collaboratively with Task Force members who were not physically present with them in their various cities and countries. This confidence was evident in both the face-to-face and online training sessions conducted by the project. Finally, the collaboratory helped to position the Task Force as a leader in the use of ICTs within the WSIS civil society sector. In fact, after the conclusion of WSIS with the closing of the Tunis summit, the Task Force was able to

partner with other civil society organisations in convening the first post-WSIS international follow-up meeting, held in Denmark. In the process of planning and implementing the conference, the Task Force made great use of the available cyberinfrastructure. One major contribution was for outreach, and to use the webconferencing tools to enable remote participation in the Denmark conference by Task Force members and others from as far away as Venezuela to give presentations and participate in conference working group sessions.

Institutionalisation of the WFUNA policy collaboratory

Finally, we asked: in what ways can collaboratory infrastructure be institutionalised within a transnational NGO network such as the WFUNA Task Force? Here, we find substantial evidence of attempted institutionalisation and planning for long-term inclusion of the collaboratory approach within the Task Force. The follow-up meeting in Copenhagen included an evaluation of the project, its overall impact, and discussion of ongoing funding mechanisms. The post-WSIS funding proposals also included explicit references to organising members' ongoing work and engagement in other policy processes, such as the WTO and other on-going policy discussions along the lines of a policy collaboratory.

Conclusion

What do these findings mean for transnational policy networks and the potential to enhance civil society and developing country participation in global ICT policy processes?

First, there is clearly tremendous potential to use information and communication technologies to facilitate the participation by transnational NGO networks in global policy processes. However, as Rogers (1962) would predict, the diffusion of these new technologies and organisational forms is quite difficult. Successfully introducing the socio-technical infrastructure of a collaboratory presents tremendous challenges that can only be overcome by training and visionary leadership. In the case of the WFUNA Collaboratory, the Task Force had a high degree of 'collaboration readiness' and clearly identified the benefits of using information and communication technologies to work together more closely with their colleagues around the world. Because of this realisation, they were willing to put the time in for training, and going the 'extra mile' to find internet cafes or to get help participating in the synchronous online sessions.

In addition, both the coordinators of the Task Force and the researchers were tireless in pursuing their common objectives. Both groups could see the potential value of the collaboratory and worked to ensure that the project had every possible chance to succeed. If at any time, either of the two groups had expended less energy, time, or attention to the collaboratory, it would have most likely lost momentum.

Also, as Henderson (2002) identified, there is the potential danger that national or local NGOs (as the organisational members of the WFUNA Task Force remain) will pay more attention to developing these 'horizontal networks', along with their corresponding virtual communities and geographically distributed colleagues, and might pay relatively less attention

to their own national priorities and delivering services to their local constituency. Henderson saw examples of this phenomenon in Russian NGOs, who were reorienting themselves and their work to appear more 'westernized'. These issues are also related to questions of 'legitimacy' of the NGO, raised by Ganesh (2003) and others who find that some local NGOs engaged in transnational networks may ignore their relevance locally.

However, within the Task Force, this seems not to be the case. In fact, many of the organisational participants were able to see so clearly the benefits of the collaboratory approach not only for their transnational collaboration, but have also lobbied hard to have these technologies and approaches used at national levels. Quite the opposite of getting more drawn into transnational priorities, they have taken transnational ideas and innovations and attempted to introduce them at local levels.

Second, even with the recognised benefits and the willingness to participate in training, and find internet access points, the Task Force members did not utilise the collaboratory to its full potential. Researchers can envision numerous ways in which the collaboratory infrastructure could contribute to organisational development, but it takes longer than expected to introduce these technologies into the real transnational networks. Further, clearly some network members are able to grasp and harness the power of the collaboratory more readily than others.

However, even with limited use, the collaboratory can serve to empower network members, especially those from developing countries. As one participant responded, one of the most interesting aspects of this study is that members of the Task Force were not 'alone' in these policy processes. They always felt like they had their network members with them, either in person or virtually. This served to strengthen their participation in the ongoing discussions and debates even more. These findings are very much in line with the earlier work of Contractor et al. (1996) who found that 'interactional influence' was a better predictor of one's perceptions of media use than were individual demographic characteristics.

When thinking about the impact of the collaboratory, it is interesting that the use of CMC tools makes the extraordinary seem ordinary. With the Task Force, we have a wide range of geographically distributed policy actors from both developed and developing countries, with significantly varying degrees of technology expertise and support, and yet, they are able to function fairly well as an organised institution. Bimber, Flanagin and Stohl (2005) might argue that this seemingly extraordinary feat is possible perhaps because the new CMC tools are able to reduce the significant and costly burdens of geographically distributed collective action. They argue that:

As most studies of emerging media have shown, the unique and wide-ranging effects of new technologies do not arise from the attributes of the technology themselves, but from the manner in which people appropriate them initially to substitute for and accomplish previously established communication practices. (384)

So, as the policy collaboratory emerged, it was able to significantly support the previously established communication patterns of the WFUNA WSIS

Task Force, and helped to facilitate what they already wanted to do within the WSIS processes.

Finally, it is important for us to discuss another factor in the limited success of the WFUNA policy collaboratory, one that has implications for the ability to generalise the model to other transnational non-governmental organisation networks. The technologies and organisational infrastructure required for the WFUNA collaboratory were expensive. The Danish International Development Agency (DANIDA) funded the Task Force, but even this funding did not cover all of the costs associated with the collaboratory. As other organisations move to take advantage of this collaboratory approach, sources of funding and organisations that can benefit from economies of scale as they support collaboratories for transnational NGOs, will be essential.

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