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THE 'EAR' AND 'EYE' DIGITAL DIVIDE

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Abstract: This paper is about using technology to help people who share knowledge orally. The objective is to appreciate the social and technical needs of this preference so as to narrow the divide developing between these people and those who earn their living from written knowledge sharing. Writing is not the preferred method of knowledge sharing for the majority of peoples on earth nor is it appropriate for the majority of problems. A mix of both literacy and orality is believed to be the ideal, so a failure to develop cheap and relevant synchronous and asynchronous oral knowledge sharing technology may down play the importance of orality in the social and economic development of both the developed and developing nations. This paper will argue that IS designers interested in global diversity, equity, innovation and economic development through communication technology need to place more emphasis on orality. The difference between oral and written knowledge sharing will be discussed to explain the need for both synchronous and asynchronous communication technologies. A small study comparing asynchronous oral and written communication is presented as is an attempt to design an Internet based oral conferencing system to link Aboriginal communities. It was found that there was a need for developing cheap community based conferencing facilities and to improve the asynchronous oral communication technologies.

Keywords: Orality, literacy, asynchronous, knowledge sharing.

1 INTRODUCTION

Ashrawi (1999) estimated there were about 600 million telephones in the world, eighty percent of which were located in the wealthiest 25 countries. While presented by Ashrawi as a digital divide issue, it also attests to the popularity of oral communication in the more developed countries.

However, the importance of phones to those not in the 25 countries, which equates to 9/10 of countries of the world (about three billion people), as an economic development technology needs to be appreciated. Access to appropriate technology to even communicate over long distances may be the highest priority for less developed nations. Oral communication technologies, like the phone and the radio, have already proved their worth as technologies that can improve living standards. The lack of reading and writing skills in many developing countries makes the written communication services typical of Internet (email, web pages) nearly useless. The majority of people on earth either can not, have not, do not want to, or do not need to communicate in the written form.

Jones (1995) acknowledges the Internet is a technology invented and developed by what he calls the "writing class" and who Chandler (2002) calls the 'eye people', people who learn and make their living by trading in the written form. Urbanised scientists, lawyers and public servants are obvious examples. However, these people, and the explicit text-based knowledge in which they trade, are a minority use of knowledge sharing and maybe even they do not use written communication for innovation. Over-emphasis of written over oral knowledge sharing may be stifling cultural diversity and tacit knowledge sharing (innovation). Writing cultures appear to *economically*[1] dominate oral ones but this may not be because of writing per se but rather because of the advantages of having the appropriate mix of oral and written, synchronous and asynchronous communication technologies.

This is an important digital divide issue but it is also a social construction of technology issue. Costs aside, the Internet, email, databases and web pages have been socially constructed around text-based and therefore asynchronous communication. The oral functionality of the Internet is underdeveloped. This paper will argue that IS designers need to give more thought to technologies that assist synchronous and asynchronous oral knowledge sharing and move away from what Chandler (2002) calls Graphocentrism; giving writing an assumed privilege over orality. This is not just a developing countries issue, as the popularity of the telephone and radio in the more developed countries suggests. Written knowledge is inextricably linked to issues of objectivism, a universal rather than personal value system and the dominance of legalised relationships. Moreover, written forms of communication are of limited use for complex skills-based knowledge sharing like engineering and farming. The majority of IS services focus on written communication so fail the "ear people" who need more diverse knowledge sharing technologies (Savard, 1998).

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[1] But, may be not in terms of social development.

2 THE EYE PEOPLE'S KNOWLEDGE SHARING

What are the attributes of writing? Importantly, it is asynchronous and thus fixed over time. Olson and Torrance (1991) define it as having a higher definition but lower activity medium than conversation, a technology that turned city-states into nations. Ong (1982) reports that, of the 10,000 languages used by mankind, only a little over 100 developed meaningful writing. Writing seems to have been developed to allow the recording of asynchronous trade. As a communication system, it includes books, scientific articles, newspapers, dictionaries, diaries, e-mails, web pages, databases, definitions, contracts, reports. It encourages a culture that, if a thought is not in print, then it has not yet matured, is not legal, is only opinion, and may best not be believed. Writing requires years of training; to attain a reasonable standard maybe 4 years, to be very good at it maybe 20 years for the average person. It is a system that is very good for storing a ritualised version of your memory at one point in time. It helps one remember objectified detailed knowledge like telephone numbers and exact legal phrasing. It allows communication between people who have never met - even after the writer is dead. It gives durability to the ideas of writers over non-writers. Writing enables readers to work at a speed convenient to themselves; pieces can be re-read or skipped. Long and complicated arguments can be correctly structured, as editing of previous phrases is possible. It is not a good way to keep secrets and is an unwise medium to record rumour as the act of writing gives more "concreteness" to a thought than may have been intended.

In the anthropology literature (Olson and Torrance, 1991), there has been a lot of discussion about the impact of literacy on thinking, including much backtracking over assumptions that orality equated to a lack of reasoning skills. It has been necessary to separate the influences of written cultures on subsequent educational influences such as the West's absorption of the writings of Plato and Aristotle with their concepts of essences and concept classification. Ong (1982) provides an example using the set: a hammer, a saw, a log and a hatchet. Which is the odd one out? To those of us brought up to thinking in Plato's essence and collective nouns, we may identify the saw, hammer and hatchet as tools, so the log stands out. Ong reports on oral people who are not familiar with this decontextualisation of classifications, so were not comfortable with the question but being polite responded by saying that if he meant which one they could do without, then they would choose the hatchet because the saw did a better job. When it was pointed out that the log was not a "tool", the response was that the other objects would be no use without the log and the log would become a tool once fashioned. The oral person was focused on relative use, i.e. situational thinking. This may be a more useful way for innovators to think.

In their review of the empirics on the impact of writing on thinking, Olson and Torrance (1991) discuss some thing they call the mental skill of 'differentiation' and 'connectiveness' pointing out that hunter gatherers seem to place more emphasis on connectiveness. Differentiation is a skill that involves problem solving by looking more closely at the separate elements that make up the problem, which sounds similar to analysis and the scientific method. Connectivity is a problem solving approach that seeks connections between the problem and the rest of the world to see if that offers solutions. Dewey (1910) uses the word 'synthesis' for something that sounds similar but he puts more emphasis on seeking a hierarchy of broader and broader (zooming out) perspectives that enable a problem to be seen in context. This reminds the reader of the old systems thinking advice that problems need both synthesis and analysis. Olson and Torrance (1991) go on to suggest writing encourages decontextualisation but also encourages differentiation thinking over connectiveness thinking.

Chandler (2002) points out that writing is seen as attractive by some as it encourages the objectification of knowledge. Olson and Torrance (1991) argue strongly that this is because writing decontextualises initially in terms of who is talking to whom which in turn encourages generalisations as the audience is unclear. Indeed, it introduces the concept of audiences as 'strangers'. This decontextualisation of knowledge is problematic outside science research judging by the many articles written in IS and social inquiry (e.g. Walsham, 1999) calling for human activity problems to be more contextualised. For example, it has lead to a "product" image of education based on a perspective of knowledge as a "thing" that can be purchased and handed over. Ong (1982), in his study of orality vs literacy, points out that writing also tends to encourage conservatism. Oral cultures do not have history books, dictionaries and operating manuals. Further, writing encourages standardised learning both in terms of process (because teachers all read the same "how to do it" books) and in terms of content because once an explanation of a phenomenon is written down, there is a tendency not to think about any background reasoning. This conservatism and standardisation of thinking is expected to save time by not "reinventing the wheel" but in other ways it acts against innovation. Ong also points out that text cannot be questioned or change its mind. If "bad" knowledge is written down, it can be corrected only if all the copies are destroyed, else it will "infect" readers for years to come. Writing also encourages the "objectivity" problem solving and decision making, while allowing interpersonal skills to decline with the people centered view of problem solving - something that has plagued IS research (Butler, 2000).

As mentioned, the clever thing about writing is that it is asynchronous. Kock (2001) undertook a study of asynchronous use of group support systems. He found a difference between synchronous and asynchronous

problem solving. First, he found that, while synchronous increased the quantity of ideas, asynchronous improved group process efficiency especially with 'group set-up' costs. There was little time wasted organising meetings, in informal social interaction and in introductions when asynchronous methods were used. While there was less volume of ideas generated by the group, the responses were more reflective and considered. Shirani et. al. (1999) have reported similar results. Though there was less number of ideas generated using e-mail over face-to–face meetings, the ideas were more considered, and more in-depth (inferential). They argue that asynchronous communication has the advantage of a deeper analysis of problems. Therefore, they considered a need for the appropriate mix of synchronous and asynchronous communication. In both these studies, the asynchronous communications were in text format.

3 THE EAR PEOPLE'S KNOWLEDGE SHARING

Oral includes aural, spoken or heard - meaning conversation by listening and questioning the knowledge sharer. This is primarily a synchronous and interactive kinaesthetic communication medium even if the listener is only providing body language responses. Ong (1982) sees the shift from oral to literate cultures as a side effect of the enlightenment that starts from Plato noting the human eye was the most used and trusted human sense (don't believe it until you see it) through to empiricism and on to Hollywood. Those who prefer to use 'the ear' tend to rely on phone calls rather than email, discussion rather than books (reports), argument and debate, telling stories, hearing good speakers, listening and watching movies, thinking about riddles and thinking about problems in a group. This form of communication is usually associated with tacit and skills knowledge sharing. Ong (1982), clearly a 'phonocentric', argues that oral communication emphasises different mental skills compared to text. Examples include memory and an ability to adjust the story to the immediate audience.

Orality also aligns with Habermas' (1979) concern for more social integration through immediate communicative interactions (synchronous) and less systems integration that encourages imposed order through distant experts and impersonal media (writing). Further, written communication rather imposes a one-on-one communication style characterised by a person sitting alone with a book. It is not a community sharing, discussing, bonding technology. Oral communication often also means a small group in discussion. Technology that is to address the needs of oral communication needs to be more centred around group conferencing rather than lone PC to lone PC communication. Also secrets need to be handled differently. Most cultures have taboos or secrets that cannot be written down. For example,

governments discourage the publishing of information about bomb and drug making and adults try to restrict children's access to pornography. If written, then controlling access is difficult. Secrets are better managed in the oral form but they run counter to the principles of enlightenment (Olson and Torrance, 1991).

People with a preference against learning through writing live not only in developing countries, but also throughout the developed world. Indigenous peoples and the vast majority of the skilled labour classes don't learn about factors that affect their livelihood from reading. The same may be true of everyday business discussions as the recent spate of research recommending more thought be given to dialogue in organisational change attests (Issacs, 1993). Nearly all the innovation and commercial achievement prior to mass literacy in the late 20th century was achieved with writing restricted to scorekeeping (accounting). Lawson (1999) argues for social routines, trust and the opportunity for tacit knowledge sharing as necessary for raising the innovative potential of a region. He points out that the empirical evidence to date is that physical clustering results in more innovation than virtual clustering (use of the Internet to communicate). This is possibly why cities and high-density population areas tend to be more innovative. It is thought experts (persons with core competencies) need to meet, argue, see, feel and discuss new ideas for innovation to occur.

However, if orality were available in an asynchronous form, it might be even more useful. Dictation machines and telephone answering machines are asynchronous oral communication technologies that have proved very popular. Voice over the Internet (VOIP) technologies are not only cheaper, node independent communication but asynchronous. The lack of quality is because the technology is basically asynchronous, the voice file is broken into packages, which are sent separately and reassembled. Voice based emails, where a recorded voice is emailed as a .wav or .mp3 file is a distinctive asynchronous oral technology. However, voiced based emails have not caught on, while email has; (the authors are aware of an exception with a group of people who have disabilities that makes typing an email difficult). Rather, at least in the writing classes, mobile phones are now being used extensively for SMS messages. It is unclear if this is because these people do not want to talk or because of the functionality of asynchronous text communication.

4 A TECHNICAL PERSPECTIVE

While oral people like to talk face to face in groups, there must be occasions when they would like to talk with people they cannot meet. This is the problem communication technology was invented to overcome. Clearly,

we have some understanding of the functionality of telephones. Conferencing over short ranges seems best done using CB, which has many of the characteristics of listserve, partly because telephone conferencing is not cheap. A slightly newer technology is voiced based emails (as oral asynchronous communication).

In order to understand its present functionality and usability better, the authors and a colleague[2] devised a small experiment using the Internet and a voice-based web-board, Wimba, with a large first-year university subject. These were "communication" majors studying modes of Internet communication. Initially, the students were required to submit voice based messages. Later, this was relaxed to allow the choice between voice and text. The intention of the experiment was to gain a better feel for some of the problems with the present asynchronous voice based technology for those comfortable with modern communication technologies.

> *I found that typing allowed you to delete mistakes more easily and gather thoughts, while with the voice postings you really had to think and plan and concentrate on what you were going to say. I also think that voice postings are a little embarrassing! (novice user of Wimba).*

Their most common comment was on the embarrassment of talking into a void - there is no one at the other end, no feedback; recording is like talking to yourself. One simple solution to this would be to develop voice-activated heads for the sender that at least give the illusion of listening. Software such as 'psychologist for Mac' couples a voice synthesizer with an Eliza type Rogerian analysis to provide verbal prompts to the talker based on the talker's previous comments. Participants also reported that they do not like hearing their own voice when they played back their message. It is expected that this is a transitional problem; people who often record their voice seem to get accustomed to the sound. However, voice enhancement software with the recorder making personal selections might also act to overcome this problem.

Editing a voice contribution prior to posting required the whole contribution to be re-recorded from the beginning, regardless of how small the error. In contrast, an error in a text entry can be fixed easily. It is reasonable to expect the likelihood of making an error in a voice contribution would increase proportionately with the duration of the recording. Therefore, a long voice contribution would take an increasingly long time to get error free. This would seem to encourage shorter voice postings or suggest that longer voice postings contain a higher percentage of errors. This is reinforced by participants complaining that the postings of

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[2] With thanks to Phil Marriott and the Wimba suppliers.

their colleagues contained a number of annoying speech errors. This problem seems to be the single biggest one in asynchronous voice communication. It is an area in need of extensive research so as to allow words to be found in a recording and edits to be made easily.

Although the majority of participants preferred text messaging, some did prefer voice to text messages, claiming that it was because it was easier than typing and provided them with a richer means of communication - one that contained verbal cues and an emotional context. Many participants used a mix of voice and text in their messages. Typically, the text was written as a series of dot points and the voice component elaborated on these points. This hybrid might be the appropriate use of the technology.

The people involved in this trial were a group of undergraduates, reasonably competent in text-based communication. They have never been trained in voice-based work in the way actors and media presenters are. They did not have any disabilities like blindness or paralysis. All of them could type on a computer keyboard. Even so, there did seem to be some demand for the present functionality of voice based asynchronous communication - a minority preferred it.

4.1 Hypermedia

When looking around for evidence of the availability and popularity of asynchronous voice technologies, the author found little apart from the limited functionality of dictation and telephone answering machines. Voice based emails were ‘out there’ but not popular. Fowler (1994) argues that hypertext (including hypermedia) is a hybrid technology having some of the qualities of writing and some of orality. By hypertext (hypermedia), it is meant the hyperlinking of anything that can be imbedded in a web page with anything else. This includes text, pictures, movies and voice files in an interactive manner so that a reader can add a link or response to everybody else’s web site at the discretion of the originators. Examples include history sites where web users are invited to add their own contribution and online journals where people are asked to provide comments or links to articles.

Fowler (1994) identifies a list of characteristics for books. These include that they involve a non interactive reader, the text is fixed, permanent and finished, there is a beginning, a middle and an end, it is only the author’s voice (autocratic), there are publishing gatekeepers, it has a single path, and encourages conservativism. Hypertext transcends to some extent many of these qualities but it is still centred on text so of limited use to traditional oral cultures. It may, however, be a step in the right direction for applying tacit knowledge for a literate person. Moreover, the hyperlinking and multimedia functionality is attractive to oral peoples provided the output is broadcast like TV and radio.

A technology that has not been mentioned too much is the radio, and its web equivilant; Internet radio (web page as a streaming 'station'). Coupled with software that mixes incoming audio and video streams to the listeners' requirements, this technology can be used to create numerous purpose-built streaming radio stations. These can be used as decentralised, non-hosted radio able to be designed around local groups needs and local issues. However, this needs infrastructure funding and extensive start up training. Hybrid projects (appropriate technologies) such as the use of the telephone to ask a skilled person to look up a web site and then broadcast it on the radio, or the use of broadcast web pages using push technology over CB radio, is another possibility. However, these require a caring, knowledgeable group to fund and appropriately design for those with little understanding of the technical possibilities.

5 A CULTURE AND SOCIAL PERSPECTIVE

Orality also needs to be thought of as a social or cultural diversity issue, if only to inform the design of technology. Western communities, through the availability and accessibility of communication media and their large volume of explicit written forms, are able to broadcast readily and so promote their knowledge at the expense of oral cultures. The potential for communities whose knowledge system is not based on the written form to be silenced in this environment is significant. The Internet is thus a powerful device to ensure paper knowledge gets to shout louder (metaphorically) than knowledge that is based on experience (trial and error). The "West" gets to shout louder than the developing nations (Ashwari, 1999). This reaches a point where Western explicit knowledge assumes itself superior and starts to treat indigenous knowledge as inferior. Without getting into a defence of Western scientific knowledge, there is a lot of assumed "knowledge" that the West uses that is not scientifically based. Christians may think their beliefs more "logical" than indigenous beliefs, the resulting Western values are also believed superior. So, for example, non-western medication is considered not worthy of research funding. One attitude is that other people's knowledge needs to be subsumed into the dominant culture's knowledge, like Christians taking "Pagan" holidays or images, and Western social scientists "explaining" indigenous artefacts using the latest trend of social theory. Note the problems indigenous and ancient peoples are having in reclaiming their cultural stories, artefacts and knowledge. Examples include the Egyptians reclaiming items taken from the Pyramids and Aboriginal Australians claiming ownership rights over Dreamtime stories and their traditional knowledge about fauna and flora, as well as explanations of artefacts held and sold by museums. There is knowledge competition.

The "oral peoples" are struggling to be heard. A community's unique knowledge not only needs to be preserved but also shared and so developed within that community. For communities with an oral tradition, this means more than saving artefacts and writing down their stories. They have a need to keep building their intellectual property by word of mouth. This knowledge sharing method not only passes on knowledge but also provides a social system, including giving authority to elders and providing a supportive means of learning. In times past, the physical distance between communities would protect their knowledge from being absorbed by other "richer" communities. In the aftermath of the communication revolution, this has been problematic. Printing, cheap travel, the control of diseases like malaria, radio, telephone and television have provided the technology infrastructure for communities to share knowledge across vast physical spaces. However, given the Western dominance of communication media in terms of ownership and content, there has not been an equal sharing of knowledge. Media, such as television and now the Internet, using mainly broadcast models of communication, encourage this. The cost of preparing materials, access to adequate technology and a cultural lack of preference to the broadcasting mode of informing blocks many cultures from sharing, let alone developing, their knowledge. This raises the question of how newer, alternative communication technology can be developed, not only to avoid these mistakes of the past, but also to create space for other knowledge transfer modes.

Ife (1999) suggests that responsible community development should "seek to identify the important elements of the local culture, and preserve them". Preservation and development of knowledge diversity and essential tacit knowledge is critical, then, to the continuation of the cultures and communities. Different communities, from artisans to indigenous peoples, have a need to preserve and develop their knowledge in ways relevant to their specific traditions and cultures. This is not merely a "cultural preservation" act but also an economic development one. Trade knowledge builds modern cities and indigenous knowledge has increasing commercial value especially to indigenous communities.

6 A COMMUNITY PROJECT

Researching community issues with orality or asynchronous communication is not as straightforward as the student based experiment outlined earlier. Below are details of a system designed to assist remote primarily oral Aboriginal communities discuss land rights as part of their negotiations with the State Government. The context details impacting on the design serve to illustrate how developing technologies to encourage or

assist oral preferences will need to be awake to some very different needs. It is not just a matter of giving people mobile phones.

This project provides the second of two empirical experiences we designed to improve our interpretation of the situation. The first was the student assignment. We did not analyse any data beyond reflect on what the participants said to us, nor did we sample anything, measure anything nor have control groups or repeat experiments. Indeed, with both the students and the Aboriginal elders experience we would consider it unethical to do so. We are not willing to conduct an experiment on the Aboriginals. Our claim to generalisability is of the problem domain or concepts involved rather than in the statistical sampling sense of generalisability. We make no claim that our empirics are generalisable. We believe that after a lot of experience in this situation, reflecting on the perspectives as reported to us by participants, against a conceptual frame of the importance of oral knowledge, we have some suggestions of where those wanted to inquire further may look first.

With this Aboriginal project, the setting was the State Government trying to negotiate with the Aboriginal peoples over land rights following passage of Federal Law that these peoples still had right to pass over much of the State. After some effort to legally identify elders able to talk for certain traditional areas, community meetings were organized. One of the authors was employed as adviser by these communities on interacting with the Government, which included identifying infrastructure needs. This was undertaken first by listening to the general community discussions over 6 days, and then by including an agenda item of whether they would sign off an a application for a Government grant asking for (faxes, phones and computers) oral communication infrastructure. This agenda item was secondary compared the land rights issues. When it was agreed it could be raised, the suggestions made were made to all those involved and in a public place. We allowed plenty of time for informal debate. At the end of the time allocated for discussion a call for a show of hands was made by the coordinator of the elders. Those people who agreed, took the grant application letter back to their local community and signed it if no objections were raised.

Communication between the 20 different peoples that make up South Australia's Aboriginal peoples is not easy and yet there is a need for them to speak as one to make Statewide legislative change. South Australia is approximately the size of Western Europe but with a mixed population of about 1.5 million. The cost of holding a 3-day meeting of these people is about $130,000. The issues are complicated, more so because many do not speak English nor do they have a common language. Further, many are not comfortable with reading large documents. Therefore, little can be achieved in a 3-day meeting. Further, the age and health of the elders complicate

matters. Eyesight and hearing is not good, special diets are required and many are diabetic. Added to this, the quality of telecommunication and power supply in many outback areas of South Australia is of limited quality. Making phone calls is a hit and miss affair, repairs slow, many find sending small emails or downloading web pages too erratic and slow to be worthwhile, so video conferencing is not realistic. The most common means of communication is UHF CB, using a backbone of transmitter tower supported by volunteer workers.

An oral tradition is more than just talking instead of writing. It affects who is allowed to do the talking, what can be talked about and how people are to listen. Whole social structures and routines result from the tradition. The elders are respected because they have the knowledge. If it is written down, the young can ignore and fail to protect the elders. Issues can be dealt with only one at a time, with long meetings on one issue preferred to the writing class's style of a several parallel issues being discussed over several weeks. One issue is discussed to some conclusion. Everybody is encouraged to have their say in front of others rather than the writing class's way of doing much of the negotiations on a one to one basis before the main meeting.

Historically, the radio has been very influential in developing political support and in providing education to remote tribes' people all over the world, particularly in the Middle East. It is cheap and popular especially when the instructional material is well mixed with entertainment. This mix, if correctly selected, may also serve to maintain cultural diversity. Programs like the well known English production, "The Archers", were developed in the 1940's by the Department of Agriculture to carry instructional material to farmers during radio "soapy" dramas. Streaming radio (and some TV) solves the problem of supplying radio over very long distances. It also means that a full time commentator presence is not required. A scanning process can be used to select relevant material, both from satellite down loads and from the very numerous Internet stations, a few hours of which can be placed in a "buffeting file". These can be rebroadcast on the Internet (which, in Australia, is now not classified under the Communications Act as broadcasting) and interspersed with local material using a DJ. At the receiving end, the stream would be rebroadcast in UHF and/or FM for a minimal cost.

A large number of people living in remote South Australia use UHF CBs. The public has invested a lot of volunteer work and money onto a 'backbone" of repeater towers. This forms the main emergency service communication systems in the State. It is an easy matter to connect the external microphone of a UHF CB to the sound card of a PC. Using voice activated CBs, it is then possible for someone in a vehicle with a UHF CB to broadcast and be picked up by a CB, which is attached to a PC. Then, using

VOIP, this message can be carried internationally, including back to the streaming radio station. It is thus possible to have a talkback streaming radio station using existing infrastructure for those travelling long distances. While hardly state of the art, it is a solution that integrates the technology quickly and easily, but importantly it is relevant to the community groups.

Using the types of technology suggested above, an unsuccessful attempt was made to raise a Federal grant to set up, record and store these community meetings as the last of the Aborigines who remember the old way near old age. The land title negotiations that were to take place between the Government and Aboriginal communities would be binding for many decades so the intention was to inform future generations how equitable the negotiations were. It was intended to supplement the recordings with background materials, translations and links to official documents into a hypertext (hypermedia) cultural database, which, with interviews with the elders and careful selection and cataloguing of archival materials, would provide an encyclopaedia of the event. Of course, this would be very inadequate in terms of capturing the oral traditions, but some parts could be saved. The idea is not new - many indigenous peoples have now started similar projects. Apart from visual scenes and conversations with people who have the knowledge, archival footage and descriptions of artefacts, maps and stories can be captured. This still undermines the "respect for elders as they have the knowledge" social order that an oral tradition supports and puts a tremendous onus on the administrators as errors in accuracy may do lasting damage. Secret knowledge, such a sexual advice to young women, may also be lost. The thought was that this multimedia database would be more likely used than a book with subsequent generations of Aboriginal peoples.

The Federal Government did not agree that a grant for recording these negotiations as described was warranted – instead they were recorded using the traditional "written" method. That this project was unsuccessful was the motivation for this paper. In the rush and excitement to provide the technology, 'appropriateness', be it in schools or for communities with an oral preference, may be trampled. A compounding issue is that, while many communities want to emphasise their unique culture and differences, this should not be translated into appearing unable or unwilling to be able to master the latest technology. It is being here that a community based asynchronous oral communication system would push the envelop of the communication technology but towards something appropriate for someone apart from the writing classes.

7 CONCLUSION

To recap, this paper is about orality. The authors are concerned that the development of Internet services has been driven by an implicit assumption that information is written. Oral knowledge sharing has been the silent partner. This is thought to be a mistake as a combination of both is thought to be the optimum for innovation and thus social and economic development for both the developed and developing nations. Orality is more situational, decontextualises less and requires different mental skills such as memory.

This study found that the technology requirements to bring orality up to the standards of written e-communication include:

- Improved asynchronous oral functionality, including
  - Improved voice editing facilities,
  - Improved voice based email, including built-in quality microphones in PCs,
  - Visual or voice feedback when recording maybe including Elisa type software,
  - Development of combined dot pointing with speech media, maybe with simple sketching facilities.
- Improved voice conferencing facilities, i.e. less assumption of 'one on one' communication. This should allow several groups of people to meet and talk for up to days at a time, maybe using 'wired' meeting rooms and having access to multimedia facilities to discuss specific cultural artefacts.

The main force working against the suggestions presented in this paper is the status of writing. Literacy is seen as a major development issue so it is possible to imagine the Internet being used to teach reading and writing before being used as an oral communication technology. Writing is still seen by many as 'the truth', the correct or official version of events. Therefore, if a person's words are written down, they are given status and recorded for the future. While these attributes of writing need to be acknowledged, if orality is suppressed then so might innovation.

This written communication on the needs of oral traditions is clearly paradoxical. Oral people should talk for themselves, but if they did, this paper would not be produced. We are sure many in Aboriginal groups we met would say, "Those academics have no right to talk for me, nor write for me, unless I dictate what is said". This we respect and agree with. We do not claim to talk for anyone but ourselves. We believe that the Internet communications technologies should be more inclusive of oral people because we seek knowledge diversity.

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