Another World: Developing countries in the Pacific region need to find their own pathways into the new information society.

Synopsis

Realities of limited telecommunications and Internet service delivery are putting a restraint on expectations of major impact from new media in Pacific nations. This paper argues that for development tasks at least, a leap forward based on new technology is as yet rather much to bank on, so the widest range of considerations has to be kept in mind – all forms of mass communication media that are available to use and adapt, other opportunity factors, and obstacles to communication.

The paper will examine two cases: the island nation of Tuvalu, and the Highlands region of Papua New Guinea. In Tuvalu, checks on media use include limited net access, slow or congested bandwidth speeds, and lack of access to computer services and repairs. In the Western Highlands province of Papua New Guinea, there is currently little access to the Internet, and what there is tends also to be slow and limited. More traditional forms of media such as radio stand to deliver good returns if developed well.

The method of investigation for the two case studies is principally direct observation by the researcher in each case. During extended visits to the two developing regions in question, the researchers participated in local media production or assisted with training. In each case the undertaking was backgrounded with extensive preparatory work including a review of relevant scholarly literature on regional issues and mass media.

Convergence may come to contribute well to the dissemination of information and the establishment of public dialogues, but problems of information poverty – illiteracy, lack of access, inability to use the Internet, lack of money for facilities, software and training – will have to be negotiated.

Introduction

Convergence as we understand it is a mixing of formats on a lit screen. Where once there would be print, sound and moving images with sound; now with screen based digital media the formats are mixed. The linear conventions, that sound, images or text are different, are superseded by the reality that materials are made up of bytes of data which are uniform phenomena. It makes for flexibility, and the possibilities call for much more experimentation so that media artifacts can be made most appropriate to their many

targets and purposes. Sometimes the mix may favour galleys of text and persuasive writing, at other times a dynamic show using graphics and sound, and so on. It brings in novel elements such as an unprecedented physical capacity for interactivity, between publics and media producers, and among publics themselves. Mixing of the elements of sound and vision can now be technically effortless and has few limitations; so new styles must further be anticipated.

On that point, a useful kind of imagining is to see the transition from analogue processes to digital as eliminating the logic of a progression in time. Since products, e.g. a video news package, do not now have to be put together in a sequential way, stories can be told, ideas represented "out of order", using other principles. Traditional journalism (for print, radio, television) has always been knocking on the door in this regard by insisting that stories be told at the top, as-it-were before the story is actually told. Strict chronology can be forsaken for other principles, such as notice-ability or newness of information; telling can switch back and forth in time to put together the full message as it suits the producers' intentions and communicative style.

Already the foundations of mixed media have been well laid through the proliferation of viable new publications on line, and an economics has been established. Costs by comparison with traditional print and broadcast media are low, especially for start-ups. Markets can be split and new markets made, to be serviced by an eclectic array of publications. Financial endurance already has been achieved in many cases; and otherwise economic failure is seen as a very acceptable loss given the limited initial outlays. It is widely anticipated that while the various subscription and advertising models don't have the bonanza quality of old-media staples, like classified advertising in newspapers or product promotion on colour free-to-air television, more ways of making a dollar from the new media will develop.

The interest of established media organisations in compensating for the weakening of their revenue base in exactly these fields stands to boost the search for revenue devices. The intense engagement of these organisations in new, convergent media, and their investment in the field, while putting competitive pressure on small operators, also assists in transferring the attention of mass audiences towards it. The process, as is so often observed, is global, and by refinement, it is developing as one in which local concerns of communities are serviced amid a trade in global products. Therefore geographically defined communities will demand services relevant to local concerns while assimilating a plethora of programs or information from outside; similarly a community based on interests, though globally dispersed (*viz* owners of stocks and shares, bicycle enthusiasts, scholars), can expect active service of their interests through new media.

Except in poor countries.

We are concerned here that much of the world stands to be left behind; that the spread of convergent new media is not penetrating to the mass of people in developing countries at anything like a comparable rate; that research and policy development to date, to assess and accommodate changes associated with new media, is focused mostly on the needs of

the major users, not the Third World "periphery"; that material conditions in many countries work strongly against any easy or rapid uptake of new media on a mass scale; and that while use of new media will be inevitable and advantageous, the application and adaptation of traditional media of mass communication, like radio especially, should be persisted with, forming a part of sound strategies for development. The argument is assisted by referring to actual economic and social circumstances in developing countries of the Pacific region, and in particular two case studies based on field work in Papua New Guinea (contributed by Amanda Watson), and Tuvalu (by Mark Hayes). The principal method used is observation on location, a qualitative approach which will back up repeated instances, some of which will be quoted here, where other investigators in the field have expressed reservations about the immediate usefulness of new media.

The Internet is the prime common carrier for convergent technologies, playing a part already, in all countries as at least a key link to the outside world. Yet the explosion of the capacity of information and communication technology (ICT) in the developed world threatens to open further the information gap between rich and poor, centre and periphery, developed and underdeveloped societies. A main purpose of this paper is to support the suggestion that for these "other" societies to keep pace, while immediately seizing any advantages to be had from use of new media, the best option is also to persist with known strategies for basic economic and social development; and that, such strategies will include use of the most accessible and effective media tools – as often as not the "traditional" media formats.

Expectations, economics and projections are those of the "developed" world.

Great expectations about the uses and directions of new media in advanced economies are realistic, considering experience of the Internet so far, with its constant uptake by millions of new users, qualified instantaneousness (it can be very fast but often isn't), and the fact that it is in use everywhere. From the perspective of the most advanced economic regions it is a global phenomenon. New media are also able to keep on rapidly expanding and be sustained because, in these regions, they can draw on great underlying wealth in material and human resources. Users, furthermore, with the capacity and means to participate, are doing so not only as consumers but as contributors. The rise of such a novel phenomenon on a major scale has turned attention to projections and planning for changes that the "explosion" will lead to; though as we say, ones to be managed from the standpoint of those with the immediate means to participate on the biggest scale.

For example Bruns (2006) is able to track a heavy trade in information through specialised private news and commentary services, with plentiful resources, often operating collaboratively; and he suggests that it foreshadows the realisation of Gans's multi-perspectival approach to news reporting: "Digital storage and transmission has massively expanded space and time available for media content, for users to become producers and publishers of media content, to a point where from the producers' point of view bandwidth restrictions become irrelevant." (Bruns: 13) The emergent products to date mostly "repurpose" material already available on line, but can offer alternatives to mainstream or traditional media, "implicitly or explicitly as correctives." (Bruns: 59).

In the field of policy development, the European Commission provides a leading example. Always mindful of potential threats or opportunities for its 500-million citizens, the Commission has initiated a sophisticated review in the context of an already-gazetted new European law, a Directive titled "Audiovisual Media Services Without Frontiers" (European Commission, 2007) – harkening back to its consolidation of more traditional media services Europe-wide, "Television Without Frontiers". Following an extensive public survey, the Commission this year produced the first of an intended series of policy documents, its Communication on Media Literacy (European Commisison, 2007a), which sets definitions in three areas: commercial communications; media literacy for access to audiovisual works, and media literacy for "online". Its concerns about preparation of publics for life with new media were expressed by Viviane Reding, the European Commissioner for the single and specialised portfolio created under the designation of Information Society and Media:

> "The media are changing, and so is citizens' use of such media. New information and communication technologies make it much easier for anybody to retrieve and disseminate information, communicate, publish or even broadcast. The ability of people to critically analyse what they find in the media and to make more informed choices – called 'media literacy' – therefore becomes even more essential for active citizenship and democracy ... The ability to read and write – or traditional literacy – is no longer sufficient. People need a greater awareness of how to express themselves effectively, and how to interpret what others are saying, especially on blogs, via search engines or in advertising. Everyone (old and young) needs to get to grips with the new digital world. For this, continuous information and education is more important than regulation ... Especially with regard to advertising, promoting media literacy is much more appropriate than advocating advertising bans." (European Commission, 2007b)

Whatever the reach of globalisation processes, this applied, highly informed, protective and opportunistic work is going towards policies for a rather wealthy population in the Northern Hemisphere; it will not be so applicable to the interests of people in poorer, small and isolated communities at the other end of the Earth. The two examples above, representative of the thrust of research towards an extension of pluralistic media and civil society, highlight the widely-held assumption that resources are great and will expand – material resources and human resources of education, skills or language. Goals are set in terms of identifying best practice in the context of a liberal, information-based society. These can reasonably be seen as universal concerns. Open access to ICT, a stable society, and freedom to communicate are universally sought after if too rarely achieved. The question remains however as to what extent citizens in developing countries can expect to share in the benefits of the ICT revolution.

New media in developing countries of the Pacific region.

Recent, separate research reports by Anderson (2007) and Foster (2007), in *Pacific Journalism Review*, together provide a useful survey of the current status of new media in the South Pacific islands. Anderson's investigation of online resources for education about politics in twelve Pacific islands states, listed in Appendix 1, is indicative of resources available for new media. All of the countries have some government presence on line; some, notably Fiji, Tokelau and Tonga are extensive. However the services are not "participatory", being more in the way of postings of official information, and in every case Internet costs are high, especially in terms of local earnings, and "literacy" issues (conventional literacy, computer and Internet literacy and research literacy) are very problematic. Access to Internet is principally just in towns and cities.

Underdevelopment of infrastructure and the operations of telecommunications monopolies are seen as keeping up costs of Internet access in schools, workplaces or public Internet cafes. Literacy problems are complicated by the predominance of English on websites; training in new media is on a "self-education" basis; in the twelve countries surveyed, computer use and other forms of ICT education are being integrated into some school curricula, but hampered by "challenges" of infrastructure and costs (Anderson:103). Information is quoted on the availability of information technology from UNESCO in 2003, and the CIA *World Factbook* from 2005, in the latter case putting approximate figures on expected rather low levels of participation in Internet use:

> "The percentage of users throughout the Pacific Island region is variable and ranges from approximately 60% of the population in Niue [where a free service is available] to just over 16.5% in the Cook Islands, about 11% in Tuvalu, and 7% in Fiji. For the other selected countries the percentage of people using the Internet is still well under 5%." (Anderson:105)

The conclusion is that to date a well-educated elite in any one place will be included in new media use, by-passing traditional elites in access to this additional source of power and influence, and leaving out the great majority of population. From the point of view of political education, while development of democracy "essentially relates to the majority" (Anderson: 107), majority interests are not yet directly being served.

> "With the current status of technology accessibility in the region in general a 'back to basics' approach for political education and participation may still be the most conducive to an egalitarian rather than elitist democracy. Traditional forms of media, such as radio and newspaper are still among the most reliable for Pacific populations. In terms of using media for the political education of the Pacific island public, from a perspective of communicating with the entire population in general, these are still the means that should be advocated. This is not to say that digital technologies are redundant. But a realistic view is needed about the way in which the use of such technology can assist rather than transform political education and participation. Internet technology can be considered as only part of the equation" (Anderson: 106-7).

Foster documents the recent history of anonymous web logs ("blogs") used in Fiji in 2007 to evade restrictions imposed on traditional mass media by the military government. Given the kinds of background or environmental restrictions mentioned above, these have nevertheless created impact, being credited with providing a balance to the limited range of news stories permitted by the armed forces, and giving an airing to specifically proscribed information or ideas, e.g. that the December 2006 *coup d'etat* had prominent Indo-Fijian backers, or word of alleged abuses committed by soldiers. Altogether 22 "anti-military, pro-democracy" blogs have been identified, with a small number of "counter-blogs" put up by the government or its supporters.

Bloggers have had to move to new hosts as military agents sought to track them down and block their outputs. The new media as agents for dissent in Fiji raised the universal prospect of more use of advocacy sites in a field of media not observant of traditional, professional media ethics, or conventions such as routine verification procedures. The trend was seen as problematic in the Fijian case, as the anti-military sites were all anonymous, hence avoiding accountability, and in some dramatic cases involving allegations of brutality, or murder, against the army, factually incorrect. Some of the sites also became known for carrying racial invective and blasphemy in English or Fijian language. Journalists and management in traditional media having begun to use the dissident sites for tip-offs, after nearly a year were withdrawing from that.

The Fijian case calls to mind the spread of advocacy on the Internet, as in the case of *jihadist* sites in the Middle East or the globally successful, underground *Tamilnet* operation out of Sri Lanka. It also is a reminder of autocratic action by state authorities, from Fiji to China to further afield, to limit or censor mass online communication, as another problem of the environment for new media in many developing countries; although Foster still notes that its relative imperviousness to control, at least in the short term, is potentially a great virtue in times of crisis:

> "If the press is the watchdog of the people, perhaps blogs need to be seen not as the mongrel brother but the bulldog ready to be let loose at a moment's notice. If nothing else, such an approach would put heavy-handed administrations on notice … of the unpredictable consequences of any further infringements on a free press" (Foster: 58).

Often enough constraints on use of new media will be less sinister and yet equally difficult, a wholly practical matter of what will be materially possible. To begin with, in regions not well serviced by an infrastructure of electricity, transport, formal trade in goods and services, especially where these are in the Tropics; tools of new media are worth less than in the developed world, because productivity and return on investment will be less. The value of many digital devices including personal computers is diminished because their functionality is impaired. Even in cases where we are not considering communication networks, but where highly capable digital production equipment is installed; using and maintaining it may be made substantially more difficult by the climate, lack of service support or distance from suppliers.

As a strong example here is testimony obtained from another "front line" situation, in a broadcast interview given by Max Stahl, director of the East Timor National Film and Television Archive; a collection of over 500 items from Portugese times through the Indonesian period including Stahl's own footage of the 1991 Santa Cruz massacre, to the present. The archive is able to raise some income making video products, e.g. for NGOs; it can obtain international grants, and the government provides premises – though it cannot pay any salaries to the archives staff.

> "Obviously there are massive advantages to digital. It can be small and it doesn't have to be very expensive to take pictures, and you can take good quality pictures with small light equipment. There are other challenges particularly in a place like this where the climate is not friendly towards storage or towards computers, where the economic background and the backup is very minimal, and that makes digital rather fragile and rather frail. Indeed with an old film thing it might go a bit ragged and eventually become unplayable but with digital, with the flick of a switch you can lose the entire thing … (Question) Most of the archive material is stored on VHS, almost a redundant technology in Australia …The archive itself, the masters are not on VHS, they're on digital tape, small video tape. These VHS are viewing copies. They're on VHS because it's an outgoing technology; it's relatively simple; it's relatively robust; qualitatively it's not too great but at the same time if the tape gets partly chewed up you can still see most of it, whereas with digital systems, DVDs and so on, you just need a bit of the damp that exists here in large quantities in the atmosphere to grow a bit of mold on your DVD, and suddenly you can't play any of it. So it's not a good option for us … We have to worry about the masters which are on mini DV, and that's our big problem." (ABC)

Case study: Patience and success with radio in Papua New Guinea Highlands.

PNG – Highlands radio station observed.

The radio station under study is in the Papua New Guinea Highlands, a religious station and part of the community sector, still at an early stage as an institution having only been opened in 2003. Certain main points arise from observations at this station in 2005 and 2006: (a) The station provides a good example of the phenomena discussed above, concerning the availability and possibilities, and also many shortcomings in such a situation, of digital ICT; (b) it demonstrates the general difficulties to be endured when producing mass media in remote parts of a developing country, with funds, technology and equipment, and mobilisation of human resources; and (c) it indicates the efficacy of radio as a branch of conventional media in achieving development goals, especially community development.

The researcher visited the station for one week in mid-2005 and for another week one year later, as a consultant engaged to observe and report to management on ways to develop the operation, and as a trainer for broadcasting staff. The experience was reinforced both times by extensive discussions with management and staff; by

preparatory contact with staff members and others who had worked on the station, and by use of documents, e.g. a church report on broadcasting policy, the AusAID (Australian Agency for International Development) *Media for Development Initiative* report, and an earlier observation study made by a student from Divine Word University (DWU).

It is a pattern of PNG town districts that audiences can receive Radio Australia and / or BBC network transmissions, and popular music on commercial stations which concentrate on youth with a smattering of community information; while audience members otherwise have to rely on the government-owned NBC or the community sector for local coverage at all thorough. The Highlands station seeks to stimulate community life, and make up for an information gap given the very irregular standard of service from the cash-strapped NBC. Most of the station's programming is in Tok Pisin, offering talk and gospel music. There is local news and a set of programs produced from outside, e.g. by clergy or church organisations, or the provincial AIDS Committee. The station broadcasts 24 hours a day and handles the consequent heavy demand for program fare by repeating some programs, and relaying broadcast hours from a church network and the BBC.

The program philosophy concentrates on community contact. Use of Tok Pisin extends the audience range and over a period of a year presenters reported a growing response, on evidence such as increased music requests and dedications. The station sees itself contributing to the community, through its interview sessions, recording and broadcast of community events, religious services, singing competitions, and *toksaves* (meaning 'messages', usually about community events or opportunities). Regular program materials include HIV/AIDS messages and the HIV/AIDS program, and a church family life program. "Grassroots reporters" are co-opted where possible – volunteers who tell about goings-on around town or in villages.

PNG - "New media" technologies.

There is much good together with the bad in regard to available technology. It is a positive indication for the future that high quality, user friendly technology is available off the shelf to set up and run small operations at affordable cost. The term "affordable" is used advisedly; a relative term. In Australia community stations could set themselves up from the 1970s because transmitters for FM, which had just started, were cheaper than MW ones; and further, falling costs of electronic equipment meant that from that time prohibitively expensive custom built equipment (multi-track mixing desks, studio consoles) would give way to far cheaper gear, e.g. software for mixing sound on very cheap "pocket" computers. The perspective has to be adjusted for location as well as for time; kit that is affordable to an individual setting up as a media producer in Australia will be expensive for a small company or partnership in a developing country like PNG. The Highlands station nevertheless was set up with an installation of good new equipment for broadcast production, and is set up to collect and rebroadcast satellite feeds, so that the researcher was able to report in the following terms: "The equipment, computer software, and computer network are all working very well."

The obverse of the digital situation is that service and communications are weak; poor download speeds and general lack of system capacity create major difficulty throughout PNG. The Internet situation in the country is generally classed as "terrible" by users who report that they struggle even downloading basic files. Volunteers have pleaded with their managers and AusAID staff to avoid sending unnecessary emails and keep them to text only. Frequent electricity outages exacerbate these problems. Put together with the low levels of people's accessibility to computers, especially in provincial areas, this situation with poor connectivity is a crucial barrier to development of new media services. Facilities may be obtained to construct excellent media artifacts, be they for sound, visual, or mixed-media, but they cannot be effectively distributed. Further, the arrival of better days must be some long time away. Construction of supporting infrastructure such as satellite stations, cabling, servers and exchanges, given the country's struggling economy, topography and population distribution, is a very large scale need.

PNG - Radio as a conventional media solution.

Radio receivers are a strategic element in meeting mass communication needs in the PNG Highlands, being cheap, very portable, able to pick up signals over a wide area without any installation work needed, simple to use and maintain, and amenable to sharing -- no passwords or log-ins are ever required and several people can listen at once. Because they are familiar no special educational work is needed. Adult literacy in PNG is 57.3%; 1-2% of adults speak English (CIA *World Factbook*), further reducing the immediate advantages to this population of the Internet, where the bulk of content in that country is text in English. The advantages of broadcasting, at this place, at this time in history, overshadow the great disadvantage, that radio broadcasting is not inter-active. Feedback using telephones is an excellent supplement to broadcasts, but cannot match the multi-faceted exchange of information, sharing among multiple users and concurrent sessions that exist with new media formats -- digital online or wireless multi-media.

The fact remains however that such new media cannot be rated a plausible option for tackling mass communication needs in the Highlands situation, when the underlying economy is taken into account. In PNG 85% of people live off subsistence agriculture and per capita Gross Domestic Product (GDP), 2006 estimate, is K8150 ($US2700, Yahoo currency converter, 31.12.07), (CIA *World Factbook*). Communication undeniably multiplies the impacts of spending on development basics like roads, harbours and drainage, schools, health services and justice; but inevitably any community media service will have to run on shoestring budgets.

The Highlands radio station is a sound outcome of thinking about communication needs and a decision by church authorities that the radio medium is the soundest option, but which in order to thrive must deal with two main problems identified by the present researcher: the search for reliable funding, and the related problem of recruiting adequate staff. In 2005 the station had 5.6 full-time staff positions with some personnel doubling up as managers and broadcasters, and in 2006 it added an administrative position. The salaries are low, staff attesting that they find it hard to make ends meet, while the "hungry" nature of twenty-four hour broadcasting commits them to long hours of work.

Broadcasting being not only labour intensive but also skilled work, there has been pressure for these staff members, and volunteers who come forward to help them, to get training and upgrade their abilities.

Prior to the researcher's visits in 2005 and 2006, no staff member at the radio station had ever received any training in radio broadcasting techniques. Initial training was conducted during these visits in basic radio scripting techniques, media ethics, interviewing, program branding and the production of promotional messages ("promos") to advertise coming programs. The staff effort is being supplemented with outside help, from volunteers, or others such as a journalist and an IT graduate from DWU, the regional university at Madang. An experienced Australian radio producer was undertaking a three-month volunteer placement at the radio station from November 2007 to February 2008 through Australian Volunteers International, hopefully adding to the capacity of the existing station staff. While the station has an adequate building and the modern equipment set-up mentioned above, it faces capital outlays for needed studio sound-proofing, eventual equipment upgrades and future expansion of its operations. In addition, the management and board of the station struggle to provide adequate housing to staff members, and this impedes the ability to employ additional staff.

PNG - Community development.

In a short time the Highlands radio station has made substantial progress, in commencing as a broadcaster and capturing the interest of an audience which feeds back its interests. It has put some focus on staff training, to make more effective use of its limited resources, in the process showing its prime interests, in people - in fostering communication and community life. Observation at the station has established that staff have taken on board the obligations of professional broadcasters, e.g. though having only one full free day per week, with few exceptions presenters are routinely arriving on time for shifts. Certain cultural factors have been noted, specifically deep shyness about questioning others, or performing a "friendly sounding" broadcaster role, where the broadcasters have applied themselves to try to make the adjustment, in order to be effective interviewers or presenters.

In many respects the operation remains under construction, building up a skills base and ongoing efficiencies, orientated towards serving the regional community, the better to foster active community engagement. To that end, projects under internal discussion have been to do with streamlining the on-air product (mapping out precise program schedules, planned injection of station brand identity announcements or promos at set intervals, reducing repeats of programs or scheduling them to better advantage); and work focused on immediate social needs, e.g. pressure on the broadcasters to do more interviews with people in the community, a church-run training program attended by one of the broadcasters on human rights, family violence and child abuse, and arrangements to regularise the input from the HIV/AIDS organisation.

Consultant's recommendations placed before the station's community-based management board reflect its ongoing needs in regard to resources: a pay rise for staff; one extra full-

time broadcaster and an office management team of three, to be free of on-air duties, and a further drive to find extra sources of secure funding. On balance this radio station has asserted a place for itself as a key element in efforts to spread information, generate a mass conversation in its district, and cultivate interest in the well-being of the community. It is confronting large problems especially to do with inadequate funding, but has demonstrated that radio is a feasible medium for the task, and perhaps the only feasible medium available for a long time to come.

Case study: Progress despite adversity in public communication in Tuvalu.

People in tiny Tuvalu have lesser problems obtaining direct access to one another; the "On Islands" population is concentrated on the small atoll of Funafuti; population estimates do not exceed just 12000 (CIA *World Factbook*) and most citizens claim to know most others, with abundant extended family links as well. That ease of access is qualified however by the fact that perhaps 3000 of the Tuvaluans live in other places – New Zealand, Hawaii, Australia and elsewhere; and outer islands are also rather inaccessible. The main application of mass media systems for small and isolated Tuvalu is then to maintain active links with the outside world, which begins 1200 kilometers away in Fiji, and here the familiar problem of stressed resources immediately arises. Per capita GDP is A$1100 (ADB, 2005), and costs of communication are a severe restraint on the potential for any new abundance that might arise through access to new media.

The researcher in this case has made extended visits to Tuvalu, conducting an ongoing sociological study of the country and mass communication issues: three weeks in 2002, and again in 2004 and 2006, with at time of writing a fourth working trip scheduled for 2008. The work has entailed extensive searches of literature exploring the islands' history; collaboration with others pursuing a specialised interest in the country (*viz* Brian cannon in Vancouver who maintains the Tuvaluislands.com website), and detailed exchanges, both in set-piece interviews and informal conversation with Tuvaluans, from the Prime Minister through to journalists and government officials, to the youngest citizens. This contribution draws on the field work completed to date, and previous publication on Tuvalu (Hayes in Duffield and Cokley, 2006). The following is his report on the very finite size and remoteness of the population of the country; the battle to maintain communication links, and some problems with the "outside" world, whether from the deficiencies of mainstream journalism or machinations of the "dot.com" economy:-

Settings, infrastructure and outside interventions.

On Monday morning, February 20, 2006, Bennett Simeona, myself, and Opetaia Simati stood in front of the two meter diameter satellite dish near the north western corner of the three storey, two wing, Tuvalu Government Building which dominates the local skyline towards the southern end of the 2.7 square kilometer Funafuti Atoll, to have our picture

taken at the main Internet feed point for Dot TV Land. To our left, a few meters away, was the Funafuti Lagoon, called *Te Namo*, gently lapping against the shore, with tiny, dense vegetation-topped and dazzling pinky white coral sand girded *motu* (islets) dotting the horizon on *Te Namo's* far Western edge some 18 kilometers away. Funafuti Atoll is a 12 kilometer long boomerang shaped atoll roughly half way between Australia and Hawai'i, lying almost due south to north, about 700 meters wide where the airport – destination code FUN – and the government building are located in the southern village of Vaikau, and narrowing down to only a few meters at its extremities. Diagonally south east across the paved air strip from the airport sits Telecom Tuvalu's satellite dish array, with two large dishes pointing almost vertically towards Intelsat 701 parked some 30,000 kilometers above the Central Pacific.

The atoll is very densely populated, with some 4,500 people squeezed on to its available land. In bald summary, the dynamics of tradition, modernity and even post- or 'liquid modernity' (Bauman, 2000) are vividly, obviously, in play. There are no mountains or hills, and no running streams or rivers, on any of Tuvalu's nine inhabited islands, and the entire scattered island country is at the mercy of the elements, hence global warming, which with more and severer droughts, cyclones, and projections of significant sea level rise, among other creeping effects, poses a grave, perhaps even terminal threat to Tuvalu's very existence.

My mission on Tuvalu's capital island, for a third visit, was to report on what was to be a record breaking extreme king tide eight days later, peaking at 3.48 meters; the picture being taken was to go with planned articles on the effects of global warming on a Small Island Developing State (SIDS) and what we believe to have been the world's first Live Web TV (as opposed to WebCam) broadcast from Tuvalu, into a journalism lecture at the University of Queensland (Hayes, 2006a). At the time Bennett Simeona and Opetaia Simati were employed by the Tuvaluan Government Information Technology Office, part of the Communications Ministry, which is responsible for the maintenance and operation of, among other things, Tuvalu's major Internet connection, routed through the satellite dish pointing north above Funafuti Road towards the Dutch operated New Skies 5 satellite -- the signal then grounding in Sydney, at SingTel Optus, and sent onwards to the world (TraceRoutes & WhoIs to 202.2.96.4 run 1/1/2008).

The entire national bandwidth is 1,028 kilobits per second down, and 512 kilobits up, about the same bandwidth as a premium home Broadband connection in Australia. There is only one Web Site in Cyberspace which originates from Tuvalu, with an InterNet Protocol (IP) of 202.2.96.4 and a Host called *Sologa* (family; line of descent, lineage) – www.tuvalu.tv. All the other Dot TVs could be anywhere. *Sologa* is actually a Unix box the size of a home DVD player racked, with a couple of similar sized computers all trailing cables of various kinds, in a windowless, air conditioned room in the southern wing of the Government Building. Next to *Sologa* is *Aliki* (chief, extended family elder) which is the main Government computer box. Not too many *Palagi* (Westerner, outsider), even with interests in IT and using IT for journalism, have actually seen the

physical site and heart of the Real .TV. Plans are afoot to deliver Internet access to all Outer Islands, but, as of early 2008, only Vaitupu, site of Tuvalu's main high school, at Motofoua on Vaitupu's south eastern end, was also on line, with a tiny bandwidth.

In the 1990s, the then Tuvaluan Government thought it could make some money from leasing the country's 688 IDD code to a New Zealand company – Tuvalu's phone access is routed through Telecom New Zealand via IntelSat 701 – which, they soon found out, was operating very expensive telephone sex chat services. Needless to say, the very conservative and deeply Christian Tuvaluans, and especially *Te Ekalesia Kelisiano Tuvalu* (Tuvaluan Christian Church) and its extremely influential *Faifeau* (pastors) were not impressed in the least, and demanded the Government get out of the foul deal, irrespective of how much money the deal was generating; not all that much. Occasionally, following complaints from subscribers mysteriously getting huge bills from 'calling' 688 numbers, metropolitan TelCos cut Tuvalu off their IDD access. The complainants might have been using a phone sex or gambling 'premium' service, and had their phone 'phished' (stolen) by identity thieves. Cheaper for the TelCo to cut tiny Tuvalu off their IDD access than hunt down the phone phishers.

Thanks to a decision made quite early in the history of the Internet, and later confirmed by the Internet Assigned Numbers Authority (IANA), Tuvalu was assigned the 'Internet country code' or Top Level Domain of . (dot) TV. This 'Cyberspace address' only became a hot property with the Dot Com Boom of the 1990s, along with other tiny Pacific countries' 'addresses' such as Niue (.NU), and Tonga (.TO), and the three tiny island New Zealand dependency of Tokelau (.TK) (Whittle, 2007). The Dot Com Boom overtook more cautious Internet governance, and Tuvalu initially found its 'country code' had simply been appropriated by Dot Com entrepreneurs, and passed around, for suitably inflated fees, until the Tuvaluan Government got it back. An auction was held for what had become the .TV Corporation and it was leased by the US-based Internet security and e-commerce corporation, Verisign, in 2001.

While the detailed story of .TV has never been fully told, one persistent feature of *Palagi* reports on .TV were, and remain, ridiculous claims about the fantastic amounts of money the .TV lease supposedly could bring Tuvalu. One particular article by Daphna Barham, published by *The Guardian Weekly* in 2005 was headlined 'Drowning in money', implying that, because of the windfall income the Dot TV lease had brought Tuvalu, the place was in danger of going the way of Nauru (though it did not mention Nauru) (Barham, 2006). In focusing on the ways increasing income, from many sources and not just the .TV lease, is changing the Tuvaluan lifestyle, this report told a misleading tale of an idealised Polynesian paradise whose society is coming unglued. It is not really like that; the situation described better, for instance, by anthropologists Keith and Anne Chambers, whose *Unity of Heart* (2001) analyses the culture of Tuvalu's northernmost atoll, Nanumea, much more adequately, as well as sympathetically, pointing to the changes greater individualism and affluence are having on even remote Nanumea -- and particularly on not so remote Funafuti (Chambers, 2001). For the record, the .TV lease

with Verisign brings the Tuvaluan Government about $US 2 million annually, though, as Radio New Zealand International reported, Tuvalu might not be getting the best of the Verisign deal as greater uses are made of .TV by richer metropolitan Internet outlets, (http://www.rnzi.com/pages/news.php?op=read&id=35416).

A related, erroneous tale is periodically made public, by evidently technologically semi-literate outside journalists, which goes as follows: A US-based anti-virus or IT security company or consultancy does some research which 'proves' that, aside from well known sources in Russia, Eastern Europe, or the USA, a sizeable amount of 'net nastiness' like pornography, viruses, and phishing (illegal stealing or hacking of private telephone or on-line accounts; electronic identity theft) originates from sites with a .TO, .TK, .NU, or a .TV top level Internet domain or 'Cyberspace address'. In an illogical reporting leap, stories about this commercially oriented research ignore some easily checked facts, like the physical size, Internet penetration, available bandwidths, GDP, and generally very conservative, Christian, quasi-traditional cultures of Tonga, Tokelau, Niue, or Tuvalu -- and report that these countries are the *direct sources* of assorted 'net nastiness'. Considering the tiny size and acute population density of Tuvalu, one wonders where "Cyber Gnomes" with their huge file servers and satellite dishes might be hiding, to pump terra-bytes of porn and Trojans out of "Dot TV Land". To provide some relief to Tuvaluans exasperated by such activity the Pacific Chapter of the Internet Society (PICISOC) uses the Internet to distribute media releases to refute the stories when they occur.

On-the-ground realities: walking tour on Funafuti.

Consider instead the realities of media service, Internet and telecommunication use "on the ground", for citizens of this small state: Access to the Internet through the government IT centre or two private cafes is expensive by local standards at least, though service has improved with time; the government service in 2006 connecting via the NewStar 5 satellite to a new service provider in Noumea, with substantially increased bandwidth. The failure of the INTELSAT 804 satellite in January 2005 dramatically highlighted the islands' dependence. Telephone contact, data feeds and direct satellite broadcasting channels were shut down until INTELSAT 701 could be reactivated to take the traffic, with consequent readjustment problems on the ground including realignment of large dishes. The country was again cut off in a similar, brief incident at the end of that year. Informal entertainment services are obtained through private users sharing downloads from satellite television, but again costs can be prohibitive. In the event of failure of a receiver used to rebroadcast the BBC it cannot be repaired on site, requiring air-freighting, prepaid, to Radio Australia workshops in Melbourne. Once more due to cost factors an information lifeline such as Radio Australia is rebroadcast from shortwave, with accompanying noise, as against a clean feed obtainable from the Internet. Uneven electricity supplies from an ageing Funafuti power plant, now replaced, impeded the digital flow in the first years.

Just north of the Tuvalu Government building, a minute or two amble up Funafuti Road (it's usually too hot to walk faster than an amble anyway, and you might meet somebody you know and pause for a chat), diagonally across from the Vaikau Lagi Hotel, Tuvalu's main hotel (though there are several guest houses, and some families take in visitors for a fee), and next to the main Police Post, and the 'navy' office is the dilapidated white cottage which houses Radio Tuvalu's little newsroom, office, and studios.

Until November, 2007, the Tuvalu Media Corporation (TMC) ran Radio Tuvalu and published a monthly A4 sized newspaper, *Tuvalu Echoes*, when the printer worked and they had sufficient paper or ink. The TMC was set up as a government-owned corporation in 1999 to semi-privatise government media; a Regional development initiated in a time of neo-liberal donor and international loan agency pressure, to downsize all government operations in favor of private enterprise.

At the Princess Margaret Hospital in Fongafale village, central Funafuti, medical doctor Steven Homasi and his colleagues routinely use the Internet to send and receive medical information, but for urgent consultations, or to arrange medical evacuations from the Outer Islands, which can only occur using one of Tuvalu's two cargo boats or its single Australian-funded 'navy' patrol boat, or by air to Suva in Fiji, they must reach for the telephone and the fax machine – for better speed and reliability. Nearby in Fongafale village, is the main Primary School, the headquarters of the Tuvalu Association of Non-Government Organizations (TANGO), the University of the South Pacific's Centre for Tuvalu (though this uses a downlink only audio and video facility via InmarSat), several small businesses, including a little cooperative supermarket, or *Fusi*, and a Western Union agency. A small Internet Café has also been established there. At any given time, as many as 600 Tuvaluan men are crewing cargo boats around the world, bringing a vital source of remittance income to their families, but with long separations. The Internet serves as a vital communication channel between seafarers and their families as well. All use the Internet to varying degrees, given the available bandwidth, which seriously decreases as demand increases across the island, especially during weekdays. Further north, at the Port Complex which juts into *Te Namo*, some use is also made of the Internet, though almost all official communications are routed through the Marine Department's office or the Government Travel Office, both located in the Government Building.

The efficiencies of the "new" world economy drawing on the benefits of ICT are available to people of this place, but the benefits are qualified. Isolation, the very small population, and high costs in a poor economy are very material constraints on what can be attained. The information in this report has been corroborated and authenticated by Pese Maatia, a government Information Technology officer from Tuvalu doing Higher Degree study in Australia, interviewed for this study on 6.1.08. Mr Maatia discusses problems with resources and distance, and overcoming obstacles as new systems are taken up by the public, in the transcript of interview, in Appendix 2.

Conclusions.

This paper arrives at a statement of its main propositions. New media already perform several known functions well and are heading in certain recognised directions, but are governed by imponderables, so that even the most advanced potential users are studying advisedly the levels of investment and commitment to be made in the coming decades. The new media field is a growth area known to deliver high productivity, but still requires money – and it still assumes much preparedness on the part of users, as to their wealth, education, language capacities and cultural adaptability. Here the situation of developing countries is compromised because they are commencing on a weaker resource base and will encounter more practical difficulties; entering the business will be more difficult for them and initially at least will be less rewarding in terms of *pro rata* returns on what is spent. It is not really feasible for the naturally poorer countries to climb onto the cyber "bandwagon" while it is traveling at speed. In terms of human life experience, especially in places where life expectancy is poor, some generations may yet pass in an "information poor" state, if it were left to the new media at this time.

The project of development already in train in such countries as the Pacific islands needs to continue, and might work towards a point where new media as a productive and rewarding resource can be picked up on a large scale and exploited most effectively. Dramatic impacts might be expected from the high capacity, built-in efficiencies and universal familiarity of new media; becoming part of the "new economy" where information and communication figure as a key element in all production. (In another kind of discussion we might then consider two-way flows, where inputs from one side to the other can begin to cause positive cultural transformations; referring to theorists on such translations, *vis* Flusser (2003). In the meantime where there are tasks for development, of infrastructure and economic resources, of solidarity-making and building of civil society in communities, or of human resources including basic health care or literacy; the mobilisation of appropriate mass media is an open choice that more often than not should remain with traditional forms, not new media as yet.

Notes and acknowledgments:

Dr Hayes respectfully dedicates his section of this paper to the memory of his late friend, IT worker, photographer, and 'citizen journalist', Lomi Paeniu, then 26, with whom, had Lomi not tragically died on Easter Sunday, 2007, he would have collaborated to make this research so very much better and much more deeply, authentically, Tuvaluan.

Appendix 1: Twelve countries listed in study by Anderson.

Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Samoa, Tokelau, Tonga, Tuvalu, Vanuatu.

Appendix 2: Interview with Pese Maatia, 6.1.08, excerpts:

Well all I can say is that the people in Tuvalu are still educating themselves on the use of Internet.

When the Internet was first introduced only government departments and a few public users were able to access it. There has been an increasing number of Internet users in Tuvalu in the past two years. Most users use Internet for emailing, chatting with friends and families overseas and share photos. The use of social networking sites like bebo, MySpace is very popular to most teenagers and adults too. There are some talented individuals who use music tools available on the net, mixed with local musical instruments.

Also, there are now some people who have enrolled in online courses. I think people now realise the importance of Internet not only to communicate with friends, but for use as and education tool to do researches on what is available, for example cooking recipes etc.

There is no way we can stop people accessing pornography sites; we can only manage it. For Internet gambling, I don't think Internet users in Tuvalu are aware of Internet gambling or even the use of it. Security is a major problem in any Internet environment in the whole world. In Tuvalu we are vulnerable to any attacks as well as any organisation in the world. We do not have enough resources to have a better security on our network.

Question: How aware of the Internet do you think people living on the Outer Islands are?

I think most of the people in the outer islands are not aware of the Internet, even if they heard from families coming from the capital Funafuti, they still have no idea what is the Internet. That's why we want to get the Internet to the outer islands.

Question: What restricts or frustrates your professional uses of the Internet in Tuvalu?

There are two Internet Service Providers. In 2004 we relocated the government ISP to the new government building with our own link via a 2.4meter satellite dish. Telecom then also established an ISP.

(With the government service) we use a dialup connection to all pay users apart from the government building that has a local area network. With the dial up connection we have three different product payments which are monthly and an unlimited account. The three products were:

$20 Month = 40hrs and 10c a minute after 40hrs

$40 Month = 80hrs and 10c a minute after 80hrs
$100 Month = Unlimited

Telecom uses Wi-fi which they have two different rates for both home use and company use.

As a small nation with a small economy, Internet is a new innovation in our country where the government of the day try their best to adopt, but no doubt it is a financial concern because it's knew and no one knew of the benefit at the beginning; thankfully the introduction of Dot TV helped us start the Internet in Tuvalu.

Limited bandwidth due to high cost is a major problem. Servicing and upgrading of ISP equipments and government computers to adapt to this technological world is something that we cannot sustain on a monthly basis.

We have had a problem with our electricity supply which damaged most electronic equipments on the islands. Now there is an improvement to our electricity, thanks to the Japanese Government for the new power plant.

In the government ISP, there are over 500 users for a 1mb/512kbs bandwidth at the bottle neck. That means all 500-plus users are sharing the bandwidth.

Telecom is taking over our project to get the Internet to the outer islands and we are working together to achieve that goal.

The government secondary school named Motufoua, located on the island of Vaitupu, has its Internet satellite dish, 2.4 meters with a bandwidth of 256kbps/128kbps installed in the beginning of 2006.The project was funded by the UNESCO.

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