

# Culture, Communication, and ICT for Development: A Caribbean Study

—DEBORAH DYSART-GALE, KRISTINA PITULA, AND THIRUVENGADAM RADHAKRISHNAN

**Abstract**—Development projects in information and communication technologies may fail if local users perceive them as incompatible with existing work practices or cultural values. The present study examines cultural communication in the design of a prototype information-management system for the social service department of a developing Caribbean nation. The requirements-engineering process required communication within a culturally heterogeneous group of local and outside stakeholders. A capacity-building writing workshop sought to integrate the database into workplace practices. The experience highlights professional communication's role in mediating cultural difference and facilitating stakeholders' self-determination in the improvement of their work practices.

**Index Terms**—Cultural factors, diffusion of technology, information and communication technology for development (ICT4D), social work, workplace communication.

A major focus of information and communication technology for development (ICT4D) research is the creation of projects that meet the knowledge needs of users in developing countries [1]. In recent years, researchers have become aware of the importance of cultural factors in facilitating the design and diffusion of culturally appropriate communication technologies [2], [3]. As the scholarship of ICT4D advances, however, criticism has emerged on one hand against overinflated assessment of technology as a panacea to “break down cultural barriers and bring world peace” [4, p. 598] and, on the other hand, against an overemphasis on cultural factors, in which culture is viewed as the sole determining factor in technological diffusion [4], [5]. Nye calls for the exploration of a common-sense middle ground between these poles of cultural determinism and a manifest destiny of technology [4]. The discipline of professional communication, with its pragmatic attention to the circulation of information among stakeholders, is uniquely positioned to chart such theoretical and practical middle ground.

The relationship between communication, culture, and technology is complex: Communication patterns are determined by culture and altered by technology, and culture exercises

influence over the adoption of technology, only to be altered by technological change. These complex interactions become visible at the level of professional communication within an organization or community. To better understand these interactions, we present a thick description of the impact of technological innovation upon the communication practices of the social work department of a small, English-speaking Caribbean country [6]. Department administrators requested that we develop a prototype information-management system that would replace the existing paper-based system for tracking the provision of client services. In conjunction with this project, we presented a capacity-building workshop to train end users in report-writing skills using the new technology. In so doing, we discovered that the stakeholders of the system held diverse beliefs and values regarding social work and were also divided in their attitudes toward the proposed technological innovation.

By providing a thick description of the departmental context that “trac[es] the curve of social discourse; fixing it into an inspectable form” [6, p.19], as outlined by Geertz, we explore the role of communication practices in shaping technological diffusion at the organizational level. We believe this dual observation of technology and professional communication can inform more effective communication pedagogy in the workplace, help expand ICT's vocabulary for describing culture beyond the widely used work of Hofstede [7], and contribute to theoretical understandings of workplace communication.

We proceed with a general background of the project, then provide a discussion of our theoretical assumptions before proceeding to our description

Manuscript received April 29, 2009; revised September 02, 2009; accepted October 23, 2009. Date of publication October 30, 2009; date of current version February 24, 2011.

D. Dysart-Gale is with the General Studies Unit, Faculty of Engineering and Computer Science, Concordia University, Montréal, QC H3G 2W1 Canada (email: Dysart@encs.concordia.ca).

K. Pitula and T. Radhakrishnan are with the Department of Computer Science and Software Engineering, Faculty of Engineering and Computer Science, Concordia University, Montréal, QC H3G 2W1 Canada (email: Pitul\_87@encs.concordia.ca; krishnan@cs.concordia.ca).

IEEE 10.1109/TPC.2009.2035573

and analysis of the effects of technology upon the communication practices of the department.

## BACKGROUND

The site of our research is a small Caribbean island nation where about one-quarter of the population lives in poverty [8]. Like many countries in the region, an important portion of its wealth comes from citizens working overseas for extended periods. While this migration infuses necessary cash into the economy, it deprives the community of the full social contributions of some of its most talented and resourceful members [9]. The limited opportunities for local employment have further diminished since 2005 with the collapse of the sugar industry, the country's major employer. Unemployment and the migration patterns of the country's most able citizens serve to raise the relative proportion of residents requiring social services on the island. The social work department aims to provide approximately 8,000 people with services such as emergency financial and food aid, access to off-island health care, and school supplies. However, the gross domestic product-to-debt ratio of well over 100% limits the effectiveness and availability of these programs [8].

The social work department where our investigation took place is housed within the national ministry that is also responsible for social programs such as community development, health, sports, youth, and gender affairs. Upper-level administrators and the supervisor responsible for daily operations possess undergraduate or graduate degrees in their relevant disciplines from overseas universities in the US or British Commonwealth. High-school-educated lay practitioners, known as social assistance officers (SAOs), provide direct client care. These practitioners, who enjoy high status in the local community, have little formal training in professional social work theory or practice. As pivotal members of the social work department, these SAOs act as the "eyes and ears" of the academically trained administrators and supervisors. The SAOs' primary duties are assessing client needs and filing claims for assistance within their assigned communities; they are also responsible for preparing related documentation and case notes. Another important duty of the officers is to generate quarterly reports for the department supervisor and upper-level administrators, who, in turn, use these reports for internal assessment of programs and to apply for aid from international donors.

Anticipating a reduction in foreign aid as a result of the global economic recession, department administrators resolved to follow the example of neighboring countries in acquiring a computerized client database. This was done to improve service delivery by reducing redundancy, monitoring programs, and enhancing the quality of grant applications through the inclusion of statistical evidence of service need and program efficiency. Because of our long-standing research ties to the department as well as our affiliation with a university faculty of computer science, we agreed to assist in the development of a prototype database system. This database would, for the first time, assemble departmental client records into an electronic information-management system. We conducted the initial phase of our project via telephone conferences and emails with the supervisor, working in conjunction with and at the behest of the ministry's upper-level administrators. In the face of the overwhelmingly positive support we had received from the administrators for the project, we made the erroneous assumption that this represented the general stakeholder attitude toward the project. It was not until we arrived on site that we realized that the SAOs did not share the administrators' enthusiasm. We observed these stakeholders' attitudes throughout the site visit, most directly in a workshop organized for the SAOs. The workshop also enabled us to observe how the officers used writing strategies to create a convergence with their administrative audience [5], [10], adapting their professional writing to improve departmental communication and address the expectations of a wider, international audience.

## DIFFUSION OF TECHNOLOGY AND INNOVATION

As our interest is in observing the relationship between technological innovation, culture, and communication, we will now turn our attention to a theoretical discussion of these concepts. Our understanding of technological innovation and diffusion is grounded in Rogers's pioneering work, most notably in his seminal book, *Diffusion of Innovations* [11]. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" [11, p. 5]. Within the social system, Rogers presents an idealized typography of groups that adopt a new technology: "venturesome" innovators, "respectable" early adopters, the "deliberate" early majority, "skeptical" late majority, and "traditional" laggards [11, pp.

247–251]. Based on sociometric research, Rogers makes several generalizations about early adopters, characterizing them as having better education, higher social status, and greater social mobility than late adopters [11, pp. 247–251].

Applied to the present study, it could be argued that the nation as a whole may be characterized as late-majority adopters, as most other nations in the region have already shifted to electronic client records. In a further marker of its late-majority-adopter status, this nation has moved to adopt the database as “an economic necessity and the answer to increasing network pressures” [11, p. 249]. Viewed from within the context of the ministry, the higher-status, better-educated administrators can be seen as innovators, playing

an important role in the diffusion process: that of launching the new idea in the social system by importing the innovation from outside of the system’s boundaries . . . thus [playing] a gate keeping role in the flow of new ideas into a social system. [11, p. 248]

The SAOs, in their expressions of resistance to the database, qualify as laggards, who

tend to be frankly suspicious of innovations and change agents. Their traditional orientation slows the innovation-decision process to a crawl. . . . [While] most individuals in a social system are looking to the road of change ahead, the laggard’s attention is fixed on the rear-view mirror. [11, p. 250]

While Rogers’s ideas continue to shape the study of technological diffusion, important criticisms have been made of his work, which we feel must be considered in any serious study of the diffusion of innovation in the development context. Specifically, Rogers’s work has been criticized for a positivist, proinnovation bias [12]. This uncritical embrace of innovation is demonstrated in his discussion of the term “laggard,” a term with negative connotations in American English:

Diffusion scholars who use adopter categories in their research do not mean any particular disrespect by the term “laggard.” Indeed, if they used any other term instead of laggards, it would soon have a similar negative connotation. [11, p. 250].

Put another way, resistance to innovation is considered so inherently negative that any term associated with it inevitably becomes pejorative.

Criticisms have been leveled against “diffusionism,” the unquestioned assumption that innovation is an unalloyed good. This diffusionist position views innovators as presciently importing beneficial technology from outside the social system, while “laggard” and “localite” resisters behave irrationally by rejecting opportunities to improve their lives and well being. Blaut points to the political and social imperialism inherent in this view [13]. McMaster and Wastell concur and extend the criticism further to include other reductionist theoretical approaches based upon Rogers’s work, such as the Technology Adoption Model (TAM). These, they argue, obscure the role of culture and value in the adoption process, thereby reducing the choice to adopt a new technology

to a yes/no issue of technological rationality—an encounter between a disembodied subject facing an objective technical artifact wherein a simple binary choice is to be made. This is what we may call the “standard model” of innovation in our field. At first sight, it seems so natural, innocuous and common-sensical. Nevertheless, it is far from innocent. [12, p. 386]

These criticisms must be addressed within the context of ICT4D, where the role of cultural attitudes toward technology and innovation are of central concern. In our present case study, reading Rogers through a diffusionist lens would lead to a characterization of administrators as innovators contending against laggard SAOs. We agree with McMaster and Wastell that these interpretations are not innocent, and agree further that “[p]ortraying nondiffusion as ‘resistance’ creates an ideological bias that narrows the focus of enquiry and erects a self-serving moral dichotomy” [12, p. 387]. However, we find that reading Rogers’s work in the full light of these criticisms enhances rather than diminishes his work’s usefulness as a means of assessing and understanding the conditions under which innovation is adopted.

## CULTURE AND COMMUNICATION

There are many approaches to culture (famously, one study claimed to have identified more than 300 definitions coined during the last half of the twentieth century alone [14]). These definitions range from notions of common practices, shared semiotic structures and meaning [6], to Hofstede’s description of culture as “software of the mind” [15]. Hofstede’s work has been widely used in

ICT4D literature, perhaps due to the familiarity of his software metaphor and to the intuitive appeal of his dimensions of power distance, individualism, uncertainty avoidance, masculinity, and time orientation [7]. Nevertheless, the wide application of Hofstede's work in ICT4D has attracted criticism on several fronts. Most prominently, it is noted that the dimensions were formulated on the basis of data from international offices of IBM and may not be reliable representations of the host cultures; furthermore, by treating national cultures, Hofstede's paradigm offers little guidance in the analysis of gender, religious, ethnic, or other subcultures within national boundaries [16].

Professional communication offers an alternative perspective to reductionist or essentializing definitions of culture. By focusing on the artifacts through which information is circulated within communities and organizations, professional communication scholarship views culture as one variable among several that create rhetorical differences. Connor has noted that rhetorical differences come from a wide variety of sources, including disciplinary or educational background, gender roles, perceptions of genre constraints, and linguistic habits [17]. With specific regard to scientific and technical communication, St. Amant likewise notes that although English has transcended national, cultural, and linguistic boundaries to become the language of choice for professional communication, "human rhetorical expectations and preferences vary from group to group and culture to culture" [18, p. 298]. St. Amant further notes that the growing dominance of computer and online writing in international professional communication has created an expectation for linear exchanges of typed text [19], an expository form that is not a part of the indigenous rhetorical structures of a variety of cultures, as described by Kaplan in the 1960s [20].

These observations leave little question that rhetoric is culturally inflected. As theorized by Bazerman, artifacts of work processes—interview protocols, structural hierarchies, paper forms, computer interfaces (one might add oral communication practices such as interviews that do not generate transcripts or "hard-copy" tangible artifacts)—all reflect the culture of the organization as well as the larger culture in which the organization is situated [21]. Practices of written and spoken communication determine the activity and work processes of organizations:

The more prominent the communicative actions are in the activity, the more the organization of the communication will influence the organization and nature of the activity and the social relations enacted in pursuit of the activity. [21, p. 296]

That is to say, an institution's tools for collecting and communicating information both shape and are shaped by the interpersonal and organizational practices enacted to collect it.

Thatcher demonstrates the practical impact of these culturally dependent rhetorical differences in his study of the writing of policy and procedure documents in the US and Ecuador [22]. The study revealed that the US writers viewed these documents as a means of regulating individual behavior within the work context. South Americans, in contrast, viewed interpersonal communication as performing that regulatory function. Significantly, culture of origin was not a determinant for communication and learning strategies; US-educated participants learned new material through reading, memorization, and individual, introspective study. In contrast, participants educated in South America relied on group discussion of concrete examples: "Many South American personnel assumed a collective, almost resistant approach to the written definitions and instead invoked their oral dramatizations to think through the principles and procedures" [22, p. 378]. His US informants also found that written directives did not lead to uniformity in work practices. Rather, the informants needed to resort to daily telephone discussions with their South American employees. American-style professional writing was universalist in character, emphasizing the uniform applicability of policies and procedures; the South Americans, in contrast, focused on particular cases and exceptions to the rules.

## ICT4D AND CROSS-CULTURAL TECHNOLOGY DESIGN

One of our central tasks in the design of the requested database system was to determine the end users' requirements. Within the work of cross-cultural software engineering, the process of requirements engineering (RE) is recognized as an essential first step in which the RE identifies and documents the intended purpose of a proposed software system in order to generate the desired functions. The RE process involves identifying all of the stakeholders and their goals and needs, as well

as the context in which the system will be used. An original set of ill-defined and possibly conflicting ideas of what the system should do is elicited from the stakeholders and elaborated iteratively until the ideas converge on a single, detailed technical specification describing the system's behavior completely and unequivocally [23].

RE work takes on special urgency in an ICT4D context, where developers may be unfamiliar with the requirements that a project must meet. Foremost among these is the need for people to use the technology to facilitate meaningful and sustainable social activity [24]. To be acceptable to its intended users, a technology must be perceived as beneficial, easy to use, affordable, and socially relevant and endorsed, with adequate infrastructure in place to support and sustain its use over time [25], [26].

The notion of "cultural appropriateness" was central to our understanding of our task as development researchers. We agree with Shen, Woolley, and Prior's articulation of culture-centered design based on the understanding that technology is not culturally neutral [27]. In software development, culture-centered design recognizes that interfaces and underlying functional structures are manifestations of culturally determined values, beliefs, ways of thinking, and practices that cannot be effaced by superficial adjustments such as changing surface structures, language, or color scheme of the interface [28]. Culturally sensitive design also requires a capacity-building or training component "by which individuals, organizations, institutions, and societies develop abilities (individually and collectively) to perform functions, solve problems, set, and achieve objectives" [29]. Our work in designing the database for administrators and SAOs clearly demanded an RE process carefully attuned to local needs, practices, and sensibilities, with educational agendas set by recipients rather than providers [30].

## ICT4D AND COMMUNICATION: OBSERVATIONAL DATA

Due to the constraints of distance, we began our work of eliciting requirements for the database and workshops through telephone and email correspondence with the department supervisor over a period of approximately three months. From our conversations, it was evident that the supervisor and administrators were unfamiliar with

database technology and the process of defining requirements. However, they readily answered our questions and sent us copies of paper data-intake forms, which we used in the construction of the database interface. Above all, they were able to describe, through use of examples and scenarios, the sorts of tasks they wished the database to perform. For example, the department regularly supplied the local radio station with the names of citizens celebrating their 100th birthdays; considerable consternation arose if a centenarian was not publicly congratulated on his or her special day, or conversely, if a greeting was inadvertently broadcast for someone who had already passed away. Such rich descriptions of desired functions provided us with ample detail to construct the desired features for the electronic information system.

The administrators also discussed the desired content of the capacity-building workshops, identifying the shortcomings they perceived in the SAOs' professional communication. The supervisor, who frequently observed officers in direct contact with clients, emphasized the fact that the officers were lay practitioners with no formal training in social work. The administrators described the SAOs' "undisciplined" behavior (i.e., untutored in the accepted norms of the formal discipline of social work) and made general statements about deficiencies in their quarterly reports and other writing (e.g., "it's not good"). Our own reading of the SAOs' completed forms and reports, as well as previous observations of their client interaction, led us to agree in principle with the administrators' assessment of the SAOs' needs.

However, although the administrators clearly outlined the behaviors that needed improvement, they were less able to provide a detailed description of the positive changes in professional oral and written communication they wished to see implemented. The administrators were unable to convey their vision of ideal or desired professional writing (in terms of, for example, statistical detail, quantitative descriptions of general trends, representative anecdotes). As stated with frustration by one administrator, "[The reports] are bad. We want them to be good." Perhaps because of this inability to provide clear guidance about their expectations for the SAOs' writing, the administrators requested a seminar in writing skills to utilize and organize the data into effective, useful reports.

Based on the information we had collected through our correspondence with the supervisor, we prepared a preliminary overview of the database system in a PowerPoint presentation that summarized progress to date and identified the steps for future phases. We also made plans to investigate the workflow, context of use, and system constraints and properties, and to conduct rapid ethnographic studies of end users during our site visit. To prepare for the workshop, we assembled instructional materials on a variety of professional communication topics from which the SAOs could choose as a means of customizing the curriculum of their two-day skills-building workshop. We then felt prepared for our one-week onsite visit to meet with the stakeholders. Our plan was to review our current vision for the database with the supervisor and upper-level administrators before soliciting further requirements from the SAOs. The plan for the capacity-building workshop was to solicit topic preferences in the first days and to finalize the curriculum for the workshop planned for later in the week.

Upon our arrival on site, we discovered that the administrators and supervisor were very pleased with the description of the proposed database as presented in the PowerPoint slides. Several upper-level administrators stated that they preferred the schematic flow of our discussion of the slides to the voluminous texts and diagrams of the formal project proposals received from commercial contractors and development organizations (“all this junk,” as the reports were characterized by one administrator). In contrast to the positive discussions with the administrators, however, our first interviews with the SAOs revealed their resistance about the database. Perhaps because of the positive working relationship we had developed on previous research visits, the officers spoke candidly regarding their deep misgivings about the new information-management system. In the absence of the supervisor, they expressed concerns that the system would undermine existing interpersonal relationships between the officers and clients and their fear that it would ultimately be used to monitor their productivity and activities within the community.

The first day of our site visit was largely dedicated to observing the patterns of departmental work as they unfolded in the departmental headquarters (the site of the SAOs’ and supervisor’s offices) and the central ministry (the upper-level administrators’ offices). We noted significant differences in

organizational culture, corresponding to what Hall and Hall described as monochronic and polychronic time orientations [31], [32]. Office culture in the ministry was organized in a way very similar to the monochronic routines practiced in North America (i.e., organized according to the clock, emphasizing punctuality, privacy, and sequential completion of tasks). We were ushered into administrators’ private offices by secretaries according to prearranged appointments and were seated in chairs directly in front of the administrators’ desks. When our interviews were interrupted by phone calls put through by secretarial staff or by colleagues with urgent business, apologies were offered for the intrusion on “our time”; following the interruption, the topic of conversation was resumed. On at least one occasion, we were permitted to continue with unfinished business past the scheduled end of our appointment but were ushered out when the next scheduled visitor arrived.

Our visit to the National Information Technology Center similarly unfolded according to the norms of monochronic time-oriented culture we observed in the ministry. We arrived at the center for our appointment and were graciously met and given a tour of the facilities. We were then ushered into a conference room, where we systematically went through the document we had prepared. Our questions about platform requirements, network connectivity, system properties, and constraints were answered. A plan of action was proposed, amended, and agreed upon, and a list was prepared of items requiring follow-up. Individuals were assigned responsibility for addressing these and reporting back to the group. Before adjourning, we summarized the points covered and actions to be taken going forward. Flip charts were used to facilitate the discussion.

Work routines among the SAOs and their supervisor in the departmental headquarters were markedly different, corresponding to Hall and Hall’s description of polychronic culture in which actions are organized around people and their immediate needs rather than on tasks and schedules [31]. SAOs not currently on field assignments shared open office space and several older-model computers; there they discussed details about individual clients’ cases. Clients and visitors appeared without appointments, proceeding directly through the main office to find the person they wished to see; receptionists or other gatekeepers did not regulate their movements. The supervisor had a private office

with a door that was kept closed. Visitors knocked and immediately entered the room, where they remained standing, waiting for the supervisor's attention, for up to several minutes. It appeared that while the supervisor was a powerful figure commanding respect, her authority demanded deference and silence, not physical distance as practiced in the ministerial offices. Office workers entered the room unannounced through a passage located behind the supervisor's desk. We were accompanied into the supervisor's office and offered places on what appeared to be well-worn living room furniture placed against a wall. Over the following two-and-a-half hours, we conversed with visitors as they arrived and with the supervisor as she simultaneously took phone calls, issued orders, answered subordinates' questions, reviewed documents, and received clients. (One client was accompanied by a small child who was celebrating a birthday. We observed the supervisor take money from her wallet and give it to the mother to buy the child a present, all while taking a phone call.) We rarely returned to the same topic of conversation following an interruption.

The SAOs did not spend much time in the headquarters, as they were primarily active visiting clients' homes in the community. We accompanied officers on these visits on previous research trips, observing them as they interacted with the entire household as well as with others present (e.g., friends, neighbors, and relatives). The SAOs took no notes during these visits, and client needs were expressed in the course of friendly conversational exchanges. SAOs offered advice and opinions and typically concluded the visit with statements such as "I'll look into this," or "I'll talk to [supervisor]."

Back at the office, officers created intake forms (written reports requesting aid), which they passed on to the supervisor for action [33], [34]. We observed the SAOs discussing their reports with other officers, who offered additional information (some of which could be characterized as gossip) concerning the case. The forms used for the various reports (e.g., intake, financial information, history of receipt of services) were organized with short fill-in blanks soliciting demographic information (e.g., "Religion," "Supportive Others," "Overseas Support," "Type of Support Requested"). However, the officers largely ignored the preset fields, typically only filling in the client's name before turning the form over and entering a narrative-style summary of the client's problem in the few lines reserved for "Notes" at the bottom of the form.

The narratives frequently would exceed this small space, and writers extended their narratives into the margins. Another strategy was to use the short fill-in blanks for narrative entries (e.g., in the space for "Religion" was written "Members of [Roman Catholic church] help with housework and shopping as needed"); these entries likewise extended beyond the space provided and into the margins. Literally and figuratively, the forms did not provide a space for the SAOs' preferred communication practices.

Although the administrators were critical of the SAOs' intake forms and reports ("these just aren't good" and "contain lots of unnecessary stuff"), they emphasized that they were nevertheless crucial tools in the work of the department. As expressed by an administrator: "We're not out in the community. We have an idea, certainly, but don't know the clients like the officers do. We need to know what they need in order to design effective programs." Likewise, the SAOs themselves were unhappy with the quality of their reports, but also with the way they were received by the administrators. One SAO voiced the central complaint: "The reports are supposed to be 'recommendations.' But we recommend, and then they don't follow our recommendations. That makes the department and us, everyone, look bad."

We examined the recommendations contained in the SAOs' quarterly reports and intake forms and noted that they shared the same orientation toward narrative we observed in their other documents. Their accounts were narratives implicitly demonstrating (as opposed to explicitly recommending) the need for a particular action. This rhetorical strategy was in unfortunate contrast to the administrators' need for quantitative summaries from which to compile a general picture of trends in community service needs. The following passage from a quarterly report provides an illustration of the contours of this problem:

*We continue to give food packages to needy persons who applied and qualified for this assistance. Since I worked on the school uniform programme this year, [I've identified] more needy persons and the numbers on my food list have increased significantly. The food programme must be extended to more needy families.*

The problematic nature of this passage may not be readily apparent on first reading, but is evident through the theoretical lens offered by Ong's distinction between oral versus literate

cultures [35]. Ong notes that oral culture focuses on the experiential aspects of human interaction, while literate culture aims for analysis, scientific objectivity, and abstraction. Viewed from Ong's theoretical perspective, the excerpt above presents a picture of human experience, but does not provide the administrators with ready data for analysis. Interpreted through Hall's theoretical perspective, the text suggests daily communication practices that are high context, heavily reliant on personal interactions, and rooted in community, with readers expected to construct meaning from the existing store of local knowledge [36].

## MAKING SENSE OF CULTURE

We gave considerable thought to the interpretation of the rich cultural context, following Geertz's observation that

cultural analysis is (or should be) guessing at meanings, assessing the guesses, and drawing explanatory conclusions for the better guesses, not discovering the Continent of Meaning and mapping out its bodiless landscape. [6, p. 20]

Specifically, we examined our observations in terms of how they would most likely relate to the stakeholders' professional communication practices.

Immediately obvious to us was the low priority given to writing and the written word throughout the organizational culture of the department. Departmental record keeping was described to us as "paper based," but, from our observations, we believe it was better described as "talk based." Officers made no written notes in the field and completed reports after considerable discussion about the case with colleagues and superiors. Clients who desired special assistance made phone calls or, in urgent cases, made the long trip to the department headquarters to make personal requests from the supervisor; there was no evidence that clients communicated their needs in writing or sought to establish a paper trail documenting their requests. The administrators had expressed their preference for obtaining information about the proposed database system through the discussion of schematic PowerPoint slides as opposed to the text-heavy, formal project proposals submitted by private contractors that appeared to remain unread in their folders. Finally, while all stakeholders provided rich descriptions of daily communication patterns within the community, none could offer

detailed explanations of what they expected or desired from the SAOs' written reports.

Viewed from this perspective, the argument could be made that professional communication patterns on all levels within the organization were heavily conditioned by oral culture. Thatcher notes that the rhetorical structures of oral culture tend to be narrative in nature and serve as "the mechanism of sharing traditions and maintaining face and relational solidarity" [37, p. 313]. This put local communication patterns at odds with the linear structures favored by international aid agencies, disciplinary social-work discourse, and other "western," scientific discourses [38]. Thatcher observes that in such western individualist cultures, "orality is relegated to expressing personal opinions and beliefs" [37, p. 313]. From the perspective of the international aid organizations, the SAOs' reports, rooted in oral communication patterns, were not objective, valid, or reliable depictions of social service delivery in the community but merely subjective opinion. Finally, our observations suggested to us that the administrators were, to a greater or lesser degree, bicultural; their daily professional practice was rooted in the local oral culture (e.g., their expressed preference for face-to-face descriptions of database project development), while they had implicitly adopted the norms of written culture when working with international partners such as aid organizations.

Although problematic when overtly manifest in their professional writing, the high-context oral culture of the department fit well with our method for soliciting requirements for the proposed ICT4D project from the administrators [36]. While theorists of culturally sensitive RE warn that in the ICT4D context stakeholders may be unable to express their software functionality needs [1], [23], we found the administrators' rich descriptions of their community practice evocative and helpful. In contrast with the richly experiential rhetorical style of high-context oral culture, writing for an international audience of aid agencies requires adaptation to the low-context style that emphasizes objective exposition of factual information, allowing readers the sense of reaching decisions independently, without pressure or input from others [37]. For the SAOs, and to a lesser extent, the administrators, meeting the rhetorical expectations for the low-context, literate culture of the international audience would require explicit writing instruction.



Through our interviews, we came to view the administrators and SAOs as forming two distinct cultures operating on different sets of values, assumptions, and goals, leading to fundamentally different views about the department's mission. Whereas administrators looked outward to the international aid community to secure resources and expertise to improve social service delivery, the SAOs looked locally to identify the needs of individuals in the community. Administrators understood that the SAOs' rich depictions of clients' lives and experiences could not serve the information needs of a low-context international audience, but they seemed unable to provide the SAOs with strategies for speaking about clients' experiences in a quantitative or low-context way. The status quo of paper-based records was not acceptable to their international donors, and the proposed future of online client records was unpopular with the SAOs. These differences caused considerable friction between the two groups. However, Ong positions rhetoric—the art and practice of persuasion—as a bridge between such divisions [35]. We determined to make the construction of such a rhetorical bridge the focus of our workshop.

### **WORKSHOP IN CROSS-CULTURAL PROFESSIONAL COMMUNICATION**

After observing and analyzing the cultural aspects of the departmental work practices, we began our scheduled workshop with the officers. Our goal was twofold: first, to introduce the database project and solicit the SAOs' input into its design and second, to provide instruction in professional report writing. The author acknowledged as “the computer expert” (Pitula) conducted the first hour of the workshop, scheduled as a collaborative discussion of interface design and general discussion of the project. Although cordial, respectful relations existed between the researchers and the SAOs, the officers again showed reluctance, even belligerence, in this discussion. They restated their opinion that the database had no practical value, insisting that the current paper-based system already provided complete, adequate information about client needs, if only the administrators would take the time to carefully read the reports and recommendations. Even though they acknowledged that keeping track of essential client-related data was a major difficulty in their job, they were unwilling to consider the database as a solution. A further concern was that the database was another in a series of

disruptive and ultimately ineffective technologies introduced “to make [the administrators] look good.” Finally, they expressed concern that working with computerized records would negatively impact interpersonal relationships with clients, who “will just become numbers for us.” The hour passed without resolving this serious problem or eliciting SAOs' suggestions for database functionality.

While the SAOs had been reluctant to participate in the session devoted to soliciting their needs for the proposed database, they were quite positive toward the rest of the workshop. We had offered such capacity-building workshops in the past, and SAOs rated these sessions as both enjoyable and useful. On this occasion, the SAOs stated they were most interested in improving the persuasiveness of the recommendation portion of their quarterly reports and wanted to focus their attention exclusively on ways of making their recommendations persuasive to their superiors. (We have presented a complete description of this workshop; see [39].)

In workshop exercises, we encouraged SAOs to view the administrators as an audience with identifiable interests and biases. SAOs identified the administrators' primary interest as assembling statistical data about program expenditures, especially when a net savings could be demonstrated. The rhetorical power of this interest became apparent as the SAOs devised a writing exercise in which they advocated for improvements in the food service at the local residential home for the elderly. The SAOs reasoned that the administrators would most likely be willing to improve the food service if persuaded that such actions would ultimately save money. In exploring ways to demonstrate that improved diet would result in lower costs, the SAOs hit upon the observation that diabetic patients were frequently hospitalized due to uncontrolled blood glucose levels and attributed this to the negative effects of an institutional diet high in refined foods and carbohydrates (specifically, white flour and sugar).

The group discussion turned to the question of how to obtain the necessary quantitative evidence to support the SAOs' claims. The more expenditure that could be traced back to nutrition-related excess medical treatment, they reasoned, the more effectively administrators could be persuaded to change the nursing home diet. Some of the SAOs asked if the new database would contain retrievable records about the admitting diagnoses, cost, and frequency of residents' hospitalizations.

TABLE I  
EVOLUTION OF THE RHETORICAL PRACTICES OF THE SAOS

Rhetorical Goal	Rhetorical Strategy	Rhetorical Resources
Describe social service delivery	Provide detailed depictions of clients and community	Appeals to shared community values
Persuade audience to adopt proposed projects	Appeal to perceived audience desires	Knowledge of local needs, work practices, and audience members' preferences
Obtain tangible results through implemented projects	Present reasoned, well-supported arguments	Objective, quantitative evidence electronically retrievable from database

We assured them that the database could provide such information. They then considered other areas where statistical evidence would be useful in persuading the administrators to adopt the SAOs' recommendations.

At the conclusion of the writing workshop, the SAOs expressed satisfaction at the prospect of having access to useful data and insisted on meeting again with the researcher involved in the database (Pitula). The researcher was confronted with pointed questions: "Why didn't you tell us that the database could do this?" The group then proceeded to generate usable requirements to create functionality for a number of social service programs. They also offered suggestions for interface design, drawing out a possible prototype, complete with content for the drop-down menus.

The SAOs' sudden enthusiasm for the database project was obviously unexpected in light of their previous resistance. They attributed their change in attitude to their understanding of how it could be used to promote the interests of their clients to the administrators. Until independently identifying a practical use for the information the database could provide, they had viewed it as antithetical to their values of client-centered social-work practice.

The changes in the SAOs' approach to writing are summarized in Table I. The SAOs' initial goal in their writing was to provide a straightforward description of situations that implied social service needs. This rhetorical goal evolved into the desire to design projects that would show tangible results. To reach these goals, they employed rhetorical strategies that evolved from simple reports of observations to considered reasoning focused on the interests and values of their audience. As their rhetorical strategies matured, the SAOs drew upon increasingly sophisticated resources, from their

initial appeal to local values to the use of statistical evidence drawn from the database.

### IMPLICATIONS FOR PRACTICE

Watching the change in the SAOs' attitudes toward the database confirmed for us that ICT4D projects must grow organically from, and simultaneously serve to improve, existing work and communication processes. This is not a profound assertion, but we found that it had several implications for our professional practice both as researchers and as capacity builders. First, from a research perspective, we found it helpful to adopt an ethnographic approach as outlined by Geertz [6], focusing our attention on the stakeholders' subjective experience of the database and its potential impact on their workplace. This approach took us in a different direction than had we relied upon Hofstede's dimensions of national culture [7], [15] to account for the process of technology diffusion. We considered it, therefore, fortunate that no cultural-dimension profile was available for this particular nation [40]; rather than extrapolate from the profiles of neighboring nations, we instead chose to obtain this information through Geertz's ethnographic methods. We found that this approach brought several benefits. It enabled us to build networks of trust with the stakeholders, increasing our access to the workplace and, in turn, enhancing our ability to collect further data. Ultimately, without Hofstede's dimensions for data analysis, we were forced to draw upon a wider scope of theories to interpret our observational data, thus achieving a "purpose-built" understanding of this particular departmental culture, especially through applying the theoretical work of Ong, Hall, and Rogers [11], [31], [35], [36].

Second, from a pedagogical perspective, we gained an appreciation of the SAOs' ability to adjust their rhetorical strategies to fit the expectations

of an expanded audience and to incorporate the database in these strategies. This change was not top-down, mandated by the administrators or by us as instructors. Rather, the SAOs engaged our questions and comments through group discussion and created their own models of the rhetorical playing field. The norms of oral culture, with their emphasis on concrete descriptions, examples, and interpersonal negotiation [35], were effective tools for helping the group develop understanding and consensus about the features of a rhetorical strategy effective for reaching their target audience. Our observations confirm those of Thatcher, who noted that groups functioning within the norms of oral culture made extensive use of discussion, elaboration, and examples in order to achieve an understanding of new concepts. This discussion diminished as group members gained familiarity and facility with new ideas [22], [37]. From a pedagogical perspective, these observations suggest to us that rhetoric and writing instruction for adult students from an oral culture need not offer prescriptive models for “good writing” or algorithmic processes for assessing and addressing unfamiliar audiences. Rather, the SAOs achieved good results by collaboratively determining how to adapt their rhetorical practices to meet the needs of their audience [39].

## CONCLUSION

The starting point for our inquiry was the relationship among culture, communication patterns, and technology, which we explored through our observations of the departmental stakeholders. Administrators’ expectations of professional communication were shaped by their cross-cultural experiences in their overseas academic studies and interactions with international audiences of donors and aid organizations; SAOs’ communication practices, in contrast, reflected local cultural norms. These distinct cultural patterns appeared to condition the differing acceptance of the new technology. Initially, the SAOs rejected the database project and effectively refused to participate in the work of RE. However, they had no objection to participating in skills-building workshops that included a

significant writing component. Perhaps this reflects the SAOs’ perception of writing as “familiar” and computer use as “foreign” or “suspect.” It was within the context of the writing workshop that the SAOs worked to formulate persuasive arguments for the administrators that required statistical, quantitative evidence. When considering how best to assemble this evidence, the connection between the work of persuasion and the usefulness of the database became apparent. The SAOs then actively assisted in the RE process.

Ong’s assertion that rhetoric provides bridges between oral and literate cultures proved true: In attempting to persuade their superiors, the SAOs persuaded themselves of the value of the proposed new technology as well as a new rhetorical strategy based on quantitative evidence. In the presence of the new technology, the stakeholder groups converged: SAOs realized the rhetorical value of quantitative data, and administrators acknowledged the need for qualitative interpretation to provide a picture of “what it all means.”

Further studies are underway to assess the long-term acceptance of the database and its impact on the department’s professional communication patterns, both oral and written. Input from the SAOs as well as from the administrators is being solicited for follow-up workshops. It is anticipated that these studies and workshops will reveal improvement in written records and track the integration of the database in the daily departmental work processes. Ultimately, it is hoped that the stakeholders will use the database and other new technologies to improve their existing communication practices, enabling them to develop the rhetorical skills to engage productively with a wider audience of developers, donors, and other communities facing similar social and economic disruption.

## ACKNOWLEDGMENTS

This study was conducted through a Concordia University Vice-President’s Office of Research Seed Funding Grant. The authors would like to thank the reviewers for their criticism and encouragement, which have greatly improved this paper.

## REFERENCES

- [1] M. Myers and F. Tan, “Beyond models of national culture in information systems research,” *J. Global Inf. Manage.*, vol. 10, no. 2, pp. 24–32, 2002.
- [2] G. Kersten, M. Kersten, and W. Rakowski, “Software and culture: Beyond the internationalization of the interface,” *J. Global Inf. Manage.*, vol. 10, no. 4, pp. 86–101, 2002.

- [3] H. Galperin and J. Mariscal, Eds., *Digital Poverty: Latin American and Caribbean Perspectives*. Ottawa, ON, Canada: Practical Action Publishing/IDRC, 2007.
- [4] D. Nye, "Technology and the production of difference," *Amer. Quart.*, vol. 58, no. 3, pp. 597–618, 2006.
- [5] H. Feigenbaum, "Globaloney: Economic versus cultural convergence under conditions of globalization," *J. Arts Manage., Law, Soc.*, vol. 31, no. 4, pp. 255–264, 2002.
- [6] C. Geertz, "Thick description: Toward an interpretive theory of culture," in *The Interpretation of Cultures: Selected Essays*. New York: Basic Books, 1973, pp. 3–30.
- [7] G. Hofstede, *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations*. Thousand Oaks, CA: Sage, 2001.
- [8] E. Gaible. (2008). Survey of ICT and education in the Caribbean. infoDev.org. Washington, DC. [Online]. Available: <http://www.infoDev.org/en/Publication.441.html>
- [9] L. Dawson. (2007). Brain drain, brain circulation, remittances and development: Prospects for the Caribbean. Centre for International Governance Innovation. Waterloo, ON, Canada. [Online]. Available: <http://www.cigionline.org>
- [10] J. M. Barbero, "Digital convergence in cultural communication," *Popular Commun.*, vol. 7, no. 3, pp. 147–157, 2009.
- [11] E. Rogers, *Diffusion of Innovations*, 3rd ed. New York: Free Press, 1999.
- [12] T. McMaster and D. G. Wastell, "Diffusion or delusion? Challenging an IS research tradition," *Inf. Technol. People*, vol. 18, no. 4, pp. 383–404, 2005.
- [13] J. Blaut, *The Colonizer's Model of the World: Geographical Diffusionism and Eurocentric History*. New York: Guilford Press, 1993.
- [14] J. Wang, "Toward a critical perspective of culture: Contrast or compare rhetorics," *J. Tech. Writing Commun.*, vol. 38, no. 2, pp. 133–148, 2008.
- [15] G. Hofstede, *Cultures and Organizations: Software of the Mind*. New York: McGraw-Hill, 2005.
- [16] D. P. Ford, C. E. Connelly, and D. B. Meister, "Information systems research and Hofstede's *Culture's Consequences*: An uneasy and incomplete partnership," *IEEE Trans. Eng. Manage.*, vol. 50, no. 1, pp. 8–25, Feb., 2003.
- [17] U. Connor, *Contrastive Rhetoric: Cross-Cultural Aspects of Second-Language Writing*. Cambridge, UK: Cambridge Univ. Press, 1996.
- [18] K. St. Amant, "When culture and rhetoric contrast: Examining English as the international language of technical communication," *IEEE Trans. Prof. Commun.*, vol. 42, no. 4, pp. 297–300, Dec., 1999.
- [19] K. St. Amant, "When cultures and computers collide," *J. Bus. Tech. Commun.*, vol. 16, no. 4, pp. 196–214, 2002.
- [20] R. Kaplan, "Cultural thought patterns in intercultural education," *Language Learn.*, vol. 16, no. 1, pp. 1–20, 1966.
- [21] C. Bazerman, "Discursively structured activities," *Mind, Cult. Activity*, vol. 4, no. 4, pp. 296–308, 1997.
- [22] B. L. Thatcher, "Writing policies and procedures in a U.S./South American context," *Tech. Commun. Quart.*, vol. 9, no. 4, pp. 365–399, 2000.
- [23] B. Nuseibeh and S. Easterbrook, "Requirements engineering: A roadmap," in *Proc. Conf. Future of Software Engineering, Int. Conf. Software Engineering*, 2000, pp. 35–46.
- [24] M. Warschauer, *Technology and Social Inclusion*. Boston, MA: MIT Press, 2003.
- [25] V. Venkatesh, M. Morris, G. Davis, and F. Davis, "User acceptance of information technology: Toward a unified view," *MIS Quart.*, vol. 27, no. 3, pp. 425–478, 2003.
- [26] J. Koch and T. Caradonna, "Technologies and business models that work in developing countries," in *Proc. Int. Conf. Information and Communication Technologies and Development*, 2006, pp. 193–202.
- [27] S. T. Shen, M. Woolley, and S. Prior, "Toward culture-centered design," *Interact. Comput.*, vol. 18, no. 3, pp. 820–852, 2006.
- [28] A. Marcus, "International and intercultural user interfaces," in *User Interfaces for All: Concepts, Methods, and Tools*, C. Stephanidis, Ed. Mahwah, NJ: Erlbaum, 2001, pp. 47–63.
- [29] United Nations Development Program. Management Development and Governance Division. (1997). Capacity development: Technical advisory paper 2. New York. [Online]. Available: [mirror.undp.org/magnet/Docs/cap/Capdeven.pdf](http://mirror.undp.org/magnet/Docs/cap/Capdeven.pdf)
- [30] M. Bontenbal, "Understanding north-south municipal partnership conditions for capacity development: A Dutch-Peruvian example," *Habitat Int.*, vol. 33, no. 1, pp. 100–105, 2009.
- [31] E. Hall and M. R. Hall, *Understanding Cultural Differences*. Yarmouth, ME: Intercultural Press, 1990.
- [32] P. Golemon, "Communicating in the intercultural classroom," *IEEE Trans. Prof. Commun.*, vol. 46, no. 3, pp. 231–235, Sep., 2003.
- [33] D. Dysart-Gale, "Respite: Cultural values in North American and Caribbean caregiving," *Can. J. Commun.*, vol. 32, no. 3, pp. 401–415, 2007.
- [34] D. Dysart-Gale, "Negotiating values in stories of illness and caring on St. Kitts," *Storytelling, Self and Society*, vol. 2, no. 1, pp. 38–52, 2005.
- [35] W. J. Ong, *Orality and Literacy: The Technologizing of the Word*. New York: Routledge Press, 1982.
- [36] E. Hall, *Beyond Culture*. New York: Anchor Books, 1976.
- [37] B. Thatcher, "Rhetorics and communication media across cultures," *J. English Acad. Purposes*, vol. 3, no. 2, pp. 305–320, 2004.
- [38] C. Miller, "A humanistic rationale for technical writing," *Coll. English*, vol. 40, no. 6, pp. 610–617, 1979.

- [39] D. Dysart-Gale, K. Pitula, and T. Radhakrishnan, "Improving professional communication for lay practitioners: A rhetorical approach," *IEEE Trans. Prof. Commun.*, vol. 53, no. 3, pp. 293–303, Sep., 2010.
- [40] Itim International. [Online]. Available <http://www.geert-hofstede.com>

**Deborah Dysart-Gale** is a communication scholar with research interests in development communication, adoption of technology, and comparative rhetoric. Since 2003, she has worked with government social assistance and community development workers in the Caribbean, providing capacity building in professional communication for paraprofessionals.

**Kristina Pitula** received the Ph.D. degree with a focus on the practice and theory of culturally sensitive software design from Concordia University, Montréal, QC, Canada. She has 15 years

of professional experience in software technology and is involved in information and communication technology for development.

**Thiruvengadam Radhakrishnan** has taught and researched computer science for 34 years. He has supervised more than 75 Master's and Ph.D. students. He is pursuing his recent research focus in information and communication technology for development with a research team of four Ph.D. students and one Master's student.