

Chapter 13

Social Shaping of Technologies for Community Development Redeployment of Information Communication Technologies among the Kelabit in Bario of the Kelabit Highlands

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ABSTRACT

Using electronic-Bario (e-Bario) project in the Kelabit Highlands of Sarawak in East Malaysia, this chapter explores how the introduction of information communication technologies (ICT) as developmental tools have been mediated and reconfigured by webs of social relations and the intricate interplay of social, political and cultural conditions specific to different social and technical settings. One crucial factor conditioning the effects of the project has been the Kelabit's own desire for, and expectations of, "development" and "progress." This is a quest which ties in closely with two fundamental Kelabit concepts: doo-ness and iyuk. As a result, the social and economic effects of ICT have unfolded through countless open-ended strategic and everyday decisions made by the Kelabit themselves, who actively consume, apply and make use of objects, ideas and services in the Highlands.

'The new electronic interdependence recreates the world in the image of a global village'. -- Marshall McLuhan, The Gutenberg Galaxy in Daintith, John (ed.) Quotations, Bloomsbury (1996, p.256:1).

INTRODUCTION

Over the last 15 years information and communication technologies (ICT) have been increasingly and optimistically promoted as a means of transforming

developing countries into "modern" and knowledge-based societies and to alleviate some of the social and economic problems of developing world, particularly those in rural areas. Yet very little is known about the veracity of these aspirations, much less about the long-term social and economic effects of these technologies upon development in rural areas (Keniston, 2002).

Informed by a social shaping technology (SST) framework, this chapter explores how the introduc-

DOI: 10.4018/978-1-60566-735-5.ch013

tion of information communication technologies was mediated and reconfigured by webs of social relations and the intricate interplay of social, political and cultural conditions specific to the Kelabit Highlands. In this way the chapter seeks to achieve a more critical understanding of the relationship between ICT and society that provide an understanding of the implications of ICT for social and economic development and inform current discussions about the emerging “Information Society.”

SOCIAL SHAPING AND CONSEQUENCES OF ICT

The social shaping of technology (SST) approach to technology-society relationships has emerged in the late 1980s as an important framework to explore whether technology can be seen as a main force that shapes society or whether society and social values shape the way in which technology affects our lives. With regards to information communication technologies, the approach builds on two main themes: the design and implementation of ICT artifacts and systems; and the implications of ICT for individuals, organizations and society. Within this broad remit the SST approach could not, and will not deny that technology has an effect on society but at the same time emphasizes organizational, cultural, economic and other factors influencing the process of technological change and innovation (Williams and Edge, 1996; Kling, 2000). In other words, deviating from a technological determinism standpoint, SST embraces the centrality of users, society and social values to shape the way in which information communication technologies (ICT), affect our lives, (Dutton, 2001; Rohracher, 2003; Fischer, 1992).

Taking the lead from the SST framework, this chapter explores the social and economic effects of electronic-Bario (e-Bario), an ICT-based community development project implemented in the Kelabit Highlands of Sarawak. This is in order to

shed some light on the character and significance of ICT in different social and technical settings and at the same time to illuminate the processes of shaping the use and impacts of ICT in Bario. It takes into account the role of the Kelabit’s own desire for, and expectations of, “development” and “progress.” This is a quest which ties in closely with two fundamental Kelabit concepts: *doo*-ness and *iyuk*. As will be made clear later in the chapter, both notions signify movements and good-ness in terms of social status among the Kelabit. By highlighting their significance, this chapter argues that it is the local cultural logic of *doo*-ness and *iyuk* among the Kelabit which is central to the shaping of technology especially how meanings (symbolically) are “inscribed to technologies” (Rose, 2001, p.69), creating a desire for new technologies, and informing their development and appropriation by users in the Highlands. In short Kelabit notions of *iyuk* and *doo*-ness are central to functional and symbolic encoding of technologies in Bario and are crucial factors conditioning the effects of the project. This is evident by the ways in which the social and economic effects of e-Bario have unfolded through countless open-ended strategic and everyday decisions made by the Kelabit themselves, who actively consume, apply and make use of objects, ideas and services in the Highlands.

BACKGROUND: THE E-BARIO PROJECT

Considered the traditional homeland of the Kelabit, the Kelabit Highlands is situated above the rapids found at the headwaters of the Baram and Limbang in Northeast Sarawak, close to the border between Kalimantan and Malaysia in the Miri Division. Although there is no official boundary to define the area, Thong and Bahrin (1993, p.17) estimate that the Highlands comprise an area of approximately 2,500 square kilometers. With an average altitude of 1000 meters above sea level, it is surrounded by

some of the highest peaks and rugged mountains in Central Borneo. This out-of-the-way situation is well noted by Harrison (1959): ‘There is one [of] or two places on the map of Borneo and, more widely, on the map of the world – where you can get farther away from a known place . . . , from what most people call “the world.” There are fewer places where you (or I) are likely to be able to feel more remote, more “cut off” from the great outside. . . .’ (p.5). Nowadays, flying into the unofficial capital of the Kelabit Highlands known as Bario, is the only practical way to get there. There is no road, and a land expedition requires a river journey plus an additional weeklong trek across forested mountains (Bala, 2002).

But, who are the Kelabit? Numbering at 5,240 in 2000, the Kelabit are one of the smallest ethnic groups in Malaysia. For the past thirty years many have left the Kelabit Highlands for education and job opportunities. As a result only a thousand still remain in the Highlands while the rest are living in cities like Miri, Kuching and Kuala Lumpur, or even overseas in the U.K., U.S.A., Canada, Holland, Australia and New Zealand. This high level of rural-urban migration has led to a geographically-dispersed community, creating almost a clear distinction between the Kelabit who remain in the Highlands (rural Kelabit) and those who have left to live in urban areas (urban Kelabit).

Ironically, it was because of these two social situations: high levels of rural-urban migration of the Kelabit and the geographical remoteness of the Kelabit Highlands that Bario became a test-bed for the e-Bario project. Initiated by an interdisciplinary team of researchers from Universiti Malaysia Sarawak (UNIMAS), e-Bario explored the use of telephones, computers, Very Small Aperture Terminals (VSATs) and the Internet to improve the lives of marginalized groups in remote areas of Sarawak. Initially funded by International Development Research Centre in Canada, it was later adopted by the Malaysian Government as one of its Demonstrator Application Grant Schemes.

The project was largely initiated in response to Malaysia’s approach to adopt ICT as essential developmental tools in generating a knowledge and information-based society (UN, 2000, p.9) - a form of society which Malaysia aims to attain by the year 2010 (Goh Beng Lan, 2002, p.190).

In order to facilitate this mass development program, the Malaysian government has set out specific targets. These include: to become an Information Society by the year 2005, whereby people would have access to information, and information becomes a commodity; and to be a Knowledge-based-Society by 2010, with a Malaysian society that values the culture of life-long learning and the creation of knowledge-based products and services. Known as the National Information Communication Technologies Initiatives, the following is a brief review of the mechanisms by which the government aims to attain these targets:

- a) establishment of a National IT Council;
- b) formulation of a National IT Agenda;
- c) development of the Multimedia Super Corridor;
- d) implementation of Bridging the Digital Divide Program (BDDP);
- e) awarding of the DAGS (Demonstrator Application Grant Scheme).

The design of this multi-faceted strategy and the mechanisms, however, does not include a clear picture of how the rural sector of the nation will be situated within the larger framework. Therefore there exists a huge gap between what are in effect two worlds: the government’s aspirations for a future knowledge-based economy, and the realities of rural living.

It was within this perceived hiatus in national development planning that e-Bario was conceived as a pilot project to explore whether provision of equal access to ICT can bring economic, social and cultural benefits to rural communities in Sarawak. This is particularly significant for the state of Sarawak, where 60 per cent of its 2.027

million people live in rural areas. Although Sarawak has been promised a full and equitable allocation within Malaysia's mass development plan, many communities have no access to good roads or to telecommunication services (Harris, 1999). Most rural areas lack both telephone lines and a continuous supply of electricity. Bario, in short, exemplified the disconnected portion of the digital divide, and presented a challenging environment in which to test the usefulness and effectiveness of ICT in rural Malaysia (Harris et al., 2001). Since access to ICT is predicted to promote new social, economic and cultural opportunities in rural areas (Enberg, 1998), e-Bario also provides a useful window to explore the roles that ICT can play in advancing community-based development in developing countries. With this in mind, the villagers in Bario were systematically connected to a range of ICT in September 2000 and have grown to include the following physical and technological components.

1. *Computer Laboratories:* Two computer laboratories were designed and equipped with 16 computers due to demand from students and teachers. The lab was also equipped with 2 printers and a scanner.
2. *Telephonic equipment:* The new technologies were installed within the existing communications network, the telephones were placed at strategic locations or important meeting places in Bario, such as the airport, the shop area, the school and also the clinic.
3. *Very Small Aperture Terminals & Network Configuration:* To provide access to telephone (voice) and Internet networks four Internet ground station technologies known as Very Small Aperture Terminals (VSATs) were installed by Telekom Malaysia Berhad. These were located at the shop area, the clinic, the school, and the airport.
4. *Telecentre:* A permanent telecentre, known as Gatuman Bario (Bario Link), was set up in 2001. It is located at Pasar Bario and has 5 rooms: a room for computing services, a visitor's room with table and chairs for meetings and resting, 2 rooms for administration purposes – one for the e-Bario coordinator and the other for technical assistance - and another for staff to monitor and run the day to day management of the telecentre. The telecentre is equipped with 10 computers, an inkjet printer, a laser printer, a laminating machine, a photocopier and Internet access.
5. *Power Supply:* Since Bario is outside the national grid, the telecentre was initially powered by diesel run generators. This power supply has evolved into a hybrid diesel (80%) – solar panel (20%) power supply, and more recently a solar panel – diesel system.
6. *Training and skills:* An Information Technology (IT) Literacy Programme was introduced by the research team from University Malaysia Sarawak in conjunction with COMServe, a local IT company based in Kuching. Training was identified as an ongoing process, and not a one-time or once only activity. The training included word processing, key-board usage, e-mailing, browsing the web, and the management of technologies including trouble shooting.
6. *Website creation:* Due to web hosting problems this information was incorporated into a web site designed by UNIMAS at www.e-bario.com. The web site contains information on the project, and also on the Kelabit Highlands. It was designed to promote Bario as a tourist destination, and is linked with other web sites developed by or used by Kelabit, such as the Online Kelabit Society (OKS).
8. *Storage of information – Bario Digital Library:* An experiment with recording, documenting and disseminating Kelabit songs and dances on CD ROM has been developed under the project. It is called the Bario Digital Library (BDL). The first record

contains nine *laku* songs by women in Bario with digital images of each singer singing the *laku*. Each song has been transcribed in Kelabit, with English translation. It is a step towards the creation of an electronic record of Kelabit oral stories.

9. *Management and Administration*: “Management and Administration” is not a physical or technological component of e-Bario, but rather a management system, which has been put in place in order to manage the project in Bario, and also the community telecentre. To achieve this, a project coordinator-cum-manager has been appointed by the Council of Elders, Authority for Village Protection and Development (Malay, *Jawatankuasa Keselamatan, Kebersihan Kampung* (JKKK)) and University Malaysia Sarawak to oversee the workings of the initiative in Bario. In addition to the project coordinator, a technical assistant was also trained and appointed to oversee the technical aspects of the project, such as trouble shooting and managing all the equipment and software.

Technologically, the initiative was a milestone in terms of providing equal access to ICT in the Malaysian context, and was identified as “one of the most notable of Malaysia’s Internet development initiatives” by the International Telecommunications Union (ITU, 2003). In the international arena, the initiative has put Bario and the Kelabit on the world map - a remote community connected with up-to date technologies – leading to its selection as one of the Top Seven Intelligent Communities of 2001 by The World Teleport Association in New York.

ASSESSING “EFFECTS”: WHAT REALLY HAPPENED IN BARIO?

This technological development nonetheless raises important questions. What of the Kelabit

themselves? What meanings do they inscribe to the technologies? How have the new technologies come to be incorporated in existing social practices? That is, how have the technologies have been appropriated and used by the Kelabit in Bario?

To explore these questions in detail the next section will highlight two fundamental Kelabit concepts: *iyuk* and *doo*-ness. An understanding of these two concepts can help us to understand on going Kelabit engagement with e-Bario and in turn can highlight the social processes taking place that shaped meanings and usage of technologies in Bario.

Kelabit *iyuk* and *doo*-ness

Between August 2005 and September 2006, when engaging the Kelabit with discussions on the impact and effects of ICT in the Highlands, their response was always quick and straightforward. I have been told it is about *iyuk* (movement) and the attainment of *doo*-ness (good-ness and better well being). Traditionally these two notions indicate movements and good-ness in terms of social status among the Kelabit. While *iyuk* broadly refers to the notion of movement and specifically to status mobility, *doo*-ness embodies notions of good-ness, success and better well being, or rather the qualities required to constitute a good person such as knowledge, endurance and perseverance, self discipline, hospitality, generosity, and strength (Bala, 2008).

The attainment of *doo*-ness through means and mechanisms of *iyuk* is the basis of all social status among the Kelabit: it represents an ideal that Kelabit individuals and collectively aim to attain and accumulate. It is the the images and ideals of *doo*-ness, and the interweaving processes between *doo*-ness and *iyuk* that have generated and sustained Kelabit modes of engagement with ideas, institutions and objects from the outside world. These externalities are adopted and co-opted by the Kelabit and given meanings, for example, as a means of providing a range of new options

and systems for attaining and expressing social status, prestige and power in the Highlands. It is the dynamics between these that is relevant to the way in which Internet, computer, telephone and Very Small Aperture Terminals (VSATs) were received and adapted by the Kelabit in the Highlands and beyond. This is in spite of, or possibly as a response to the Kelabit insulation from much of the world; for instance, prior to World War II, little was known by outsiders of the Kelabits and their surroundings. They were self-sufficient: producing salt, planting rice and hunting and gathering jungle produce for food as main source of protein.

An ethno-historical analysis can establish how over the years the Kelabit forged connections with the rest of the world through a variety of strategies and traditions to attain *iyuk* and *doo-ness*. A clear example of this is how through the cultural activities of travelling far (*me ngerang mado*), the Kelabit came into the possession of prestige items, such as jars, beads and gongs. These were impossible to obtain locally in Central Borneo. Therefore those items that reached the highlands are considered important visible signs of prestige in the community (Saging, 1977; Talla, 1979; Janowski, 1991). Among these prestige items are the T'ang and Ming Chinese jars, locally known as *belanai ma'un* (ancient jars). These are prized as family heirlooms, particularly the 150-pound ceramic jars with red dragon.

By traveling far, a person did not only accumulate prestige items but also knowledge. The experiences gained through traveling are considered knowledge, thus the Kelabit notion: *mado lawe, mula'nuk keli* (Far traveling increases one's understanding). As with other prestige objects, knowledge is a good source of high social standing in the longhouses (long structure built on stilts with common areas and separate family dwellings). This suggests that cultural practices of traveling far are important local practices and strategies for *iyuk* of status among the Kelabit; they are important means to incorporate objects and

ideas from the outside world into Kelabit social system. Hence those who possessed these items are highly regarded in the community.

Kelabit *Iyuk*, *Doo-ness* and Nation-ness

At the same time as the Kelabit absorb objects, ideas and people into their social system, the Kelabit themselves have been integrated into the wider economic and political terrain. Most pertinent here is the formation of Malaysia in September 1963. Sarawak together with Sabah, Singapore and Malaya have formed a federation. Consequentially, the population on the Malaysian side of Borneo was granted Malaysian citizenship and its privileges. With the granting of this citizenship new forms of economic, political and social systems were introduced.

As noted by Anderson (1983) 'Nation-ness is the most universal legitimate value in the political life of our time' (p.12). This process inevitably did not only change how to attain *iyuk* and *doo-ness* but also the very notions of *iyuk* and *doo-ness* in the Kelabit Highlands. That is, what they constitute among the Kelabit in the contemporary world. Said differently, the Kelabit integration into Malaysia as a nation-state has transformed the meaning of *iyuk* and *doo-ness* within the community; increasingly the notions are linked with the Malaysian government's notion of "development" (Malay, *pembangunan*) which is seen as a means for individuals to attain and enjoy affluent and prestigious lifestyles whilst at the same time enabling the whole collective (in this case the Kelabit society) to command high standards of living and respect from others. This is revealed through Kelabit every-day discussions concerning their contemporary identity and standard of living as a group. These discussions often focus on how to attract and bring more development projects into the Highlands for *doo-ness*: big and small infrastructure, better roads, cars, good medical services and effective communication facilities.

In fact, there is a sense of communal pride in being considered a progressive and successful community. Although complex, there is consequently an overall general desire for “development” as promulgated by the Malaysian government as means for *iyuk* and *doo*-ness among rural and urban Kelabit. Seen in this light, e-Bario is just one of many projects being pursued by the Kelabit to promote “progress” in the Kelabit Highlands, partly as a strategy for gaining *doo*-ness and *iyuk* for the Kelabit as a whole.

It is this Kelabit contemporary desire for progress and development, which partly defined the Kelabit on-going engagement with e-Bario in the Kelabit Highlands. If in the past the Kelabit participated in travelling far in search of Chinese jars, beads and other valuable items as part of their strategies for advancement, in the contemporary world the Kelabit are eager to collaborate with the world of progress and development in order to attain better well being (*doo ulun*) in the Highlands.

In order to understand how exactly ICT as developmental tools have been used, or rather are used to increase the Kelabit’s livelihood, the next section will highlight the appropriation of technologies for communication, and as means to position or reposition Kelabit interests and their identity as a group.

As described earlier, many Kelabit have left the Highlands for education and job opportunities. This has led to a highly mobile and geographically-dispersed community. As a result of their widespread diaspora the Kelabit are constantly looking for ways and strategies to ease communication between urban and rural Kelabit. It is out of this need that the Kelabit are using e-Bario as new ways and strategies to foster family relations and community connections. This is especially important for many older men and women in the Highlands who welcome the telephone especially as an improved means of communicating with their children living in the cities. The significance of

this is made clear by Maren Talla who is 78 years old. He said, ‘In the days before the telephone, I had to fly to and fro between Bario and Miri when I wanted to speak to my son and daughters, who currently are all living in Kuala Lumpur. It’s a lot of money to fly down to Miri and Marudi just to speak with them. But now with the telephone, it is so much easier and cheaper. Although I can’t see their faces, at least I can hear their voices. It is very satisfying to my soul when I hear them. I usually stop at the *Pasar* (market) to have something to eat and also to call my children on my way to my sheep ranch. It feels so good to be able to hear their voices on the phone; it makes me sleep well in the night. Listening to their voices on the phone calms me.’

The significance of e-Bario however goes beyond easing communication between rural and urban Kelabit for it also signifies that ‘we [the Kelabit] are at par with the rest of the world and people.’ Although many do not use the Internet in relation to daily activities such as farming and so forth, the presence of the new technologies in Bario is perceived not purely as a means of obtaining better quality information, connectedness and *iyuk*, but also as a symbol that the Kelabit are *doo* (progressive) in that they are not being left behind by others. These technologies are markers and signifiers that they are on a par with others in embracing worldwide shifts of perspective and influence. This is particularly significant in the context of Kelabit’s present day marginal or even displaced position within the broader policies and discourse of the Malaysian state and ethnic framework of development.

To explore the situation in detail, the next part of this section will provide a brief overview of Malaysia’s ethnic-oriented national development agenda under Malaysia’s New Economic Policy (NEP or DEB for *Dasar Ekonomi Baru* in Malay) which was introduced in 1971 in response to race riots in Kuala Lumpur in 1969.

MALAYSIAN ETHNIC FRAMEWORK OF DEVELOPMENT

The Malaysian Ethnic Framework of Development under New Economic Policy (NEP) signifies a development pattern which is tilted towards distributional objectives, albeit along racial lines (Brosius, 2003; Hilley, 2001; King, 1999; Scott, 1985). Underlying the national quest for rapid economic growth is the desire to accelerate the process of restructuring Malaysian society to correct economic imbalance so as to reduce and eventually eliminate the identification of race and ethnicity with economic function (Second Malaysia Plan 1971-1975 provides a thorough outline of the aims and agendas of the policy). Embedded in the framework, however, is the requirement to identify persons based on their ethnic and religious affiliation for the purpose of resource and wealth distribution. As noted by Chandra (1986, p.33), ethnic and religious categories “carry deep meanings for people” in defining a person’s existence and purpose especially in accessing political and economic resources in Malaysia.

What are the implications of the framework for the Kelabit, as one of the smallest ethnic groups in Sarawak? The Kelabit have to come to grips with their assimilation and participation within Malaysia’s inter-ethnic disparities with regard access to key economic and political resources.

First of all, the Kelabit “peripheral situation” in relation to particular (Malay) political cultures is aggravated by the Highlands’ physical distance from centres of power. Without numbers, constituencies, pressure groups or lobbies, and with their out-of-the-way location (Tsing 1993), there is a concern that the Kelabit are not given a hearing in the context of a national integration discourse, which places, as will be made clear later, the Malay-Muslim *bumiputera* at the top of the hierarchy.

Second, although article 153 (Kedit, 1989) guarantees the Kelabit as Bumiputera (lit. the sons of the soil) certain privileges under the New

Economic Policy (NEP), the eminent position of Malay *adat istiadat* (customs and traditions) and Islamic religion has created a sense of hegemony and superiority on the part of the Malays over other groups in Malaysia. Consequentially, the prominence of Malay-ness in national discourse tends to benefit the Malays politically, socially and economically (Shamsul, 1986; Jomo, 1985). In the long run this framework has forced ethnic groups into a competitive relationship with each other, in which one group’s advancement can mean the retardation of another group (Despres, 1975; Nagata, 1979).

Putting this differently, the NEP and ethnic framework of development as new and shifting political, economic and social contexts have created new form of *iyuk* competition, in which the Kelabit must engage competitively with other citizens who are not Kelabit for economic and political resources. This entails the Kelabit to compete with other ethnic groups for access to government financial support, government grants, development projects and schemes. All this has introduced a particular concern or desire among the Kelabit for new means to project their identity in relation to others in Malaysia and globally; hence constantly looking for strategies for collective political agency and to advance their social status within Malaysia’s economic and political terrain.

It is partly due to this dynamic of economic competition that the Kelabit have appropriated e-Bario as a new means and strategy to strengthen and articulate their *iyuk* and *doo*-ness through what Miller and Slater describe as “dynamics of positioning,” (2001:18). Dynamics of positioning is a term used to denote how people engage with the ways in which Internet media position them within networks that transcend their immediate location, placing them within wider flows of cultural, political, and economic resources.

A good example of this is how the Kelabit are currently using and transforming e-Bario as a forum and a stage to position and reposition

their aspirations for cultural and political *iyuk* and recognition by others. This is reflected in the words of 80 years-old Balang Radu, who claimed that e-Bario has enabled further progress (*iyuk*) for those living in Bario by providing the means to forge connections with the rest of the world. He stated, 'With these new means of communications, our lives are made much easier, although we live isolated in the headwaters of Baram. We can now liaise with the outside world from our villages, including talking to our children in Kuala Lumpur, Kuching and throughout the world. This is progress (*iyuk*) for us. It has made our life easier and we are connected to the rest of the world in a new way. Therefore we are basically very-very pleased with its arrival. We are now on a par with the rest of the world.'

Balang Radu's remarks demonstrate that the new technologies are being incorporated into the Kelabit ongoing pursuit for mechanisms to position themselves within wider networks of interaction that transcend their isolated position in the Highlands. In this way the Kelabit can *continue* to be integrated within (and be part of) the space of global flow of technologies, skills, communication and information. As described in the beginning of this chapter, Kelabit society has long been connected to the outside world through their geographic mobility, and the dispersal of families. In tandem with their experiences, the Kelabit also see themselves as a part of the wider world of progress. Just as the cultural practices of travelling far, and the adoption of school and church have expanded their horizons, so too the Kelabits' contemporary acceptance of ICT like the telephones, the Internet, Very Small Aperture Terminals (VSATs) and computers in the Highlands is seen as an extension of their existing connections to the rest of the world.

This sense of achievement is important for the Kelabit for the specific reasons I have noted earlier. They are deeply concerned about their communal *doo*-ness or status and collective interests in relation to others, especially within Malaysia's

multiracial setting. As I have suggested, one of the ways in which the Kelabit are engaging with this situation is by positioning themselves on the same level with others in their pursuit of progress and success. By their capacity to attract new ideas and technologies into their environment, and their ability to adopt, incorporate, master and recreate them, the Kelabit portray themselves as a successful and progressive people.

e-Bario in this sense can be perceived as having three-fold significance in Bario: it provides means for *iyuk* by making it easier to communicate with diasporic Kelabit; it serves as a strategy for the image management of Kelabit *doo*-ness, in terms of their prestige and social status both locally and on the larger stage of Malaysia and the expanding world environment. It is a marker of Kelabit success. At the same time, it has become a symbolic compensation and a new resource for their relative smallness in numbers, political marginalization within Malaysia's ethnic framework of development and the geographical isolation of the Highlands from centres of power.

This dynamics of positioning is revealing through the ways e-Bario has been integrated within the local political apparatus to become a versatile platform for the Kelabit to position and reposition their interests in relation to the far wider context of state and national development plans. The Internet, computers and software are becoming useful tools and means to form networks, to acquire new skills in the Kelabit Highlands and to position the Kelabit at the forefront of competition for economic and political resources in Malaysia.

A local person, whom I shall refer to as Robert, who returned to Bario on retirement, illustrates this situation. Besides making a living as a tourist guide, Robert is involved in a number of organizations at village level: as secretary to a political party, and as secretary to the development bureau of the Council for Village Protection and Development. In many ways Robert depends on the computing services provided at the tele-

centre both for his tourism activities and also for conducting research, gathering information and writing documents and reports, including a concise development proposal for the Kelabit Highlands to be submitted for consideration under the Ninth Malaysia Plan. It was in this context that he stated that the Internet gave him access to a mass of information and enabled him to communicate with relevant people and agencies, such as the policy makers, politicians and government officials: 'The Internet seems to reduce the amount of protocol one has to endure in order to get through to these development conveners.'

Robert's statement indicates that some Kelabit are turning to these technologies as means to strategize their actions in their encounters with ideas, intervention and people from the outside world. This is particularly important as new notions of development which include commercial logging and large-scale, futuristic development plans for the Highlands are currently being introduced and implemented in the Bario. For instance, in 2003, commercial logging as a form of development has been introduced in the Kelabit Highlands. This differing concept of development has begun to shift attention away from socio-economic development among the Kelabit to their legal rights and governance in relation to their land and cultural heritage in the Highlands. This has stimulated individuals and groups to speak up after many years of moving in tandem with state-initiated plans for development. This is because there are significant concerns about the potential impact of logging in the Highlands area. These include the effects on watersheds for wet rice cultivation in the area; the Kelabit dependence on the forest for jungle produce and wild game; and the growing ecotourism in the Kelabit Highlands. Numerous people provide guiding and lodging services for Malaysian and international tourists, many of whom are attracted by the opportunities for long-distance trekking. Seen in this light, demands for land for timber concessions are bound to come into conflict with Highlanders in competition for

the same resources. This is due to the very nature of logging is in complete contradiction to the new types of tourism that the Sarawak Tourism Board and the Kelabit themselves want to attract.

Simultaneously, there is a feeling that the Kelabit are dealing with the limitations of available local institutions and practices for confronting the many problems that commercial logging and road building are generating and will continue to do so. One critical issue is the shifting notion of land ownership, which is seen as a steady alienation of the Kelabit from their heritage land, and if left unaddressed, could become a growing arena for political conflict at the village level.

All these social and political processes are beginning to shape Kelabit modes of engagement with ICT, and their outcomes in the Highlands. The use of the Internet, computers and telephone permits a form of political agency, especially as these new forms of intervention threaten to change the physical and cultural landscape of the Highlands. The new technologies inspire those in Bario to reach out to those that have left the Highlands, but still maintain a strong interest in the affairs of the village.

A good example of this is the use of community websites such as the Online Kelabit Society (OKS). As an online forum, the site features discussions on various issues which currently face the Kelabit. It is an on-line forum, and the discussions that take place within it, which allow for exchanges of ideas between members of the community both within Malaysia and beyond. Some topics or themes are the encroachment of commercial logging and the impact of development in Bario, mapping of Native Customary Land and cultural sites in the Kelabit Highlands, and the documentation of the Kelabit language, which are increasingly being managed via the Internet. A recent example of this is an Internet forum to revive the use of the Kelabit language among the younger generation. The initiative was launched by a Kelabit woman living in Miri, who is very concerned about the declining interest for and usage of the language

among migrant Kelabit. As a network conducted on the Internet, the discussion list includes Kelabit who are living in Miri, Kuala Lumpur, Kuching, Bario, Bintulu and Singapore. The main concern is to find ways of documenting “extinct” Kelabit words, terms and phrases, while at the same time promoting the use of the language

All this points to the idea that the Internet has become a new means to maintain solidarity, within an increasingly stratified and occupationally mobile population, and in the face of new types of development intervention described. In fact, the significance of Online Kelabit Society, in reproducing and maintaining solidarity among the Kelabit has been likened to the traditional roles of *ruma'kadang* (the longhouse) by one of its regular users. This is because it provides space for the exchanges of ideas and advice, which are important elements of communal living in a longhouse. This suggests that ICT makes it possible for the Kelabit to form new networks and to reproduce effective organization and actions. At the same time, the presence of ICT facilitates a greater agency and capacity for political engagement to question, assess and debate these developments, and to form links with other agencies which might be useful. The various technologies available at the telecentre, for instance desk tops, associated software and the Internet, are currently being used to strategize the Kelabit position in their encounters with commercial logging activities in the Highlands. Examples of this are the documentation of oral histories and the recording of images relating to cultural and historical sites found in the Highlands, as well as the marking of their Global Positioning System (GPS) points. All these are uploaded into a Geographic Information System (GIS) database at the telecentre, to allow for the construction of a land-use history in the form of a digital map, and spatial and temporal analyses of past land use in the region. These in turn are useful historical and legal documents in negotiations with agencies involved in conservation and logging.

In so many ways, the telecentre nowadays has become more than a venue to provide equal access for new technologies in the Highlands. It has increasingly become a place and forum for the Kelabit to present and manage other “development” issues currently facing them in Bario. This trend was made evident through a recent conversation with the local manager, in which he said that, ‘e-Bario is not just about ICT anymore. We are also into introducing and managing the implementation of solar power in Bario and have bought a printing and laminating machine for the Centre. So, now people in Bario can print their photographs very easily. We produce the same quality as the shops in town, but at a cheaper rate for our people.’ Furthermore, he continued that ‘e-Bario has now become the secretariat for all sorts of events and activities in the Kelabit Highlands. Both the church and Council of Elders use the centre to organize their religious and administrative activities.’ At the time I spoke to the manager, the Centre was organizing the World Wildlife Fund “Heart of Borneo” Project’s yearly symposium in Bario and also for the annual Kelabit Highlands Food and Cultural Festival. Put simply, ongoing negotiations and explorations are taking place to make e-Bario significant and relevant to the people in the Kelabit Highlands beyond the imagined practical outcomes of the initiative, and far beyond the original intentions of the project proposal.

CONCLUSION

In conclusion, what can we learn from e-Bario especially with regards to ICT for community development and its effect at the grass roots level? Experiences in e-Bario made it clear that the introduction of information communication technologies has been mediated and reconfigured by webs of social relations and the intricate interplay of social, political and cultural conditions specific to the Kelabit Highlands. As a result, the social

and economic effects of e-Bario unfolded through countless open-ended strategic and everyday decisions made by the Kelabit themselves, who actively consume, apply and make use of objects, ideas and services in the Highlands. As shown in this chapter, one crucial factor conditioning the effects of the project was the Kelabit's own desire for, and expectations of, "development" and "progress."

All this suggests that real-life situations can change the purpose of technologies, and the ways in which they are used may differ greatly from what had been envisaged at the outset. Placed within local social processes and circumstances, the visions of outside policy-makers for introducing ICT as tools for social and economic development may differ markedly from the actual realities of their use and effectiveness in different political and economic settings. As drivers and developmental tools for the creation of a knowledge-based society in Malaysia, the technologies in Bario have not necessarily heralded a new form of society. Rather, they have been partly integrated with or subordinated to existing practices, internal values and socio-political arrangements in the community. Their continued use and adaptation has also provided for new forums of dialogue and communication, allowing a sense of communal identity to be rekindled. In turn, it is within these social processes that the computers, Internet and telephone have been given meaning, and their application modified and developed within the community's social context and in a wider political and economic terrain.

This social shaping of use, and the simultaneous modification of social and political processes facilitated by or inspired by engagements with ICT suggests that it is in the local circumstances that ICT is engaged with, interpreted, represented and woven into the fabric of daily life of those communities within the area. The technologies should not, therefore, be viewed as separate and independent entities, but rather as objects that

gain effect, meaning and relevance through the ways in which they are adopted and become part of the Kelabit social and political life.

As we can see the Kelabit negotiate what value to attribute to the Internet, computers and telephones, and how to apply these technologies to their own political, social and economic circumstances. All this resonates closely with Norman Long's transformative process of planned development, which he describes as 'constantly reshaped by its own internal organization, cultural and political dynamics and by specific conditions it encounters and itself creates, including the responses and strategies of local groups who may struggle to define and defend their own social spaces, cultural boundaries and positions within the wider power field' (2001, p.72).

The presence and use of ICT in Bario facilitate, inspire and modify existing Kelabit social practices, strategies and actions in their on-going engagement with development. This is particularly apparent in their engagement with commercial logging as a new industry in the area. It is an example of local empowerment, whereby the use of ICT has facilitated greater agency for political engagement in the face of this shifting notion of development. The new technologies are seen to increase the Kelabit's opportunities and abilities to make choices and to translate them into desired actions and outcomes. As a direct result, e-Bario has been recreated as a new platform to manage the interface of development in the Kelabit Highlands. In short, the presence of the Internet and computers as technologies of communication and information shape, color and influence the Kelabit response to their current circumstances.

REFERENCES

Anderson, B. R. (1991). *Imagined communities: Reflections on the origins and spread of nationalism*. London: Verso.

Bala, P. (2002). *Changing borders and identities in the Kelabit Highlands: Anthropological reflections on growing up in a Kelabit village near the international border*. Kuching: Dayak Studies Contemporary Series, No. 1, Kuching, Malaysia: The Institute of East Asian Studies, UNIMAS.

Bala, P. (2008). *Desire for progress: The Kelabit experience with information communication technologies (ICTs) for RURAL DEVELOPMENT in Sarawak, East Malaysia*. Unpublished doctoral dissertation, Cambridge: Christ's College, Cambridge University.

Brosius, P. (2003). The forest and the nation negotiating citizenship in Sarawak, East Malaysia. In M. Rosaldo (Ed.), *Cultural citizenship in Island Southeast Asia. Nation and belonging in the Hinterland* (pp. 77-133). Berkeley, CA: University of California Press.

Chandra, M. (1986). Territorial Integration: A personal view. In *The bonding of a nation: Federalism and territorial integration in Malaysia, Proceedings of the First ISIS Conference on National Integration*, Kuala Lumpur, Malaysia (pp.25-37). Kuala Lumpur, Malaysia: ISIS.

Despres, L. (Ed.). (1975). *Ethnicity and resource competition in plural society*. Paris: Mouton Publishers.

Dutton, W. H. (2001[1996]). *Information and communication technologies visions and realities*. Oxford, UK: Oxford University Press.

Ernberg, J. (1998). Empowering communities in the information society: An international perspective. In *The first mile of connectivity*. Rome, Italy: Food and Agriculture Organisation of the United Nations. Retrieved April 28, 2000, from <http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/Cddirect/Cdre0028.html>

Fischer, C. S. (1992). *America calling. A social history of the telephone to 1940*. Berkeley, CA: University of California Press.

Goh, B. L. (2002). Rethinking modernity: State, Ethnicity, and class in the forging of a modern urban Malaysia. In C. J. W.-L. Wee (Ed.), *Local cultures and the new Asia. The society, culture and capitalism in Southeast Asia* (pp. 185-215). Singapore: Institute of Southeast Asian Studies.

Harris, R. W. (1999). Rural information technology for Sarawak's development. *Sarawak Development Journal*, 2(1), 72-84.

Harris, R. W., Bala, P., Songan, P., & Khoo, G. L. (2001). Challenges and opportunities in introducing information and communication technologies to the Kelabit community of north central Borneo. *New Media & Society*, 3(3), 270-296. doi:10.1177/14614440122226092

Harrison, T. (1959). *World within: A Borneo story*. Singapore: Oxford University Press.

Hilley, J. (2001). *Malaysia: Mahathirism, hegemony and the new opposition (politics in contemporary Asia)*. New York: Zed Books.

International Telecommunication Union. (2003). *Connecting Malaysia's rural communities to the information age: The E-Bario project*. Retrieved October 22, 2008, from http://www.itu.int/ITU-D/ict_stories/themes/case_studies/e-bario.html

Janowski, M. (1991). *Rice, work and community among the Kelabits in Sarawak, East Malaysia*. Unpublished doctoral dissertation, London: London School of Economics, University of London.

Jomo, K. S. (1985). *Malaysia's new economic policies: Evaluations of the mid-term review of the 4th MP*. Kuala Lumpur, Malaysia: Malaysian Economic Association.

Keniston, K. (2002). IT for the common man. Lessons from India. The second M N Srinivas memorial lecture. In *NIAS Special Publication SP7 - 02*. Bangalore, India: National Institute of Advanced Studies.

- King, V. T. (1999). *Anthropology and development in South-east Asia: Theory and practice*. Kuala Lumpur, Malaysia: Oxford University Press.
- Kling, R. (2000). Learning about information technologies and social change: The contribution of social informatics. *The Information Society*, 16(3), 217–232. doi:10.1080/01972240050133661
- Long, N. (2001). *Development sociology: Actor perspectives*. London: Routledge.
- Mackay, H. (1995). Theorising the IT/ society relationship. In N. Heap, R. Thomas, G. Einon, R. Mason, & H. Mackay (Eds.), *Information technology and society: A reader* (pp. 41-53). London: Sage Publications.
- Nagata, J. (1979). *Malaysian mosaic perspective from a poly-ethnic society*. Vancouver: University of British Columbia Press.
- Rohracher, H. (2003). The role of users in the social shaping of environmental technologies. *Innovation*, 16(2), 177–192.
- Rose, D. A. (2001). Reconceptualizing the user(s) of-and in-technological innovation: The case of vaccines in the United States. In R. Coombs, K. Green, A. Richards, & V. Walsh (Eds.), *Technology and the market. Demand, users and innovation* (pp. 68-88). Cheltenham, UK: Edward Elgar Publishing.
- Saging, R. (1976). *An ethno-history of the Kelabit tribe of Sarawak. A Brief look at the Kelabit tribe before World War II and after*. Graduation Exercise submitted to the Jabatan Sejarah. University of Malaya, in partial fulfilment of the requirements for the Degree of Bachelor of Arts.
- Scott, J. C. (1985). *Weapons of the weak: Everyday forms of peasant resistance*. London: Yale University Press.
- Shamsul, A. B. (1986). *From British to Bumiputera rule: Local politics and rural development in Malaysia*. Singapore: Institute of South East Asia Studies.
- Talla, Y. (1979). *The Kelabit of the Kelabit Highlands, Sarawak* (Report No. 9). Pulau Pinang, Malaysia: School of Comparative Social Sciences, USM.
- Thong, L. B., & Bahrain, T. S. (1993). The Bario exodus: A conception of Sarawak urbanization. *Borneo Review*, 4(2), 112–127.
- Tsing, A. L. (1993). *In the realm of the diamond queen: Marginality in an out-of-the-way place*. Princeton, NJ: Princeton University Press.
- United Nations, E. C. O. S. O. C. (2000). *Development and international cooperation in the twenty-first century: The role of information technology in the context of a knowledge-based global economy* (A Report of the Secretary-General). New York: United Nations.
- Williams, R., & Edge, D. (1996). The social shaping of technology. In W. H. Dutton (Ed.), *Information and communication technologies: Visions and realities* (pp. 53-68). Oxford, UK: Oxford University Press.