

# **THE MOBILE PHONE: THE NEW COMMUNICATION DRUM OF PAPUA NEW GUINEA**

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# **Keywords**

Cell phone, ceremonial drum, communication, development, drum, information and communication technologies, Madang, Melanesia, mobile phone, Pacific, Papua New Guinea, slit-gong, telecommunications.

# Abstract

This thesis examines the role of mobile telephony in rural communities in Papua New Guinea (PNG). It is a threshold study which reports on research conducted in the earliest stages of mobile phone adoption in these areas. It explores the ways in which this new technology changes people's lives, social structures and relationships. The research focuses on non-urban communities, which previously had little or no access to modern communication technologies, but which are in some cases still using traditional forms of communication such as drums. It has found that the introduction of mobile telecommunications has generally been viewed positively, although several negative concerns have been strongly felt. Specific benefits related to enhanced communication with relatives and friends living away from home villages, and use of the technology in time-critical emergencies or crises. Difficulties have arisen with respect to the cost of owning and operating a handset, as well as financial and logistical challenges when recharging handset batteries, particularly in areas with no mains electricity supply. Perceived damaging effects of mobile phone access related to sex, crime and pornography.

The changes taking place are described through a social lens, by foregrounding the perceptions of villagers. The perspectives of key informants, such as telecommunication company managers, are also discussed. Employing the technique of triangulation (using different methods and sources) has helped to validate the findings of the research project. The sources constantly overlap and agree on the main themes, such as those outlined above.

PNG is a developing country which performs poorly on a wide range of development indicators. A large majority of the people live outside of the major towns and cities. It is therefore worthwhile investigating the introduction of mobile phone technology in rural areas. These areas often have poor access to services, including transport, health, education and banking. Until 2007, communities in such regions fell outside of mobile phone coverage areas. In the case of all ten villages discussed in this thesis, there has never been any landline telephone infrastructure available. Therefore, this research on mobile phones is in effect documenting the first ever access to any kind of phone in these communities.

This research makes a unique contribution to knowledge about the role of communication in PNG, and has implications for policy, practice and theory. In the policy arena, the thesis aids understanding of the impact which communication sector competition and regulation can have on rural and relatively isolated communities. There are three practical problems which have emerged from the research: cost, battery recharging difficulties and breakage are all major obstacles to uptake and use of mobile telephony in rural communities. Efforts to reduce usage costs, enable easier recharging, and design more robust handsets would allow for increased utilisation of mobile phones for a range of purposes. With respect to the realm of theory, this research sits amongst the most recent scholarship in the mobile phone field, located within the broader communication theory area. It recommends cautionary reading of any literature which suggests that mobile phones will reduce poverty and increase incomes in poor, rural communities in developing countries. Nonetheless, the present research adds weight to mobile phone studies which suggest that the primary advantages of mobile phones in such settings are for the satisfactions of communication of itself, and for social interaction among loved ones.

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## List of Abbreviations and Tok Pisin Words

3G	Third Generation mobile phone (see Section 2.7.5)
DWU	Divine Word University (a university based in Madang town)
Easipawa	Easy power (a mobile phone system for pre-paid electricity purchase)
Flex cards	A small cardboard card of mobile phone credit (see Section 2.10)
Garamut	A wooden drum used for communication in some villages in PNG
GDP	Gross Domestic Product
GreenCom	Green Communications Limited
GSM	Global System for Mobiles (a technical standard)
ICCC	Independent Consumer and Competition Commission
ICTs	Information and Communication Technologies (see Section 2.4.1)
ICT4D	Information and Communication Technologies for Development
PMV	Public Motor Vehicle (public transport in PNG)
PNG	Papua New Guinea
QUT	Queensland University of Technology
Raskols	Group of criminals or a criminal gang
SIM	An identification card inside a mobile phone handset
SMS	Short Message Service (also known as text messaging)
Tambu	A person related by marriage (affine, for example brother-in-law)
Tok Pisin	A language spoken throughout much of PNG (also known as ‘pidgin’)
Tok ples	A term referring to any local language spoken in PNG
USA	United States of America
VSAT	Very Small Aperture Terminal (a satellite-based system)
Wantok	One language (person who speaks the same local language)
WSHO	Workplace Health and Safety Officer

# Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: \_\_\_\_\_

Date: September 14 2011

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# Prologue

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Marianne's village is similar to others in PNG: there is no electricity supply; the road is in a terrible state of disrepair; and there is no improved water supply. Marianne is one of only an elite group of people from her village to be educated. She lives and works in town, and her meagre wage is often called upon to support a large number of people at 'home'. When Marianne told me her village had recently gained mobile phone reception, during a conversation late in 2007, this fascinated me a great deal. To think that these people who have so little access to technology now have access to this most modern of communication tools! They do not even have the electricity supply usually required to recharge handsets! I thought it was extraordinary. I had seen, in the second half of 2007, people in the town in PNG where I was living, queuing in the street to purchase mobile phones. But I had thought, until this conversation with Marianne, that it was yet another opportunity that would be available only to people who live in towns and cities. I had not realised until that moment that mobile phone coverage was expanding beyond urban centres.

Marianne explained to me that the change in her village was striking. Her family members could now phone her (or, more often, text her and ask her to phone them) and let her know if there was some way they needed assistance. She was enthusiastic about the changes taking place, and saw this new technology as a great boon for her community. It was that conversation with Marianne which planted within me the seed of the idea of investigating the role of mobile telephony and change in rural communities in PNG.



# Chapter 1: Introduction

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## 1.1 INTRODUCTION

To uncover the trends occurring as mobile phone reception is expanding into rural areas of PNG and to portray the attitudes expressed about this change, the current research project involved the triangulation of both sources of information and methods for gathering information. Specifically, this meant that both the survey method and semi-structured interviews were employed to gather data. Primary sources were villagers, with the important addition of some authoritative individuals such as communication scholars and telecommunication company managers.

This research project found that mobile telephony was viewed as a predominantly positive force that was opening up people's communicative options. People in rural areas were particularly pleased to be able to contact relatives and friends residing in other parts of PNG, especially in the towns and cities. This social contact was highly valued and was seen as the main benefit of the new technology in people's lives. On the downside, people expressed dismay at the costs incurred in owning and operating these devices. As well as usage costs, many villagers without an electricity supply at home were also frequently lumped with an additional monetary cost each time the handset battery ran down and needed to be recharged. The substantial cost burden felt by villagers regarding mobile telephony was one of the key findings that may be of interest to mobile phone companies, government regulatory bodies and advocacy groups.

Other negative factors regarding mobile phones which were frequently mentioned by villagers and also by knowledgeable informants, involved the perceived impact of mobile phones in marriages, and the potential (or actual) use of mobile phones by criminals. In the first case, it was felt that the advent of a technology which enabled private communication allowed married people to organise sexual liaisons with extra-marital partners more easily. Negative concerns were also expressed about young, unmarried people engaging in private communication through mobile phones to foster inappropriate relationships, unseen by watchful eyes in their home communities. In the second case, people feared the

technology would enable criminals to coordinate their activities more effectively. While these concerns were strongly felt, people generally viewed mobile phones positively and were keen to acquire and use them.

The introduction of this twenty-first century technology into villages without adequate drainage and sanitation systems, electricity infrastructure, road networks and other amenities may be as momentous a change in villagers' lives as the earlier introduction of aviation or radio broadcasting. As the use of mobile phones in rural PNG is in its early stages it has been most interesting to uncover the mixed reactions to the technology. In developing nations worldwide, mobile phone coverage is increasing, with more and more poor people buying their first ever phone. In advanced economies, technically complex handheld devices are becoming ever more popular, and this is a trend which may extend to the developing world in the future. As mobile telephony is ubiquitous in many countries, the recent changes in PNG have created a unique opportunity to study the behaviour and attitudes of early adopters and to evaluate the role of mobile phones in the communication patterns of a specific society. This timely research, which took place in the early stages of mobile phone network expansion in PNG, proved useful in that it showed the social tensions and the joys linked to the first experiences of mobile telephony in rather disadvantaged villages.

## **1.2 RESEARCH QUESTION AND SUB-QUESTIONS**

### **1.2.1 Key Research Question**

What are the roles of mobile phones in the 'communicative ecologies'<sup>1</sup> of rural villages in PNG?

### **1.2.2 Sub-Questions**

- How do rural villagers in PNG describe their feelings about the introduction of mobile telephony?
- In what ways are social relationships and roles changing, remaining static or being reinforced as a result of the introduction of mobile phones?
- How do economic issues affect the social and communication transactions related to mobile phones?

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<sup>1</sup> The term 'communicative ecology' refers to the range of communications that take place in a given setting (Tacchi, Slater and Hearn 2003, 15) (see Section 2.3).

- What factors limit or facilitate the uptake and use of mobile phones?
- How many rural villagers are taking up this new technology, and how is it being used?

### **1.3 SIGNIFICANCE OF THE RESEARCH**

This research is significant and valuable as the introduction of mobile telephony has, in just a short space of time, dramatically altered the communication practices of people in PNG who have very little access to basic services. Most research surrounding the introduction of telecommunications to date has been conducted in Western, developed settings (Donner 2008b, 140; Goggin 2006, 13; Green and Haddon 2009, 10). There is a growing body of research around mobile phones, with some research being carried out in developing countries. Nonetheless, little mobile telephony research has been conducted: in developing countries (Donner 2008b, 152); in rural areas (Donner 2008b, 151); with poor communities (Donner 2008c, 31); in culturally diverse settings (Donner 2008b, 152); or as this technology was first being introduced to a region (Donner 2008a). The current research project has taken place as mobile phone reception was spreading across PNG, a developing country with a great deal of cultural diversity (Reilly 2004, 480). In particular, this research has helped to address the requirement “to document the different needs and motivations of rural and poor users (and nonusers) of mobile telephony in the developing world” (Donner 2008b, 151). Thus, it addresses the gap in the literature identified by Donner and makes a significant contribution to the growing field of mobile phone scholarship.

With the notable exception of the anthropology field, little research has been done in PNG, by comparison with other countries. Therefore, there is a strong need for research to be carried out in this rapidly-changing society. The society and cultures of PNG and other Pacific nations are not widely understood by academics from Australia and other places. This research contributes to the understanding of Australia’s former territory within Australia and around the world. The research outcomes could also assist relevant government departments and telecommunication providers in PNG in the formulation of policy.

Recent media and communication research in PNG has been carried out at Divine Word University (DWU) by Alphonse Aime (2006), Joys Eggins (2007),

Martha Ginau (Ginau and Papoutsaki 2007), Patrick Matbob (Matbob and Papoutsaki 2006; Matbob 2007), Br Michael McManus (McManus 2004; McManus and Papoutsaki 2004; McManus 2006), Dr Evangelia Papoutsaki (Papoutsaki and Sharp 2005; Papoutsaki and Rooney 2006c; Papoutsaki and McManus forthcoming), and Dr Dick Rooney (2004, 2006). Research has also been conducted by Dr Helen Molnar (2005) and Dr Lee Duffield (2005, 2006a). The Media for Development Initiative produced two reports in conjunction with the Media Council of PNG (2007a, 2007b). Some earlier work was undertaken by Dr David Robie (1995, 2001). Nonetheless, this body of literature provides only a limited picture of the media landscape in PNG (Papoutsaki and Rooney 2006b, ix), focusing mainly on print media and media training. There is no published academic literature addressing mobile phone technology in PNG. Therefore, it is timely that this research has been undertaken.

Mobile telephony is now available in many parts of the world. Although the technology may be ubiquitous in some contexts, it exists in many very different guises (see Goggin 2006, 52-53; Hawk and Rieder 2003, xvii). The rural part of PNG is one setting within which the place of the mobile phone can be explored, in the context of a very dynamic change in world society. As mobile phone coverage increases, this has manifest social and economic implications. There are difficulties and complications which emerge. This research paints the picture of mobile phone use in one place (rural PNG) and one time period (2009) and helps to complete the larger picture about what is really happening with respect to mobile phones in people's lives.

In particular, the research sheds light on the uptake of mobile phone technology among what is an 'early adopter' community, and all the findings will be conditioned by that fact. The uses and impacts of mobile phones identified in the study should be regarded as indicating essential responses, in a community making first contact with a technology which is already in advanced form – digital with several capabilities and applications. Mobile phone penetration is already so high in most other countries that any comparable opportunity to understand fresh import of the technology has been lost. This research project provides a unique insight into the impact of the introduction of mobile phone technology on communication patterns within a specific society. Further, the research contributes to academic debates

around the interplay between communication and technology and presents wider conceptual ramifications for scholars of communication as well as those interested in development issues.

#### 1.4 THE COMMUNICATION DRUM METAPHOR

Drums have been widely used for sending out messages in PNG, and in many communities such drums have spiritual or relational functions (see Leach 2002; also Blades 1975, 45; Hart and Lieberman 1991, 31, 152; Holland 2008, 2). In the present research the prime concern is the use of them for transmitting information and therefore the term ‘communication drum’ is used, interchanged with the local name for the instrument: ‘*garamut*’. As villagers have themselves drawn parallels between mobile phones and such drums, the thesis title alludes to these discussions. The metaphor of the drum is used to help the reader in understanding the role of the mobile phone in rural villages in PNG. This is because drum usage can be seen as a kind of forerunner of the telephone, now arriving widely across the country. In similar fashion, the drum metaphor has been used to describe radio broadcasting (McLuhan 1964, 324-335) and to refer to mobile phones in Africa (de Bruijn, Nyamnjoh and Brinkman 2009b).

In many traditional societies around the world, percussive instruments played an important role in communication (Blades 1975, 35; Hart and Lieberman 1991, 52; Herzog 1964, 312; Holland 2008, 2; Nzewi, Anyahuru and Ohiauraumunna 2001) as well as in musical expression and sacred rituals (Hart and Lieberman 1991, 31). In some communities, sending messages or information through percussive means is an ongoing practice in contemporary times (Blades 1975, 45; Herzog 1964, 312). As will be shown in this thesis, use of drums as communication tools continues in the present setting in PNG in some villages.

Among the earliest instruments are found the percussion idiophones. These are instruments made of naturally sonorous materials, from which a sound can be produced without the addition of a stretched skin, string or vibrating column of air. (Blades 1975, 36; also Hart and Lieberman 1991, 156)

One such instrument is a “hollowed tree trunk” (Blades 1975, 44; also Herzog 1964, 313; Leach 2002, 713) which has, when struck with a wooden stick, “a resonant sound with considerable carrying power” (Blades 1975, 44) reaching many

kilometres in favourable conditions (Leach 2002, 718). This instrument is the *garamut* referred to in this thesis and it is known variously as a ‘log drum’ (Blades 1975, 44), ‘slit drum’ (Blades 1975, 44; Hart and Lieberman 1991, 156; Herzog 1964, 313; Nzewi, Anyahuru and Ohiauraumunna 2001, 94), ‘slit-gong’ (Hart and Lieberman 1991, 52; Leach 2002, 733), ‘signal-drum’ (Herzog 1964, 313) or ‘ceremonial drum’ (Leach 2002, 713). Such devices are common along the north coast of PNG and beyond (Leach 2002, 713) and are or were usually “used to communicate over distance utilising a series or code of beats” (Leach 2002, 715).

Communication itself has always had to take place. An efficient system of drum messaging, though open to all hearers and limited in geographical range, served this need to a high degree. Now an analogous system (private and with far greater range) has come suddenly into the communicative ecology of the villages. Communication needs are a constant of life; they may be met differently with new tools, and conceivably they may themselves change, under pressure of the new technical possibilities.

# Chapter 2: Literature Review

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## 2.1 PURPOSE

To provide a backdrop or frame for this study, and to inform the data gathered, the following theories, concepts or bodies of scholarly work will be referred to: general communication theory; communicative ecology; the field known as information and communication technologies for development, or ICT4D; du Gay et al.'s circuit of culture; innovation theory; and the growing body of work around mobile telephony. The context of PNG will also be discussed, with respect to both its development status and the rollout of mobile phone services in the country in recent years.

## 2.2 COMMUNICATION THEORY

This section of the thesis locates the theoretical framework of the research project within the communication theory tradition. It briefly describes the history of communication theory, with particular attention given to mass communications theory, the political economy approach and development communication. It then positions the current research project within the field of communication scholarship.

### 2.2.1 Mass Communications Theory

Mass communications theory is the term for a field that evolved in the period after World War Two, especially in North America. Mass communications theory was integral to the emergence of communication studies, and encompassed media effects research and modernisation theory. The emergence of mass communications theory at a particular historical point is noteworthy as the prevailing conditions influenced the types of paradigms that came to dominate scholarly debate. The destruction caused during World War Two and the development of new communication and broadcast technologies led to meaningful consideration of communication, its meaning and its impact. Definitions of communication were written (for example DeVito 1971, v), the communication process was analysed (such as Gibb 1971/1961) and models of communication flow were developed as ways of trying to understand communication interactions (for example Wilbur

Schramm's source-message-destination model: Schramm 1971/1954, 13). Although somewhat of an outlier from the mass communications mainstream, Marshall McLuhan is remembered for suggesting the impact of technological innovation was of such great consequence as to foreground the medium itself (for example the telephone) over the content of particular messages (McLuhan 1971/1964, 76; see also Mansell 2009, 3).

In the 1950s and 1960s, there was a belief "about media power found in the mass communications paradigm" (Flew 2007, 6) which suggested that "the mass media were thought to have a powerful and direct influence on individuals" (Melkote 2010/2003, 110; see also Mansell 2009, 2-3). The media effects research which supported this belief "approached the relationship of media to power in terms of influence, which was behavioural, individualised, and empirically measurable in relation to particular media messages" (Flew 2007, 7). Coinciding with this interest in effects of media on individuals (Servaes 2000a, 50), television became popular and pervasive (Schiller 2010/1991, 247), and this was seen as a tool, along with radio, for transmitting messages with effects on a wide audience (Schiller 2010/1991, 247).

Since this period, media effects research has encountered a critique whereby it was seen to be insufficiently comprehensive, with too much focus on the message itself (for example Flew 2007, 5-8), and offering too little consideration of the various ways in which a message can be interpreted (Flew 2007, 40; Schiller 2010/1991, 250). For example, words and images which resonate with audiences in one nation-state or culture may be perceived negatively in a different context (Kress and van Leeuwen 1990, 5; Nye jnr. 2010, 340). Early scholars were interested in how messages could be transmitted with perfect clarity (see Darnell 1971), whereas critics of media effects research question the motives of such research projects (Thussu 2006, 45), and particularly the funding sources (Melkote 2010/2003, 107). Schramm also found against effects ideas when he determined that traditional psychological determinants of opinion – family and peer group influence – were continuing to apply, notwithstanding media bombardments (1972, 9-11).

In addition to media effects research, the mass communications approach also comprises modernisation theory. Following the destruction of World War Two, people were keen to adopt "an optimistic view about the future of mankind"

(Fagerlind and Saha 1989, 15). Beliefs about the powerful effects of the mass media (Flew 2007, 6; Melkote 2010/2003, 110) led to an enthusiastic embracing of the media as a catalyst for development. It was felt that the mass media speeds up the process of modernisation by exposing people to new ideas and attitudes (Melkote 2010/2003, 109). Successes in rebuilding parts of Europe that had been bombed during the war led to a feeling that other parts of the world could be improved through the application of exogenous assistance (Melkote and Steeves 2001, 50-53). This feeling produced large numbers of development projects in the developing world in the 1950s (Lerner 2010/1963, 75). Modernisation theory proponents were aiming for each poor country to become a 'modern' society, with rising income levels, the capacity to consume (Lerner 2010/1963, 81) and the growth of gross national product (Melkote 2010/2003, 106). Traditional lifestyles and values were to be replaced by modern attitudes and ways of being (Melkote 2010/2003, 107). Thus 'modern' was understood as wealthy (Servaes 2000a, 47) or Western, and "modernisation was presumed to equate to Westernisation, and to be a necessary prerequisite to meeting human needs" (Paterson 1997, np).

Supporters of modernisation theory believed that media messages and communication programs, combined with educational strategies and increased literacy (Lerner 2010/1963, 82), could move poorer states towards the ultimate goal of development and modernity (Melkote 2010/2003, 107). It was felt that it is the provision of "new ideas and new information which stimulate people to want to behave in new ways" (Lerner 2010/1963, 86) and that "a society cannot hope to develop until the majority of its population holds modern values" (Fagerlind and Saha 1989, 16). Therefore, communication and expanding media consumption habits were seen as crucial in the modernisation process (Lerner 2010/1963, 86-87; Thussu 2006, 43), leading to the development of a political class and ultimately a 'modern' society (Lerner 2010/1963, 87).

A key advantage of modernisation theory was that it had a positive outlook (Fagerlind and Saha 1989, 16). It provided a clear structure through which organisations and individuals could strive for the improvement of societies, such as Rostow's 'take-off' model (Fagerlind and Saha 1989, 68-71) and Inkeles' "set of attitude questions known as the modernity scale" (Fagerlind and Saha 1989, 16). Outcomes were mainly thought of in economic terms (Melkote 2010/2003, 106;

Servaes 2000a, 47; Thussu 2006, 44), and therefore were quantifiable (Servaes 2000a, 47) and could be easily measured.

Criticisms of modernisation theory began to emerge as it was observed that “developing countries with higher exposure to Western media do not manifest higher levels of modern values or indeed, economic development” (Fagerlind and Saha 1989, 17). The ‘trickle-down effect’, whereby growth in gross national product was assumed to lead to improved livelihoods for people at all levels of society, was found to be based on flawed assumptions (Melkote 2010/2003, 107) and insufficient consideration of structural influences on inequality – a concern already being expressed within the modernisation school in the 1970s (for example Lamberton 1977, 212-213; Zachrisson 1977, 53-54). Additionally, in such critiques, modernisation theory has an “ethnocentric perspective” (Servaes 2000a, 47), does not consider non-economic forms of development (Melkote and Steeves 2001, 34), and overlooks the environmental costs of the changes it is advancing (Kukari and Ogoba 1999, 54). It was also of concern to later scholars that modernisation theorists were held to be dismissive of traditional lifestyles and values and did not appreciate the value of traditional cultures (Fagerlind and Saha 1989, 17-18; Kukari and Ogoba 1999; Melkote 2010/2003, 108; Thussu 2006, 45). It will be seen below how these varied criticisms of modernisation theory led to the emergence of a new school of thought surrounding development and communication.

### **2.2.2 Political Economy Approach**

Whereas the media effects research in the mass communications paradigm viewed the “transmission of information” (Flew 2007, 5) as a way to exercise power (Flew 2007, 5), later scholars acknowledged that media power is connected with other forms of power, such as political or economic power. Therefore, the political economy approach emerged, with a focus on examining media industries and the relationships between their structures, their production methods and their owners (Flew 2007, 7-8). Three aspects of the political economy approach that will be covered are industry-focused research, cultural imperialism and dependency theory.

The political economy approach has been “the most influential framework” (Flew 2007, 30) for discussions about the media over at least the last 30 years (Flew 2007, 30). Political economy writers aim to redress what they see as some of the shortfalls of mass communications theory, suggesting that it did not sufficiently

consider power, ideology and culture (Flew 2007, 30). Industry-focused research studies have chosen to look at the point of production and the industries that are involved in media production, rather than considering in the first instance the medium or the messages. They could be sceptical about media effects, saying audiences tend to determine their view, often regardless of media pressure. Industry-focused research studies include evaluations of media policy (for example McChesney 2010/1999, 190), discussions of global media flows (Miller et al. 2005) and examinations of media ownership trends (McChesney 2010/1999, 192-193, 196-201).

Through the political economy approach and the findings of industry-focused research, such as the concentration of media ownership explained by McChesney (2010/1999, 196-201), the notion of cultural imperialism has evolved. This idea asserts that media flows are uneven, predominantly from Western nations like the United States of America (USA) to developing nations (Schiller 2010/1991, 247-248). According to cultural imperialism writers, these imbalanced flows of cultural products persisted, with detrimental effects in recipient nations (Schiller 2010/1991, 250-259).

In keeping with notions of cultural imperialism, and also building on criticisms of modernisation theory, dependency theory provides an analysis of the world system by positing that the level of development in a country is heavily influenced by external factors (Fagerlind and Saha 1989, 22-23), rather than the values of the members of that society and the gross national product figure. Unlike modernisation theory, dependency theory does not have a stated aim, but rather seeks to describe a set of relations on a global scale that are viewed by proponents of dependency theory as inherently unfair (Fagerlind and Saha 1989, 23). The theory argues that despite decolonisation, newly independent states still depend on global capital flows and the political power linked with them (Flew 2007, 75). The global media is implicated in this scenario as it is “predicated upon probusiness neoliberal deregulation worldwide” (McChesney 2010/1999, 209)<sup>2</sup>. Further, the lack of development in certain nation-states or regions of the world is seen as being caused by progress in Western or developed nations (Fagerlind and Saha 1989, 22; Melkote and Steeves

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<sup>2</sup> That point may be qualified in liberal journalistic theory, for example Kovach and Rosenstiel emphasise verification, where providing information to an audience is privileged over shareholder interests (2007, 52-112).

2001, 170-171). The picture painted by dependency theory is one in which the former colonisers take resources from poorer states, which in turn remain underdeveloped (Melkote and Steeves 2001, 171). Related to this approach is Galtung's work analysing the relationships between states at the 'centre' or 'periphery' in culture and economy, for example regarding the conditions required for effective decolonisation (2005, 17-19) or the role of the USA (Galtung and Vincent 2004).

The colonial relationship between Britain and India provides a clear example of the exploitative relationships that are of concern to dependency theorists. Mahatma Gandhi believed that Britain's progress was enabled due to the imposition of disadvantage and hardship in India and that British rule in India was "a terribly earnest business proposition worked out from day to day with deadly precision" (published in 1929 in *Young India*, quoted in Fischer 1997, 325). A similar line of thinking is asserted by George Orwell:

the high standard of life we enjoy in England depends upon our keeping a tight hold on the Empire, particularly the tropical portions of it such as India and Africa. Under the capitalist system, in order that England may live in comparative comfort, a hundred million Indians must live on the verge of starvation (Orwell 1966, 139-140).

Dependency theory is valuable as it explores the colonial, post-colonial and neo-colonial practices of developed nations and gives an historical context to current disparities between countries (Fagerlind and Saha 1989, 25; Melkote and Steeves 2001, 172). However, it is criticised as it does not adequately take into account factors that occur within countries which might affect their development status (Fagerlind and Saha 1989, 24). Another limitation of dependency theory is that it provides an analysis of the problem but on its own part does not provide answers or suggestions for ways to move forwards (Fagerlind and Saha 1989, 25) (rather inviting further work on how change will occur).

In recent years, there has been a renewed interest in the political economy approach, particularly driven by concerns about mergers of media companies leading to an increased concentration of media ownership (Flew 2007, 73) and the market dominance of a small number of large companies (McChesney 2010/1999, 196-201). Discussions about the USA, and especially the global distribution networks of the

Hollywood film studios (Miller et al. 2005) have once again brought notions of global cultural domination into focus (Schiller 2010/1991, 247). This second wave of political economists contains mixed views about the trends (Iwabuchi 2010; Schiller 2010/1991). It can be argued that the dominance of the USA is diminishing (Schiller 2010/1991, 249), at least in part due to the increasing role of transnational corporations (Iwabuchi 2010; Schiller 2010/1991, 249). Appadurai suggests that global cultural flows are much more complex and multifaceted than the simple cultural imperialism model suggests (Appadurai 2010/1990). Alternatively it can be posited that the USA continues to have strong control of distribution networks (Iwabuchi 2010) and that companies from other countries tend to adopt the practices of producers based in the USA, leaving consumers with little choice (Schiller 2010/1991, 254).

Thus far, two formative stages in the evolution of communication studies have been introduced. Mass communications theory emerged at a time of technological advancement and rebuilding following World War Two, when there was an interest in media effects and processes of modernisation. Holding substantial sway for some time with not only communication scholars but also development workers, modernisation theory came to be criticised for a variety of reasons, including ethnocentricity and a lack of consideration for non-economic factors. These criticisms led to a movement which drew attention to the dependency of nations in the periphery of the world system. This dependency theory was a keystone of the political economy approach, which developed out of criticisms of mass communications theory, and was the second major stage in the communication studies movement.

### **2.2.3 Development Communication**

Development communication is a field of both study and application that emerged at the same time as modernisation theory. Development communication has taken various approaches, involving theoretical shifts and reassessments over the decades since its outset. Today, it is an area that in some manifestations retains approaches from its origins, and in other forms is very different from the viewpoints and attitudes adopted in its early days. What follows is an examination of the field of development communication broadly, with specific reference to the two main iterations of this theoretical approach, each of which have their own implications for

both research and development actions on the ground. There is then a consideration of the current research project, which is focused on the recent advent of mobile telephony in rural areas of PNG, to demonstrate how the research intersects with the development communication school of thought.

Development communication is communication which is designed to lead to development or “social and economic improvements” (Paterson 1997, np). It is “communication with a social conscience” (AMIC 1985, 50-51), which usually takes place in developing nations (Paterson 1997) and hopes to achieve positive outcomes “with either media (print, radio, telephony, video, and the Internet), or education (training, literacy, schooling)” (McPhail 2009, 3). There are two main theoretical approaches to development communication (alternatively known as communication for development): those approaches that are in line with modernisation theory, and those that take an alternative viewpoint (Melkote 2002, 423) which is more focused on concepts such as participation and empowerment (Melkote 2010/2003, 109). In other words, just as there have been changes in theoretical conceptions of communication, from the one-way flow in the sender-receiver model of communication to a symmetrical relationship between actors in dialogue (Melkote 2010/2003, 115-117; Servaes 2000a, 49), so too has there been progression in terms of thinking around development (Melkote 2010/2003, 105-110) and how it relates to communication (Servaes 2000a, 48-54).

The first conceptualisation of development communication emerged in the post World War Two period (Melkote 2002, 420-421; Paterson 1997; Waisbord 2001, 1) and was founded on modernisation theory (Melkote 2002, 421; Mody 2002, 415; Paterson 1997; Waisbord 2001, 2) and propaganda research conducted in the USA between the two world wars (Melkote 2002, 421). This period marked the emergence of radio and television, with “high hopes that radio and television could be put to use in the world's most disadvantaged countries to bring about dramatic progress” (Paterson 1997, np). In particular, radio broadcasting was seen as an important tool from the outset (McPhail 2009, 4, 6). The first advocate of using communication to achieve development outcomes was Daniel Lerner, who believed the media was the ideal tool for modernising societies (Mody 2002, 415). The communication model adopted was a one-way, media-centred model of communication (Servaes 2000a, 50; Waisbord 2001, 3). Development efforts stemming from this approach used

messages, distributed primarily through the mass media, “to create a climate of acceptance by beneficiaries for exogenous ideas and innovations” (Melkote 1991, 263). The overarching aim was to change people’s lifestyles (McPhail 2009, 8) and achieve economic outcomes (McPhail 2009, 3). It was felt that the mass media was a powerful device which would directly influence individuals (Melkote 2010/2003, 110; Servaes 2000a, 50) by exposing them to new ideas and attitudes (Melkote 2010/2003, 109). This would achieve the desired aim of changing people who “had always been ignorant and indifferent” (Lerner 2010/1963, 81).

It was later felt that early attempts at development communication, centred as they were in the modernisation paradigm, “made a number of erroneous assumptions” (Paterson 1997, np) and focused efforts too heavily in centrally controlled mass media output (Paterson 1997) and “externally directed social change” (Melkote 1991, 263). Criticism was aroused as “indigenous ways were dismissed, marginalised, ridiculed, or ignored” (McPhail 2009, 9). At the same time, there was a realisation that communication needs to be participatory and dialogic (Mody 2002, 416). Therefore, a second type of development communication emerged which had a “social or cultural lens” (McPhail 2009, 3) and would operate with “a bottom-up or grass-roots approach” (McPhail 2009, 3). This second model of development communication was influenced by dependency theory (Melkote 2010/2003, 116; Paterson 1997). The desired outcome is development which is “qualitative and pluralistic” (Melkote 2010/2003, 113). In other words, the ultimate goal “has shifted from economic growth to meeting basic needs” (Paterson 1997, np). Aid programs aim not only to inform people, but also to empower them (Paterson 1997) and to “create a climate of mutual understanding between benefactors and beneficiaries” (Melkote 1991, 263).

Although theoretical conceptions of development communication have changed over the decades since World War Two, some scholars question the extent to which this theoretical change has led to changes in the operation of programs in practice. For example, Melkote asserts that although participation is now the preferred method for engaging communities and individuals, often in practice participatory approaches only serve to work towards specific indicators that have been set by external sources and remain aligned with the modernisation perspective (2010/2003, 113-114).

Having introduced development communication and the two main schools of thought linked to this concept, this chapter will now introduce some of the research methods utilised by development communication researchers. Early research into communication and development in the 1950s and 1960s focused on assumptions about expected powerful effects of the media – a notion which came from research conducted with funding from the government, military and intelligence agencies in the USA (Melkote 2010/2003, 107; Paterson 1997). More recent research activities align themselves with the second school of thought around development communication discussed above and utilise action research, participatory techniques, and ethnographic methods like participant observation (Tacchi, Slater and Hearn 2003). An example of a participatory research technique is a group interview which uses materials such as photographs as catalysts for discussion and which views the role of the researcher as a ‘facilitator’ (Tacchi, Slater and Hearn 2003, 77). Participant observation involves a researcher being immersed in a society or group and engaging in activities while making research notes about the activities and behaviours which are taking place (Tacchi, Slater and Hearn 2003, 9).

Action research is “a type of applied research in which the purpose is to facilitate social change or a political-social goal” (Neuman 2003, 529). The action research cycle typically involves observation and consideration of a problem, which leads to some form of intervention or action, which is then subsequently assessed using ‘feedback’, which in turn leads back into the beginning of the cycle (McPherson and Baptista Nunes 2004, 10; Stringer 1996, 17; Wadsworth 1997a, 61). Action research proponents argue that action research is “a practical tool for solving problems” (Stringer 1996, 11) which is more useful than other forms of research, as it takes the conclusions further, to recommendations and implementation (McPherson and Baptista Nunes 2004, 9). The argument is that the conclusions drawn through research need to be tested (Wadsworth 1997b, 78). There is a belief that “change is understood as inevitably resulting from the research process” (Wadsworth 1997a, 36). One action research project in PNG looked at small oil-palm farms (Gibson-Graham 2004, 412) and then tested an intervention which was designed to make it easier for unemployed youths to work in such enterprises (Gibson-Graham 2004, 416).

Two different types of action research which have been implemented in relation to communication studies include participatory action research and ethnographic action research. Participatory action research is “an experiential methodology” (Melkote 2010/2003, 114) in which community members are engaged in a collaborative manner in project activities and “self-evaluation” (Melkote 2010/2003, 114). The process values local knowledge and aims for social transformation in the lives of marginalised people (Melkote 2010/2003, 114). Ethnographic action research is upheld by proponents as “one of the innovative research approaches to study the impact of information and communication technologies” (Tacchi, Slater and Hearn 2003, iii). This applied research method aims to enhance the effectiveness of development programs involving communication technologies (Tacchi, Slater and Hearn 2003, x). Deploying the method reflects the practitioner’s thinking about development and communication.

#### **2.2.4 The Current Research Project and Communication Theory**

This chapter discusses the current research project, and how development communication has a resonance in the present research. It also considers the research methods associated with development communication and explains how these relate to the methods employed in the current research. The current research project examined contemporary trends in communication practices in PNG. Specifically, it looked at the recent introduction of mobile telephone services into rural areas of the country. The analysis was undertaken through a social lens, to provide a thorough understanding of the roles of mobile phones in rural communities by foregrounding the feelings, thoughts and attitudes expressed by the villagers. This in turn enabled a deeper understanding of sociological effects related to the uptake of mobile telephony.

This research project emerged from the researcher’s interests in both development and communication. Having lived and worked in two different countries in the Pacific region (the Federated States of Micronesia and PNG), and having also lived in a developing nation in Asia (Nepal), the researcher was acutely aware that the lives of many of the people in these places were vastly different from her own background in an affluent, Western country. She was also exposed repeatedly to arguments that aid projects can be ineffectual or even cause further disadvantage. Despite both centralised, directive aid programs and efforts to establish

more inclusive programs and approaches, the reality is that many poor people in developing nations “are entrapped in a dependency situation in highly stratified and unequal social and economic structures” (Melkote 2010/2003, 119). With a background in communication and media, and with some understanding of the cultures of PNG and the contemporary issues facing the country, it was appropriate for the researcher to explore the intersection between communication and development in PNG.

The researcher sensed the inequality between different countries in the world in terms of social indicators, service provision, lifestyle and opportunities. In this regard, she came from a similar position to development communication advocates in both schools. Early development communication theorists and modernisation proponents were enthusiastic about the prospect of being able to enhance the lives of the disadvantaged, and sought quantifiable indicators of progress. Later development communication scholars and practitioners have tended to focus more on participation at both the individual and community levels, and this too held appeal for the researcher. However, rather than looking for indicators of the powerful effects of the new technology, or trying to engage community members in participatory activities, the researcher’s aim in the current research project was to assess in an open-minded manner the changes currently occurring in rural societies in PNG.

The present research project has used some of the approaches of development communication theory. Development communication is about development occurring or being attempted, and how this relates to communication activities. Development communication asks questions like ‘where does the media fit into people’s lives and development prospects?’. Radio is typically considered in these types of discussions. In like fashion, the current research project asked ‘where do mobile phones fit into people’s lives and development prospects?’. If the mass media is unable to achieve much (both in terms of theoretical limitations of one-way media flows and in terms of the lack of media penetration in rural villages in PNG), then maybe the newly available communication device, the mobile phone, can assist in leading to some form of development?

In addition to exploring areas related to development communication scholarship, the current research project also employed some research approaches used in that field. In line with early development communication research, there were

questions in the survey questionnaire (see Section 3.5.1) which aimed to ascertain levels of media penetration, media access and media consumption patterns. In keeping with later notions of development communication, both open-ended questions in the survey questionnaire and semi-structured interviews were utilised (see Section 3.5.2) in an attempt to give local voices a chance to express their opinions, desires and concerns.

The action research method, in which information and understandings are garnered in the process of mobilising action, was not utilised in the current research project. This research aimed to generate new knowledge about communication in PNG and the roles of mobile telephones in the communication landscape. It did not aim to intervene or establish a communication for development project. As mobile telephony was in its infancy in PNG at the time of the research project's inception, it was felt that it was best to find out what was going on rather than to engage in any kind of research-based intervention. In addition, a sole researcher could not hope to achieve a substantive result through an action research project in PNG in a research period of three years, with limited funds and resources.

This project may resemble an ethnographic study, in view of the researcher's close engagement with informants in villages, and the flexible while still systematic interviewing. However, it is not ethnographic work in a strict sense, as might be found in branches of anthropology (Marcus 1995, 99), where the engagement with communities is far more searching in detail and sustained over longer periods of time (Marcus 1995, 96; Preissle and Grant 2004, 178; Tacchi, Slater and Hearn 2003, 9). The influence of ethnographic approaches to research is present (see Section 3.4.2).

Given very limited knowledge of the Pacific region in the world beyond its borders, and the scarcity of research conducted in rural areas of PNG, the intention to learn and spread knowledge about PNG was an important objective. In a less direct sense, it is hoped that the knowledge gained from research studies of this nature "will include implications for the development process" (Mody 2002, 416). Focusing on the views of the locals who are using (or not using) this technology is important as "one always needs to ask not why this is a new device or form, but what is new *for society* about it" (Flew 2007, 23, emphasis in original).

In conclusion, it can be seen that the current research project fits into the broad framework of communication theory. It sits at the forefront of research which is

dealing with new communication technologies at the very time when these technologies are first becoming available in the field sites. With an understanding of the historical progress of communication theory, from mass communications theory to other approaches such as the political economy approach, this research project is most closely aligned with the development communication strand of communication theory. Within development communication, there are two main schools of thought: the first associated with mass communications theory and modernisation theory, and the second influenced by the political economy approach and dependency theory. In the current research project, research methods preferred by proponents of each of these approaches to development communication were adopted: quantifiable indicators of media penetration and access, and qualitative methods like interviewing, respectively. However, it is noted that the current research project did not employ the action research cycle.

The current research project contributes to the growing body of mobile phone scholarship (see Section 2.7 and Section 2.8). It has seized a rare opportunity to study people and communities in the very earliest stages of their discovery of mobile telephony, and their consideration of whether or how to incorporate mobile phone use into social activities and private lives. Its aim was to assess the role of mobile telephony in rural villages in PNG and to determine whether there may be an intersection between communication and development in this context, particularly as viewed through the eyes of the local residents.

### **2.3 COMMUNICATIVE ECOLOGY**

Through its interest in the changes taking place in the communication patterns of people in rural villages in PNG, this research project has needed to consider the existing communication processes in the villages being studied. For this reason, the ‘communicative ecology’ concept resonates well within this study’s parameters. The term ‘communicative ecology’ is defined by Tacchi, Slater and Hearn as the range of communications in a given setting (2003, 15). Thus the communicative ecology includes “the complete range of communication media and information flows within a community” (Horst and Miller 2006, 12), such as mass media, church meetings, informal gatherings and transport. The concept stems from the term ‘ecology’ in the biological sciences, which refers to all the interactions taking place in an area, including contact between soil, plants, wind, sunlight, insects and so on (Tacchi,

Slater and Hearn 2003, 15). For Tacchi and Watkins, “each community has a unique communicative ecology” (2007, 3). This idea fits in well in the present research, which entered village settings without preconceptions as to the consequences of the introduction of mobile telephony.

In this sense, we are not simply asking about the ‘use’ or the ‘effects’ of a new medium: rather, we are looking at how members of a specific culture attempt to make themselves a(t) home in a transforming communicative environment, how they can find themselves in this environment and at the same time try to mould it in their own image. (Miller and Slater 2000, 1)

Studying the mobile phone in isolation would not adequately convey the “mix or repertoire of communications skills and resources” (Tacchi, Slater and Hearn 2003, 15) which exist in the field sites in this study. Instead, in research exploring communicative ecologies, it is “crucial to look at *everything* that could count as a medium of communication” (Tacchi, Slater and Hearn 2003, 16, emphasis in original), which is why residents were asked about travel to urban centres as well as media access and media consumption habits. Questioning related to mass media use included digital as well as non-digital technologies (Day and Greenwood 2009, 328) such as magazines, newspapers and books. This approach is necessary as to understand “any one particular technology of communication one needs first to appreciate its role as part of” (Horst and Miller 2006, 10) the wider context of the communicative ecology.

Using the communicative ecology concept as a framework helps to avoid potential traps with technological determinism. Rather than envisaging a one-way relationship in which mobile phone introduction affects communities, the thesis foregrounds a two-way interaction between technology and society. Such an approach was advocated by leading mobile phone scholar Jonathan Donner (2008b, 143) and has been used in other mobile phone literature (for example de Bruijn, Nyamnjoh and Brinkman 2009b) in an effort to avoid an overly strong focus on technology or perceived powerful effects of technology.

## **2.4 ICT4D**

### **2.4.1 ICTs**

The term ‘information and communication technologies’ (ICTs) can include “the whole range of technologies designed to access, process and transmit information” (Weigel 2004, 19), from devices that have been common in developed nations for many decades (like radio receivers, landline telephones and television sets) to more recently designed tools such as computers and the Internet (Weigel 2004, 19). In this thesis, and indeed commonly in literature about ICTs (for example Unwin 2009a, 26-27; van Dijk 2005, 204; von Braun and Torero 2006, 3), mobile telephones are included under the term ICTs.

### **2.4.2 ICT4D**

Inspired by the emergence of a range of new communication technologies, there are theorists who are optimistic that these tools can be used to achieve improved wellbeing for poor people around the world, particularly in developing countries (Day and Greenwood 2009, 327; Toyama 2010). This school of thought is known as ‘information and communication technologies for development’ (ICT4D) and examples include Unwin (2009a), Marshall, Taylor and Yu (2006), Rahman (2008) and Beschoner (2007). ICT4D literature is concerned with how communication technologies such as mobile phones “can be used to enable the empowerment of poor and marginalised communities” (Unwin 2009a, 33), although much of the promise has now been brought into question due to inconsistent outcomes in rural development endeavours (Day and Greenwood 2009, 346; also Toyama 2010).

Proponents of ICT4D believe increased access to communication technologies such as computers and telecommunications will lead to greater social inclusion, more effective service delivery, increased efficiency and transparency of government, direct productivity gains, expanded markets and overall economic growth (Beschoner 2007). Several articles have been published in *The Economist* which suggest that mobile phones lead to increased entrepreneurship and direct economic benefits for both sellers and buyers in poor communities (The Economist 2005b, 2005c, 2007): “for policymakers interested in ... growth, the message is clear: mobile phones are the most effective means” (The Economist 2005a, 94). Gurstein believes

communication technologies are utilised “to enable and empower community processes” (2007, 11) and thereby overcome digital divides “both within and between communities” (2007, 11).

### **2.4.3 Digital Divide**

Since the early 1990s, due to communication policy deregulation, coupled with technological developments such as satellite television and computer networks, the notion of global communication has emerged (Wang and Servaes 2000, 1). The media (such as radio stations, television channels and Internet sites) provide a window onto the world (Hamelink 1995, 2), although “for most people even this is not available since they live in rural poverty without electricity supply, movie theatres or transmitters” (Hamelink 1995, 2). This disparity in access to ICTs is referred to as the ‘digital divide’ (van Dijk 2005, 1). This term became popular in the late 1990s and typically refers to “the gap between those who do and those who do not have access to computers and the Internet” (van Dijk 2005, 1). This type of analysis can be used with reference to other forms of technology. For example, van Dijk argues that mobile phones have spread more equally than computers and the Internet (2005, 46).

McPhail points out that after sixty years of development efforts “the Third World or peripheral nations still lack access to modern telecommunications and mass media” (2009, 3). Mattelart asserts that inequity in terms of access to the Internet and other communication technologies (2010/2002, 325) is so disadvantaging for people in developing nations as to be viewed as “techno-apartheid” (Mattelart 2010/2002, 325).<sup>3</sup> Concerns such as these regarding the unequal distribution of ICTs on a global scale hark back to the emphasis in early communication and development projects on increasing media penetration (Thussu 2006, 44; Waisbord 2001, 3-4). In the early days of development efforts, such was the confidence in the ability of the media to achieve development outcomes that development effectiveness was measured using media penetration figures (Waisbord 2001, 4). In contemporary literature, some scholars remain concerned that the imbalance in access to ICTs is directly affecting opportunities, such as health and economic outcomes, thus further increasing the digital divide (see Tacchi and Grubb 2007, 78).

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<sup>3</sup> As a theme of the present research, it is of interest to consider whether the recent proliferation of mobile phones in the developing world will appreciably change this situation (see Day and Greenwood 2009, 335; van Dijk 2005, 46).

#### **2.4.4 Leapfrogging**

People residing in rural parts of PNG and other developing nations have missed out on many stages of technological development (see Harvey 2000, 62; Unwin 2009a, 19) which have been experienced in developed countries and some urban centres in the developing world. In terms of ICTs, the sequence of technologies experienced in other places progressed through the railroad, the telegraph, the automobile, the radio, and the landline telephone (Harvey 2000, 62) to faxes, emails, mobile phones, instant messaging, video conferencing and voice calls over the Internet (Unwin 2009a, 19). In the PNG villages studied in the present research project, the only technologies in the aforementioned list which have been experienced are the automobile, the radio and mobile phones.

In cases where advanced technologies (such as mobile phones) are available in a place which has never had access to its predecessors (in this example the telegraph and landline telephones), this is referred to as ‘leapfrogging’. In essence, the term “leapfrogging is used in a technical sense to signify skipping over the technological frontier or product cycle” (Sanzogni and Arthur-Gray 2006, 671), meaning that a community skips certain stages in the evolution of technologies. For ICT4D scholars leapfrogging can also mean that access to new ICTs is seen as catalysing a rapid pace of development (Finkelievich 2006, 109; Pryor 2006, 14; Sanzogni and Arthur-Gray 2006, 671). In particular, telecommunications are viewed as instrumental in this respect (Sanzogni and Arthur-Gray 2006, 671).

#### **2.4.5 The Current Research Project and the ICT4D Approach**

This research has stemmed from a less technologically deterministic basis than some of the work in the ICT4D school of thought, practice and research. ICT4D literature conveys the “underlying hope that mobiles can contribute to livelihoods and wellbeing in resource-constrained settings” (Donner 2008b, 152). For example, Bhavnani et al. argue that mobile phone access can reduce poverty in rural settings (2008). ICT4D supporters have created something akin to a contemporary version of modernisation theory (see Section 2.2.1) which, instead of focusing on powerful (if unpredictable or negative) effects of the mass media, adheres to “an almost blind faith in the potential of the new information and communication technologies” (Thussu 2006, 46), with implicit faith in the ingenuity of users. This research project did not necessarily take the ICT4D approach. Rather, it uncovered the existing

communication processes in the villages being studied, and explored the changes taking place through the expansion of mobile phone coverage. The present research has taken a critical approach to notions of ICT4D as it did not have as a premise the notion that mobile phones could be the solution to developmental challenges. Instead, it has remained open to discovering both negative as well as positive societal changes related to mobile telephony. The present research questioned the extent to which the emergence of a new communication technology could achieve improved economic wellbeing for poor people.

## 2.5 CIRCUIT OF CULTURE

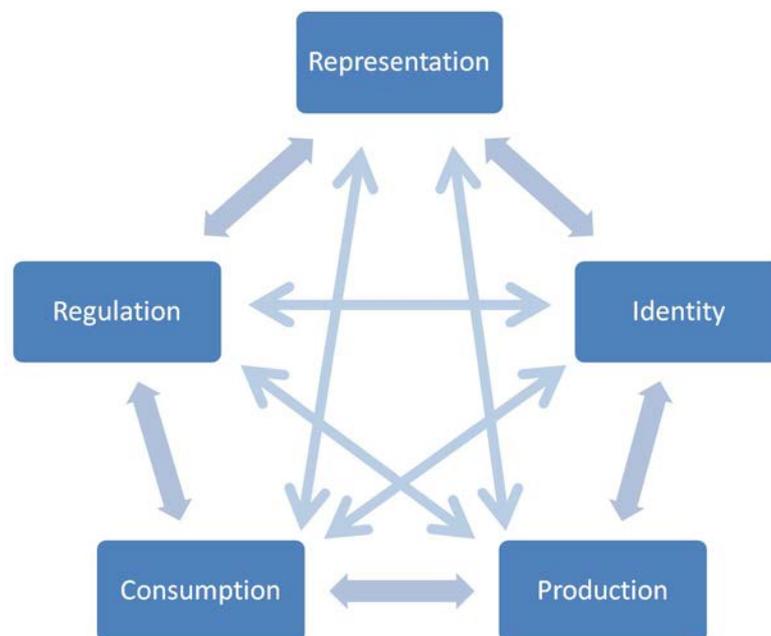


Figure 2.1. Circuit of culture model (from du Gay et al. 1997, 3)

The ‘circuit of culture’ model was developed by du Gay et al. (1997) to illustrate five facets of the relationship between technology and society: representation, regulation, identity, consumption, and production. Interactions between the five components of the model (see Figure 2.1) contribute to “the meaning that an artefact comes to possess” (du Gay et al. 1997, 3) in society. The authors argued that the circuit was an important framework “through which any analysis of a cultural text or artefact must pass if it is to be adequately studied” (du Gay et al. 1997, 3). This meant examining any technology with respect to “how it is represented, what social identities are associated with it, how it is produced and

consumed, and what mechanisms regulate its distribution and use” (du Gay et al. 1997, 3).

One of the earliest electronic technologies which had the capacity for mobility and individual usage was the SONY Walkman (Churchill and Wakeford 2002, 156), and it was this device which was the subject of the first extensive investigation using the ‘circuit of culture’ model (du Gay et al. 1997). The model has since been used to analyse other technologies, including mobile phones. Churchill and Wakeford (2002) used the model in an effort to develop a rigorous design tool for engineers and product designers. They analysed advertisements and other representations of mobile phones to move the prospective consumer from stereotypical imaginings closer to reality and actual practice in the minds of mobile phone designers. Goggin referred to the model when proposing the notion of mobile phone culture (2006, 7-8). Green and Haddon used the model as part of the framework for their text on mobile phones (2009, 3). The present research project also uses the ‘circuit of culture’ model to understand the data collected regarding mobile phones in villages in PNG (see Section 9.6).

## **2.6 INNOVATION THEORY**

Innovation theory examines the extent to which technologies are adopted by individuals and communities (Rogers 1995, 1-17). Developed by Rogers in the post-World War Two period (Mante and Heres 2003, 128; Servaes 2000a, 49-50), innovation theory was also known as ‘diffusion of innovations’ (Servaes 2000a, 49). Innovation theory, modernisation theory and the diffusion model of communication were linked at the time and have been represented as congruous (Servaes 2000a, 49; Thussu 2006, 44). While studies of supposed powerful effects of the media were at a macro-level, Rogers’ diffusion of innovations was focused on the micro-level of technology adoption by individuals (Melkote 2010/2003, 110).

Rogers has refined his writing about innovation and technology adoption over the decades since its original inception. Nonetheless, innovation theory can still be associated with some negative connotations of modernisation theory, as proponents attempted “to transfer technological innovations from development agencies to their clients” (Servaes 2000a, 49) in a manner which has since been deemed to be “elitist, vertical or top-down” (Servaes 2000a, 49). Some criticise innovation theory for

portraying a “simple, linear, sequential process, driven by the needs of potential adopters” (Kautz and Pries-Heje 1996, 6), without considering “the dynamics of the relationship between suppliers and adopters and the active participation of the potential adopters in the process” (Kautz and Pries-Heje 1996, 6-7). Rogers responds to criticisms such as these by continuing to develop and qualify his theory. For example, he acknowledges that in his early conceptualisation, he did not consider the possibility that individuals could modify an innovation to suit their own particular needs, circumstances and preferences (Rogers 1995, 17). More recently, Rogers explains that people do indeed use new technology in their own unique ways - a process he terms ‘re-invention’ (1995, 17).

Based on numerous research studies in various countries, proponents of innovation theory detail certain factors that influence the extent to which individuals adopt innovations, and the speed with which they do this (Rogers 1995, 15-17). For example, cultural factors in the host community are said to affect the uptake of a new idea or tool (Rogers 1995, 1-4 and 15-16): “an important factor regarding the adoption rate of an innovation is its compatibility with the values, beliefs and past experiences of individuals in the social system” (Rogers 1995, 4).

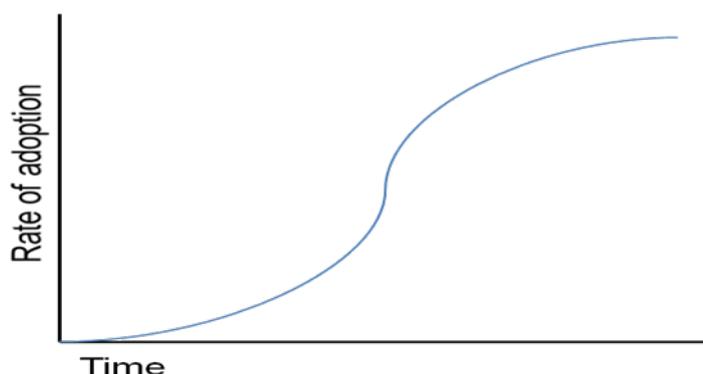


Figure 2.2. Adoption of technology over time

Across a range of countries, technology uptake is generally found to typify an ‘S’ shaped curve (Mahajan and Peterson 1985, 8-9; Mante and Heres 2003, 128) like that illustrated in Figure 2.2. The ‘S’ curve shows that few people are willing to adopt a new technology in its infancy, but as time passes, the rate of adoption increases, until ultimately it plateaus (Mahajan and Peterson 1985, 8). To this day, Rogers’ diffusion of innovations remains “a common theme in technology research”

(Donner 2008b, 144). Given that mobile phone reception is currently rolling out across PNG, it is relevant to consider adoption rates and the reasons why people are choosing to purchase or reject this new tool.

## **2.7 MOBILE PHONE SCHOLARSHIP**

There is a valuable body of literature available about mobile telephony and its impacts in society (for example Donner 2008b; Goggin 2006; Katz 2008c; Kavoori and Arceneaux 2006b) which has helped to develop thinking and inform the research. This is a relatively nascent field, with almost no research on mobile phones having been published before the year 2000 (Green and Haddon 2009, 1). The literature asserts that “mobile telephony has a significantly greater degree of impact upon communication activities and practices, with further impacts across the wider society” (Flew 2007, 23) when compared with other communication and media devices such as DVD players (Flew 2007, 23).

The following review will outline some of the key trends that have to date been explored by leading mobile phone researchers. They are: the fast pace with which mobile phones are adopted by consumers; the ubiquitous nature of mobile phones in developed countries; the uneven distribution of mobile phones throughout the world; and the importance of social uses of mobile telephony. Other aspects of mobile phone use which have been focused on in academic research will also be outlined, followed by a brief review of some points of contention regarding mobile phones in social settings. Finally, the phenomenon of convergence will be discussed briefly.

Before turning to these points, it is worth noting that much of the early mobile phone research was conducted in the developed world (Donner 2008b, 140; Goggin 2006, 13; Goggin and Newell 2006, 155; Kavoori and Chadha 2006, 227), meaning that the relevance of this body of research in other localities has been questioned (Goggin 2006, 14). However, a study of mobile phones in any context must begin with a consideration of the available literature. It is also worth noting that the term ‘mobile phone’ is primarily used here, although in some parts of the world the same device is called a ‘cell phone’. In this thesis, ‘mobile telephony’ is assumed to be synonymous with ‘mobile phone’. Some scholars use the term ‘mobile’ or the plural form of ‘mobiles’. In PNG the terms ‘phone’ or ‘mobile’ can be used to refer to a mobile phone, although in this thesis the full phrase ‘mobile phone’ is generally used

to distinguish from other types of phones. Phones connected to cables laid in the ground or wires strung from telegraph poles are referred to as landline telephones or fixed telephones. A short written message sent from one mobile phone to another is commonly referred to as either a text message or SMS (short message service). An identification card linked to a phone number which is inserted into a handset is known as a SIM card.

### **2.7.1 Speedy Adoption**

Mobile phone technology developed into a mass market in the mid-1990s (Green and Haddon 2009, 9). Wherever and whenever mobile phones become available in a new market, they are taken up by consumers with enthusiasm. This enthusiasm is evidenced by a speedy pace of adoption, which has outstripped the rate of adoption of landline telephones (Donner 2008c, 33; Lacohee et al. 2003, 203, cited in Goggin 2006, 19; Srivastava 2008, 22-23) and in places transformed telephone availability in general. For example, in Jamaica, it seems everyone now possesses a phone, although “just a few years ago many low-income Jamaicans had little access to any kind of phone” (Horst and Miller 2006, 1). Similarly, in Russia, the landline system was deteriorating (Lonkila and Gladarev 2008, 275), and mobile phones have been taken up at a very swift pace (Lonkila and Gladarev 2008, 277).

Why is it that consumers purchase mobile phones so voraciously? There are three main reasons identified here: the human need for communication, the worth of information, and the ‘magical’ quality of mobile telephony. Firstly, mobile phones are desirable due to the importance of communication in the human psyche (Spasojevic, Hinman and Dzierson 2007, 119-120). Secondly, a high value is placed upon information and knowledge in the present era (Hawk and Rieder 2003, x) and this tool can increase access to information. And thirdly, there is the appealing ‘magical’ quality of using mobile phones to communicate with people at great distances (Donner 2008b, 143; Fogg 2007, 8; Katz 2006, 6).

### **2.7.2 Distribution**

Mobile phones are ubiquitous in the developed world (Katz 2006, 3-4; also see Haddon 2003, 52). Not only do people in developed countries carry their mobile phones everywhere with them (Fogg 2007, 6), but frequently they cannot bear to be apart from them (Fogg 2007, 5-6). For example, during the attacks on the USA on

September 11 2001, many people fleeing burning buildings grabbed their mobile devices rather than wallets or photos (Robinson and Robison 2006, 91), which shows the high value attributed to the mobile phone. If they do accidentally leave them behind, “many mobile phone users experience intense anxiety” (Spasojevic, Hinman and Dzierson 2007, 117). This demonstration of the “close emotional attachment that many people give to their mobiles” (Katz 2006, 9) is even referred to by Fogg as a manifestation of love (2007, 5). Regardless of the underlying feelings, people in the developed world use mobile phones for a range of tasks formerly accomplished by other technologies, such as alarm clocks, wrist watches and calendars (Goggin 2006, 32). Some people also use them to increase their sense of safety (Katz 2006, 10-11; Ling and Haddon 2003; Walsh, White and Young 2007, 130; see also Overå 2008, 50; Pelckmans 2009, 27). It is argued that mobile phones can form part of an individual’s self-image (Spasojevic, Hinman and Dzierson 2007, 118) and that they can also be fashion statements (Fortunati and Cianchi 2006; Goggin 2006, 46-47; Green and Haddon 2009, 98-99; see also Horst and Miller 2006, 64).

However, mobile phones are not distributed evenly around the world (Hawk and Rieder 2003, xi): “the historically wealthy and powerful countries predominate” (Goggin 2006, 1), as has been the case with previous technologies (Levinson 2004, 121). In Europe in 2010, there were more mobile phone subscriptions than people (120 subscriptions per 100 inhabitants), but in Africa there were only 41 mobile phones for every 100 people (ITU 2010). Section 2.8 will focus on mobile telephony in developing nations. There are also differences in the ability to use the technology, which can disadvantage, and even marginalise, people with disabilities (Goggin and Newell 2006, 155-172).

### **2.7.3 Social Uses and Other Research Interests**

Many mobile phone studies have found that users identify social uses of mobile telephony as amongst the most important (Aakhus 2003, 30; Bakke 2010, 365; Bell 2005, 71-72; Chib 2009, 3-4; Donner 2008b, 150; Heeks 2008; Johnsen 2003, 163-166; Law and Peng 2008, 55; LIRNEasia 2007; Mpogole, Usanga and Tedre 2008; Pelckmans 2009, 30; Souter et al. 2005; Tabinas and Guzman 2010; Walsh, White and Young 2007, 126), over and above business uses or other ostensibly functional practices. This finding is contradictory to expectations in ICT4D literature that mobile telephony will aid in business success, job-seeking and income generating

activities (see Section 2.4). It also differs from some early perceptions of designers and commentators that mobile phones would serve purposes with respect to practical needs such as security (Ling and Haddon 2003) and logistical coordination (Aakhus 2003, 30; Licoppe 2003, 175; Mante and Heres 2003, 132-133).

Some studies have examined mobile phone use in relationships. Two different studies in Asia have found that mobile phones are used in courtship and romantic relationships, but also by suspicious partners for detection of infidelity (Ellwood-Clayton 2006; Mustafa, Siarap and Suan 2009). In Jamaica, much mobile phone activity “revolves around the potential of sexual liaisons” (Horst and Miller 2005, 758). Other studies have focused on youth and mobile phones (for example Brinkman, de Bruijn and Bilal 2009; Javier and Guzman 2010; Katz 2008b; Kreutzer 2008; Mustafa, Siarap and Suan 2009; Walsh, White and Young 2007). There have also been some suggestions that youth are the biggest users; data from Mexico indicates a higher penetration rate among young people, compared to older age groups (Mariscal and Bonina 2008, 68). Another set of research projects has considered SMS and the implications of widespread text messaging (such as Austin 2003; Ling 2006; Mustafa, Siarap and Suan 2009).

#### **2.7.4 Negative Experiences**

Before concluding this section, some negative experiences of mobile telephony will be discussed. The omnipresence of mobile phones can become irritating (Rice 2003, 95), and has also created concerns about an excessive intrusion of work responsibilities into people’s homes (Goggin 2006, 36). There are worries about the percentage of road accidents that involve drivers using mobile phones (Katz 2006, 4). In Saudi Arabia, the camera phone was banned until 2005 (Katz 2006, 31), and in various countries, institutions where people will be scantily clad (for example, while swimming or exercising), have banned photography (Green and Haddon 2009, 140). Mobile phone jamming devices have been installed in some Mexican churches and Arabian mosques (Katz 2006, 23), as well as some theatres (Burgess 2004, 10).

In the second Gulf War, journalists were able to use mobile phones to provide real-time reporting, a development which has been criticised by some for threatening to undo the foundations of journalistic practice (Levinson 2004, 140-141) through reduced checking of information (see Kovach and Rosenstiel 2007, 78-112). More recently, mobile phones have been used for citizen journalism (where untrained

people disseminate images and text about events) (Green and Haddon 2009, 140-141; Robinson and Robison 2006) and this has caused some negative concerns about hoaxes (Robinson and Robison 2006, 94).

It has been suggested that mobile phones may have been utilised by those involved in planning the attacks on the USA on September 11 2001 (Levinson 2004, 158). The mobile phone "can be used to trigger bombs" (Lorente 2006, 16). It has also been proposed that the mobile phone, with its associated highly visible advertising, is spreading the impact of an excessive capitalism around the world (Kavoori and Chadha 2006, 237). In the education arena, it has been found that students have been cheating in examinations by capturing and distributing photos of questions or solutions using mobile phones (Javier and Guzman 2010). Other problematic behaviours demonstrated by young people have included using mobile phones while driving and sending text messages while in cinemas or lectures (Walsh, White and Young 2007, 125).

Yet despite negative perceptions and resistance, many people are embracing this technology, some well beyond the range of their hitherto settled patterns of existence. Religious groups like the Amish, who reject modern clothing and equipment, are readily taking up mobile phones (Katz 2006, 31). For Masai tribes people, the mobile phone is the only exogenous tool they possess, in addition to the metal knife (Katz 2008a, np). Poor people throughout Asia who are not yet mobile phone owners are planning to purchase one as soon as they are able to (LIRNEasia 2007, np).

### **2.7.5 Convergence**

Convergence is a recent and ongoing trend in technological design, enabled through very fast computer chips, which means that ICTs, communication networks and media content can combine in one device or platform (Flew 2007, 22; also Hawk and Rieder 2003, xv; Robinson and Robison 2006, 99). Convergence is taking effect in mobile phone design, with third generation (3G) phones or 'smart phones' possessing the capability for photography and videography (Goggin 2006, 33) and Internet access (Dudley-Nicholson 2008, 20). The capacity to access the Internet through mobile phone handsets has been much anticipated, as it is argued that "the convergence of the Internet and mobile telephony enabled by satellite communication amounts to a new telecommunications revolution" (Thussu 2006,

209; also Levinson 2004, 28). There was swift early adoption of 3G in Korea and Japan (Horst and Miller 2006, 190; Srivastava 2008, 18-21). In late 2009, the demand for and use of Internet bandwidth on mobile devices around the world increased considerably, particularly in developed nations like Australia (Dudley-Nicholson 2008, 20; Jensen 2010, 5).

A qualification is that such devices may be limited in their effectiveness or uptake in communities with low educational levels as “quite a number of the convergent mobile media technologies ... rely on very active, informed, and knowledgeable consumers” (Goggin 2006, 209). However, in the Jamaican context, Horst and Miller had predicted high uptake of Internet through mobile phones (2006, 167) – a prediction which did eventuate by 2010 (Miller 2010b).

### **2.7.6 Conclusion regarding Mobile Phone Scholarship**

This section has looked at: the speedy rate of mobile telephony adoption; the ubiquitous nature of mobile phones in the developed world; uneven distribution across the planet; social uses; other research interests; some negative perceptions and experiences; and continuing technological developments. In conclusion, it can be seen from the literature gathered that the importance of mobile phones is increasing (Fogg 2007, 5), and that several theorists view them as having a positive influence in people’s lives (for example Spasojevic, Hinman and Dzierson 2007, 120). However, Hawk believes the mobile phone is only one of many tools that need to be used together in order to improve people’s lives (2003, xviii). Maroon suggests that face-to-face communication remains paramount (2006, 200). Levinson points out that the mobile phone is continually evolving, and that it creates problems, while it addresses or alleviates others (2006, 15). Mobile telephony will continue to expand in volume and diversity of activity, and therefore its impacts will be extended. As a result, future research will be called for. The current explosion of mobile phone use in developing countries requires particular attention, because of the different general contexts.

## **2.8 MOBILE PHONES IN DEVELOPING NATIONS**

This section will narrow the focus of the discussion on mobile telephony, by looking specifically at the situation of this technology in the developing world. Distribution figures will be outlined briefly. The available literature will be referred

to, including the continuing debate around economic impacts of mobile telephony and the innovative and cost-saving uses of the mobile phone which are evident in developing countries. Finally this section will touch upon ICT4D literature regarding mobile phones and will consider why mobile telephone services have spread in the developing world.

### **2.8.1 Uptake in Developing Nations**

Half of the world's population does not own a mobile phone (AFP 2008), and yet there are now more mobile phones than there are citizens in some countries (such as Australia: AAP 2008; and Singapore: Bell 2005, 68), which means that there has been to date distinct inequality in terms of access to this technology (Goggin 2006, 1; van Dijk 2005, 2). Initially mobile phones were more widely adopted in developed nations. However, this distribution pattern is changing rapidly, with mobile phones being taken up enthusiastically by consumers in developing nations (AFP 2009, 41; Beschorner 2007; Chib, Lwin and Jung 2009, 220; Chipchase 2008; Day and Greenwood 2009, 335; Donner 2008b, 143; Greenspan 2004, 6; Internews 2009; Souter et al. 2005, 6; Srivastava 2008, 15). In the year 2000, the developing world made up roughly one third of the total number of mobile phone subscriptions in the world, with the remainder of mobile phone accounts being held in developed nations (ITU 2010). Yet by 2010 the developing world contributed nearly three quarters of all mobile phone subscriptions (ITU 2010). Whereas 39% of the world's population lived outside of mobile phone reception areas in 2003, this percentage had reduced to 10% by 2009 (ITU 2010).

Related to the spread of mobile telephony in the developing world, there has been a general trend of deregulation and the opening up of markets to competition (for example de Bruijn, Nyamnjoh and Brinkman 2009a, 18; Horst and Miller 2006, 19-36; Maroon 2006, 190; Mpogole, Usanga and Tedre 2008; Overå 2008, 43). While in many places monopolies have ceased to exist (Hamelink 1995, 94), in numerous countries, duopolies have become established (see Mariscal and Bonina 2008, 66 regarding Latin America). Several commentators have argued that an important factor in the uptake of mobile phones in developing nations has been the implementation of pre-paid schemes (Greenspan 2004, 120; Horst and Miller 2006, 77-78; Mariscal and Bonina 2008, 66; Srivastava 2008, 15). Nonetheless, affordability remains a challenge for many poor people (Brinkman, de Bruijn and

Bilal 2009, 75; Chib 2009, 9; Day and Greenwood 2009, 335; Donner 2008c, 33-34; LIRNEasia 2007; Mariscal and Bonina 2008, 72; Overå 2008, 46; Srivastava 2008, 24; Thussu 2006, 239).

Extremely strong growth rates have been evident in Africa (AFP 2008; Kreutzer 2008), where nearly 90% of telephones are now mobile phones (AFP 2008, np). In 2000, one in 50 Africans had access to a mobile phone, but by 2008, the figure had changed to one in three (de Bruijn, Nyamnjoh and Brinkman 2009a, 11). The uptake in Africa has exceeded expectations, with even those in the very poorest categories using mobile phones (Day and Greenwood 2009, 335). It has been suggested that statistics may in fact under-represent the true scope of mobile phone usage and access in Africa due to practices such as handset sharing (Donner 2008b, 144).

In Asia, growth rates have outstripped analysts' expectations (Bell 2005, 68). Massive mobile phone markets exist in both China (Donner 2008b, 145) and India (DFID 2008b, 13), with Chinese mobile phone users already accounting for nearly one third of the world's subscribers by 2005 (Bell 2005, 67). In India, mobile phone ownership was limited to an elite group in 1999 (Greenspan 2004, 6), but in the following years mobile phones became virtually ubiquitous in Indian urban centres (Greenspan 2004, 6; Pannu 2010) and reception and uptake also spread to rural areas (Belt 2008; Sundari 2010; Tacchi 2010). The Philippines is referred to as "the texting capital of the world" (Javier and Guzman 2010, np; see Katz 2006, 21; LIRNEasia 2007) due to the high frequency with which Filipinos send text messages.

In the Pacific, the general trends in recent years regarding mobile telephony have included market liberalisation (see for example Basnett and Brien 2009 on Vanuatu), increasing coverage areas and rapid uptake. Digicel is currently operating in the Pacific nations of Samoa, Tonga, Vanuatu, PNG, Fiji and Nauru and also intends to expand its Pacific operations, following receipt of "commitments from the governments of several other countries in the Pacific" (Digicel Pacific 2011, np). Digicel first launched in the Pacific in November 2006 (Digicel Pacific 2011) in Samoa (Nadkarni 2006a, 2007). Mobile phone services in Samoa are also operated by SamoaTel (PITA 2009b).

Compared to its Pacific neighbours, Tonga had mobile phone competition from an early date, with two providers operating since 2002 (Tabureguci 2009). One of

these providers was bought out by Digicel (Tabureguci 2009), which officially launched in May 2008 (Digicel Pacific 2011). Digicel launched in Vanuatu in June 2008 (Digicel Pacific 2011) and the other mobile phone provider is Telecom Vanuatu (PITA 2009a). Digicel launched in Fiji in October 2008 (Digicel Pacific 2011). Vodafone also operates a mobile phone service in Fiji (Islands Business 2009a). Mobile phones first became available in Nauru when Digicel launched in 2009 (Digicel Pacific 2011; PITA 2009b). To celebrate the new service, the President of Nauru declared a national holiday (Digicel Pacific 2009). In a controversial decision (Manu'ari and Makira 2010), Digicel lost out in a tendering process in the Solomon Islands to bemobile (March 2010). The launch of bemobile in the Solomon Islands officially took place on August 31 2010 (March 2010; Solomon Times Online 2010), after a delayed start (March 2010). Section 2.10 will outline recent developments with respect to mobile telephony in PNG.

The impact of mobile phone uptake is substantial as many people in developing countries previously had no access to any kind of telephone (ITU 2003 in Donner 2008b, 140). In various studies, it has been noted that mobile telephony has become available in places where landline telephone infrastructure has been absent, limited or slow to become available (Srivastava 2008, 15, 23; for example in Burkina Faso: Kibora 2009; in Tanzania: Molony 2009; in India: Sundari 2010; in the Philippines: Javier and Guzman 2010; in Russia: Lonkila and Gladarev 2008, 275-276; and in Jamaica: Horst and Miller 2006). This tool is spreading quickly into regions with limited, or only recent, access to other modern technologies. For example, in Bhutan, television became available just ten years ago, remote villages are only now receiving electricity, and mobile phones are also becoming available (Bartlett 2008, np). There are many people around the world for whom mobile phone access remains a challenge, due to limited physical access and other pre-existing inequalities (van Dijk 2005, 200-201). Even so, the continuing growth of mobile network coverage maps and ongoing mobile phone uptake in developing nations leads to some predictions that "global ubiquity is only a matter of time" (Internews 2009, np).

### **2.8.2 Research Trends**

Most early research into mobile telephony was situated in the developed world (Donner 2008b, 140; Goggin 2006, 13; Green and Haddon 2009, 10). Contemporaneous with the spread of mobile phones in developing nations, an

increasing number of studies is emerging from these areas, such as research conducted in Africa (including de Bruijn, Nyamnjoh and Brinkman 2009b; Govender 2010; Kreutzer 2008), Asia (for example Chib, Lwin and Jung 2009; Pannu 2010; Sundari 2010; Tabinas and Guzman 2010) and the Pacific (such as Basnett and Brien 2009). Even so, there is scope for a substantial increase in the amount of research undertaken regarding this technology in the developing world, “where the distinct forces of cultural variability and economic constraint will enrich our understanding of mobile use for years to come” (Donner 2008b, 152).

Donner (2008b) has reviewed the literature on mobile phones in developing countries across a range of disciplines as diverse as economics, design and anthropology. He has categorised the available literature into different types, such as ICT4D research, and “daily life” studies which highlight the similarities and differences in the experiences of users in disparate localities (Donner 2008b). An illuminative illustration of the second type of research describes an innovative use of mobile telephony in a hilly area of Sri Lanka, and stresses that this example must be understood within its particular geographical and social context (Tacchi and Grubb 2007). While providing a thorough discussion of the research conducted thus far into mobile telephony in the developing world, Donner argues that the need for further research in this field remains (2008b, 151).

### **2.8.3 Economic Impact**

There is some debate among scholars as to the economic impact of mobile phones in underprivileged communities (Donner 2008c, 29; Miller 2006, 41). Some suggest that mobile phones increase the economic security and prospects of poor people (for example Belt 2008; Beschorner 2007, 2-3; Brinkman, de Bruijn and Bilal 2009, 74, 87; Jensen 2007; Mariscal and Bonina 2008, 76; Tabinas and Guzman 2010), whereas others claim that mobile phones consume limited household income which could have been spent addressing other needs (Diga 2008; Javier and Guzman 2010; Mpogole, Usanga and Tedre 2008, 8). More nuanced readings suggest that mobile phones may be beneficial for those who already have access to a greater range of resources, but could further disadvantage the very poor (Overå 2008; Souter et al. 2005, 12-14). One viewpoint is that mobile phones are a “necessary but not sufficient condition for growth and for poverty alleviation” (Donner 2008c, 34), as other enabling factors also need to be present, such as transport infrastructure, social

stability and so on (Donner 2008c, 34). An ethnographic study in Jamaica found that while poor people might not use mobile phones to find jobs or increase business opportunities, they do use mobile phones to address immediate needs by sourcing small amounts of money from other people also classified as low income (Horst and Miller 2006, 2005; Miller 2006).

Poor people in developing countries are cultivating ingenious strategies to minimise their expenditure, while still remaining in communication with others (LIRNEasia 2007). Such strategies can include restricting calls to non-peak periods (Brinkman, de Bruijn and Bilal 2009, 75; LIRNEasia 2007), and, as a form of signal, ringing but hanging up before the recipient answers (Green and Haddon 2009, 103-104; LIRNEasia 2007; Pelckmans 2009, 28-29). The latter technique can give the recipient a previously determined message (Donner 2008b, 148; Overå 2008, 48), or it can be a signal for the recipient to return the call, thus enabling the initiator to avoid bearing the cost of the exchange (Donner 2008b, 148; Overå 2008, 48). Donner argues that this practice of making intentional missed calls utilises and strengthens “existing hierarchies, norms, and social relations” (2008b, 148).

#### **2.8.4 Other Innovations**

Beyond keeping costs down, it has been found that mobile phones are being used in the developing world in a range of innovative ways (Goggin 2006, 22; Katz 2006, 12). Such implementation can achieve “fairly sophisticated actions” (Spasojevic, Hinman and Dzierson 2007, 119), far beyond the preconceived ideas of the designers (Goggin 2006, 52). Horst and Miller claim that this rate of innovation is so quick that academia cannot keep up (2006, 11). Examples of innovation include real-time coordination of protests (Green and Haddon 2009, 80; Rice 2003, 96), farmers using these devices to harmonise their activities (Spasojevic, Hinman and Dzierson 2007, 119), and health bodies using them to distribute public health alerts (Spasojevic, Hinman and Dzierson 2007, 119). LeBrun argues that it is possible to conceive of the mobile phone meeting the basic human needs outlined by Maslow (LeBrun 2007, 111). Indeed, in the developing world, mobile telephony can be more effective as an information technology than computing, due to hardware prices and unreliable electricity supplies (Spasojevic, Hinman and Dzierson 2007, 115).

In the developing world, where many households have never possessed a landline telephone, the changes as a result of the introduction of mobile phones stand

to be more meaningful for many strategic social uses than elsewhere (Horst and Miller 2006, 4, 8; Kavoori and Arceneaux 2006a, 1). In addition, talking into a mobile phone requires no formal education (Levinson 2004, 124-126). Perhaps it is for these reasons that the mobile phone is being touted as a tool for development (Kavoori and Chadha 2006, 227) or as the vehicle through which greater equality between nations can be achieved (Levinson 2004, 124).

### **2.8.5 ICT4D and Mobile Phones**

As was outlined in Section 2.4, literature which anticipates or strives for improved wellbeing is known as ICT4D literature. As an example of an ICT4D approach to mobile phones, Fogg argues that mobile telephony has the potential to achieve behaviour change through persuasive methods (2007, 5-10). He feels there is promise of substantial benefits which could arise through effective and carefully designed programs (Fogg 2007, 10). One noteworthy development project is Grameenphone, a micro-finance project in which rural women borrow money to purchase a mobile phone and can then establish a business selling access time to people in the surrounding area (Greenspan 2004, 119; Quadir 2005). Two main applications of mobile phones and development or ICT4D projects have been discussed in the media and in academic literature: mobile banking (Allam 2008; Funnell 2009; Wroe 2008), and health interventions (Almasy 2009; Boland 2007; Chib 2009; Chib, Lwin and Jung 2009; DFID 2008a, 2008b; Levine 2007). In the latter case, pilot programs have included a sexual health text message service for teenagers in the USA (Levine 2007, 15-20), and a program for diabetics (Boland 2007, 47-52). However, the efficacy of such programs is uncertain (Spasojevic, Hinman and Dzierson 2007, 115).

### **2.8.6 Conclusion regarding Mobile Phones in Developing Nations**

The literature in relation to mobile phones in the developing world has been examined here, with particular attention to the strong growth rates in the last decade, and the questions around the role of the technology in economic life. In concluding this section, it is important to stress the dearth of mobile phone research in developing nations and the need for more of this kind of research. Donner feels that it is valuable for studies to be conducted as the technology is being rolled out (Donner 2008a, np) and he also wishes to see more research conducted with rural and poor people (Donner 2008b, 151).

## **2.9 PNG CONTEXT**

PNG lies north of Australia and east of Indonesia, within a geographical area known as Melanesia (D'Arcy 2008, xxii; Moore 2003, 3). In order to sketch out the pertinent contextual issues with regard to this research being situated in PNG, this section will examine: a brief history; traditional cultures; the contemporary situation (including the country's development status); the education system; media and communication; and the telecommunications sector. The currency used in PNG will also be discussed, along with some indicators for conversion to other currencies.

### **2.9.1 History**

It is generally agreed that the earliest humans settled in PNG at least 40,000 years ago (Irwin 1992, 5; Kirch 2010, 131; Moore 2003, 21; Rynkiewich 2004, 17). Some archaeological evidence exists to suggest that there were settlements in the Highlands of PNG as much as 49,000 years ago (Summerhayes et al. 2010, 78). There are two main groups of people in PNG, with distinct language types (Rynkiewich 2004, 28), which suggests that there was a second migration to the area, around 4000 years ago (Kirch 2010, 131; Rynkiewich 2004, 28). The earlier migration consisted of non-Austronesian speakers, also known as Papuan speakers, who travelled by watercraft from Southeast Asia, and the later migration was of Austronesian speakers, also from Southeast Asia (Bellwood and Glover 2004, 3, 7, 11; D'Arcy 2008, xxvi; Kirch 2010, 131). One of the earliest instances in the world of agriculture using irrigated, systematic rotation and high yield crops seems to have been in the Kuk valley, in PNG's Highlands, from around 7000 years ago (D'Arcy 2008, xxviii; Moore 2003, 21, 28; Rynkiewich 2004, 24).

German traders established bases in the northern part of PNG in the Nineteenth Century (Griffin, Nelson and Firth 1979, 34-39) and it was known as German New Guinea from 1884 to 1914 (Griffin, Nelson and Firth 1979, 34; Moore 2003, 1; Quanchi and Robson 2005, 123). It came under Australian military control from 1914 to 1921 (Griffin, Nelson and Firth 1979, 46-48; Moore 2003, 1). After this period, it was administered by Australia, as mandated by the League of Nations and later the United Nations (Moore 2003, 1). Britain formally took possession of the southern half of the country in 1884 and it became known as British New Guinea (Griffin, Nelson and Firth 1979, 11; Moore 2003, 1; Quanchi and Robson 2005,

123). From 1906, the southern part of the country was administered by Australia (Griffin, Nelson and Firth 1979, 22; Moore 2003, 1).

From 1945, both halves of the country were administered as one unit by Australia (Moore 2003, 1-2) and Australia continued to manage PNG until it gained independence in 1975 (Griffin, Nelson and Firth 1979, 231; Waiko 1993, 80, 125-126). Since the time of PNG's independence, Australia has supported PNG with considerable financial and development assistance (AusAID 2007; Waiko 1993, 195-197). De Gedare suggests that although PNG gained independence from Australia in 1975, Australia continued to have a substantial amount of influence over the policies of its former territory after that time (1994, 122-123). Diplomatic relations between PNG and Australia are referred to by one analyst as involving "mutual distrust" (Lien 2006, 124), but efforts have been made recurrently to maintain and strengthen friendly ties (for example Marshall 2008c).

### **2.9.2 Cultures**

The people across the country speak over 800 languages (Giris et al. 2005, 3; Moore 2003, 29; Rooney and Papoutsaki 2006, 2). These languages are of two types: Austronesian and non-Austronesian languages (Moore 2003, 22). The substantial linguistic variation is reflected in extensive cultural diversity (Reilly 2004, 480; also Lien 2006, 119). Traditional identity in PNG stems from the group (or tribe), rather than the individual (Dureau 2006, 108-109). In traditional societies, gender roles were well defined: men were the leaders in public scenarios, and made decisions about tribal disputes, while women controlled homes, children, gardening and animals (Giris et al. 2005, 11; also Kunze 1925, 61; Pech 1991, 21).

Due to contemporary trends such as urbanisation and formal education, roles are changing (Giris et al. 2005, 17), with problems emerging such as sexual violence against women and children, alcohol abuse, drug use, HIV/AIDS (Giris et al. 2005, 20) and high crime rates (AFP 2005). Some people from PNG now feel ashamed about their country (Foster 2006, 129-130), due to its negative image abroad and "international stereotypes of PNG as a dangerous place" (Dureau 2006, 113).

### **2.9.3 Development Status**

PNG "faces serious development challenges" (Papoutsaki and Sharp 2005, 3). The country's progress towards achieving the targets set out by the United Nations in

the form of the Millennium Development Goals is mixed. “Although progress has been made in some areas, in others there has been mainly stagnation or even deterioration. Overall, progress has been disappointing” (Government of Papua New Guinea and United Nations in Papua New Guinea 2004, 41), while the emergence of HIV/AIDS “threatens to undo all progress that has so far been made” (Government of Papua New Guinea and United Nations in Papua New Guinea 2004, 41).

A substantial percentage of people live outside of urban areas in PNG (National AIDS Council 2006, 8). In fact, the most recent census data positions over 86% of the population in rural areas (National Statistical Office of Papua New Guinea 2004, np). Many parts of PNG boast only poor infrastructure (Government of Papua New Guinea and United Nations in Papua New Guinea 2004, 5). There is a great deal of variation in the living conditions experienced across the country (Hanson et al. 2001, 10), with the least developed areas being overlooked (National Economic and Fiscal Commission 2004, 3). Disparate communities are separated by impassable topographical obstacles, such as high mountains, poor roads, and open seas. These impediments are reflected in poor performance on development indicators, such as low life expectancy (61.6 years) and low adult literacy rate (59.1%) (United Nations 2010). There is poor access to water, with only 61% of people having access to an improved water supply (United Nations 2007). The maternal mortality rate is high (Fifer 2010, 3; Giris et al. 2005, 5), which is “a marker of both gender inequity and health system weakness” (Morgan 2010, 7). PNG ranks poorly on the United Nations Human Development Index: 137<sup>th</sup> out of 169 countries (United Nations 2010).

While PNG has experienced economic growth over the past six years (Gouy et al. 2010, 1; also Callick 2009a, 20), “living standards have kept sinking” (Callick 2009a, 20). A large prospective mineral extraction project has created hope, but questions abound about how PNG will use the resulting revenue to improve the lives of its citizens (Callick 2009a, 20; Gouy et al. 2010). Corruption has been cited as a cause of the government’s inability to adequately provide services (Callick 2009b, 16). This is reflected in the Transparency International finding that political parties are the institutions which are perceived to be the most corrupt in PNG (2010, 11). The police and justice sector has also been labelled corrupt: an ombudsman has suggested the police department is the most corrupt government agency in PNG

(Callick 2009b, 16); meanwhile “the correctional service is short of staff [and] prison breaks are not uncommon” (Callick 2009b, 16). Reflecting such concerns about corruption, PNG is ranked poorly on Transparency International’s Corruption Perceptions Index, which “indicates the perceived level of public-sector corruption” (Transparency International 2009, np): PNG is 154<sup>th</sup> out of 180 countries (Transparency International 2009).

There is a substantial difference between lifestyles and levels of service provision in urban and rural areas in PNG: “some people earn relatively high incomes and have access to a range of health, education and information services. Other people are poor, remote and marginalised, often because of where they live” (Hanson et al. 2001, 10). While rural areas are the focus of this research project, it is worth noting that urban areas are not without their problems: large numbers of “unskilled, unemployed, frustrated young men” (Callick 2009b, 16) can cause violence and commit crimes (Callick 2009b, 16). In recent times, “a genuine sense of grievance” (then governor of Madang Province Sir Arnold Amet, quoted in Callick 2010, 23) has developed towards Asian immigrants and business owners, who are seen as taking jobs and business opportunities from locals (see also Callick 2009b, 16).

Rural areas are generally thought of as settings with natural features such as trees and creeks (Day and Greenwood 2009, 322) alongside “only sparse human settlements such as smallholdings or villages” (Day and Greenwood 2009, 322). In rural areas formal employment opportunities are rare (Horst and Miller 2006, 104). Remote areas are also rural, but are usually deemed to be even further from an urban centre than other rural localities (Day and Greenwood 2009, 322). All the villages studied in this thesis are referred to as rural, even though some may also be considered ‘remote’. Rural areas typically depend largely on agriculture (Day and Greenwood 2009, 322, 325). Many people living in rural areas in developing countries: have inadequate access to water; lack basic sanitation; or do not have access to electricity (Day and Greenwood 2009, 322, 331). Such indicators apply in PNG, as will be seen with respect to the villages discussed in this thesis.

#### **2.9.4 Education System**

Since 1995, the educational path for children in PNG has commenced in community-based elementary schools (Hopkins et al. 2005, 78; Weeks 1993). These

schools provide “the first three years of formal schooling” (Hopkins et al. 2005, 78), usually in the vernacular language (Weeks 1993) or in Tok Pisin<sup>4</sup> or Motu (Hopkins et al. 2005, 78). Although elementary schools are part of the government’s education system, they are managed “with considerable input from the local community” (Hopkins et al. 2005, 78) and have provided a “low-cost means of extending primary schooling from the bottom up” (Weeks 1993, page unknown). After completing their elementary education, students usually progress to primary school.

To continue their education beyond primary schooling, there are several stages at which students must pass examinations before they can progress to the next level (Hopkins et al. 2005, 93; Weeks 1993). Common exit points from the PNG educational system are grades six, eight and ten. Some early attempts were made to establish quota systems, to ensure girls and rural youth were offered educational opportunities, but these moves have been overcome by an emphasis on examination results (Weeks 1993). Therefore, “village school children will be discriminated against when they have to compete with urban school children for places in high schools” (Hopkins et al. 2005, 94) due to their lower English language literacy skills, which are influenced by socio-economic factors such as the high number of students in the classroom, the language spoken at home and the lack of accessible reading materials (Hopkins et al. 2005). There are also many more potential students than there are available places in all grades in the schools across the country (Rao 2006, 24), and the number of available places in proportion to the number of potential students in that age bracket decreases as students progress through the grades (Rao 2006, 24). The percentage of people who are able to undertake higher education is low (Papoutsaki and Rooney 2006a, 422-423), and the number with postgraduate degrees is even lower.

Many of the students in PNG have also participated in the traditional educational system, which is “practical and situated within a village context” (Huckaby 2004, 78; also McLaughlin 1994, 64; McLaughlin 1997, 1). Introduced methods of instruction can be in direct opposition to traditional ways of thinking and doing (Huckaby 2004, 79, 88). Therefore, “an educated Papua New Guinean is a hybrid of traditional and western socialisation” (McLaughlin 2002, 12).

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<sup>4</sup> Tok Pisin is a language spoken throughout much of PNG. It is also known as Neo-Melanesian or pidgin.

### 2.9.5 Media and Communication

Prior to colonial contact, peoples in PNG had traditional communication techniques. These differed across the country but included sending messengers, blowing into shells (see Section 5.15), striking drums (see Section 1.4), singing out from mountaintops (like a form of yodelling) (see Section 8.5) and blowing wooden flutes (see Section 4.8). In areas around the north coast of the mainland, communication drums were widely used (see Section 1.4). Communities adhered to different cultural rules about such drums (Leach 2002, 719). For example, in a Rai Coast area a man's bones were placed in his *garamut* when he died and thus his *garamut's* voice died with him, but in some parts of the Sepik region, older *garamuts* were lined up to remind the people of their ancestors (Leach 2002, 727-728).

Today, the mass media in PNG sits comfortably within Smith's portrayal of developing world media systems, with foreign-owned newspapers, imported broadcast equipment, and foreign content (1980, 46). The reach of the media, such as television and print media, is severely limited (Crocombe 2001, 139). The government realises the importance of communication and media penetration, suggesting that "a developed district would be able to receive EMTV [the only local television station at the time], radio broadcasts and have telephone lines" (National Economic and Fiscal Commission 2004, 8). As with other areas of service provision, the churches play an important role in the communication sector in PNG (Crocombe 2001, 291): they were the first publishers in the country (Crocombe 2001, 271), and they also now operate radio stations (Duffield, Watson and Hayes 2008, 24-25; Eggins 2007). Heralded as a leading example of an effective national network of radio stations prior to independence (for example Johnstone 1976, 60), the government's National Broadcasting Commission has since become "a shadow of its former self" (Boden 1995, 47), with stations failing to broadcast due to theft of equipment (The National 2005), power blackouts (Sennitt 2004) or "inadequate maintenance, money [or] management" (Crocombe 2001, 275).

Compared to neighbouring Pacific island nations, PNG has performed poorly for some time in the telecommunications arena, with much lower landline telephone penetration than its neighbours (in 1991, PNG had only one phone connection for every 100 people) (Crocombe 2001, 270). Communication infrastructure, such as landline telephones, "is often considered a luxury compared to [other development

priorities like] agriculture, water supply, and roads” (Jussawalla 1994, 157). In 1990, nearly 1500 people were on a waiting list to establish a landline connection (Jussawalla 1994, 159). Obviously, the advent of mobile telephony is radically changing the situation with regard to access to telecommunications, and people’s expectations about this.

### **2.9.6 Currency**

The currency used in PNG is the Kina and the toea. These words relate to traditional forms of exchange and can be thought of roughly as the dollar and the cent, respectively. There are 100 toea to a Kina. In this thesis, only Kina and toea values will be given but conversion to other currencies can be obtained from <http://www.xe.com/ucc/full/> or from banks or other financial institutions. Values obtained from the website above on March 2 2011 for one Kina (K1) were: 0.38 AUD; 0.39 USD; 0.49 SGD; 0.28 EUR; or 0.24 GBP.

## **2.10 MOBILE PHONES IN PNG**

Having discussed briefly the contemporary situation in PNG, and having outlined some key trends in mobile phone scholarship, this section will look specifically at the introduction of mobile telephony in PNG. This account of recent history uses media reports as its dominant sources, as these provide crucial information that is not available in any other format. Material used includes: newspaper articles gathered from the two daily newspapers (see Section 3.6), which together “provide the most comprehensive record” (Duffield 2006a, 98) of events taking place in PNG; the letters sent to these newspapers, which provide insight into the mood and the dominant opinions held by the general public and indicate the presence of a strong public debate on mobile phone-related issues; and material from other media sources, most notably Islands Business magazine and the Australian Broadcasting Corporation.

Since the middle of 2007, mobile phone uptake has increased at an astonishing rate in PNG. Digicel signed up 600,000 customers between July 2007 and March 2008 (Marshall 2008b, np), which is an extraordinary uptake rate in a country with a population of just under 6 million (CIA World Factbook 2008, np). Digicel is an Irish-owned (Marshall 2008b) private telecommunication company, which entered the PNG market in July 2007 (Digicel Pacific 2011; Marshall 2008b). Digicel

provides mobile phone services in 32 markets (Digicel Group 2011) including Jamaica (Horst and Miller 2006, 162) and other countries in the Caribbean, Central America, South America and the Pacific (Digicel Group 2011). Digicel has over 11 million customers worldwide (Digicel Pacific 2010). In PNG, Digicel operates a GSM<sup>5</sup> network (Digicel Pacific 2011; Nadkarni 2006b, 31).

Prior to Digicel's entry into PNG, the government telecommunication provider, Telikom PNG, had held a monopoly (Barker 2008; Marshall 2007), offering citizens 'B Mobile' service, through its subsidiary Pacific Mobile Communications Company Ltd (Pacific Mobile Communications Company Ltd. 2004). This was a GSM system which was first launched in 2003 (Tabureguci 2007, 57). B Mobile provided only limited networks with poor quality reception, even in urban areas. In addition, at one stage their switch in Port Moresby had nearly reached its maximum designated technical capacity of only 50,000 subscribers and their computer system was becoming overloaded, with no additional users being taken on (Pacific Mobile Communications Company Ltd. 2005). Between 2005 and mid-2007 (the time when Digicel launched), Telikom PNG addressed these technical issues and increased the number of mobile phone subscribers (PITA 2006, 41; Tabureguci 2007, 57).

The monopoly ceased when the Independent Consumer and Competition Commission (ICCC) opened up the market, granting licences to two companies: Digicel, and Indonesian-owned GreenCom (Kaiok 2007c, 6; Marshall 2008a; Post-Courier 2007g, 3). From the outset, Digicel campaigned in a highly visible manner, and began to establish a new network, with increasingly wider mobile phone coverage (Barker 2008). Excitement and change were in the air, as Digicel "secured 20,000 customers in its first three days of business" (Marshall 2007, np). As it rolled out to each new town, people queued in the streets (Rheeney 2008a, 14) to purchase cheap handsets (Marshall 2008a) and take advantage of introductory offers (Rheeney 2008a, 14). GreenCom, on the other hand, has never offered mobile phone service to consumers in PNG (Kaiok 2008c, 2008d, 5; Post-Courier 2008e, 3; The National 2008a, 1). It reportedly became insolvent when a major shareholder pulled out, leaving local workers unpaid (Kanu 2009a, 3), and liquidation proceedings commenced (Kanu 2009b, 40).

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<sup>5</sup> GSM stands for 'Global System for Mobiles', a technical standard which was developed in Europe but is now widely used around the world (Goggin 2006, 32).

Prior to the launch of Digicel in PNG, the country had the lowest rate of mobile phone penetration in the Pacific, with less than two percent of the population living within a mobile phone reception area (Kaiok 2008o, 5; Roberts 2008, 13). Within only eight months, coverage had extended to ten percent of the population, the price of a SIM card had fallen by 80% and the cost of a mobile phone call had fallen by more than a third (Kaiok 2008o, 5; Roberts 2008, 13). Mobile telephony accounted for 0.7% of gross domestic product (GDP) growth in PNG in 2007 (Australian Government 2008, 43; Roberts 2008, 13). The number of people with mobile phones grew quickly “from 100,000 in 2006 to an estimated one million in 2008” (Commonwealth of Australia 2009, 34). Mobile telephony accounted for roughly 2.5% of PNG’s GDP in the 2008-2009 fiscal year (Commonwealth of Australia 2009, 36). By the end of 2009, Finance and Treasury Minister Patrick Pruaitch said that Digicel’s network was covering most rural areas in PNG (Tannos 2009, 3). Over one million people in PNG have become mobile phone subscribers since 2007 (Gouy et al. 2010).

Mobile phone technology is being avidly pursued throughout PNG by people from a range of educational, socio-economic and cultural backgrounds. Both mobile phone companies offer pre-paid schemes, which have been widely adopted. In each case, the steps involved for users are roughly the same: a small cardboard card (about the size of a business card) is purchased; a code on the card is revealed by scratching off a grey coating (like that used on lottery tickets in Australia); and the code is entered into the handset so that the value of the card can be credited to that phone number. The small cards used in this process are referred to as ‘flex’ cards in this thesis.

Many people feel acutely disadvantaged and are demanding development. This technology appeals as a method of addressing disempowerment. Communities see the introduction of mobile phone technology as an important step towards their advancement, as is typified by this letter published in a local newspaper:

Even though so-called Telikom PNG Ltd has been here for the last 33 years, they have never been to our area in Siane to further their services to the remote areas. So I’m now asking for something positive to be done by Digicel to send their technical teams to visit our areas. We are willing to assist them bring services [*sic*] to our areas. (Anggo 2008, page unknown)

It is evident that the introduction of mobile phone services in areas of PNG where people have so little access to other facilities (such as health services, schools and even adequate roads) could result in substantial changes in people's lives. This sentiment is expressed in numerous letters to the two daily newspapers: "Digicel brought a revolution to this country. They have empowered hundreds of thousands of people even in the remotest areas" (Glynn 2008, page unknown), and "Heartfelt thanks to Digicel for you have reached deeper into the most remotest [*sic*] areas of PNG and saved lives, including my mum's" (Bro 2008, page unknown).

Early in February 2008, the acting Chief Executive Officer of Telikom PNG, Peter Loko, publicly admitted that his organisation had failed the people: "he said Telikom had let the people down, acknowledging the company needed to improve its services" (Sete 2008, 5). This admission came at a time when Telikom PNG's services were regularly being complained about in letters to the editor. Numerous letters expressed frustration at poor B Mobile service (for example Haych 2008; Yawa 2008), at landlines that have been inoperable for some time in whole areas (such as Glynn 2008; Moimoi 2008, 29) or in particular organisations (for example Jay 2008; Tito 2008), or were dismissive of Telikom PNG's customer service standards (including Glynn 2008; Unbeliever 2008).

Mobile telephony received substantial coverage in the PNG press in the early days after Digicel's launch. Some of the primary reasons for media attention included: delayed interconnection between the two major players; the government's partial sale of B Mobile; and court cases between the key players.

There is a need for "efficient and commercially sustainable interconnection" (InterConnect Communications 2008, np) for a successful telecommunications system in a competitive environment (InterConnect Communications 2008; Samarajiva 2006, 69). Competition alone is insufficient (Donner 2008b, 145), but requires "adequate provisions for a reasonable interconnection and revenue-sharing between providers" (Donner 2008b, 145). Interconnectivity does not refer to affiliation or collaboration and therefore non-discriminatory interconnection is not anti-competitive (Samarajiva 2006, 68). Rather, interconnectivity stresses the technical compatibility of systems, so that customers can contact one another.

In PNG, the term interconnection refers to the ability of users to be able to call a landline or B Mobile phone number from a Digicel phone, or vice versa. The

inability for the two phone systems to work together initially meant that some wealthy residents and foreigners living in the country were carrying around two mobile phone handsets – one containing a B Mobile SIM card, and the other using a Digicel SIM card. For the average person, it meant that, even if they owned a mobile phone, they were unable to contact roughly half of the phones in the country. The PNG government had initially stipulated that interconnection between Digicel and Telikom PNG should take effect by the end of January 2008 (Kaiok 2008k), but continued delays pushed the date back repeatedly. Technical issues were cited, but dispute over interconnection rates<sup>6</sup> also received media attention (Kaiok 2008e). The two companies blamed one another publicly for the delays (Kaiok 2008f; Marshall 2008a), eventually asking the ICCC to mediate (Marshall 2008a; Post-Courier 2008g, 5). Interconnection finally occurred on June 26 2008 at midnight (Kaiok 2008l).

The interconnection rates agreed upon by the two rival mobile phone companies were set for one year (Kenneth 2009, 7; Lasibori 2009, 6; Post-Courier 2009j, 5). Once this agreement lapsed, in June 2009, the two companies entered into arbitration to resolve disagreements about new interconnection rates (Post-Courier 2009d, 19; Tapakau 2009a, 7). These negotiations were continuing in October 2009 (Farapo 2009b, 14; Post-Courier 2009a, 8; The National 2009r, 14), with concerns being expressed about the delay (Post-Courier 2009a, 8). An ICCC ruling was expected in mid-November 2009 (Tapakau 2009b, 35).

The technical side of interconnection has not been free from hurdles either. Related to B Mobile upgrading its switch in October 2009 (Farapo 2009a, 6; Tapakau 2009c, 10), customers were no longer able to send text messages from B Mobile to Digicel phones or vice versa (Tapakau 2009c, 10; The National 2009o, 14, 2009q, 3). There were also allegedly problems with making phone calls between the two networks, and between landline telephones and Digicel numbers (The National 2009e, 3).

The PNG government announced at the start of September 2008 that it had sold half of B Mobile to “a consortium made up of two American companies and PNG’s two major super funds” (The National 2008a, 1). Making the announcement,

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<sup>6</sup> Interconnection rates are payments between telecommunication companies for phone calls made between networks, based on rates agreed upon by the companies.

Telikom board member Albert Veratau admitted that “Telikom’s infrastructure was old and outdated, and the consortium would bring much needed cash and technical expertise” (The National 2008a, 1). In the lead-up to this announcement, rumours about the sale had been front-page news (Kaiok 2008a, 1; Kolo 2008, 1; Staff reporters 2008, 1) and had generated numerous angry letters to the editor (for example Alert resident 2008; Angry about selling out 2008; Simba 2008). The State Enterprises Minister Arthur Somare had initially denied that B Mobile was for sale (Kaiok 2008b, 5), but the rumours persisted and there were vocal calls for transparency (for example the Institute of National Affairs Director Paul Barker asserted that any sale or partial sale of Telikom PNG should be transparent: Pamba 2008, 3).

After the sale was announced, protests came from workers, whose union representatives were concerned not only about transparency, but also about the company being undervalued in the US\$45 million sale (Kaiok 2008n, 3; The National 2008b, 1). The parliamentary opposition also called for transparency and questioned the processes involved in the sale (Kaiok 2008h, 3). Despite his earlier denials, once the partial sale had been announced Arthur Somare claimed it was very positive for PNG and said that it would enable the company to extend its service into rural areas (Kaiok 2008j, 3). Following the partial sale of Telikom PNG’s mobile phone arm, it now operates as a public-private partnership company, independent of Telikom PNG (Kaiok 2008i, 5; The National 2008a, 1). The company has been re-branded as ‘bemobile’ (Joku 2009, 13) and will be referred to as such throughout the remainder of the thesis.

There were various court cases and disputes between the key players in the telecommunications sector in PNG during the early days of Digicel’s operations in the country. A dispute over international calls received considerable media coverage and generated heated debate and strong responses from consumers. In mid-April 2008, the PNG government granted Telikom PNG exclusive rights to offer international calls (Nicholas 2008, 1). This decision effectively halted Digicel’s ability to offer international calling services (Nicholas 2008, 1). Digicel took out court proceedings against this decision on the same day (Asaeli 2008, 3). Digicel also commenced a publicity campaign asking people to express their support, which they claim generated 330,000 responses in favour of them being able to offer international

calls (Post-Courier 2008d, 3). The Port Moresby Chamber of Commerce and Industry President Ken Dunn labelled the legislative amendment as a “clear step backwards” (Post-Courier 2008d, 3), fearing a return to pre-Digicel international call rates that were “among the most expensive in the world” (Dunn, quoted in Post-Courier 2008d, 3).

The National Court ruled against Digicel in June 2008, but Digicel announced its intention to appeal (Kaiok 2008m). In October 2008, Digicel once again returned to court to dispute two further decisions allowing Telikom PNG to be the sole operator of an international gateway for phone calls into and out of the country (Post-Courier 2008c, 7). By the end of 2009, there were still ongoing court cases instigated by both Digicel and the government relating to the international gateway (Vuvu 2009, 11). On December 30 2009, the local press reported that Digicel had proposed “a settlement out of court on all matters on hand” (Vuvu 2009, 11), including those cases relating to the international gateway, so that the parties could move forward and work cooperatively (Vuvu 2009, 11).

In April 2009, the PNG Telecommunications Minister, Patrick Tammur, released a report suggesting that PNG was moving towards open competition and deregulation of ICTs (Islands Business 2009c, 25). Amongst the report’s recommendations was liberalisation of the international gateway (Islands Business 2009c, 25). Other noteworthy recommendations included the removal of unnecessary retail price regulation and additional efforts to spread access to telecommunications into rural areas (Islands Business 2009c, 25). Late in 2009, a new ICT bill passed parliament (Talu 2009b, 9; The National 2009i, 10; Vuvu 2009, 11), promising more effective competition and cheaper prices (The National 2009i, 10).

As this review of developments in relation to mobile telephony in PNG focuses on the period from 2007 to the end of the 2009 calendar year, it provides a valuable snapshot of the key issues in the sector during a crucial phase in mobile phone service expansion. Although the political and financial dealings focused on in the PNG press are not at the centre of this research project, they are worth noting as they do impact upon the services that ordinary people have access to.

# Chapter 3: Research Design

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## 3.1 PURPOSE

This chapter will explain how data were collected. The concepts which will be covered are: epistemology, approach, strategy, and methods. Each of these four concepts will be explained and discussed in turn in the following sections. Table 3.1 has been devised by the author, drawing on work by Crotty (1998) and Creswell (2003). It shows that the epistemology and the approach refer to the thinking which informed the research design, while the latter two terms relate more directly to the techniques employed to gather data. Later in the chapter, the following issues related to research design will also be discussed: use of secondary sources; the role of the researcher; data analysis processes; research ethics; health and safety; funding sources; and some limitations of the research design.

Table 3.1

Terms used in this research project (developed from Crotty 1998; Creswell 2003, 4-6)

<b>Term</b>	<b>Term meaning</b>	<b>Synonymous terms</b>	<b>Examples</b>	<b>Used in this case</b>
Epistemology	Theory of knowledge	Paradigm, knowledge claims	Objectivism, subjectivism	Pragmatism
Approach	Theoretical perspective	Philosophical stance, knowledge claims, methodology	Positivism, interpretivism, critical theory	Mixed methods
Strategy	Plan of action	Methodology	Experimental research, ethnography	Concurrent
Methods	Techniques employed	Instruments, tools	Laboratory experiments, participant observation	Survey, interviews

### **3.2 EPISTEMOLOGY**

An epistemology has been described as a “theory of knowledge embedded in the theoretical perspective” (Creswell 2003, 4) which informs the research. An epistemology can also be referred to as a paradigm or a knowledge claim (Creswell 2003, 6). Examples of epistemologies include objectivism and subjectivism (Cowger and Menon 2001, 475-477; Creswell 2003, 4). The epistemology employed in the present study was pragmatism (Creswell 2003, 11-12; Plano Clark et al. 2008, 382; Teddlie, Tashakkori and Johnson 2008, 390), which meant that the researcher was able to “use multiple perspectives or theoretical lenses for seeing and understanding a phenomenon” (Teddlie, Tashakkori and Johnson 2008, 404).

The pragmatic viewpoint is ideal for answering complex questions (Plano Clark et al. 2008, 365) as it “is not committed to any one system of philosophy and reality” (Creswell 2003, 12). It does not align with the objectivist viewpoint of a reality which exists separate to human experience, nor is it situated wholly within a worldview centred on the subjective perspective of the mind (Creswell 2003, 12). Thus, the researcher is freed from the need to adhere solely to either quantitative or qualitative methods and instead can focus on the research question, selecting whichever methods may be appropriate to respond to the question (Creswell 2003, 11).

### **3.3 APPROACH**

An approach to research is a theoretical perspective (Crotty 1998, 5), philosophical stance, knowledge claim (Creswell 2003, 4-6), or methodology (Wadsworth 1997a, 107). Examples of approaches include positivism, interpretivism, and critical theory (Neuman 2003, 70-87). Positivism is an approach which: is insistent on demonstrated possibilities (Cohen, Manion and Morrison 2000, 8; Neuman 2006, 81; Punch 2004, 47); treats the social world “like the world of natural phenomena as being hard, real and external to the individual” (Cohen, Manion and Morrison 2000, 6; also Noblit 2004, 186); and predominantly analyses quantitative data (Neuman 2003, 71). By contrast, interpretivism explores qualitative data which show how people “create meaning in everyday life” (Neuman 2006, 88). Interpretivism “looks for culturally derived and historically situated interpretations of the social” (Crotty 1998, 67). While quantitative research is situated within a

positivist paradigm, and qualitative research has an interpretive or constructivist framework, the mixed methods approach is a third alternative (Plano Clark et al. 2008, 363), centred on a “pragmatist paradigm” (Teddlie, Tashakkori and Johnson 2008, 390; also Plano Clark et al. 2008, 382).

This research project employed a mixed methods approach, meaning that it collected and analysed both quantitative and qualitative data (Creswell 2003, 12; Irwin 2008, 417; Plano Clark et al. 2008, 364; Teddlie, Tashakkori and Johnson 2008, 390). The mixed methods approach is also known as multimethod (Hartmann 2006, 276; Irwin 2008, 417; Oksman 2006, 117), multimethods (Cowger and Menon 2001, 473), convergence, integrated or combined research (Creswell 2003, 16), or a hybrid approach (Krotz 2006, 309). Drawing on both quantitative and qualitative data can “result in a better understanding of the problem being studied” (Plano Clark et al. 2008, 365) as it “provides an opportunity to take advantage of the strengths of each” (Cowger and Menon 2001, 477; also Creswell 2003, 22; Plano Clark et al. 2008, 365). For example, “the researcher can examine statistical results and overall trends, along with in-depth individual perspectives and the context in which they occur” (Plano Clark et al. 2008, 365-366). The advantage of mixed methods research, which is arguably “a major methodological approach alongside” (Plano Clark et al. 2008, 385) the other two main methodologies, is that it is effective in “addressing many of the research questions of interest today that seek to both understand and generalise findings” (Plano Clark et al. 2008, 385).

The data gathered included both quantitative data (such as the number of phone calls made on a given day) and qualitative data (such as the words people used to express their feelings) (Krotz 2006, 303-308). Such a hybrid approach is useful “if we work on a rapidly changing field” (Krotz 2006, 309) like the continuing expansion of mobile telephony into more and more communities in PNG. Thus, “if we want to describe the use of a mobile phone, it is helpful to know quantitative measures and also to understand what people are doing with such devices by qualitative approaches” (Krotz 2006, 309).

### 3.4 STRATEGY

#### 3.4.1 The Concurrent Strategy

Mixed methods research designs vary according to weighting, timing and the data analysis style (Plano Clark et al. 2008, 378-379). Of the various research designs available to mixed methods researchers, the current study employed a concurrent strategy (Creswell 2003, 16), also known as a “concurrent/parallel design” (Teddlie, Tashakkori and Johnson 2008, 393), a “triangulation design” (Plano Clark et al. 2008, 372-374) or the “simultaneous triangulation of methods” (Cowger and Menon 2001, 481). Depicted in Figure 3.1 is the typical concurrent strategy, in which the quantitative and qualitative data are usually: given equal weighting (Creswell 2003, 211; Plano Clark et al. 2008, 372); collected at the same time (Creswell 2003, 16; Teddlie, Tashakkori and Johnson 2008, 393); and “merged together into one interpretation” (Plano Clark et al. 2008, 372; also Creswell 2003, 217).

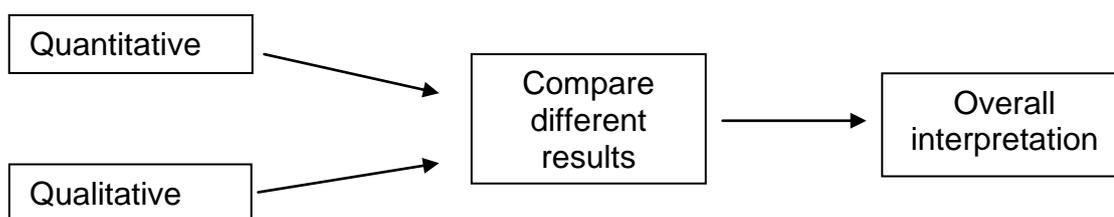


Figure 3.1. The concurrent strategy (figure based on Plano Clark et al. 2008, 372)

During analysis, as well as comparing the different types of data, it is also possible to transform some data to the other type: “data transformation most often occurs when a researcher transforms qualitative results (such as themes) into quantitative counts (such as how frequently the theme occurred)” (Plano Clark et al. 2008, 379). It has been argued that the concurrent strategy can achieve “well-validated and substantiated findings” (Creswell 2003, 217), “by obtaining two different but complementary types of data” (Plano Clark et al. 2008, 372).

#### 3.4.2 Ethnographic Influence

Although the strategy adopted was not ethnography, in the sense of the traditional form of ethnography principally practised by anthropologists (Marcus 1995, 99), the research project has been influenced in its design and execution by

some ethnographic thinking (see Section 2.2.4). For example, care was taken in determining how to seek research permissions in a culturally appropriate manner (see Section 3.9), and the survey questionnaire was conducted in a locally accessible language (see Section 3.5.1).

A key method employed by ethnographers is participant observation (Tacchi, Slater and Hearn 2003, 52), which traditionally requires lengthy, intensive periods of living in a community of interest (Marcus 1995, 96; Tacchi, Slater and Hearn 2003, 9). The length of the stay was often as long as a calendar year so that the researcher could observe “at least one complete cycle of events” or seasons (Preissle and Grant 2004, 178). This research did not involve the researcher becoming a participant in rural communities. Although some observations were made and reported, these were not the principal research data from which conclusions were drawn.

In the literature on ethnography, the approach which bears some semblance to that undertaken here is the multi-sited ethnography (Marcus 1995) which examines multiple communities and exogenous influences upon them (Marcus 1995, 96). The present research also bears some of the hallmarks of ethnographic work in that the principal researcher had developed cultural awareness through having lived in the country for three years prior to undertaking this study and also utilised her linguistic skills during the data collection process (see Section 3.7).

### **3.5 METHODS**

A method is a technique or way of gathering data (Punch 2004, 29; Wadsworth 1997a, 35). Each research method has certain underlying assumptions, also known as the epistemology, approach and strategy, which provide “a context for the process involved and a basis for its logic and its criteria” (Crotty 1998, 66). The survey method is a method commonly employed by positivist researchers (Neuman 2003, 71, 264). Interpretivism corresponds to research methods that focus on the individual, and the small-scale (Cohen and Manion 1997, 39), such as participant observation (Cohen and Manion 1997, 38; Neuman 2006, 88), fieldwork (Preissle and Grant 2004), and interviews (Rubin and Rubin 2005, 28).

This research explored the role of mobile telephony in rural communities in PNG. It investigated the changes occurring in people’s lives linked with the advent of this new tool. To achieve this, the researcher used two different research methods:

the survey method, and interviews. Using a combination of these two methods was designed to enhance the overall findings, as “interviews and survey responses may provide different lenses on people’s perceptions of some particular event or state of affairs” (Irwin 2008, 415). Data collection took place in 2009. In total, the research generated orally-administered survey questionnaires with 748 people, and semi-structured interviews with 17 people.

Using different methods helped to alleviate the shortfalls of each research method (Creswell 2003, 15; Lapan 2004, 243; Plano Clark et al. 2008, 365), and indeed the different underlying methodologies (Plano Clark et al. 2008, 381-382). Employing a combination of different methods in one research project can be referred to as triangulation (Cowger and Menon 2001, 477; also Creswell 2003, 15; Irwin 2008, 417; Lapan 2004, 243). The implementation of triangulation in this research project enabled a greater degree of understanding to be achieved (Irwin 2008, 417) and ensured that more meaningful information was collected.

### **3.5.1 Survey**

The survey method is designed to gain responses from a number of people, to a set of questions, in a short period of time (Neuman 2003, 35). Responses are often analysed in a statistical format (Crotty 1998, 6), and researchers tend to generalise these results to a wider population (Neuman 2003, 35). Tacchi, Slater and Hearn suggest that the survey method can be used in conjunction with other methods and can therefore complement the data gathered through other means (2003, 89). The survey questionnaire designed for this research project reflected the mixed methods approach in that: both quantitative and qualitative questions were included (Plano Clark et al. 2008, 364); wording conveyed “both open- and closed-ended questions” (Creswell 2003, 17); and the resulting analysis involved both “statistical and text analysis” (Creswell 2003, 17).

The survey was conducted in Tok Pisin, with questions asked orally and verbal responses copied down in writing by the researcher. This method of conducting face-to-face discussions was chosen as it allowed the participation of respondents who were not able to read (Conrad and Schober 2008, 173). It also helped to alleviate difficulties with regard to the survey process in settings where familiarity with survey questionnaires was low (Mangen 2007, 26). Potential respondents were chosen in a casual manner, as is appropriate in a village setting, although an effort

was made to ensure that the resulting sample in each village was representative of the population, with respect to: age range; mobile phone ownership; gender; and housing location. Survey questions covered: mobile phone ownership and use; attitudes towards mobile phones; mobile phone owners' funding sources and battery recharging procedures; use of phones by people who did not own mobile phones; media access; media consumption; communication practices; and demographic data such as age and educational background. The survey questions were devised based upon preliminary reading (in particular, Tacchi, Slater and Hearn, 2003), and early, less formal consultations and discussions, and they were piloted in Madang town with Tok Pisin speakers with low levels of formal education, prior to the first village stay. The survey questionnaire can be viewed in Appendix 3 and Appendix 4.

Villages were chosen using factors such as accessibility (which can vary substantially depending upon seasons), safety, and procedures for the introduction of the researcher into communities. Selection criteria were developed in order to determine which villages to include in this study. The criteria took into account practical considerations as well as factors relating to the research question, and are listed in Table 3.2. Two villages which met the criteria were included in this study: Orora (see Chapter 4) and Megiar (see Chapter 5).

Table 3.2

Selection criteria used to select villages for this research project

<b>Selection criteria</b>	<b>Indicators</b>
Mobile phone reception	The village had reception at the time of the research (2009)
Accessibility	It was practical to get to the village: travel time; money; and seasonal variation
Rural location	The village was a rural village
Tok Pisin speaking	The majority of the residents were able to speak Tok Pisin
Introducer	One person was known to the researcher and prepared to introduce the researcher to the village
Safety	The village and the route to and from the village were considered safe

In addition, research assistants were recruited to conduct survey questionnaires in other villages. The research assistants were selected from among full-time, undergraduate students at the campuses of DWU in Madang town, PNG. Desirable

candidates were those with prior research training or experience. To be eligible for consideration, students needed to be PNG nationals who hailed from a village which had mobile phone reception, and who were planning to return to that village following the conclusion of second semester in 2009. The selection process required compulsory attendance at one of the interest meetings held for backgrounding and briefing, followed by written confirmation by email of a student's willingness to participate. At the interest meetings, the aims of the project were outlined. Students were also given information about the work involved and the limited money available for honorariums.

Of the more than 70 students who confirmed their interest once they had attended interest meetings, 30 students were selected to be research assistants. The selection criteria used included: the range of provinces (a large group from Madang Province was selected to allow for a focus on that province, and an average of one from each of the other provinces was selected); the varying types of village locations (for example remote or rural, and coastal, Highlands or islands); and the type of mobile phone reception available (Digicel, bemobile or both). This thesis employs data from survey questionnaires obtained by the eight Madang Province research assistants listed in Table 3.3. The body of data from Madang Province was internally consistent across a broad range of factors, obviating a demand for more data from further afield. A surplus of data obtained from other provinces, which on a notional reading appeared similar in drift to the Madang Province data, was put aside for the reason given above. Constraints on resources available to this research project also limited the range of data to be employed. Research assistants from the other provinces who returned completed survey questionnaires are acknowledged and listed in Appendix 1.

Table 3.3  
Madang Province research assistants

Research assistant	Village, District	Number of survey questionnaires
Stellah Kisekol	Yukyuk, Sumkar	75
Wendy Wuluk	Pepaur, Sumkar	100
Andrew Sepu	Dangale, Bogia	80
Martin Banik	Kurum, Sumkar	80
Sylvester Marep	Giri 2, Bogia	57
Emmil Yambel	Basamuk, Rai Coast	42
Mathew Taleo	Lalok, Rai Coast	76
Almanzo Matbob	Kawe, Sumkar	66

Once selected, the training process for research assistants involved attendance at two training sessions. The first training session was conducted in groups of about five students, and was at least two hours long. It covered topics such as: the aims of the project; its ethical approvals; the research work required; and the timeframe involved. In the first training session, students were given a copy of the survey questionnaire to review and discuss in some detail. At the conclusion of the session, they were given a few more copies of the survey questionnaire to take away and practise with.

The second session was a one-on-one session, lasting for at least 90 minutes. It commenced with a detailed review of the completed practice questionnaires (done with fellow students, relatives, acquaintances, or strangers met in the local vicinity), which was a valuable process allowing for clarification of question meaning, questionnaire navigation and so on. The consent process was then covered, followed by a discussion of the need to attain a representative sample of the village population, with respect to age range, mobile phone ownership, gender, and location within the village. At this stage, research assistants received their research kits (see Figure 3.2), which included a postage-paid envelope, information pages to give to village leaders, a simple form for documenting consent by relevant leaders, the script and forms for

the informed consent process for prospective respondents, survey questionnaires, a folder and two pens. A discussion then ensued with respect to the student's village, so that the researcher could collect basic information such as the village location and development status. This discussion included consideration of the risk factors involved in research in the village, as well as travel to and from the village. Time was allowed for students to raise their own questions. Finally, contact details were swapped, and bank account details were collected.



Figure 3.2. Research Assistant Bennett Kotong receiving his research kit

Copyright: Amanda H A Watson, 2009

Students were given a small honorarium upon return of completed survey questionnaires. They were also given a certificate of appreciation. Some research assistants were given a percentage of their honorarium in advance to assist with the cost of travel home to the village. The research assistants from Madang Province all returned their survey questionnaires to the researcher in Madang town by early December 2009, either in person or care of a trusted relative. Those participating from other provinces were given envelopes with stamps on them so they could post the survey questionnaires back to Madang town from their nearest post office. Benefits for the students involved included: gaining or expanding upon research experience; deepening understanding of research ethics; earning an honorarium for submitting completed survey questionnaires; and learning more about the changes taking place in the home village. Being able to practise their developing research skills in a familiar environment where they had existing cultural knowledge was considered to be advantageous early in their research careers. After completing the

process, many of the research assistants felt the experience had been beneficial for them, explaining that they had increased their understanding of research, had developed practical research skills, and had deepened their knowledge of their own community.

Research assistants orally administered survey questionnaires in Tok Pisin or their local language, known as '*tok ples*'. The survey questionnaires were printed in Tok Pisin, but students were free to translate questions into their local language, if it aided respondents' comprehension. Explanation and translation were encouraged as the emphasis was on ensuring respondents understood the meaning of the questions. Allowing researchers to interact with participants in this way has been found to "dramatically improve response accuracy" (Conrad and Schober 2008, 186) in survey research. Using a local language could have assisted with clarifying the meaning of questions and may have also helped to reduce the perceived distance between the interviewer and the respondent. It has been found that bi-lingual assistants have played a "vital role in explaining what ... was required of the respondents" (Mangen 2007, 23). As well as linguistic benefits, students were also valuable researchers as they were conducting research in their home villages and were therefore aware of how to behave within cultural norms and protocols. The students, having consulted with the researcher during training, utilised their local cultural knowledge to determine which local leaders to approach for permission before research activities commenced.

Engaging research assistants added another element of methodological rigour known as 'investigator triangulation' (Cowger and Menon 2001, 477-478) to the project. The method of recruiting students to act as local research assistants has been employed by other researchers. For example, Graeme Smith asked undergraduate students at an agricultural university in China to gather information for his research project during their holiday breaks at home (Smith forthcoming, 2), while Arul Chib trained students from a university in Indonesia to carry out both data collection and data entry (Chib 2009, 7).

The timing of the research just as mobile phone reception was expanding into rural areas of PNG was crucial in ensuring that early adopter behaviour and attitudes could be determined. It also meant that the survey research in villages was taking place during a period in which people were intensely interested in discussing this

new topic. The research generated great interest amongst potential research assistants and also potential survey respondents as it focused on a current, ‘hot’ topic of conversation. The survey reported on in the thesis consisted of ten villages and was conducted during the earliest phases of access and adoption, as shown in Table 3.4.

Table 3.4

The village survey dates and the time elapsed since mobile phone introduction

<b>Village name</b>	<b>Reception start date</b>	<b>Research date (when survey questionnaires were administered)</b>	<b>Time lapsed between reception start date and research date</b>
Orora	December 2007	February 2009	14 months
Megiar	October 2007	September to November 2009	About 24 months
Yukyuk	December 2007	October to November 2009	22 months
Pepaur	October 2007	October to November 2009	24 months
Dangale	November 2007	October to November 2009	23 months
Kurum	October 2007	October to November 2009	24 months
Giri 2	Limited in 2008 / throughout village since July 2009	October to November 2009	About 12 months / 3 months since full reception
Basamuk	Some in 2008 / then July 2009	October to November 2009	About 12 months / 3 months since full Digicel reception
Lalok	July 2009	October to November 2009	3 months
Kawe	October 2007	October to November 2009	24 months

### **3.5.2 Interviews**

In addition to the survey, interviews were carried out by the researcher with three different groups of people: selected villagers; town residents who hailed from the villages studied; and key informants such as telecommunication company managers. The first group of people were either village leaders or people with particular positions of interest in the community (such as the first person in the village to own a mobile phone, or the local priest). The second group of people were chosen to provide information about communication between relatives residing in town and the village. The third group were strategically selected, knowledgeable people, referred to here as ‘key informants’ due to their position or their educational background (for example managers of the telecommunication providers, a

representative of the relevant government department, and so on). The number of people interviewed within each category is shown in Table 3.5.

Table 3.5

Interviews conducted

Type of interviewee	Number of interviews
Villager	7
Town resident from relevant village	2
Key informant	8

Most interviews are a mix of both structured and unstructured elements, as the topic of discussion is established by the interviewer, who then ideally manages the interaction with flexibility and adaptability (Gillham 2000, 3). Gillham describes interview types across a spectrum: the structured interview is the format for administering survey questionnaires; the semi-structured interview includes both open and closed questions; and the unstructured interview is limited to just a small number of open questions (2000, 6). The unstructured interview is problematic as it requires a great deal of preparation, can be very time-consuming and can place undue expectations on the interviewee (Mangen 2007, 27). Therefore, the structured interview format was applied in the verbally-administered survey, while the semi-structured interview was well suited to the interviews with both urban and village interviewees.

Although Tacchi, Slater and Hearn use a different term ('in-depth interview'), their approach provides some useful suggestions for conducting interviews (2003, 61-63), including the preparation of an interview schedule, which is not a prescriptive listing of questions, but rather some suggestions which can be modified as required during each interview (2003, 62). Hollway and Jefferson discuss a particular technique for approaching interviews which they argue moves away from a traditional approach of questioning and expecting 'answers' (2000). By contrast, in the narrative interview, the interviewee is conceptualised as a story-teller or narrator and "the agenda is open to development and change, depending on the narrator's experiences" (Hollway and Jefferson 2000, 31). They argue that the resulting stories allow the researcher to better understand their research subjects (Hollway and Jefferson 2000, 32).

The researcher entered into interviews in both urban and village settings in PNG with a list of pre-prepared questions, which were then varied, depending on the responses given by each interviewee. In the village setting, the researcher was particularly careful to be respectful towards the individuals being interviewed, due to factors such as the interviewees' weak educational background, and limited exposure to research practices. In towns and cities, interviewees were approached in a socially acceptable manner, for example behaving in a professional and mature manner in office environments. The village situation is less formal and more personal than the urban setting, and therefore the interview questions adopted some of the narrative interview strategies, seeking to position the interviewer as the audience and the interviewee as a 'story-teller' (Hollway and Jefferson 2000, 31). For example, an urban interviewee could be asked about the impact of the introduction of mobile phones in rural settings in emergency situations, whereas this topic would be brought up in a more conversational manner with a villager, by asking them to relate anecdotes of occasions in the distant past, and then more recently, when someone in the village became seriously ill. In this research project, all the interviews were of the semi-structured style. In the case of the village interviews, the interview technique employed was also influenced by the narrative interview concept (Hollway and Jefferson 2000, 31-39).

Interviewees were given a choice as to whether the interview was conducted in Tok Pisin, English or a mixture of both. Audio recordings were made of all the interviews conducted. Using an audio recorder can assist with interpretation and analysis, particularly when the interviewer is working in a second language (Mangen 2007, 27). It also avoids the distraction of note-taking for both parties (Mangen 2007, 27).

### **3.5.3 Timeline**

Figure 3.3 depicts the timeline for the data collection phase of this research project.

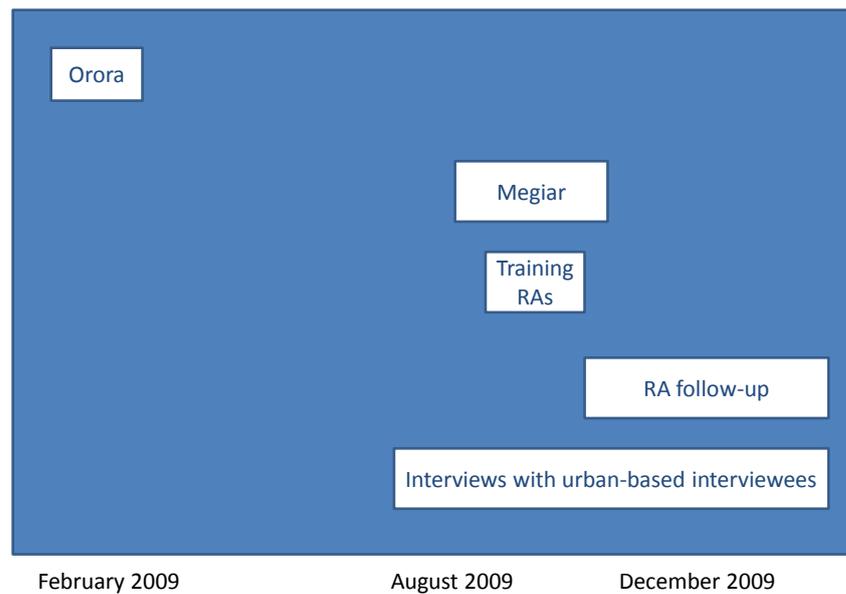


Figure 3.3. Data collection phase timeline

### 3.6 USE OF SECONDARY SOURCES

Reference to literature followed a conventional academic search style, including use of databases and library searches. As well, references were obtained from advisors and other relevant academics: Lee Duffield, Angela Romano, Roger Vallance, Anastasia Sai, Terry Flew, Max Quanchi, Jo Tacchi and others. In addition, the reading included a systematic review of the two daily newspapers published in PNG. This review of the Post-Courier and The National was undertaken for cover dates from January 1 2007 to December 31 2009<sup>7</sup>. The Post-Courier articles were sourced using keyword searches in the Factiva database, while The National was examined in hard copy format in The National Library of Australia in Canberra.

This review was to obtain information from set times which could assist the inquiry, and which could be checked. This was not a content analysis in the accepted academic sense using word counts, categorisation, weighting and so on and employing the body of published work as a principal source (Bouma and Ling 2004,

<sup>7</sup> Occasional newspaper articles which fall outside of this timespan may also be referred to.

78-83; Cohen, Manion and Morrison 2000, 164-165; Neuman 2006, 44). Instead, this newspaper review was designed to: inform the researcher's understanding of the changes taking place with respect to mobile telephony in PNG, particularly developments in service provision, coverage rollout and policy decisions; maintain an awareness of public debate on related issues through close attention to letters to the editor and editorials; and strengthen the literature review on this topic. The material gathered through the newspaper search is referred to in various parts of this thesis. In particular, Section 2.10 contains information about the situation regarding mobile phones in PNG, particularly since Digicel commenced operations in the country.

It might be observed that PNG as a developing country is not particularly well served by information sources such as academic journals or policy documents, and material from the government is difficult to obtain. However, the newspapers do carry much information, be it official or otherwise, in public debate (Duffield 2006a, 98). This information is comprehensive and verifiable, being usually attributed to named sources.

### **3.7 THE ROLE OF THE RESEARCHER**

In all research projects, "the researcher's own cultural and linguistic knowledge, disciplinary affiliations and financial and logistic resources also serve as important determinants of the choice of topic ... and the approach adopted" (Hantrais 2007, 13; also Ackers 2007, 88; Mangen 2007, 21-22). Therefore, some brief statements follow about the researcher's background and relevant experience.

The author is from Australia, is a native English speaker and has studied both in the communication and development fields. Vallance argues that a researcher who is not ethnically Melanesian (Melanesia is the Pacific region that includes PNG) can conduct research in this setting with cultural sensitivity and appropriateness, provided that the researcher has a "lived experience of Melanesian culture" (2007, 11). The researcher in this project, Amanda H A Watson, does possess such lived experience in PNG, as she lived and worked in the country for three years prior to commencing this project. Her role was as a lecturer in communication and development at DWU in Madang town. She applied herself diligently during her time there to develop her skills in Tok Pisin. In addition, the researcher advanced her

intercultural skills by attending a three-week cultural orientation course run by the Melanesian Institute in Goroka, PNG. This course was designed to assist foreigners working in PNG, enabling them to deal with their local counterparts with increased sensitivity and cultural awareness. Throughout the three years she lived in Madang town, the researcher built strong relationships with people from numerous tribal backgrounds.

While it is important to be mindful of the influence a researcher's background can have in shaping research design decisions, as well as judgements about the data gathered (Ackers 2007, 88; Hantrais 2007, 13), there are some benefits which can come into effect when conducting research in a foreign cultural setting. For example, the researcher may find it easier to comprehend differences between countries (Hantrais 2007, 13) and they may also be able to "gain an understanding of phenomena that was not obvious to insiders" (Hantrais 2007, 13).

Having been a mobile phone owner and user since about 1996, the author was pleased to leave behind the technology when she moved to PNG late in 2004. At that time, mobile telephony appeared to be non-existent in Madang town. The author enjoyed the freedom of not being 'always on-call'. Mobile phones began to be utilised by some foreign workers residing in Madang town from late 2006, but this habit remained the exception to the rule, with very poor quality reception in the town. It was not until Digicel's launch in 2007 that mobile telephony became an increasingly common part of life in Madang town.

On research trips to PNG in 2009, the researcher owned and used two mobile phones: a Digicel phone and a bemobile phone. The handsets were both basic Nokia handsets, similar or identical to those being utilised by many people in PNG at the time. Thus the researcher had first-hand experience of the common mobile phone experiences in PNG in 2009. While the author is herself a mobile phone user<sup>8</sup>, she is not a designer of mobile phones or someone who markets mobile phone services (Green and Haddon 2009, 1). She has a neutral stance towards the technology and does not necessarily view the devices as inherently good or evil. The author did not receive any funding from Digicel, bemobile, Telikom PNG or any other telecommunication company for this research.

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<sup>8</sup> For discussions about the researcher as a mobile phone user, see Pelckmans (2009), Green and Haddon (2009, 1-2), and Oksman (2006, 105).

It has been posited that knowing a language may not be sufficient to understand a culture, the meanings of phrases or the emotions conveyed by respondents (Mangen 2007, 22). This potential pitfall highlights a benefit of employing local research assistants to conduct some of the data gathering: if similar results were attained in various villages, collected by different people, then this could provide additional validation of the trends occurring or the perceptions held.

### **3.8 DATA ANALYSIS**

This study used a mixed methods approach, resulting in both qualitative and quantitative data. As a concurrent strategy was adopted, the two types of data were merged together during analysis (Creswell 2003, 217; Plano Clark et al. 2008, 379) and complemented one another. This was done in the usual manner “by simply comparing and contrasting the quantitative results with the qualitative findings to see whether the two datasets converge and agree with each other” (Plano Clark et al. 2008, 379).

The choice of data analysis techniques “must be appropriate for the kinds of data gathered” (Cohen, Manion and Morrison 2000, 82). Data analysis techniques are employed in different ways for qualitative and quantitative data (Neuman 2006, 14). With qualitative data, the researcher looks for “patterns, themes, categories and regularities” (Cohen, Manion and Morrison 2000, 147) in the material gathered from participants. The researcher seeks articulations that elucidate the respondents’ experiences, which can mean that “the striking or insightful observation of a relatively few informants may be qualitatively more important than the weight of what most said, if that insight demonstrates a usefulness to better understand the phenomenon at hand” (Vallance and Lee 2005, 5). In the present case, qualitative data included people’s perceptions of mobile phones and stories about experiences with the technology.

For quantitative data, the data analysis process involves entering the raw data into a computer software package such as SPSS, which can create tables, graphs and statistics (Neuman 2006, 14). This output is then interpreted in an attempt to answer the research question (Neuman 2006, 14). In this research project, the software program PASW (SPSS) Statistics 18 was used and the quantitative data gathered from the survey questionnaires provided useful information such as mobile phone

uptake rates and usage patterns. Basic statistical operations were carried out where appropriate.

Data transformation (Plano Clark et al. 2008, 379) also took place, for example when calculating which concerns were the most commonly expressed. Typically, it is thought that the two types of data serve distinct purposes, with “qualitative evidence accessing meaning and quantitative research supplying breadth” (Irwin 2008, 419). Nonetheless, the two can overlap (Irwin 2008, 419). For example, in this case, the qualitative data about positive and negative concerns related to mobile phones provided breadth once it was transformed into numerical counts that could be ranked.

### **3.9 ETHICS**

Given that this research involved human subjects from a different cultural background to the researcher, ethical considerations were carefully examined. Although ethical considerations are extremely important in any research project, there are some particular issues around conducting research in PNG. Vallance (2008) recommends the adoption of four attitudes or approaches to ensure that research carried out in Melanesian village settings is conducted in an ethical and culturally sensitive manner: community involvement; collaborative action; compassion; and courage.

Regarding the first recommendation, Vallance argues that ethical research in Melanesia must: inform the community<sup>9</sup>; seek permission from the community; and include community perspectives in the data collection and analysis (Vallance 2008, 8-9). In this research project, the first two of these prescribed points were adhered to carefully, and every effort has been made to take into consideration community perspectives, for example by presenting the results for each village separately (see Chapter 4, Chapter 5 and Chapter 7). Collaborative action (Vallance 2008, 9-10) was not practical in the planning stages of this research project. Even so, effort has been made to acknowledge community contributions (Vallance 2008, 9). Clear channels for understanding are important so the third recommendation suggests that “when the research context includes cross cultural parameters, the need for empathy and compassion becomes even stronger” (Vallance 2008, 10). Every effort was made to

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<sup>9</sup> Here Vallance is most interested in communities being given information about research projects before being asked to decide whether or not research activities could take place. This practice was adhered to in all villages reported on in this thesis. In addition, the researcher also intends to return to Orora and Megiar to present the findings after the research has been completed.

conduct the data collection and analysis in a compassionate, considerate manner. Finally, Vallance believes “courage is required in reporting cultural research” (Vallance 2008, 10), particularly with respect to differences of interpretation or uncertainty about intended meanings. It is hoped that the manner in which the data has been reported has adequately addressed this concern.

Due to low literacy levels in PNG (United Nations 2010), it is a difficult task to gain informed consent from participants (Vallance 2008, 8). Even using translated consent forms can be unsatisfactory (Vallance 2008, 3, 8). This difficulty is compounded by the local style of village leadership, which could mean that it is difficult for an individual to choose not to take part after their leaders have given their consent for the community’s involvement (Vallance 2008, 5). Therefore, Vallance recommends that consent must be garnered both from the community and from each individual taking part (2008, 9). Vallance suggests that the latter could be done by asking an illiterate person to make a mark on a form (2008, 9). This method was used by research assistants. In Orora and Megiar, the principal researcher asked villagers to give their consent verbally, speaking into an audio recorder. In both cases (using the paper form and the audio recording), the research project’s aims and procedures were explained verbally, in a translated and simplified form, prior to asking villagers whether they wanted to participate.

Vallance outlines several criteria for research that wishes to define itself as inherently Melanesian, such as respect for Melanesian cultures and worldviews, and a focus upon the experiences of local people (2007, 11). This aligns with the current research in that the research questions and findings focus heavily on the experiences and perspectives of villagers. Indeed, Vallance argues that “respecting the Melanesian context of the society is the only way to do ethical research in Melanesia” (2008, 2). Vallance also suggests that publication of research findings should be carried out “in ways that fosters [*sic*] the life of the Melanesian community” (2007, 11). Using this notion as a guide, the findings of this research are to be given to the communities involved once compiled.

No significant negative outcomes arose for participants due to their participation in this research project. Nonetheless, it was made clear during the recruitment stage, and throughout the fieldwork, that all participants (research assistants, survey respondents and interviewees) were under no obligation to

participate and were free to withdraw at any time. One research assistant did withdraw due to concerns felt by both her and her parents about exposure to sorcery in the village. This student had not spent much time in either her paternal or maternal villages in recent years as both her parents worked in urban centres and there was concern that villagers might act out of a sense of jealousy. In both Orora and Megiar, there were small numbers of people who chose not to participate in the survey. All of these decisions were handled respectfully and were not questioned.

The principal researcher's culturally appropriate access to villages was ensured through liaising with local colleagues who were also members of the target communities. In addition, in Orora, the researcher adhered to the standard practice of visitors to villages by contributing food to the host household, regardless of the number of people who participated in the research. There are serious ethical considerations associated with the use of incentives, as "excessive or inappropriate financial or other inducements to obtain the participation of research participants ... might coerce participation" (Miller and Salkind 2002, 112). Therefore, it was emphasised that this contribution was a token of appreciation for hosting the researcher, and not a reward for providing information. The contribution was intended to compensate the household for the costs incurred when housing the researcher, and therefore it was appropriate, in keeping with the literature regarding incentives in research (Miller and Salkind 2002, 120). In Megiar, the researcher stayed in a convent at the edge of the village, and an agreed small monetary contribution was made to cover food and utilities.

Giving, on a very small scale, is an important part of personal interactions in PNG. Commonly betelnut<sup>10</sup> is given and shared (Kunze 1925, 54), along the lines of shaking hands or sharing a cup of tea in Australia. Such interaction helps to establish a bond between people, and the researcher offered at least one betelnut to each person that she encountered during her travels on foot around Orora and Megiar. This was culturally appropriate in both villages and showed the researcher respected the local culture and practices. The small degree of social attachment the giving of betelnut established may have made some villagers feel more inclined to consent to participate in the research. Therefore, whatever sharing took place, each time an

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<sup>10</sup> Betelnut grows on a tall tree, the areca palm, which is common in tropical areas. It is chewed throughout much of Asia and the Pacific. In the Pacific it is typically chewed with other ingredients such as leaves or limestone. (For more information on betelnut see Hirsch 2007.)

individual was approached, it was made clear that the person was under no obligation to participate. For participants in urban centres, no incentives, payments or reimbursements were offered.

The recruitment of research assistants involves the risk that they may act unethically. Effort was made to mitigate this risk by training the research assistants in ethical issues and practices prior to their data collection activities. Village leaders were given contact details for the research team. Villagers were also told the name of an academic at DWU to contact about any concerns. No such enquiries have been made. In addition, as the research assistants were familiar with the local cultural environments and were members of the communities, they would have been likely to act sensitively and appropriately.

All individuals and communities were treated with sensitivity and respect by the principal researcher and efforts were made to ensure that the research assistants acted in a similar manner. The ethical risks involved in this research project were minimal and a comprehensive strategy was designed for addressing them. The research did not involve children, nor did it delve into highly sensitive topics such as violence or sexual health. The participants were not in a dependent or captive relationship to the researcher. The research did not involve deception and did not cause distress to participants. Instead, the research involved discussions with adult respondents on a topic that was generally of interest to them and which was already being discussed within communities and families. Respondents were always free to skip certain questions or to terminate the interaction at any point. The researcher was aware of ethical risks associated with cross-cultural research. Every effort was made to conduct this research project in an ethical manner at all stages, from planning through data collection to analysis and presentation.

### **3.10 HEALTH AND SAFETY**

The Australian government's travel advisory warning for PNG indicates that a "high degree of caution" (Department of Foreign Affairs and Trade 2008, np) should be employed in PNG. This is not the most severe level of travel warning that the Australian government can prescribe (Department of Foreign Affairs and Trade 2008), but it clearly indicates that there are issues that need to be seriously considered when planning travel to PNG. The specific risks stipulated in this travel

advice are too numerous to mention here, but largely fall into these categories: crime; health; dangerous locations; and natural disasters (Department of Foreign Affairs and Trade 2008).

The Workplace Health and Safety Officer (WSHO) from the researcher's university faculty was enlisted to provide assistance to the researcher in identifying hazards and developing a risk management plan. A systematic approach was taken, dealing with each of the items listed in the Australian government's travel advice (Department of Foreign Affairs and Trade 2008) in turn. Other issues of concern were also explored, such as travel within the country and animal bites. For each item, a response was drafted and subsequently revised as necessary.

Former DWU colleagues with an understanding of research ethics and methods assisted with culturally appropriate introductions into communities. In many PNG cultures, an introduction is very important when a visitor arrives in a village. Therefore, this introduction assisted greatly not only with the conduct of the research itself, but also in ensuring the safety of the researcher in the village. Special acknowledgement is made of these key people: Ben Naing in the case of Orora, and Anastasia Sai regarding Megiar. In addition, in each village a guide was taken on to help with orientation and safety in the village: Talia Naing in Orora and Christine Yass in Megiar. Pelckmans explains that such an assistant can help with interpreting as well as cultural advice (2009, 32). Village leaders who also played a central role in facilitating the researcher's successful progress were Shong 'Moks' Naing (Orora) and Felix Didol (Megiar).

Using advice from trusted local colleagues, and basing decisions and plans upon previous experience in PNG, enabled the researcher to develop, in conjunction with the WSHO, a thorough risk management plan that addressed a comprehensive range of issues. The importance of health and safety cannot be underestimated. This can impact upon both itineraries and budgets. In the case of the research in PNG, the research team was aware from the earliest discussions that health and safety was an important area to consider. The process of developing the risk management plan produced positive outcomes and uncovered numerous possibilities that had not been expressly taken into account previously, for example the risk of snake bite, considerations about where to store research-related equipment, and the development of an emergency contact list and regular contact protocols. The interaction with the

WSHO was valuable and constructive. As a result, the researcher was more fully equipped to embark upon her field research in a manner which mitigated likely risks.

The researcher was enrolled at Queensland University of Technology (QUT) and followed QUT's processes and practices, and monitored travel advice issued by Australia's Department of Foreign Affairs and Trade. The researcher received the relevant vaccinations. The support of DWU increased the researcher's safety. The researcher established a schedule for maintaining regular contact with the principal supervisor, and her external supervisor at DWU.

During the fieldwork in PNG in 2009, the researcher experienced four health and safety issues. In the first case, the researcher contracted an unidentifiable illness in Orora. This led to hospitalisation in Madang town, then Port Moresby, before medical evacuation to an Australian hospital. Recuperation was a lengthy, gradual process. Financially this was made possible as the evacuation and other medical expenses were covered by QUT's insurance policy, and paid sick leave was available through the scholarship conditions. The second issue related to risky road travel between Madang town and Megiar. In consultation with Anastasia Sai, appropriate measures were taken to reduce this risk. Specifically, the researcher avoided travel on Fridays (a day when more alcohol is consumed than on other days) and found a reliable, conservatively driven bus which was able to collect the researcher from her accommodation in town. Also, accommodation at the nearby convent was secured so that daily road travel could be avoided.

The third issue involved a tsunami alert being issued for the north coast of PNG during one of the researcher's trips to the coastal village of Megiar. The researcher was notified of this alert by a funding body based in Australia. Fortunately, no tsunami reached PNG on that occasion. The fourth and final issue related to a considerable upsurge in violent crime which occurred in Madang town in late November and early December 2009. This led to a decision to leave the country earlier than planned, which had little impact upon the research project as a great deal of data had been collected by that time. To complete the data collection phase remotely, two interviews with key informants were conducted over the telephone. Like the other interviews, these two interviews were audio recorded for later review.

In summary, the researcher conducted her research in a culturally appropriate manner, which enhanced her safety substantially. The researcher's risk management

strategies, supportive local contacts, knowledge of PNG, and understanding of the local language, were sound, and covered all that could be achieved in the planning stages to ensure her safety. Institutional support, including advice and assistance services of the Australian government, and the services available from the two universities, QUT and DWU, were materially valuable. In review, it was seen that some of the anticipated risks were real and that the risk management procedures implemented ensured that appropriate actions could be taken in each case when a concern arose.

### **3.11 FUNDING SOURCES**

Funding for this project was sourced from an Australian Postgraduate Award, an Endeavour Awards Endeavour Research Fellowship, and the QUT Creative Industries Faculty. DWU also offered in-kind support, such as office facilities, library access and assistance with securing a student visa for PNG. As has been stated earlier, no funding for this project was received, either directly or indirectly, from any telecommunication company.

### **3.12 LIMITATIONS**

This research project was designed to be conducted by one principal researcher, with minimal guidance and funding, within a three-year period. Therefore, it was not possible to undertake a longitudinal study or to analyse data from provinces throughout PNG. The research focused on rural areas and therefore did not examine happenings or attitudes in urban centres. The project did not involve extensive analysis at the policy level or within the legal realm. Nor did it consist of a detailed economic analysis of the impact of mobile phones in PNG. Instead, this research project focused on community-level understandings. It uncovered and portrayed the developments taking place in rural villages during the first phase of mobile phone network expansion into rural areas of PNG.

Limitations of the concurrent strategy for mixed methods research include potential difficulties in comparing the two types of data gathered (numeric and textual) (Creswell 2003, 217), and possible problems with resolving discrepancies in the results (Creswell 2003, 217). Such difficulties were not encountered in the present case as the different types of data generally matched one another well. There

was considerable consistency between the data from the various field sites and between the data generated using different research methods.

# Chapter 4: Orora

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## 4.1 INTRODUCTION

This chapter examines the introduction of mobile telephony into Orora, a rural village in PNG. The chapter contains findings from field research conducted in Orora in February 2009. Shortly before the introduction of mobile telephones in Orora, a woman gave birth on mats on the floor of a bush-material house<sup>11</sup>. Once the baby was born, her placenta failed to come down. Although treatment of such a case is relatively routine in a hospital, in this small, rural village on an island in a developing country, finding help was a real problem.

Yes, it was time for her to give birth, and the baby had come out successfully, but the afterbirth did not come out. And this was something where she needed people from the hospital to treat her. So we started looking, and at this time it was very hard work to go on foot and find a car and check it was working. There were excuses like the tyre is blown, or OK another one we went to look at, the battery was flat, this kind of thing. And we went to one and the battery was flat, so we tried to push-start the car. It was night and we pushed the car and we thought it would start, and it would work for us, go, go, no, no, it didn't start. We came back, no. The ambulance came here very early in the morning, no, the woman had already died. It looked like she had died, but the ambulance driver wanted proof. Had she really died for certain, or this kind of thing, so it was late but still he took her to the hospital. They said she was definitely dead, so they brought her back.<sup>12</sup> (Naing 2009b)

This incident happened in the village of Orora, in PNG, only a few years ago. But this experience is not isolated to this one occasion or place. According to country-wide figures, there are “more women and children dying during birthing,

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<sup>11</sup> Housing made of bush materials is common in PNG rural areas. This means the housing is made from natural fibres readily attained in the local environment, for example pandanus leaves.

<sup>12</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Yes, long taim bilong karim, na bebi em kamaut pinis ia, tasol bilum bilong em i no kamaut. Na dispela em nid long, olsem ol lain long hausik bai wok long kain wanem ia olsem. So em nau mipela painim, em long dispela taim mipela hat tru, go wokabaut go long narapela kar sekim [check], em bai givim kain eskius olsem a taia i pans o, OK narapela mipela go lukim em, bateri i daun, dispela kain go, na mipela go long wanpela, em bateri daun, so mipela traim long ‘pusim’ [push] kar. Nait ia mipela pusim kar go kam, mipela ting em bai stat na mekim go, go, nogat, nogat, em i no stat. Mipela kam bek. Nogat, ambulens ‘early’ moning tru em kam hia, nogat, em meri hia em indai pinis. I luk olsem em indai, tasol draiva em traim long ‘provim’ [prove]. Tru tru em indai o dispela kain, em leit tasol em stil kisim em go long hausik. Ol it tok tru tru em i dai pinis. Na ol kisim em kam bek.”

than dying of malaria” (Giris et al. 2005, 5). There is evidence that PNG’s “leading indicators of women and children’s health ... are among the lowest in the Pacific” (Giris et al. 2005, 5). In the case of the people living in rural localities, the difficulties are greater than for those people living in urban centres (Giris et al. 2005, 5-6). The harsh reality is that poor people in rural and remote villages often do not have access to adequate healthcare facilities, transport options and communication systems. The import of this story is that the outcome might be quite different if a similar situation was to arise again in the same village, due to the recent introduction of mobile phone reception there.

We know that mobiles are here and we can directly ring the ambulance or a car, like a man who has a car in a village, if we know his phone number, we can ring him and the car can take her away. It’s easy, you can just sit. There’s no need for the hard work of walking about on foot, going here, going there, you can sit in the house and ring others. If they give an excuse, you can ring another person again. So I’ve weighed it up and I think mobile telephony coming in is good. I understand, and last time I told you, I think if this system had come through to us before, we would have saved this woman. But it hadn’t, and we lost her.<sup>13</sup> (Naing 2009b)

This chapter will consider the assertion made by the villager here that the recent introduction of mobile phone reception in Orora stands to substantially alter the lives of the residents. The chapter will introduce Orora, before presenting the findings.

## **4.2 ORORA, SUMKAR DISTRICT, KARKAR ISLAND**

Orora is a village consisting of 50 houses, located on the hillside, inland from the north coast of Karkar Island. It is in Sumkar District of Madang Province. At the time when the research was conducted in February 2009, it was found that: Orora did not have a marketplace or health centre; no-one in Orora owned a motor vehicle or a home telephone; there was no electricity supply; there was a Catholic church, which was visited by a priest on a rotational basis; the church building was also used for the

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<sup>13</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Em mipela save mobail em stap na mipela ken dairekli ringim ambulens o wanpela kar, olsem wanpela man i gat kar long ples, mipela save long namba bilong em, mipela ken ringim em na kam kisim em go. Em isi, yu ken sindaun tasol. No nid long bai yu hat wok o wokabaut, go kam, go long narapela, go long narapela, bai yu sindaun tasol long haus na ring go long narapela, na em givim eskus yu ken ringim narapela gen. Em so mi skelim nau mobail kam em, em gutpela. Em mi anderstandim dispela olsem, na las taim mi tokim yu, mi ting dispela sistem kam ‘through’ long mipela bipo yet, dispela meri bilong brata hia, em bai mipela sevim em. Tasol nogat olsem na mipela lusim em, o em lusim mipela.”

village's elementary school; and the roads leading to the village were severely deteriorated, and could only be negotiated by four-wheel-drive vehicles.

The villagers lived a mainly subsistence<sup>14</sup> lifestyle, eating seasonal foods and growing some cash crops. There was no improved water supply and only one house had a rainwater tank, which meant there was inadequate water availability during the lengthy dry season<sup>15</sup>. The people had formed a development organisation, with the aim of improving some of the circumstances described here. The women had also formed a group, with the hope of generating funds for a communal rainwater tank. A small number of local men represented Orora in the elected government member's local council. Mobile phone reception became available in Orora in December 2007 when a Digicel tower in neighbouring Narer commenced operations. It was found that there was full mobile phone reception throughout Orora, as shown by the reception graph on the mobile phone handset's screen in Figure 4.1.



Figure 4.1. A villager in Orora holding up a mobile phone

Copyright: Amanda H A Watson, 2009

Orora is situated within Sumkar District, which includes Karkar Island and nearby parts of the mainland of Madang Province. In assessing the 85 districts within PNG, Hanson et al. rated Sumkar District as much less disadvantaged than others (2001, 310). However, they also acknowledged that within each district there can be substantial variation in people's ability to access services "often because of where

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<sup>14</sup> Subsistence relates to the method of sustaining life. Subsistence lifestyle generally refers to life which exists largely outside of a cash economy. Typically it involves growing one's own food for sustenance. It may also include growing some cash crops and/or bartering and trading with neighbours. For some discussion of subsistence see Bennett, Grossberg and Morris (2005, 23) or Diamond (1998, 59-61).

<sup>15</sup> Like most of the country, Karkar Island has two seasons annually: a wet season, and a dry season (McSwain 1977, 3; Stanley 1982, 314).

they live” (Hanson et al. 2001, 10). Some places in Sumkar District, such as coastal villages on the mainland or along the foreshore of Karkar Island, have relatively easy access to “a range of health, education and information services” (Hanson et al. 2001, 10). Orora is disadvantaged by comparison, due to its location up the hillside, as it is accessible only by eroded, steep and slippery roads. The villagers were aware of this difference: “we are, let me say, isolated. We’re too far up the mountain compared to the villages at the shoreline where it’s easy for services or whatever kind of things to go through there. And we’re too far up, and regarding development and all this kind of thing, we’re still coming towards that”<sup>16</sup> (Naing 2009b).

Hanson et al. rated Sumkar District as having “moderate access to services” (2001, 307). This descriptor means that it takes four to eight hours of travel to reach a major service centre (Hanson et al. 2001, 21). This rating is useful as a loose indication of comparative situations across PNG. However, the situation at a local site can be more complex and this indicator may be too general to apply with such specificity. In the case of Orora, this estimated timing could well apply. However, as has already been described in the above anecdote, the ability to organise suitable transportation, particularly if a motorised vehicle is required, can be limited by a range of factors. This makes it hard to estimate timing in an accurate manner.

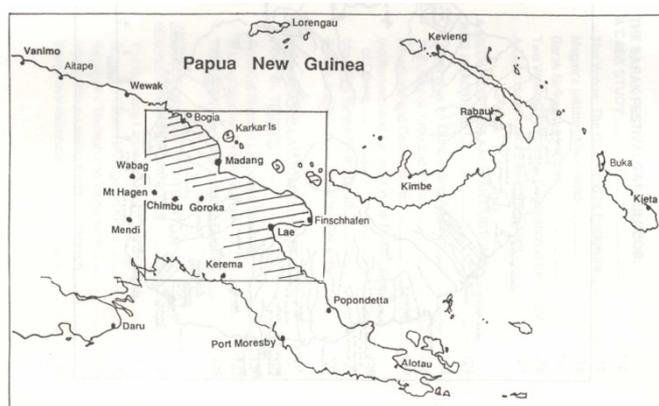


Figure 4.2. Papua New Guinea (sourced from Kunze 1925, viii)

Karkar Island is a volcanic island (see Figure 4.2), lying about 16 kilometres off the Madang coastline (McKee, Cooke and Wallace 1975, 1), around 65 kilometres North North-East of Madang town (Pech 1991, 29). On a clear day it can

<sup>16</sup> This text is an English translation of a quote from an interview in Tok Pisin: “mipela, bai mi tok ‘isolated’, mipela antap tumas long sampela ples i stap long nambis, we em bai isi long ‘services’ o wanem kain ol samting bai go ‘through’ long hia. Na mipela em antap tumas na long sait bilong ‘development’ na ol kain samting olsem, mipela stil kam yet.”

be seen from Madang town, although most of the time it is shrouded, at least in part, by clouds. At sea level, the island is about 25 by 19 kilometres (Global Volcanism Program nd; McKee, Cooke and Wallace 1975, 1; Pech 1991, 29), and its highest point is 1840 metres above sea level (Global Volcanism Program nd; McKee, Cooke and Wallace 1975, 2). In 1947, there were fewer than 5000 Karkar Islanders (MTS Foundation 2007). In 1975, the population of the island was approximately 20,000 people (McKee, Cooke and Wallace 1975, 1), but this has now grown to exceed 50,000 (MTS Foundation 2007). The first written record of volcanic activity on Karkar Island was made by Abel Tasman on April 20 1643 (Global Volcanism Program nd; McKee, Cooke and Wallace 1975, 2). A missionary recorded activity in 1895 (McKee, Cooke and Wallace 1975, 3; Pech 1991, 34, 68), and there may have been some mild activity in 1962 (McKee, Cooke and Wallace 1975, 3). There were eruptions in 1974 and 1975 (McKee, Cooke and Wallace 1975, 1) and in 1978-1979 (Global Volcanism Program nd; Pech 1991, 34; Stanley 1982, 389).

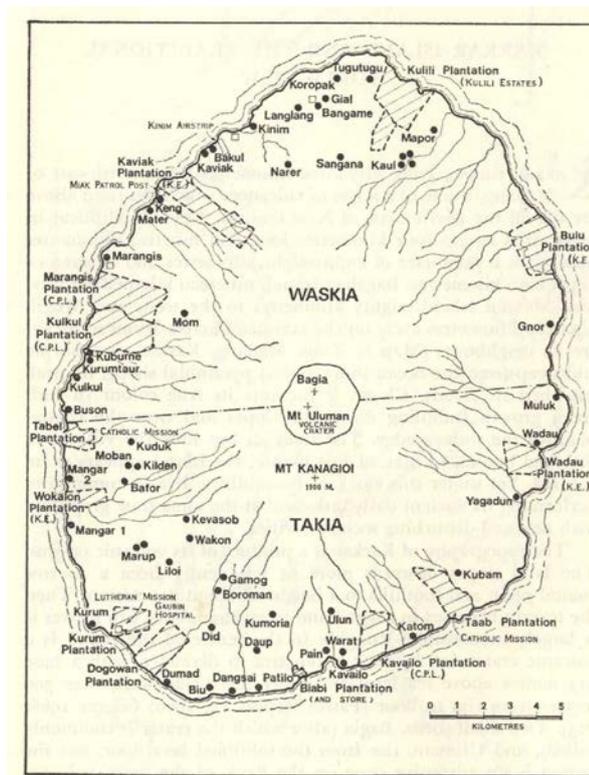


Figure 4.3. Karkar Island (sourced from McSwain 1977, 2)

Linguistically and culturally, Karkar Island is “almost equally divided” (Pech 1991, 29) between two language groups, which are descended from two distinct



### 4.3 RESEARCH UNDERTAKEN

The researcher stayed in Orora for nine days. During the researcher's stay, a survey was conducted with 72 adults in Orora (see Figure 4.5). This is a representative sample of the adult population, given that the village consists of only 50 homes. All of the homes in the village were visited during the survey period and adult family members were given the opportunity to participate in the research.



Figure 4.5. Amanda H A Watson conducting a survey in Orora

Copyright: Amanda H A Watson, 2009

From the 72 survey respondents, three people were selected to participate in semi-structured interviews. The first interview was conducted with a village leader named Albert Wowe, as he was keen to talk about traditional communication techniques. The second interview was with Shong 'Moks' Naing, the first man in the village to own a mobile phone. The third interview was with Gering Balipini, a woman resident and member of a different clan<sup>17</sup> to the other two interviewees. These three interviews added rich details that greatly enhanced the researcher's understanding of the communication needs and practices of the villagers, and how mobile phones fit into these real-life demands and behaviours. In addition, an interview was conducted with Benjamin Naing, an educated member of the Orora community, at that time living and working in Madang town. This last interview was designed to provide some perspective regarding the town end of communication interactions with Orora.

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<sup>17</sup> Clans consist of families who are related to each other and usually clans live in distinct parts of a village (Kunze 1925, 52; McSwain 1977, 8-13).

#### **4.4 RESEARCH PERMISSIONS**

Negotiations about conducting research in Orora began with Benjamin Naing, a highly respected and valued village member who lived and worked in Madang town, months before the researcher arrived in PNG. Once in Madang town, the researcher met with him, and later with his brother Shong 'Moks' Naing and his wife Talia Naing, who were to be the researcher's hosts in the village. Detailed discussions took place in preparation for the trip. Once the researcher arrived in the village, she emphasised that she would not commence any research activities unless she had the approval of all the relevant local leaders. To this end, it was advised that certain people needed to be spoken to, and these people were approached and offered detailed explanations about the research project's aims and scope. The leaders who gave their approval for the research to take place were: Ward Member Giragir Mahana; Orora Community Chairman Albert Wowe; Section 7 Leader Renson Nukutung; Section 7 Secretary Jackson Gowong; Section 8 Leader John Ukor; and Section 9 Leader Gomang 'Kanage' Siwong. It took two days to gain permission from these leaders, a process which was no doubt aided by: Benjamin Naing's advance notice about the researcher's trip; the researcher's aptitude in Tok Pisin and preparedness to explain her aims and intended activities in this language; and the support of the host family.

Having gained permission from the village leaders to conduct research in Orora, it was an important ethical consideration that each individual approached be given the opportunity to choose not to participate (Vallance 2008, 9). This practice was explained in depth to the host family, as the researcher was at pains to ensure that she would not in any way pressure any of the community members to participate in the research. It was emphasised that if any person declined involvement, this was an acceptable decision for them to make and they did not have to justify their decision in any way. Once this was clarified with the host family, the researcher began walking through the village to meet with people, often accompanied by Talia Naing, who acted as a guide, and could also be an interpreter when needed. The researcher ensured that each person was given a full explanation in Tok Pisin of the research aims prior to commencing the survey. This explanation was scripted and read out in full to every prospective participant. It was pleasing that some village members did choose not to participate, allaying the fear expressed by Vallance that

some people would feel unable to decline once their leaders had given their approval (2008, 5).

#### 4.5 DEMOGRAPHICS

A concentrated effort was made to include both males and females amongst the 72 survey participants. Visiting people in their homes made it more likely for women to participate. In many cases, women were less likely to be away from the home than their male partners, due to the needs of young children and other domestic duties. Some women were more prepared to participate in the comfort and relative privacy of their home, where there were fewer people observing them and listening to them, than in a public location. However, despite these efforts, there was a gender imbalance in the completed survey questionnaires, shown in Table 4.1.

Table 4.1  
Gender of respondents in Orora

	<b>Frequency</b>	<b>Percent</b>
Male	46	63.9
Female	26	36.1
Total	72	100.0

Those who chose to participate ranged in age from about 15 to 79 (see Table 4.2). Age was a difficult thing to assess accurately as most people were not sure of when they were born or how old they were. Generally ages were guessed following a long discussion of the milestones in the person's life, and how these related to key historical moments, such as the country gaining independence in 1975 or the advent of World War Two. Calculating a person's age by gauging the age of their oldest child and then assuming that this child was born when the parent was 20 years old was also a common device employed.

Table 4.2

Age of respondents in Orora

		<b>Frequency</b>	<b>Percent</b>
Age	0-15	1	1.4
	16-30	38	52.8
	31-45	20	27.8
	46-60	11	15.3
	61-75	1	1.4
	Over 75	1	1.4
	Total	72	100.0

Education levels in Orora were low. None of the survey participants had completed high school or undertaken any form of further education. The highest education level attained by respondents was grade nine, while nearly a third had not completed primary school (see Table 4.3).

Table 4.3

Highest school grade (Orora)

<b>School year</b>	<b>Frequency</b>	<b>Percent</b>
Less than grade 6	23	31.9
6	32	44.4
7	9	12.5
8	6	8.3
9	2	2.8
Total	72	100.0

## 4.6 HOUSING



Figure 4.6. Typical bush material house in Orora

Copyright: Amanda H A Watson, 2009

Most of the houses were made of bush materials (see Figure 4.6). One house was semi-permanent as it had a corrugated iron roof. Orora did not have an improved water supply and sourcing water was a challenge for residents, particularly during the annual dry season. No homes had water piped into them. Nearly one third of survey respondents indicated that they had no form of water supply (see Table 4.4).

Table 4.4  
Water sources in Orora

	<b>Frequency</b>	<b>Percent</b>
No water supply	21	29.2
Creek	23	31.9
Drum	24	33.3
Tank	2	2.8
Rainwater collected in pots	1	1.4
No answer	1	1.4
Total	72	100.0

Over half of the respondents said they did not have access to a toilet (see Table 4.5). Those who had toilets used pit toilets, which are small bush material huts erected over holes in the ground (see Figure 5.18 and Figure 5.19).

Table 4.5  
Toilets in Orora

	<b>Frequency</b>	<b>Percent</b>
No	40	55.6
Yes	32	44.4
Total	72	100.0

There was no mains electricity supply in Orora. In February 2009, only one family had a diesel generator, although this was not in operation during the researcher's visit due to the difficulty of transporting fuel from a coastal store to the village. All of the respondents indicated they had some form of lighting at home, mostly kerosene lamps (see Table 4.6). A high percentage had kerosene available at home when they were surveyed (63 people, or 87.5% of the total sample).

Table 4.6  
Kind of lighting in homes in Orora

	Frequency	Percent
Kerosene lamp(s)	71	98.6
Firelight / burning torch	1	1.4
Total	72	100.0

#### 4.7 COMMUNICATIVE ECOLOGY

The researcher noticed regular, almost daily, usage of a traditional drum named the ‘*garamut*’. This is an important part of the communication landscape within the village, and will be discussed in more detail in Section 4.8. The researcher also noticed that residents regularly called out in loud voices to neighbouring houses, and had whole conversations in this manner. Having spent most of her life in a Western setting, where people value their privacy, this shouting was surprising and initially seemed intrusive to the researcher. However, perhaps this is an unfair comparison as in the contemporary Australian setting there are devices, such as landline telephones, answer machines and doorbells, which can be used to inquire into the availability of neighbours in a socially acceptable manner. Certainly the residents of Orora did not seem to regard this practice of neighbours shouting to one another as anything untoward. This matter was raised in the first semi-structured interview, and the response was: “That’s with the mouth. If you’re very, very close, you can sing out. But if you’re far apart you can use the *garamut*”<sup>18</sup> (Wowe 2009). The interviewee subsequently smiled and did not view this practice as problematic.

The survey conducted in Orora included questions designed to portray the communicative ecology present. These questions included enquiries about the availability of specific communication technologies, as well as questions about media consumption habits. Survey respondents were asked if they had a landline telephone, television, computer, Internet connection or radio in their house. Not one of the respondents (0%) had a landline telephone, television, computer or Internet connection in their house.

<sup>18</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Em long maus. Klostu klostu yu ken singaut. Tasol long garamut em bilong longwe”.

Table 4.7

Radio receivers in households (Orora)

		<b>Frequency</b>	<b>Percent</b>
Radio	No	42	58.3
	Yes	30	41.7
	Total	72	100.0

Thirty respondents (41.7%) said they had a radio in their house (see Table 4.7). Of these, eight of them volunteered the information that their radio was not working at the time, in most cases because the household did not have any batteries for it (see Table 4.8). The researcher gained the impression that in most of the cases where there were no batteries for the radio, this was a somewhat permanent situation, due to the income level of the household, and perhaps also the distance from the coastal stores. This meant that in real terms only 22 respondents (30.5%) had access to a working radio receiver in their home.

Table 4.8

Reasons for inactive radios (Orora)

	<b>Frequency</b>
Radio broken	2
No batteries	6
Total	8

When asked about their media consumption experiences throughout their lifetimes, most residents in Orora indicated that they had listened to the radio and read a book, but only small numbers had watched television or a movie (see Table 4.9).

Table 4.9  
Orora respondents' media access during lifetime

		<b>Frequency</b>	<b>Percent</b>
Radio	No	7	9.7
	Yes	65	90.3
	Total	72	100.0
Letter sent	No	30	41.7
	Yes	42	58.3
	Total	72	100.0
Letter received	No	25	34.7
	Yes	47	65.3
	Total	72	100.0
Television	No	65	90.3
	Yes	7	9.7
	Total	72	100.0
Movie	No	61	84.7
	Yes	11	15.3
	Total	72	100.0
Newspaper	No	56	77.8
	Yes	16	22.2
	Total	72	100.0
Magazine	No	64	88.9
	Yes	8	11.1
	Total	72	100.0
Book	No	13	18.1
	Yes	59	81.9
	Total	72	100.0

No-one surveyed in Orora had ever used a computer or computer-based communication programs (see Table 4.10).

Table 4.10  
Orora respondents' computer usage during lifetime

		<b>Frequency</b>	<b>Percent</b>
Computer	No	72	100.0
Internet	No	72	100.0
Website	No	72	100.0
Email	No	72	100.0

While most of the respondents had travelled to Madang town at some point in their lives, the number of people who had been to another province was small, and no-one had been outside of PNG (see Table 4.11).

Table 4.11  
Travel outside of Orora during lifetime

		<b>Frequency</b>	<b>Percent</b>
Bogia	No	52	72.2
	Yes	20	27.8
	Total	72	100.0
Madang town	No	5	6.9
	Yes	67	93.1
	Total	72	100.0
Other province(s)	No	61	84.7
	Yes	11	15.3
	Total	72	100.0
Overseas	No	72	100.0

In order to gain some understanding of the contemporary communication behaviours of Orora residents, the researcher asked them to consider the preceding month, and to assess whether or not they had undertaken a list of activities within that month. A total of 14 activities were assessed in this manner. Table 4.12 provides a snapshot of media access within the last month.

Table 4.12

Orora respondents' media access during last month

		Frequency	Percent
Radio	No	45	62.5
	Yes	27	37.5
Letter sent	No	68	94.4
	Yes	4	5.6
Letter received	No	66	91.7
	Yes	6	8.3
Television	No	68	94.4
	Yes	4	5.6
Movie	No	65	90.3
	Yes	7	9.7
Newspaper	No	61	84.7
	Yes	11	15.3
Magazine	No	63	87.5
	Yes	9	12.5
Book	No	34	47.2
	Yes	38	52.8

Less than half of the respondents (37.5%) had listened to the radio within the last month. Very few respondents (5.6%) had sent a letter within that month. Some of the positive responses included sending a written note to be hand-delivered to someone in a neighbouring house or nearby village. The number of responses was similar for having received a letter over the last month. A small number of respondents (four people, or 5.6%) had watched television within the last month. All four of these people explained they had watched television during their travels outside of Orora: one in the city of Lae, two in Madang town, and one in a house in a coastal village. A similarly small group (seven people or 9.7%) had watched a movie during the specified time period. Three of these people had attended an organised movie screening in a neighbouring village, paying a small gate fee (40 to 50 toea) for admission. Three of these people had watched a movie in the house of a relative who

lived in another village on Karkar Island. The seventh person had watched a movie while on a trip to Madang town.

Only 11 people (15.3%) had read a newspaper within the last month and only a small number of respondents (12.5%) had read a magazine in the same timeframe. Respondents were not asked to give information about the type of magazine read, but one respondent volunteered the information that the magazine read was a religious publication provided by their church, and another said they had read Paradise Magazine, which is the in-flight publication of Air Niugini. Just over half of the respondents (52.8%) had read a book within the last month. Five people volunteered the information that this book was the Bible, and it would be of great interest to find out exactly what the others were referring to. The researcher felt that this surprisingly high percentage of readers may be due to the fact that many of the respondents may have been referring to the Bible in their answers.

None of the respondents had used a computer within the last month, as can be seen in Table 4.13. The result regarding accessing the Internet was the same. This question was also asked with reference to the term ‘website’, in case there was any confusion over terminology, but the answers were identical. Access to and usage of email was also a foreign practice for people residing in Orora.

Table 4.13  
Orora respondents’ computer usage during last month

		Frequency	Percent
Computer	No	72	100.0
Internet	No	72	100.0
Website	No	72	100.0
Email	No	72	100.0

Still thinking about the previous month, respondents were asked whether they had been to Bogia (a town on the coast opposite Karkar Island) or Madang town. The reason for asking these questions was that there could be greater access to communication technologies and media output in these localities. Only one person had been to Bogia, but 12 people (16.7%) had been to Madang town during the same period (see Table 4.14). Madang town is more accessible than Bogia from Orora,

with ferries going there daily. As this research was conducted during February, the number of people going to Madang town during the previous month (January) may have been higher than during other months of the year, due to Christmas celebrations, church activities, and the need to accompany children to town to commence their schooling for the year.

Table 4.14

Travel outside of Orora during last month

		<b>Frequency</b>	<b>Percent</b>
Bogia	No	71	98.6
	Yes	1	1.4
	Total	72	100.0
Madang town	No	60	83.3
	Yes	12	16.7
	Total	72	100.0

When planning this research, it was realised that few residents of Orora may have had access to the Internet. However, it was felt that it might be relevant to find out whether they were aware of any of their friends or relatives using it. Table 4.15 shows that ten respondents (13.9%) said that there was someone whom they knew who was using the Internet or email.

Table 4.15

Known others who use Internet or email (Orora)

	<b>Frequency</b>	<b>Percent</b>
No	62	86.1
Yes	10	13.9
Total	72	100.0

In order to assess the villagers' level of understanding about the Internet, those who felt they knew someone who used the Internet were asked to define this term. The researcher was careful to phrase this question in a non-threatening, friendly manner, emphasising that she was interested in their thinking. Most of the ten people asked this question took some considerable time to answer. No-one was able to

enunciate fully an accurate definition, as can be seen from Table 4.16. This indicates that the general level of awareness and understanding of the Internet in Orora was low.

Table 4.16

Internet definition provided by respondents (Orora)

	<b>Frequency</b>	<b>Percent</b>
Wrong answer <sup>19</sup>	4	5.6
Vague or partly correct answer <sup>20</sup>	4	5.6
Unable to answer - no idea	2	2.8
Total	10	13.9

The same ten people were asked what they would do with the Internet if they had access to it. The answers shown in Table 4.17 indicate that several people had some understanding of how the Internet could be of use to them, for example for reading news about events in other countries.

Table 4.17

Possible uses of the Internet envisaged (Orora)

	<b>Frequency</b>	<b>Percent</b>
No answer	1	1.4
Get news	4	5.6
Not sure	2	2.8
Communicate	1	1.4
Vague answer	1	1.4
Distance education	1	1.4
Total	10	13.9

This group was also asked to define the term 'email'. Again, the responses indicated that the level of understanding about this communication device was generally low (see Table 4.18).

<sup>19</sup> Wrong or incorrect answers included responses like 'satellite' or 'something you can watch on TV'.

<sup>20</sup> Vague or partly correct answers referred to things like 'technology or changes happening now in the world' or 'something with which you can see what's going on in other countries'.

Table 4.18  
Email definition provided by respondents (Orora)

	Frequency	Percent
Wrong answer <sup>21</sup>	3	4.2
Vague or partly correct answer <sup>22</sup>	5	6.9
Unable to answer - no idea	2	2.8
Total	10	13.9

In summary, this survey established that residents in Orora had limited access to media output, such as newspapers, radio and television. There was no usage of modern communication technologies, such as the Internet and email. Another part of the communicative ecology of Orora is the continued use of traditional communication methods, which will be discussed next. This is of particular interest as it raises questions about how modern communication technologies may fit into or change the existing communicative ecology in a rural community in PNG.

#### 4.8 TRADITIONAL COMMUNICATION METHODS

The *garamut* is a wooden drum which can be heard over large distances. This drum played an important role in the traditional communication practices of people in villages such as Orora (see Kunze 1925, 42). Furthermore, it is still in use today (see Figure 4.7). Ward Member Giragir Mahana referred to the *garamut* as “Digicel Bilong Ples”, meaning ‘The Digicel of the Village’. Digicel was the only mobile phone company offering reception on Karkar Island in 2009, so therefore this leader was in fact suggesting that the *garamut* was ‘The Mobile Phone of the Village’. He was quite enthusiastic about the *garamut*, explaining how one beat of the drum could bring everyone from surrounding villages together (he asserted this could be as many as 2000 people). Giragir Mahana believed that the *garamut* was better than the mobile phone.

<sup>21</sup> Wrong or incorrect answers included responses such as ‘something written with a pen or typewriter’ or ‘sending a text message’.

<sup>22</sup> Vague or partly correct answers included ‘something like a fax’, ‘a shortcut way to write a letter’ and ‘a new way of communicating’.



Figure 4.7. Giragir Mahana beating the biggest of his three *garamuts*

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Not everyone agreed with this assertion though. Orora Community Chairman Albert Wowe (2009) felt that the mobile phone was better than the *garamut* as it could be used to contact people in other provinces, or even other countries. He pointed out that the *garamut* could only be heard on Karkar Island, or more accurately, only within Waskia (Wowe 2009). Despite this limitation, he evidently valued the *garamut* a great deal, and he too likened it to the newest communication technology in Orora.

The *garamut* is the mobile belonging to the people of Papua New Guinea. And the mobile which has come in now, it comes from you people. Now it's come in to Papua New Guinea. So now if you're in Australia, I will be able to contact you easily. ... The *garamut* is ours, it is our mobile phone. If we want to ask everyone to come to work, attend a meeting or a gathering and so on. If we don't have the *garamut*, how will everyone come? We've got a *garamut* and if we drum it, everyone will come and gather. OK it goes like this, this, and it's the number one mobile belonging to us. [Laughs.]<sup>23</sup>  
(Wowe 2009)

Orora resident Gering Balipini explained that the *garamut* was the main method used to gather people together when she was a child (Balipini 2009). She added that the people of Orora still use the *garamut* in the contemporary setting (Balipini 2009). The researcher found this to be true, with the *garamut* being used

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<sup>23</sup> This text is an English translation of a quote from an interview in Tok Pisin: "Garamut em mobail bilong mipela Papua Niugini. Na mobail nau kam insait, em kam long yupela. Nau kam insait long Papua Niugini. Olsem nau yu stap long Australia em bai mi kontek wantaim yu isi tru. [...] Garamut, em bilong mipela, em mobail bilong mipela. Sapos mipela laik singautim ol manmeri kam long wok, sindaun, bung, olsem. Mipela nogat garamut, ol manmeri hau bai kam? Mipela gat garamut na mipela paitim, ol manmeri bai kam bung. OK i go olsem, olsem, na em i nambawan mobail bilong mipela. [Laughs.]"

almost daily during her stay in Orora, to convey a range of different messages. When the *garamut* is used to call people together for a gathering, the particular timbre of the *garamut* can indicate who the message applies to. In the case of Orora, there are five clans within the village, and there are different drums, with different sounds, for each of the clans. This means that a person can hear a drum and quickly determine whether or not the message is of relevance to them.

The *garamut* is not used solely for the purpose of calling people to a gathering. Rallying neighbouring warriors to come and assist in the case of a battle between groups was an important traditional function of the *garamut* as well. It can also be used to signal that there is a funeral happening. Specific rhythms indicate particular, differing messages. (Wowe 2009)

An integral part of the communication system based on the *garamut* is that individuals can recognise the sound (timbre or tone) of their own instrument at some distance. This enables people to be able to contact specific individuals using this method. It is not possible to contact a particular individual using one's own drum. However, if you walked to that person's home and they were not there, you could signal them by beating their own *garamut*. This function provides the basis for Albert Wowe's explanation as to why the *garamut* is referred to as the mobile phone of the village: each person has their own *garamut* signal, or 'mobile phone number'. (Wowe 2009)

This is like our mobile phone number. I have a *garamut* signal, like my mobile. Him too [pointing to another person] – he has another signal; he has like a mobile number. That's right. Now it's like you set my mobile number on the *garamut*, like I have another sign on the *garamut*. You set it, and you will contact me. And if I'm in the bush, and I hear: "oh, that's my *garamut*". Other men in the area will hear but will not come, because they'll say "that's his signal". And I will come, with my family. ... It's like my mobile phone number, my signal.<sup>24</sup> (Wowe 2009)

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<sup>24</sup> This text is an English translation of a quote from an interview in Tok Pisin: "dispela olsem mobail namba bilong mipela. Mi yet mi gat sampela sain bilong garamut olsem em mobail bilong mi. Em tu [pointing to another person] i gat narapela sain bilong em, i gat mobail namba olsem. Em nau. Nau em olsem yu setim [set] mobail number bilong mi olsem long garamut, olsem mi gat narapela sain bilong garamut. Yu setim pinis, bai yu kontekim mi. Na sapos mi stap long bus, na mi harim "o [oh] em garamut bilong mi". Ol man nabaut harim i no inap kam, bikos ol tok "em sain bilong em". Na mi yet wantaim ol famili bilong mi, bai kam kamap. [...] olsem mobail namba bilong mipela, em sain bilong mi."

Despite some traits of the *garamut* being likened to the mobile phone, an important difference is that mobile phone communication tends to be private, usually between just two people, whereas *garamut* messages can be heard by many (Naing 2009a).

If it's a mobile, you have to contact one person and speak to them. When the *garamut* is beaten, everybody hears it at the same time. So people down at [other villages], if the *garamut* is beaten at my house, my compound, everybody around Orora and down at the school, even part of Narer, can hear and say "alright, that's the message", or "they're calling for help" or "they're celebrating something" or "there is a death". (Naing 2009a)

The *garamut* was the main communication system in place in the traditional village society, but it was not the only one. A seashell could be used (Wowe 2009), although this was not such a common practice in Orora; coastal villagers were able to find shells more easily than mountain villagers (Naing 2009a). Also a bamboo flute could be blown; although the bamboo flute was mainly played for pleasure or entertainment, it could also be used as a signal, to indicate the presence or location of a particular person (Wowe 2009).

The final component of the traditional communication system in Orora that will be discussed here is the 'tanget', which is a type of plant (see Figure 4.8). As a communication form in traditional village life, the tanget had two specific functions. Firstly, it was used when there was a battle expected. If men from another village wanted to come and fight against Orora, the people's ancestors in that time would get the tanget leaves, and talk to them. They would tie two together and pull them. When the leaves broke, this indicated that it was time to fight. (Wowe 2009)



Figure 4.8. Albert Wowe points out a tanget plant in Orora  
(the tanget has long, red/maroon and green leaves)

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The second function of the tanget was to identify which member of the community had practised sorcery, in the event that a person was ill. The tanget would be placed underneath the ill person (under their head or sleeping mat) and the tanget would indicate who the culprit was. The tanget would convey this information through the victim, who would cry out in their sleep and say who had poisoned them. Once this information was available, the relatives of the victim could kill a pig and give it to the sorcerer, in order for the sickness to leave the victim. (Wowe 2009)

Although the *garamut* is still regularly used in Orora as a communication tool, the tanget no longer seems to be utilised. It is referred to as a practice that was undertaken in the past, by the ancestors of the current residents (Wowe 2009). Many influences have perhaps brought about this change, including the authorities, such as the police, intervening to stop battles (Wowe 2009) and the introduction of Western medicines, health centres and hospitals. Having looked into the communicative ecology of Orora, this chapter will now focus specifically on mobile phones.

#### **4.9 MOBILE PHONES**

Of the 72 survey respondents, only 18 (25%) owned a mobile phone at the time when the survey was conducted (see Table 4.19). As the number of mobile phone owners was low, some of the following figures only apply to a relatively small number of people. Although percentages may be used, it is recognised that these are only indicative of trends within the group. Importantly, qualitative data also gleaned

from the survey (such as answers to questions like ‘why’ and ‘how’) is used to gain a more broad understanding of the behaviours and attitudes in existence in Orora.

Table 4.19

Mobile phone ownership in Orora

	<b>Frequency</b>	<b>Percent</b>
No mobile	54	75.0
Does own	18	25.0
Total	72	100.0

Table 4.20 shows that only 6 of the 18 mobile phone owners were female. Anecdotally, a gender imbalance in relation to mobile phone ownership seemed apparent, with several female respondents mentioning that their husband owned a mobile phone, although they personally did not<sup>25</sup>. However, this difference was also in line with the gender imbalance in the total group of completed survey questionnaires, with just over a third of the respondents being female. A Pearson chi-square test was performed (Moore, McCabe and Craig 2009, 531), which found that there was not evidence to indicate that dependency existed between gender and mobile phone ownership ( $0.8 > p\text{-value} > 0.75$ ).

Table 4.20

Mobile phone owners’ gender (Orora)

	<b>Frequency</b>	<b>Percent</b>
Male	12	66.7
Female	6	33.3
Total	18	100.0

The researcher was interested in the amount of usage of mobile phones amongst mobile phone owners in Orora. Feeling that a question about average daily usage may have been too difficult to answer, the questions about usage were constructed by asking people to indicate their usage patterns for the previous day. Specifically, there were four questions asked: yesterday, how many phone calls did

<sup>25</sup> Five women in total volunteered the information that their husband owned a mobile phone but they did not. One man mentioned that his wife owned a mobile phone but he did not.

you make?; yesterday, how many phone calls did you receive?; yesterday, how many text messages did you send?; and yesterday, how many text messages did you receive?<sup>26</sup> As can be seen in Table 4.21, the usage patterns were strikingly low, with most people not undertaking these activities during the previous day.

Table 4.21  
Usage of Mobile Phones on the previous day (Orora)

		Frequency	Percent
Ring out	0	12	66.7
yesterday	2	3	16.7
	3	2	11.1
	5	1	5.6
	Total	18	100.0
Receive	0	13	72.2
calls	2	1	5.6
yesterday	3	4	22.2
	Total	18	100.0
SMS sent	0	12	66.7
yesterday	1	2	11.1
	2	3	16.7
	3	1	5.6
	Total	18	100.0
SMS	0	13	72.2
received	1	1	5.6
yesterday	2	2	11.1
	3	2	11.1
	Total	18	100.0

A key factor contributing to this low usage was the difficulty of charging mobile phone batteries in a place where there was no mains power supply. Eight survey respondents volunteered the information that their handset had no battery power at the time that they were surveyed. Another was unable to use his phone as he had unwittingly purchased a stolen handset and the mobile phone company had

<sup>26</sup> These questions were the English translations of the following survey questions in Tok Pisin: Asde, yu bin ring i go long hamas lain?; Asde, hamas taim sampela lain i bin ring i kam long yu?; Asde, yu bin salim hamas text mesis [message] o SMS?; and Asde, yu bin kisim hamas text mesis [message] o SMS?

subsequently blocked the number. This meant that although a quarter of the Orora adults surveyed owned a mobile phone in February 2009, fewer people (about 12.5%) were actually able to use their mobile phones at the time.

Mobile phone owners were asked to consider the phone calls they did make and to explain who they phoned, in which localities, and why. Most often, relatives were phoned, with friends coming a fairly close second. Only one respondent said that they used their mobile phone for calling business contacts, and one woman said that she used her device only to ring her husband. Urban centres within PNG were the places most commonly phoned. Less frequently, people indicated that they phoned other villages, or within Orora itself. Only one person said that they had phoned overseas. There were two reasons commonly given for making phone calls: to check on the recipient's wellbeing, or to ask for something, such as money or other forms of assistance. Only one person indicated that they used their mobile phone for business purposes.

Table 4.22  
Usage of phones by non-mobile phone owners (Orora)

	<b>Frequency</b>	<b>Percent</b>
No	29	53.7
Yes	25	46.3
Total	54	100.0

The 54 people (or 75% of respondents) who did not own a mobile phone were asked whether or not they did use any type of phone. About half of these people said that they did use phones (see Table 4.22). Of those 25 people who indicated that they did sometimes use phones, most admitted that this was only on rare occasions (see Table 4.23), which generally meant the one time, or just a few times, in their whole lives when respondents had used a phone.

Table 4.23

Frequency of usage of phones by non-mobile phone owners (Orora)

	<b>Frequency</b>	<b>Percent</b>
Rarely <sup>27</sup>	13	52.0
Occasionally	8	32.0
Frequently	4	16.0
Total	25	100.0

In those rare instances when a non-mobile phone owner wished to make a phone call, they typically used a mobile phone belonging to someone else. There were no landline telephones in Orora, so if someone wanted to use a public phone or a phone in a house or an office, this happened when they were on a visit to Madang town or another urban centre, or it would have involved a lengthy walk to the coast. Thus usage of these kinds of phones was rather low (see Table 4.24).

Table 4.24

Frequency of usage of phones by non-mobile phone owners (Orora)

	<b>Frequency</b>	<b>Percent</b>
In a house	1	4.0
Public phone	4	16.0
Mobile belonging to someone else	19	76.0
Public phone and office phone	1	4.0
Total	25	100.0

When using someone else's mobile phone, this was most commonly a phone belonging to a relative, or a phone belonging to a partner (husband or wife). In nearly all cases, the owner did not ask for money. But in some cases, the person borrowing the phone purchased their own flex card and keyed the credit into the handset before making the call.

In summarising the survey findings around mobile phones in Orora, the number of mobile phones in operation was low. Mobile phone owners had difficulty

<sup>27</sup> The descriptors 'rarely', 'occasionally' and 'frequently' used in Table 4.23 corresponded to the Tok Pisin phrases 'i no planti/wanwan taim', 'sampela taim' and 'planti' respectively.

charging their handset batteries. When they made phone calls, they tended to ring relatives or friends to find out how they were or to ask for assistance. People who did not own mobile phones tended to make limited use of telephony, although, when they did, they usually used a mobile phone belonging to a relative.

Despite the low number of operable mobile phones, it was crucial to understand that the advent of mobile phones in Orora was a major change for the community. The story detailed at the outset of this chapter highlighted how the introduction of mobile telephony could mean the difference between life and death for a resident of Orora in the case of a medical emergency, such as a complication during childbirth. Indeed, another interviewee described a similar situation which occurred involving a complication during labour, and argued that the mother's death could have been prevented if mobile phone reception had been available at that time (Naing 2009a). Apart from their evident importance in the case of emergencies, mobile phones could also assist people in Orora to ask for help at other times.

I'm happy. I feel a bit happy. I feel that before I was like this: I didn't have a mobile phone, so it was hard for me to contact friends who were a long way away from me. Now I have a mobile phone. If I'm short of something, money or this kind of thing, it's easy for me to ring and they can send it. I feel this way, and I feel good. Mobiles are better.<sup>28</sup> (Balipini 2009)

Mobile phones could also be used to ask people to travel to the village. In this way, the technology could bring people together if there was an occasion or a need to do so, for example a funeral.

Mobile phones are ... as I said before, if some brothers stay at whatever place in the province, whatever there is, it's easy for us to contact them so they can hear it. Now we both are at home, and his wife is sick or has a problem or his child dies, it's easy for me to talk and he'll know about his problem. We contact: "oh, we're like this". That's right, they'll get ready and they'll come. They'll get on the boat and come, come up here. This is something I see is a bit good. It's good.<sup>29</sup> (Wowe 2009)

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<sup>28</sup> This text is an English translation of a quote from an interview in Tok Pisin: "Mi hamamas. Mi save hamamas liklik. Mi yet mi pilim olsem: bipo mi stap olsem, mi nogat mobail fon, mi hat long singaut long longwe long ol pren bilong mi. Nau mi gat mobail fon, mi sot long wanem samting, moni o dispela kain, isi long mi ringim ol na ol ken salim. Mi pilim olsem, na mi pilim gutpela. Mobail em i moa gut."

<sup>29</sup> This text is an English translation of a quote from an interview in Tok Pisin: "Mobail fon em... longtaim mi tok pinis, sampela brata ol i stap long wanem hap long provins, wanem samting isi long mipela kontek wantaim ol bai ol i ken harim. Nau mitupela i stap long haus, na meri bilong em i kisim hevi o pikinini dai, isi tasol mi tok na em save long hevi bilong em. Mipela

Mobile phones were being used to increase safety and warn of danger. For example, a quarrel between youths from Orora and another village could have resulted in further repercussions for residents of Orora travelling past that village (Naing 2009b). But as this occurred since the advent of mobile telephony on the island, relatives were able to contact those Orora residents who were already travelling, enabling them to avoid the dangerous area (Naing 2009b).

Yes, I think, now I think, we'd be sleeping at the hospital or he would've fought us or taken all the little things we had or this kind of thing. But it's lucky that mobiles were here and they saved us, our skin, and [laughs, claps hands] we came up yes.<sup>30</sup> (Naing 2009b)

However, even after the introduction of this new technology, there were limits to its capacity to improve the lives of people living in isolated locations such as Orora. Gering Balipini was a woman who lived in Orora, caring for her children and her ageing mother. She described in an interview how her father passed away, at least in part due to the length of time she spent walking around the island trying to find a car to take him to hospital. When asked what would happen if her mother were to become ill, she said that she would use the mobile phone to call for help.

We want her [mother] to be with us for a long time. ... So we would pay for it [a car]. If we don't have money, we will stay with mother and she will die. And everything you think of is the money system.<sup>31</sup> (Balipini 2009)

This point was a striking one: even though the mobile phone could be used to request a car to come, it may have been that a family which led a subsistence lifestyle did not have ready cash to pay for the fuel, and even though the same instrument could have been used to ask relatives and friends living outside of the village to send money, without all these things coming together in a timely manner, this new technology may have been ineffective.

The researcher was able to witness first-hand the use of mobile phones in Orora as a crisis emerged in one family. The villagers and the primary person

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kontek "o [oh] mipela olsem". Em nau ol stretim samting, bai ol kam. Kisim bot bai kam kamap. Dispela mi lukim em gutpela liklik. Em gutpela."

<sup>30</sup> This text is an English translation of a quote from an interview in Tok Pisin: "Yes, mi ting nau mi ting, mipela slip long hausik o em paitim mipela o kisim ol wanem ol liklik samting bilong mipela o dispela kain. Tasol laki olsem mobail em stap na em sevim mipela, skin bilong mipela, na [laughs, clap hands] mipela kam antap yes."

<sup>31</sup> This text is an English translation of a quote from an interview in Tok Pisin: "Mipela laikim em bai stap wantaim mipela longpela taim liklik. [...] Em bai mipela baiim ia. Sapos mipela nogat moni, em bai mipela stap wantaim mama na mama bai i dai. Na olgeta samting yu tingim, moni sistem."

involved agreed that mobile phones assisted in the apparent resolution of this issue. However, it also became clear that there were limitations to the effectiveness of this technology. In this particular instance, it would have been advantageous if the handset had been fitted with a lie detector. Such an application would have greatly assisted in the speedy resolution of the situation. From extensive field notes taken at the time, the story is described below.

At an informal gathering in a communal area, between some of the houses in Orora, people were chatting to one another to catch up on news, and observe the newcomer (the researcher). At two o'clock in the afternoon, alarm ran through the group, as it appeared that Jackson Gowong's first-born son was missing. Jackson had sent his ten-year-old boy Joe to live with his Aunt at Rempi, a coastal village on the mainland, not far from Madang town. The idea was that the boy would stay with the Aunt and attend school there, as it was felt that he would receive a better education there than in Orora. Jackson believed that the boy was at Rempi with his Aunt. But at two o'clock, he found out that people from Rempi had told Moks and Talia Naing two days earlier that another relative, Carol, had taken the boy from Rempi, with the intention of bringing him back to Orora. This was news to Jackson and the others present, none of whom had seen the boy recently.

Jackson immediately ran off up the hill to ask Carol about the whereabouts of his son. She seemed to be changing her story, and it was unclear what exactly she had done. At one point she said that she had sent the boy back to Rempi from Madang town in a vehicle. This apparently irresponsible action caused concern as Carol did not seem to know the men in the vehicle. Jackson's next action was to send some boys to buy a flex card, so that he could ring his Aunt in Rempi to find out about his son. While the boys were on this errand to a neighbouring village, all present agreed that it was cheaper for Jackson to phone his Aunt than to spend money on the ship fare.

However, during the course of the afternoon, it became evident that the mobile phone did not magically solve all communication issues. Jackson had to repeatedly buy more flex cards as he was not getting clear answers from his relatives in Rempi. Finally, he was able to establish that his son was in Rempi and that he was apparently safe and well. Upon reflection later that night, Jackson acknowledged that the mobile phone had saved him money. He had spent a total of 16 Kina on flex cards, and he

had confirmed that Joe was in Rempi. Prior to the introduction of mobile phones in Orora, it would have cost Jackson 30 Kina or 38 Kina (depending on which ship was going the next day) for a round trip to the mainland. His concern for his son's wellbeing was eased more quickly than it would have been if he had needed to travel to Rempi to find out what was going on.

This anecdote illustrates that mobile phones can save both time and money. However, they do not resolve all communication issues, particularly when users are trying to hide something, are changing their stories or are perhaps not telling the truth. In this case, one of the delays, which caused Jackson to use up more mobile phone credit (and therefore more money) than may have been necessary, was due to the unwillingness of one young woman in Rempi to pass the mobile phone handset to the Aunt in question. Mobile phones are useful, but, as with other technologies, they are limited by the capacities and commitment of the humans operating them.

The researcher observed an unexpected use of the mobile phone: as a torch. This function of the handset allowed villagers to be able to have access to some lighting after nightfall. It was particularly valued when villagers were moving about, for example travelling to or from the village, or walking from the house to the toilet. This chapter will now move on to examine the perceptions that people in Orora had about mobile phones.

#### **4.10 PERCEPTIONS OF MOBILE PHONES**

So what were the perceptions that people in Orora had about mobile phones? In order to establish whether people viewed the introduction of mobile phones as being a positive or a negative trend, adults in Orora were asked in the survey questionnaire: Do you think that mobile telephony coming to PNG is good or bad?<sup>32</sup> Although respondents were asked to choose between the two choices, many created a third option, explaining that they had mixed feelings about mobile phones. Table 4.25 shows the community's perceptions of this new technology, with about half the respondents (51.4%) viewing this change as a positive development, while nearly half (41.7%) could see both positive and negative effects of this change.

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<sup>32</sup> This question is the English translation of the following survey question in Tok Pisin: 'Yu ting mobail fon i kam insait long PNG em i gutpela o i no gutpela?'

Table 4.25

Total sample's judgement about mobile phones (Orora)

	<b>Frequency</b>	<b>Percent</b>
Not good	5	6.9
Good	37	51.4
Both good and bad	30	41.7
Total	72	100.0

When mobile phone owners were considered as a group, it could be seen in Table 4.26 that they had similar feelings about the introduction of this technology as the general population. Half of mobile phone owners viewed mobile phones positively (50%) and nearly half (44.4%) expressed mixed feelings.

Table 4.26

Mobile phone owners' judgement about mobile phones (Orora)

	<b>Frequency</b>	<b>Percent</b>
Not good	1	5.6
Good	9	50.0
Both good and bad	8	44.4
Total	18	100.0

Over half (59.3%) of the people who did not own a mobile phone at the time that the survey was conducted indicated that they intended to purchase a mobile phone. This finding indicated that, despite the negative concerns expressed, a considerable segment of the Orora population was desirous of purchasing and owning this new device in the future. Of the remainder, there were some who did not intend to acquire a mobile phone, while others were unsure (see Table 4.27).

Table 4.27

Non-owners' intention to purchase a mobile phone (Orora)

	<b>Frequency</b>	<b>Percent</b>
No	14	25.9
Yes	32	59.3
Not sure / I don't know	8	14.8
Total	54	100.0

How did rural people describe their feelings about the introduction of mobile telephony? When he was approached for permission to conduct research in the area, local Ward Member Giragir Mahana also made it clear that he had some strong opinions which he wanted to convey. He expressed a number of negative views about mobile phones, and particularly the damage he felt they were doing to the community in his area. Behaviours that he believed had increased as a result of the introduction of mobile phones included hold-ups by thieves and extra-marital affairs. He was strongly opposed to the use of mobile phones by all members of the community and wanted a system introduced where elected leaders, such as him, possessed this technology and managed it on behalf of the community. He wanted to see restrictions imposed as to who could own mobile phones. This proposed system would be similar to gun licensing. He was opposed to women owning mobile phones, as he believed they used this tool to practise adultery. Nonetheless, despite his vehemently negative stance, even Giragir Mahana admitted that there were some benefits that were emerging from the use of this technology, particularly its use by leaders and for business purposes. He was also pleased to be able to contact his children, who were located in the urban centres of Port Moresby and Lae.

In response to the Ward Member's comments, the researcher's host Talia Naing made her thoughts known later that day, in the privacy of her home. She had been present, along with several others from Orora, when the Ward Member had expressed his views. She said she did not agree with him, highlighting positive aspects of mobile phone ownership. She was deeply displeased with his notion of banning women from owning mobile phones. She pointed out that adultery takes place only with the permission of two willing parties, both a male and a female. Indeed, crimes such as hold-ups were usually committed by men, she argued, although she did not go so far as to suggest that men should not be allowed to use mobile phones. But Talia Naing was at pains to reiterate that she felt there were more positives than negatives related to mobile phones. Parents could ring their children who were away studying, women could ring their husbands, and so on. Moks Naing supported his wife, giving more examples of instances when mobile phones were beneficial for the community in Orora.

But how did other members of the community express their feelings about mobile phones? Survey respondents were asked to express their opinions and

attitudes towards mobile phones in their own words, through an open-ended question in the survey questionnaire which simply asked ‘why’ people felt positively or negatively disposed towards mobile telephony<sup>33</sup>. On the plus side, there was a very high number of comments made about it being easier to contact friends and family who lived a long way away from Orora, and many additional comments about the benefit of being able to check up on how these people were. A high number of people talked about using the mobile phone to ask for assistance from others (such as requesting money or store-bought goods). Quite a high number of comments was made about the use of mobile phones in emergencies, and about it being easier to ring someone compared with walking a substantial distance to see them. Several people pointed out that using a mobile phone saved money that would have otherwise been spent on boat tickets or cars. A few people pointed out that if they were travelling on the ship, they could ring ahead and ask people to meet them, which would aid with both security and the transportation of cargo. Other beneficial applications of mobile phones that were mentioned by more than one person included being able to ring one’s partner (husband or wife), being able to ring the police, and being able to ring the ambulance or the hospital.

With respect to less commonly articulated reasons for viewing mobile phones positively, individuals raised the following points: they could be used to make new friends; they could help strengthen friendships; they could assist in the acquisition of knowledge; they could help with church matters; and they could help with work-related matters. A rather interesting perspective was conveyed by one person, who said “I think mobile phones will lead to other services coming here”<sup>34</sup>. Finally, a couple of people mentioned that they could use mobile phones to arrange a time to meet with someone – a practice that seemed out of keeping with the generally loose perception of time in the village setting.

There were negative aspects of the introduction of mobile phones which were raised by survey respondents. The most frequently raised negative concern was about the use of mobile phones to foster illicit relationships between males and females: either leading to extra-marital affairs, or young people having inappropriate

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<sup>33</sup> The question in the survey was simply ‘bilong wanem’, which means ‘why’ in Tok Pisin. It came immediately after the question about whether respondents felt mobile telephony was a good thing or a bad thing in PNG.

<sup>34</sup> This text is an English translation of the following quote from a survey respondent in Tok Pisin: “Mi ting mobail bai kamapim sampela moa sevis long hia”.

relationships. Young women becoming pregnant was a problem mentioned by a couple of people, with one parent stating “if my daughter becomes pregnant, lots of people will say ‘the mobile made her pregnant’”<sup>35</sup>.

The second most commonly raised negative concern was with regard to mobile phones being used by criminals to organise hold-ups on the roads. It was explained by respondents that if a person saw someone travelling who was either carrying what appeared to be valuable cargo, or was an enemy, they could call ahead to their friends further down the road who could organise a hold-up.

The other frequently raised negative concerns related to the costs of owning and operating a mobile phone: credit was used up quickly; it was too expensive to buy credit and charge handsets, which drained money from the community; voicemail used up credit; the service caused people to waste their money; and villagers did not have enough money to charge handset batteries. A few people argued that the system may have been suitable for people living in town and earning wages, but for villagers it was too expensive. Practical issues were also raised, such as not knowing how to use the device, the battery being drained quickly, the difficulty of charging the battery, and the difficulty of buying flex cards. Displeasing experiences were also raised in a couple of instances: one person’s SIM card had expired and so they had needed to purchase a new one, and another person recalled having purchased a five Kina flex card which did not work.

Out of all 72 respondents, only one person raised the issue of reception. This was unsurprising and was consistent with the researcher’s experience as there was full reception throughout Orora. Among the more unusual responses was one person’s comment that having a mobile phone in one’s pocket would make that person sick. Another unique comment was an expression of dislike regarding the exogenous nature of the system: “the system belongs to white men”<sup>36</sup>.

There were eight people who had previously owned a mobile phone, but no longer owned one at the time of the survey (see Table 4.28). Of these eight cases, three of them involved the mobile phone being stolen: one was stolen on the road, when it was being transported down to a coastal store for charging; one was stolen by

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<sup>35</sup> This text is an English translation of the following quote from a survey respondent in Tok Pisin: “Sapos pikinini meri i gat bel, planti lain bai tok ‘mobail i givim bel long em’”.

<sup>36</sup> This text is an English translation of the following quote from a survey respondent in Tok Pisin: “Em samting bilong ol waitman.”

*'raskols'* - a Tok Pisin word referring to gangs or criminals in general – in a planned attack, which was coordinated using their own mobile phones, according to a police investigation; and the details of the third incident were not ascertained. Three people's mobile phones had broken, which disappointed the owners: one was left at a store for charging and when it was returned it would no longer turn on; one owner asserted that his mobile phone was used to a high degree by other people before it broke; and the third handset was broken when some children played with it. The remaining two people who had owned mobile phones prior to the time of the survey both explained that they had given their handset away to a relative. In both cases, they were hoping to acquire another mobile phone themselves in the future. In fact, all eight people who had previously owned a mobile phone indicated their desire to acquire another one in the future.

Table 4.28

Previous ownership of a mobile phone (Orora)

	Frequency	Percent
No	46	85.2
Yes	8	14.8
Total	54	100.0

It can be seen from this information above that the concerns expressed by residents of Orora about mobile phone theft were at least in part informed by actual experiences. In summarising the general perceptions held in Orora surrounding mobile phones, overall the community viewed the introduction of this system favourably. Of most importance for the villagers was the ability to contact people living a long way away, to request assistance, and to ask for help in the case of any emergency. However, many people had mixed feelings about this new system. There were some strong concerns which were frequently expressed, particularly regarding inappropriate uses of the mobile phone (primarily for adultery and theft), and the high costs associated with operating mobile phones.

#### 4.11 MONEY AND BUSINESS

In Orora, the main income generation avenues at the time of the field research were selling natural produce at the local market, and growing cash crops, mainly

coconut and cocoa. The local economy was also supported by remittances from relatives who lived and worked in urban areas. A weekly market was held in the neighbouring village of Urugen. This was a crowded, bustling event, with people selling and buying everything from flex cards to oranges, and from bananas to root vegetables such as taro. Coconuts were processed, which involved smoking coconut-halves, before they were shipped away for sale. A number of families in Orora had the facilities to be able to process coconuts (see Figure 4.9 and Figure 4.10).



Figure 4.9. Family coconut processing operation in Orora

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Figure 4.10. Orora youth preparing coconuts for smoking

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There were several steps involved in processing cocoa beans, before they were ready for transportation and sale. The village had only one cocoa fermentary, owned and operated by Moks and Talia Naing (see Figure 4.11 and Figure 4.12).



Figure 4.11. The Naings in front of their cocoa fermentary in Orora

Copyright: Amanda H A Watson, 2009



Figure 4.12. Moks Naing mixing cocoa beans

(one of the first steps in the cocoa fermenting process)

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Mobile phone owners were asked how they procured the finances for the purchase of their mobile phone, and how they funded the ongoing expenses of purchasing flex cards and recharging batteries. Table 4.29 indicates how mobile phone owners purchased their mobile phones. For the three people listed as 'not relevant', this means that their mobile phone was given to them.

Table 4.29

Monetary sources for purchasing mobile phones (Orora)

	<b>Frequency</b>	<b>Percent</b>
Not relevant	3	16.7
<i>Bilum</i> sales <sup>37</sup>	1	5.6
Coconut	4	22.2
Market	2	11.1
Market and coconut	4	22.2
Relatives who work	1	5.6
Relatives plus market etc	1	5.6
Pig and poultry	1	5.6
Coconut, poultry and paid work	1	5.6
Total	18	100.0

When asked how they managed the ongoing costs associated with operating this technology, people gave a range of responses, primarily focused on income generation activities such as selling produce at market, and growing coconuts and cocoa (see Table 4.30).

Table 4.30

Monetary sources for purchasing mobile phone credit (Orora)

	<b>Frequency</b>	<b>Percent</b>
Unclear	4	22.2
Coconut	2	11.1
Market	6	33.3
Market and coconut	1	5.6
Market and coconut and cocoa	2	11.1
Market and cocoa	1	5.6
Relatives who work	1	5.6
Poultry and paid work	1	5.6
Total	18	100.0

<sup>37</sup> A *bilum* is a woven bag made in PNG.

However, when asked directly if other people supported them with mobile phone credit, most of the respondents indicated that they did receive this kind of assistance. One third of the responses indicated that they did not receive any help from other people in purchasing mobile phone credit. Two people received help from in-laws (*tambu* in Tok Pisin), and the others received assistance from various relatives and family members (see Table 4.31).

Table 4.31

Money for mobile phone credit sourced from other people (Orora)

	<b>Frequency</b>	<b>Percent</b>
No	6	33.3
<i>Tambu</i>	2	11.1
Parent	1	5.6
Child	1	5.6
More than 1 relative	8	44.4
Total	18	100.0

As for the matter of charging mobile phone batteries, the villagers listed only two available options for completing this task. One involved using the one diesel generator that was present in the village, and the other involved walking down to the stores on the coast to have the handset charged there. The latter procedure incurred a cost of a minimum of one Kina, up to as much as two Kina, depending on which store was visited, and whether or not the mobile phone owner provided their own charger. With regard to the former procedure of using the generator, this was only possible if the Naings had fuel to operate their generator. This fuel likewise had to be purchased from the coastal stores. The Naings had a sign on their cocoa fermentary advising residents of the cost of charging their mobile phones (see Figure 4.13). However, Moks Naing admitted that he allowed his fellow villagers to take advantage of this service even though in most instances they did not pay for it (Naing 2009b). Indeed, many survey respondents indicated that there was no payment required for charging their mobile phone batteries using the generator.

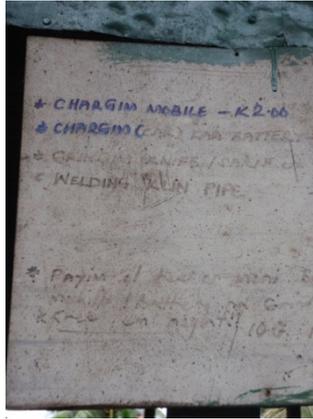


Figure 4.13. Sign indicating price of mobile phone battery charging

Copyright: Amanda H A Watson, 2009

Moks Naing owned a Digicel mobile phone charger which operated by turning the kinetic energy generated by a hand-crank into mobile phone power. This piece of equipment was inoperable at the time of the researcher's visit as the hand-crank had broken off. The researcher took a Digicel solar charger into the village (see Figure 4.14), but was unable to successfully operate it. Difficulties associated with its operation included: being uncertain as to whether or not the solar charger had already been charged; lack of strong sunlight due to continuous cloud cover; and concerns about potential theft, which limited the times when the device could be left in a suitably sunny position.



Figure 4.14. Orora children waiting for the solar charger to work

Copyright: Amanda H A Watson, 2009

Aside from the costs involved, it was of interest to establish whether or not mobile phones in Orora were utilised in income generation activities. Only one survey respondent indicated that they used their mobile phone for business purposes.

This was a much lower number than was expected by the researcher. However, in addition to this, villager Moks Naing talked about the usefulness of the mobile phone in conducting business, explaining that it allowed contact with people who were travelling to sell cocoa for him if there were any problems or issues that needed to be resolved (Naing 2009b).

It has been asserted in some mobile phone literature that mobile phone reception enables poor people greater access to markets (for example Beschoner 2007, 2) and the ability to find out different buying prices and sell to the highest bidder (Jensen 2007). However, as Moks Naing explained, the villagers did not always have the capacity to take their produce to the most desirable buyer, due to transportation limitations. People in Orora did not have a choice about where to take their goods due to poor transport availability. This limited the economic benefit of mobile telephony.

I rarely do that [sit here and ring all the places and find out who has the best price]. At Kulili there's a different rate. OK in Biabi, there's another. But sometimes if we fail to go to another place, it's because of the car that's all. So one car, the ambulance, we tend to use it for this too. And the car belonging to another brother, its condition isn't good to go round to the other side [of the island]. So if he's thinking of carrying it there, then it can go. And if not, then it can't. So we can find out the price, but with regard to transport, if there's a way to transport it to there, then we go, and if there's no suitable car which will take us there, that's alright, we don't have another choice, we go down that's all. Whether the price is good or not, we just go.<sup>38</sup>  
(Naing 2009b)

Of the 54 survey respondents who did not own a mobile phone, 35 of them (64.8% of non-owners) referred to money as a key reason for them not having a mobile phone. In most cases, they stated that they did not have enough money to buy one, and in some cases they expressed concern about the high costs involved in operating one in an ongoing manner.

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<sup>38</sup> This text is an English translation of a quote from an interview in Tok Pisin: "wanwan taim mi wok long mekim olsem [sindaun long hia na ring i go long olgeta hap na painimaut husait i gat gutpela prais]. Long Kulili i gat diferen reit bilong em. OK long Biabi, em tu i narapela. Tasol sampela taim mipela 'fail' long go long narapela hap, em long kar tasol. So wanpela kar, olsem ambulens, em mipela save yusim tu long dispela. Na kar bilong narapela brata, kondisen bilong em i no gutpela tumas long raun go long hapsait [long aislan]. Sapos em gat tingting long karim go long hap, em, em save karim go. Na nogat, em nogat. So long prais em mipela ken painaut tasol long sait bilong trenspot, em inap long trenspotim go long hap, em mipela go, na nogat wanpela rait kar we bai kisim mipela go long hap, i orait, mipela nogat narapela sois, mipela go daun tasol. 'Even' prais i gutpela o nogut mipela go tasol."

#### **4.12 KEY FINDINGS REGARDING ORORA**

The findings outlined indicate the absence of modern communication technologies in Orora prior to the introduction of mobile telephony. As there were no landline telephones, televisions, computers or Internet connections in Orora, the people's experiences of these technologies were limited to their travels beyond the village borders. Although a number of people owned radio receivers, a sizeable group of these could not afford to purchase batteries to operate this technology. Very few of the respondents had sent or received a letter, watched television, watched a movie, or read a magazine in the previous month. None of them had used a computer, Internet or email at any time in their lives. Although some people were aware that their friends and family in urban centres had access to Internet and email, they were for the most part unable to explain exactly what these technologies were.

The introduction of mobile telephony into Orora was received with mixed feelings, although there were more villagers who were in favour of the change than were against it. People were pleased to be able to contact relatives and friends living in other parts of PNG. They viewed the ability to ask for help or financial assistance as beneficial for them. Madang town resident Benjamin Naing also saw mobile phone reception in Orora as mainly positive, explaining that this enabled much easier communication with his relatives in the village. He viewed requests for assistance as appropriate; "because culturally I'm expected to assist, being a senior elder and a clan leader and leader amongst [the] people, they feel that I should, I should assist" (Naing 2009a).

Nonetheless, serious concerns were articulated throughout the community with regard to mobile phones being used by young people or married people to conduct illicit relationships, and mobile phones being used to coordinate robberies. The traditional checks on acceptable behaviour were perceived to be breaking down with the introduction of this modern communication technology, as people could use it to avoid and challenge traditional social controls. Villagers were also genuinely concerned about the costs of mobile phones, and particularly the ongoing costs associated with operating them. Many viewed the mobile phone as wasting or consuming their limited monetary resources.

Despite only a quarter of the adults surveyed owning a mobile phone, it was evident that this device could play an important role in any emergencies. In cases

such as sickness, difficulty in childbirth, or a missing child, mobile phone reception could ensure a quicker and more effective response. Aside from the obvious benefit of this technology in such instances, people in Orora still used a range of other communication mediums, such as the traditional drum, or *garamut*, and sending messages via messengers. As Moks Naing explained, mobile phones did not necessarily replace the methods of communication used formerly, but their introduction meant that there were more options available: “OK now the mobile system has come in, there’s lots of ways now I think, lots of ways for us to send messages to and fro”<sup>39</sup> (Naing 2009b). Rather than replacing other methods of communication, the new communication device became one of a range of options, giving villagers more choices.

The introduction of mobile telephony into Orora has not caused a revolution, but it has created another resource which can be utilised for communication. The communicative ecology was complex and the people could use more than one communication method in an attempt to transmit the same message:

The *garamut* is the traditional communication method and it’s still here yet, and whatever ways, modern ways, that are now coming inside here, like telephones, mobiles or writing letters and sending them, all of these, still we’re using them yet. Suppose like the *garamut*, lots of times, some of the time, we double them all with it. We talk to a man who’s going, we write a letter, we talk to him verbally, he’ll go and talk verbally, he’ll give the letter. OK some of the time the *garamut* rings out as well, a man carries a letter, passes on the message verbally with it, the *garamut* rings out, mobile too – we habitually double them all together. [Laughs.]<sup>40</sup> (Naing 2009b)

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<sup>39</sup> This text is an English translation of a quote from an interview in Tok Pisin: “OK nau mobail sistem em kam in, em planti rot nau mi skelim, em planti rot long mipela salim toksave go kam.”

<sup>40</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Garamut em ol tradisinel wei bilong komyunikesen em stil stap yet, na wanem kain ol wei, modern wei, nau em kam insait, kain olsem long telefon, mobail o raitim pas na salim i go, em olgeta, dispela, em stil mipela yusim yet. Sapos olsem garamut, planti taim, sampela taim, mipela save dablim [double] olgeta wantaim. Mipela tokim man go yet, raitim pas, tokim em long maus, em bai go toktok long maus yet, em bai givim pas. OK sampela taim garamut tu em save kra i yet, man karim pas, go toksave long maus wantaim, garamut pairap stap, mobail tu em mipela save dablim olgeta. [Laughs.]”



# Chapter 5: Megiar

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## 5.1 INTRODUCTION

What follows is a detailed presentation of the findings of field research conducted in Megiar, a rural village in PNG, between September and November 2009. The research, consisting of a survey of 102 people, plus five semi-structured interviews, aimed to determine the role of mobile telephony in the village's communicative ecology and the lives of the people residing there. Although the bulk of the writing is focused on the research findings, at the outset there is a background section which provides some useful contextual information about the village's location and development status.

## 5.2 MEGIAR, SUMKAR DISTRICT, MADANG PROVINCE

Megiar is a coastal village in Sumkar District, Madang Province. It is located on the mainland, along the north coast road, north of Madang town (see Figure 5.1). The north coast road is sealed, with local buses regularly making the 90 minute trip between Madang town and Megiar. Two of the buses operating along this route are owned by families in Megiar.

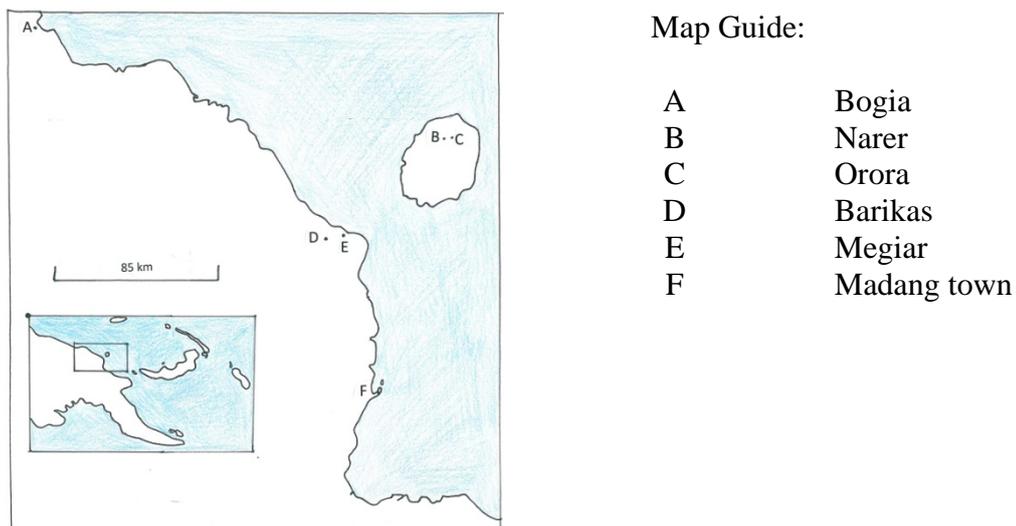


Figure 5.1. Relative locations of Orora and Megiar

Copyright: Amanda H A Watson, 2010

At the time that this research was conducted in Megiar (September to November 2009), it was estimated that there were 116 houses in Megiar. The houses were situated either on the waterfront, along the roadside or inland from the road. Some homes had mains electricity connected, although there were no landline phones in the village. The village consisted of smaller areas which had their own names, stretching from Biras, next to a Catholic mission station, to Dabag, in the direction of Dylup Plantation. Megiar had an active marketplace (see Figure 5.2).



Figure 5.2. Marketplace in Megiar

Copyright: Amanda H A Watson, 2009

Opposite the marketplace was an area where boats and buses could pull up. During the daytime, there were often many people congregated in this area next to the water, under the trees (see Figure 5.3).



Figure 5.3. Waterfront area opposite the Megiar market

Copyright: Amanda H A Watson, 2009

There were two small stores in Megiar which were open on a daily basis, and other small stores which were open infrequently (see Figure 5.4).



Figure 5.4. A trade store in Megiar

Copyright: Amanda H A Watson, 2009

There was a Catholic mission station at the edge of the village which was home to the parish priest as well as Sisters of the Sacred Heart, both from overseas and from other parts of PNG. The mission station provided a range of services, such as: a large primary school; a bore water pump that people used to collect water in containers or wash clothes; a hall that was used for training programs and meetings; a pastoral centre where training programs were run throughout each year; and a small library built from bush materials that was sometimes opened after church on Sundays. The church itself was a large, imposing building (see Figure 5.5).



Figure 5.5. Saint Francis Xavier Church in Megiar

Copyright: Amanda H A Watson, 2009

The majority of the mission station land was taken up with the primary school, which had around 600 students and catered for children from surrounding villages as well as Megiar (Uamo 2009). The primary school was established by Catholic missionaries and later integrated into the government system, with the government paying the teachers' wages since the 1970s (Uamo 2009). The primary school extended along a stretch of land between the water and the road, with the church and priest's house at one end and the convent at the other. The school sign is in Figure 5.6, with some classrooms to the left and right, and the water in the background.



Figure 5.6. Primary school in Megiar

Copyright: Amanda H A Watson, 2009

Also in Megiar, there was an elementary school, which was established in 1997. Nestled between bush material houses, the classroom buildings were also made out of bush materials (see Figure 5.7). The flat, dirt area in the foreground of the picture was filled with children playing during break times on school days.



Figure 5.7. Elementary school in Megiar

Copyright: Amanda H A Watson, 2009

The nearest health centre was Mugil Health Centre, a 90 minute walk from Megiar (Binib 2009). An ambulance was based at Mugil Health Centre. Daily activities in Megiar included working in the garden, fishing and selling fresh produce or baked goods at the market. Figure 5.8 includes a Megiar resident proudly standing next to his canoe, which he uses for fishing.



Figure 5.8. A Megiar resident with his canoe

Copyright: Amanda H A Watson, 2009

Mobile phone coverage extended to Megiar in October 2007 due to the construction of a Digicel tower at Barikas, a mountaintop village overlooking Megiar. Figure 5.9 shows the tower in the village of Barikas, which is surrounded on all sides by local bush material houses.



Figure 5.9. The Digicel tower at Barikas

Copyright: Amanda H A Watson, 2009

### 5.3 RESEARCH UNDERTAKEN



Figure 5.10. Amanda H A Watson conducting a survey in Megiar

Copyright: Amanda H A Watson, 2009

A verbally administered survey was conducted in Tok Pisin, as is shown in Figure 5.10. Semi-structured interviews were undertaken with selected people who were of key interest in relation to the research objectives. The four people interviewed in Megiar were: Kathy Uamo, the Head Teacher at the primary school; Willy Binib, a local flex card seller; Jacinta Fong, the President of the St Monica Mama Group in Megiar; and Fr Arnold Warangima, the Parish Priest of Megiar Parish. After the field research in Megiar was completed, an interview was conducted in Madang town with Pancratius ‘Pan’ Lakot, a man from Megiar who was working in town, to learn something about the town end of the communication process.

### 5.4 RESEARCH PERMISSIONS

The researcher made an initial visit to Megiar, accompanied by Dr Anastasia Sai, an academic from Megiar who was able to introduce the researcher to the community in a suitable manner. On the day of this visit, the community leaders were holding an information session for children, in which they were discussing a range of issues such as appropriate behaviour and the importance of schooling. After this event was concluded and the children were excused, the gathered leaders were able to hear about the proposed research and have their questions answered. It was at this time that the Councillor Cosmas Aiwol and 19 other leaders gave their consent for this research to be conducted in Megiar. The aim of the research was explained to

the leaders, along with the proposed research methods. It was emphasised that individuals could decline to participate and that this choice should be respected. Contact details for the researcher, supervisors and the QUT Research Ethics Officer were given to a few of the leaders.

## 5.5 DEMOGRAPHICS

In Megiar, 102 people were surveyed. The survey was conducted in Tok Pisin, and was administered orally, with the researcher asking questions verbally and writing down the spoken responses. Of the 102 people surveyed, 99 of them lived in Megiar, while 3 of them lived in villages near Megiar, but were visiting Megiar at the time when the survey was conducted. The survey was conducted with people in all of the sub-sections of the village, from Biras to Dabag. An effort was made to ensure that there was a representative sample from each of these areas of Megiar. As can be seen in Table 5.1, the resulting data consisted of a roughly equal division of the genders.

Table 5.1  
Gender of respondents in Megiar

	<b>Frequency</b>	<b>Percent</b>
Male	52	51.0
Female	50	49.0
Total	102	100.0

Efforts were made to speak to adults of a range of ages, from youths in their late teens and early twenties to parents with school children, and from parents with older children through to elderly people. Anyone considered a child in the village (below about the age of fifteen) was excluded from the sample as the research project did not have ethical clearance for including children. The age range of respondents can be seen in Table 5.2, although it should be noted that this is only indicative, as many villagers were not sure of their exact age. The purpose of including this table is to show that there were people from a range of age groups included, but it should not be taken to indicate any accuracy regarding exact ages of respondents.

Table 5.2  
Age of respondents in Megiar

		<b>Frequency</b>	<b>Percent</b>
Age in years	16-30	29	28.4
	31-45	41	40.2
	46-60	27	26.5
	61-75	5	4.9
	Total	102	100.0

The highest education level of the respondents was attained by asking them both the last grade they completed at school and whether or not they had engaged in any form of further study, such as technical college or tertiary education. From Table 5.3, it can be seen that few respondents continued their schooling beyond grade ten, although a third of them (33.3%) completed grade ten. At the lower end of the progression range, over a quarter of respondents did not continue their schooling beyond grade six (27.5%), while a fifth went no further than grade eight (20.6%).

Table 5.3  
Highest school grade (Megiar)

<b>School year</b>	<b>Frequency</b>	<b>Percent</b>
Less than grade 6	8	7.8
6	28	27.5
7	1	1.0
8	21	20.6
9	2	2.0
10	34	33.3
11	2	2.0
12	6	5.9
Total	102	100.0

Only about a third of the survey respondents in Megiar have had the opportunity to attend any kind of further training, while nearly two-thirds (63.7%) of the respondents indicated they had not undertaken any further education since leaving school, as shown in Table 5.4. Several industry-related institutions have been grouped in Table 5.4 under the heading 'job specific training': Telikom College;

Police College; teachers' college; maritime college; and business college. Only 3.9% of respondents had attended university.

Table 5.4

Further education of respondents in Megiar

<b>Type of further education</b>	<b>Frequency</b>	<b>Percent</b>
None	65	63.7
Technical college	8	7.8
University	4	3.9
Job specific training	19	18.6
Vocational training, e.g. sewing and cooking	5	4.9
Seminary	1	1.0
Total	102	100.0

## 5.6 HOUSING

There were three different types of houses in Megiar: bush material (Figure 5.11), semi-permanent (Figure 5.12), and permanent (Figure 5.13).



Figure 5.11. Bush material house in Megiar

Copyright: Amanda H A Watson, 2009



Figure 5.12. Semi-permanent house in Megiar

(note the corrugated iron roofing)

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Figure 5.13. Permanent house in Megiar

(note the guttering, downpipe and rainwater tank)

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Water access and sanitation were challenging issues in Megiar. No homes had water piped into them. Many people used springs as their primary water sources. The most commonly used spring was named Lisow (see Figure 5.14). Water was also obtained through naturally occurring wells, one of which is shown in Figure 5.15. Water could also be stored and collected in tanks (Figure 5.16) and drums (Figure 5.17).



Figure 5.14. Young girl collecting water from Lisow spring in Megiar

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Figure 5.15. Boy collecting water from well in Megiar

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Figure 5.16. Woman collecting water from rainwater tank in Megiar<sup>41</sup>

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Figure 5.17. Drums for collecting water in Megiar

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Many of the water sources listed in Table 5.5, such as wells, were shared facilities, which meant that although 30 respondents indicated that they had access to a well, this does not mean that around a third of the houses in Megiar had wells. The data is also a simplification of people's behaviours as it shows the primary water source, although often people used more than one water source, for example one for drinking water and another for washing. Many women might have carried clothes to

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<sup>41</sup> The sign on the tank says in Tok Pisin: "Tok Save: Dispela liklik wara em bilong pamili tasol. Plis harim na behainim. By: family concern.", which translates as: "Notice: This small water source belongs only to this family. Please follow this notice. By: the family concerned."

a creek to wash them, and while there they may have bathed, and perhaps then collected drinking water from a spring on the return journey or in a separate outing.

Table 5.5

Water sources in Megiar

	<b>Frequency</b>	<b>Percent</b>
Tank	15	14.7
Well	30	29.4
Creek	2	2.0
Drum	8	7.8
Spring	32	31.4
Tank belonging to neighbours or relatives	12	11.8
No answer	3	2.9
<b>Total</b>	<b>102</b>	<b>100.0</b>

Altogether 12.7% of survey respondents did not have access to a toilet, and therefore undertook this activity in the bush or when bathing in the ocean. As can be seen in Table 5.6, of the remaining 89 survey respondents who did have access to toilets, the majority (62.9%) used pit toilets, examples of which are shown in Figure 5.18 and Figure 5.19, about a third (31.5%) used toilets erected over the water (see Figure 5.20), and a very small number had access to septic toilets (5.6%). In Megiar, several families from different households may have been using the same toilet.

Table 5.6

Toilets in Megiar

	<b>Frequency</b>	<b>Percent</b>
Septic	5	5.6
Pit	56	62.9
Seawater toilet	28	31.5
<b>Total</b>	<b>89</b>	<b>100.0</b>



Figure 5.18. Pit toilet in Megiar

Copyright: Amanda H A Watson, 2009



Figure 5.19. Pit toilet in Megiar

Copyright: Amanda H A Watson, 2009



Figure 5.20. Seawater toilet in Megiar

Copyright: Amanda H A Watson, 2009

About a third of respondents had electricity available in their own home, as can be seen in Table 5.7.

Table 5.7

Power in own house in Megiar

	<b>Frequency</b>	<b>Percent</b>
No	70	68.6
Yes	32	31.4
Total	102	100.0

Table 5.8 shows that most of these people obtained access to their electricity through the mains electricity supply provided by PNG Power. Some people who did not have power in their homes explained they were not able to afford the service. In some instances, cables like extension cords had been erected to provide power to neighbouring houses (see Figure 5.21). This saved on connection fees. Recipients of power via these makeshift cables contributed some money to their neighbour's electricity bill.

Table 5.8  
Electricity type used in Megiar

	<b>Frequency</b>	<b>Percent</b>
PNG Power	22	68.8
Generator	4	12.5
Makeshift cable pulling PNG Power from neighbour's house	5	15.6
Another kind	1	3.1
<b>Total</b>	<b>32</b>	<b>100.0</b>



Figure 5.21. Power cable running between houses in Megiar

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Of the four respondents who indicated they had access to a diesel generator, all of them said that the generator was operational at the time that the survey was carried out, but three of the four respondents did not have fuel to run their generator on that particular day. Table 5.9 indicates that most respondents had access to some form of lighting in their own home.

Table 5.9  
Lighting in homes in Megiar

	<b>Frequency</b>	<b>Percent</b>
No	12	11.8
Yes	90	88.2
<b>Total</b>	<b>102</b>	<b>100.0</b>

Of those respondents who had lighting, Table 5.10 shows that two thirds (66.7%) used kerosene lamps like the one shown in Figure 5.22.

Table 5.10

Kind of lighting in homes in Megiar

	Frequency	Percent
PNG Power	22	24.4
Kerosene lamp(s)	60	66.7
Generator	1	1.1
Makeshift cable pulling PNG Power from neighbour's house	5	5.6
Battery light	1	1.1
Another kind	1	1.1
Total	90	100.0



Figure 5.22. A Megiar resident with his kerosene lamp

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Nearly all (91.7%) of the people who had kerosene lamps indicated that they had kerosene for their lamps in supply on the day that they were asked (see Table 5.11).

Table 5.11

Kerosene present in homes in Megiar

	<b>Frequency</b>	<b>Percent</b>
No	4	6.7
Yes	55	91.7
No answer	1	1.7
Total	60	100.0

## 5.7 COMMUNICATIVE ECOLOGY

Survey respondents were asked if they had a landline telephone, television, computer, Internet connection or radio in their house. Not one of the respondents (or 0%) said they had a landline telephone in their house. As can be seen in Table 5.12: very few people in Megiar had a television (7.8%) or computer (5.9%), none of them had an Internet connection at home (0%), and only about half of respondents (48%) had a radio in their home.

Table 5.12

Media present in households (Megiar)

		<b>Frequency</b>	<b>Percent</b>
Television	No	94	92.2
	Yes	8	7.8
Computer	No	96	94.1
	Yes	6	5.9
Internet	No	102	100.0
	Yes	0	0
Radio	No	53	52
	Yes	49	48

Of those who owned a radio, nearly three quarters (71.4%) said their radio was working (see Table 5.13). In most of the cases where the radio was not operational, this was because the radio was broken, although in a couple of instances the person did not have any batteries for it at the time that the survey was conducted (see Table 5.14).

Table 5.13  
Radio working? (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No	13	26.5
Yes	35	71.4
No answer	1	2.0
Total	49	100.0

Table 5.14  
Reasons for inactive radios (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No batteries	2	15.4
Radio broken	10	76.9
No answer	1	7.7
Total	13	100.0

Respondents were asked if they had undertaken a range of communication activities at any time in their lives, and then they were asked whether they had engaged in the same activities within the preceding month. Table 5.15, Table 5.16 and Table 5.17 show the findings regarding the life experiences of the individuals who participated in the survey, in other words whether or not these people had ever done these activities during their lives. Table 5.15 focuses on media-related activities, and indicates that most people in Megiar had listened to the radio (96.1%), sent a letter (89.2%), received a letter (89.2%), watched television (95.1%), watched a movie (99%), read a newspaper (91.2%), read a magazine (78.4%) and read a book (93.1%) at some point in their lives.

Table 5.15  
Megiar respondents' media access during lifetime

		Frequency	Percent
Radio	No	4	3.9
	Yes	98	96.1
	Total	102	100.0
Letter sent	No	11	10.8
	Yes	91	89.2
	Total	102	100.0
Letter received	No	11	10.8
	Yes	91	89.2
	Total	102	100.0
Television	No	5	4.9
	Yes	97	95.1
	Total	102	100.0
Movie	No	1	1.0
	Yes	101	99.0
	Total	102	100.0
Newspaper	No	9	8.8
	Yes	93	91.2
	Total	102	100.0
Magazine	No	22	21.6
	Yes	80	78.4
	Total	102	100.0
Book	No	7	6.9
	Yes	95	93.1
	Total	102	100.0

Table 5.16 presents data for computer usage during a respondent's lifetime. Whereas most of the respondents had accessed a range of media forms at least once in their lives, computer usage was much lower, with about a quarter of respondents (24.5%) having used a computer. To ensure that respondents understood terms correctly, questions about both the Internet and websites were included. The responses were slightly different for each of these questions, which indicates either that people in Megiar did not understand these terms clearly, or that a couple of

respondents had distinguished looking at a website (which perhaps was brought up onto the screen by another person) from operating the system themselves. In either case, only a very small number of people said that they had used the Internet (4.9%), accessed a website (6.9%) or used email (7.8%) during their lives.

Table 5.16  
Megiar respondents' computer usage during lifetime

		<b>Frequency</b>	<b>Percent</b>
Computer	No	77	75.5
	Yes	25	24.5
	Total	102	100.0
Internet	No	97	95.1
	Yes	5	4.9
	Total	102	100.0
Website	No	95	93.1
	Yes	7	6.9
	Total	102	100.0
Email	No	94	92.2
	Yes	8	7.8
	Total	102	100.0

In order to more fully understand people's life experiences, they were asked about their travel outside of Megiar. Table 5.17 shows that most of the respondents had been to Bogia (83.3%), all of them had been to Madang town (100%), most had been to at least one other province (85.3%) but few had been overseas (10.8%).

Table 5.17  
Travel outside of Megiar during lifetime

		Frequency	Percent
Bogia	No	17	16.7
	Yes	85	83.3
	Total	102	100.0
Madang town	No	0	0
	Yes	102	100.0
	Total	102	100.0
Other province(s)	No	15	14.7
	Yes	87	85.3
	Total	102	100.0
Overseas	No	90	88.2
	Yes	11	10.8
	No answer	1	1.0
	Total	102	100.0

In order to gain a closer understanding of contemporary life in Megiar, respondents were asked to consider their activities during the preceding month. They were asked whether they had engaged in many of the same behaviours over that month-long period. Table 5.18 through to Table 5.20 show the data for the activities undertaken during the previous month.

Whereas most of the respondents had accessed the eight mediums discussed at some point in their lives, Table 5.18 shows that the media access over the previous month was mixed. The newspaper rated as the most popular medium, with 69.6% of respondents having read a newspaper within the last month, followed closely by movies (63.7%). Movies were more accessible than television broadcasts (which were only watched by 50% of Megiar residents during the preceding month) as they did not depend on television reception being available. Movies tended to be watched using a CD (VCD or DVD) shown on a laptop or computer, or on a television screen hooked up to either a DVD player or a portable stereo with the capacity to show VCDs as well as play audio CDs. Just over half of the respondents had listened to the radio in the last month (60.8%). Although less commonly read than newspapers,

books were read by just over half of those surveyed (54.9%) whereas magazines seemed to be more difficult to acquire or less appealing, with only about a quarter of respondents having read a magazine in the previous month (29.4%). At the lower end of the spectrum, very few people sent or received letters during the previous month (9.8% and 5.9% respectively).

Table 5.18

Megiar respondents' media access in last month

		<b>Frequency</b>	<b>Percent</b>
Radio	No	40	39.2
	Yes	62	60.8
	Total	102	100.0
Letter sent	No	92	90.2
	Yes	10	9.8
	Total	102	100.0
Letter received	No	96	94.1
	Yes	6	5.9
	Total	102	100.0
Television	No	51	50.0
	Yes	51	50.0
	Total	102	100.0
Movie	No	37	36.3
	Yes	65	63.7
	Total	102	100.0
Newspaper	No	31	30.4
	Yes	71	69.6
	Total	102	100.0
Magazine	No	72	70.6
	Yes	30	29.4
	Total	102	100.0
Book	No	46	45.1
	Yes	56	54.9
	Total	102	100.0

One reason why television viewing was much more common than the television ownership levels may suggest (50% of respondents had watched television within the last month, although only 7.8% had a television at home) was because those with televisions allowed others to watch them, usually for a small fee. The satellite dish in Figure 5.23 was used for the broadcast of Australian rugby league games. An area was fenced off and attendees were charged a gate fee – fifty toea for regular matches during the season, one Kina for the grand final and one Kina for each of the three annual State of Origin games.



Figure 5.23. Satellite dish for television viewing in Megiar

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Although roughly a quarter of respondents had used a computer at some time during their lives (perhaps when working or attending school or college), very few people in Megiar had used a computer within the last month. Table 5.19 shows that the usage figures were low for computers (7.8%), Internet (2%), websites (1%) and email (2.9%).

Table 5.19  
Megiar respondents' computer usage in last month

		Frequency	Percent
Computer	No	94	92.2
	Yes	8	7.8
	Total	102	100.0
Internet	No	100	98.0
	Yes	2	2.0
	Total	102	100.0
Website	No	101	99.0
	Yes	1	1.0
	Total	102	100.0
Email	No	99	97.1
	Yes	3	2.9
	Total	102	100.0

When travelling outside of Megiar, villagers tended to go to Madang town, where they were able to access a range of services, rather than to Bogia, in the opposite direction (see Table 5.20).

Table 5.20  
Travel outside of Megiar in last month

		Frequency	Percent
Bogia	No	95	93.1
	Yes	7	6.9
	Total	102	100.0
Madang town	No	25	24.5
	Yes	77	75.5
	Total	102	100.0

To gain greater understanding of people's access to computer-based communication technologies, respondents were asked whether they were aware of any of their friends or relatives using these tools. Just over a third (39.2%) indicated that they did know someone who had access to the Internet or email (see Table 5.21).

Table 5.21

Known others who use Internet or email (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No	62	60.8
Yes	40	39.2
Total	102	100.0

Those people who had given a positive response to any of the questions relating to computers or computer-based technologies were asked to define the terms Internet and email, and were also asked about perceived (or actual) uses of the Internet. With regard to the Internet, few people were able to provide a clear definition of the term (8.1%), while a similar number gave an inaccurate response (6.5%), many gave a vague or partly correct answer (64.5%) and nearly a quarter of people in this group do not have any understanding of what the Internet is (21%), as is shown in Table 5.22.

Table 5.22

Internet definition (Megiar)

	<b>Frequency</b>	<b>Percent</b>
Wrong answer <sup>42</sup>	4	6.5
Correct answer <sup>43</sup>	5	8.1
Vague or partly correct answer <sup>44</sup>	40	64.5
Unable to answer - no idea	13	21.0
Total	62	100.0

Respondents' knowledge about email and its functions was mixed (see Table 5.23). A third of those who were asked were not able to define the term 'email' (32.3%), while a group of a similar size gave a vague or partly correct answer (38.7%). The remainder were divided between providing an accurate definition of email (17.7%) and an inaccurate one (11.3%).

<sup>42</sup> Wrong answers referred to other technologies or behaviours that were not connected to or associated with the Internet in any way.

<sup>43</sup> Responses which were classified as correct usually referred to computers, for example 'using a computer to get news from around the world' or 'a computer program to connect to other computers'.

<sup>44</sup> Vague or partly correct answers ranged from 'a quick type of communication' to 'looking at things in other countries on a screen'.

Table 5.23

Email definition (Megiar)

	Frequency	Percent
Wrong answer <sup>45</sup>	7	11.3
Correct answer <sup>46</sup>	11	17.7
Vague or partly correct answer <sup>47</sup>	24	38.7
Unable to answer - no idea	20	32.3
Total	62	100.0

The same group of people answering the computer-related questions were asked how they might use the Internet if they were to gain access to it in the future, or how they did currently use it. Detailed responses are shown in Table 5.24. In interpreting this data, it is helpful to group together some items, finding, starting with the most common responses: a third of these people did not understand how this technology might be of use to them (1.6% no answer + 24.2% not sure + 6.5% vague answer = 32.3%); about a quarter of these people would use the Internet to find news or specific information such as tsunami warnings (19.4% get news + 4.8% find specific information = 24.2%); and about a fifth envisaged that they could utilise the Internet to enhance their business outcomes (1.6% pyramid selling business + 17.7% business = 19.3%). Amongst the remaining responses, the Internet was viewed as a tool for downloading entertainment products such as music and movies (12.9%), as a communication device (6.5%) or as a tool for specific purposes (distance education 3.2% and church-related activities 1.6%).

<sup>45</sup> Answers classified as incorrect included 'sending a letter through the Post Office' and 'sending a letter with a stamp on it to make it go quickly'.

<sup>46</sup> Correct answers included 'sending a letter through a computer' and 'sending a letter to another country quickly through a computer'.

<sup>47</sup> Examples of vague or partly correct answers included 'sending a letter in a machine', 'sending a letter quickly' and 'something similar to the Internet, but I don't understand the difference'.

Table 5.24  
Possible or actual uses of the Internet (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No answer	1	1.6
Not sure	15	24.2
Vague answer	4	6.5
Get news	12	19.4
Find specific information, e.g. cholera or tsunami warnings	3	4.8
Pyramid selling business, e.g. Questnet	1	1.6
Business, e.g. selling produce or crafts	11	17.7
Downloading music, movies and video clips	8	12.9
Communicate	4	6.5
Distance education	2	3.2
Church-related activities	1	1.6
<b>Total</b>	<b>62</b>	<b>100.0</b>

To summarise the findings regarding the communicative ecology of Megiar, although residents of Megiar varied in terms of their access to media and communication technologies and their understanding of these technologies, only a very small cohort was using computers or computer-based technologies on a regular basis. Some respondents had an understanding of the purposes or workings of the Internet or email, but many were not aware of these technologies at all.

A high number of people who completed the survey had travelled to Madang town within the preceding month, showing the relative ease with which residents of Megiar could gain access to services. This may have impacted upon the figures for media access within the last month, meaning that for the high numbers of people who had read newspapers, watched movies, listened to the radio, or watched television, some of these activities may have taken place in town (or in buses, in the case of radio), rather than in Megiar itself. Nonetheless, a range of media sources was available to people in Megiar.

## 5.8 MOBILE PHONES

Efforts to include both mobile phone owners and non-owners in the survey in Megiar were informal. However, once the responses were tallied, exactly half of the respondents (50%) owned a mobile phone (see Table 5.25). This figure was a rough representation of the situation within the total population of Megiar, averaging different concentrations of use: in some families every family member owned a mobile phone, including young children; in many families, there was only one mobile phone for the whole family; and in other families there was no mobile phone ownership.

Table 5.25  
Mobile phone ownership in Megiar

	<b>Frequency</b>	<b>Percent</b>
No mobile	51	50.0
Does own	51	50.0
Total	102	100.0

Of the group of 51 respondents who owned a mobile phone, nearly two-thirds of them were male (60.8%), as can be seen in Table 5.26.

Table 5.26  
Gender of mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
Male	31	60.8
Female	20	39.2
Total	51	100.0

The head of the women's group in Megiar believed that there was a gender imbalance amongst mobile phone owners, with disproportionately more men owning mobile phones than women (Fong 2009). To establish whether a person's gender had any bearing on whether or not they owned a mobile phone, a Pearson chi-square test was performed (Moore, McCabe and Craig 2009, 531). This test found that there was reasonable evidence of dependence between these two variables, at 5% statistical significance. This meant that there was some reason to believe that a person's gender

did have some impact on whether or not they owned a mobile phone, with males in Megiar apparently more likely to own a mobile phone than females.

The total number of mobile phones in the houses of respondents in Megiar is shown in Table 5.27. This data is taking into account the respondent as well as their family members. It can be seen that the number of mobile phones per house was commonly low: a quarter of homes had only one mobile phone (25.5%), and close to the same number had only two mobile phones belonging to members of the household (22.5%). It is noteworthy that nearly a quarter of the households surveyed (22.5%) did not have any mobile phones in them.

Table 5.27  
Total number of mobile phones in Megiar houses

	<b>Frequency</b>	<b>Percent</b>
0	23	22.5
1	26	25.5
2	23	22.5
3	14	13.7
4	9	8.8
5	4	3.9
6	1	1.0
7	1	1.0
8	1	1.0
Total	102	100.0

Having established the ownership patterns in relation to mobile phones, it is interesting to gain insight into the adoption decision, or the reason why the mobile phone owner decided to purchase the mobile phone handset. A common reason for people in Megiar to have a mobile phone was that it was given to them by a relative who was living in another part of PNG so that they could communicate with one another. For those residents who bought their own handsets, the most frequently expressed reasons for doing so were to make life easier and to enable communication. Communication types referred to specifically included both communication with relatives living at some distance, as well as communication with immediate family members. Some admitted that they were influenced by seeing

others with their mobile phones and so bought their own handset due to others having them. However, the novelty of the device was not a major contributor towards people's purchasing decisions, with only one respondent stating they had chosen to buy a mobile phone as it was something new.

In terms of future adoption rates, some indication of expected uptake following the research period was determined by ascertaining whether or not non-owners intended to purchase mobile phones. Of the 51 non-owners surveyed, 21 of them said that they intended to buy a mobile phone, while 18 were not intending to, and the remaining 12 people were undecided. The primary reason specified by non-owners for their intention to purchase a mobile phone was to enable communication with people who resided some distance away. For those who did not intend to buy a mobile phone, the concerns related to being unsure about how to operate the device, not having sufficient money to make the purchase, being wary about the amount of money required to cover the ongoing operational costs, and believing the device could make the user ill. In the case of people who were unsure about whether or not they would acquire a mobile phone at some future date, the principal factor causing their uncertainty was in relation to money: most of these people stated that they did not have enough money to buy a mobile phone at the time of the survey.

A number of non-owners had previously possessed a mobile phone: 16 out of 51 (or around one third of non-owners) reported having owned a mobile phone at some point in the past. The reasons for them no longer having those handsets included theft (6 cases), breakdown (5 cases), and loss (1 case). Three people had made a decision to no longer use their mobile phone as it was requiring too much money to operate. One female respondent became so frustrated with her husband calling her constantly that she put an axe through her handset and had no intention of acquiring a new one.

The information in Table 5.28 relates to the usage patterns of mobile phone owners in Megiar. It looks specifically at the preceding day and shows the number of: phone calls made; phone calls received; text messages sent; and text messages received. This data is drawn from responses from mobile phone owners only. In a few cases, mobile phone owners were making as many as ten phone calls, and sending a similar number of text messages, within a 24-hour period. The mobile phone company Digicel was running a promotion at the time that the present research

was conducted which offered text message sending for only one toea late at night (after ten o'clock). Some respondents mentioned this promotion, which may have led to a higher number of text messages being sent during this period than at other times. The data showed that a sizeable percentage of respondents did not undertake each activity on the previous day: over a third of mobile phone owners did not make a phone call on that day (35.3%); a third of them did not receive calls (33.3%); over half of them did not send a text message (58.8%); and a third did not receive a text message in the same period (33.3%). This shows that usage of mobile phones in Megiar on a daily basis was limited.

Table 5.28

Usage of mobile phones on the previous day (Megiar)

		Frequency	Percent
Ring out yesterday	0	18	35.3
	1	8	15.7
	2	10	19.6
	3	2	3.9
	4	6	11.8
	5	2	3.9
	6	2	3.9
	7	1	2.0
	9	1	2.0
	10	1	2.0
	Total	51	100.0
Received calls yesterday	0	17	33.3
	1	8	15.7
	2	9	17.6
	3	7	13.7
	4	2	3.9
	5	2	3.9
	6	2	3.9
	7	1	2.0
	10	2	3.9
	15	1	2.0
	Total	51	100.0
SMSs sent	0	30	58.8

		<b>Frequency</b>	<b>Percent</b>
yesterday	1	7	13.7
	2	7	13.7
	3	2	3.9
	4	1	2.0
	5	2	3.9
	11	1	2.0
	15	1	2.0
	Total	51	100.0
SMSs received yesterday	0	17	33.3
	1	12	23.5
	2	11	21.6
	3	2	3.9
	5	7	13.7
	7	1	2.0
	10	1	2.0
	Total	51	100.0

Of the 51 mobile phone owners surveyed in Megiar, eight of them did not use their mobile phone at all on the preceding day. They were asked to explain the reason for this (see Table 5.29). The most common reason for non-usage of the mobile phone was that the owner did not have any credit (three responses). In two cases, the handset was switched off and unavailable as it was being charged (this activity commonly meant that the mobile phone owner was without their device for a 24-hour period). In one case, the battery was flat, and in another the person had chosen to switch their handset off that day as they were suffering from a hangover.

Table 5.29

Reasons for non-usage of mobile phone on previous day (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No battery	1	12.5
It was being charged	2	25.0
Had it turned off	1	12.5
No credit	3	37.5
No particular reason - just didn't use	1	12.5
<b>Total</b>	<b>8</b>	<b>100.0</b>

In terms of mobile phone usage, questions were asked in relation to the phone calls made by mobile phone owners. These questions pertained to the usual recipients of phone calls, where they were located, and the reasons for phoning. Table 5.30, Table 5.31 and Table 5.32 convey the data gathered from these questions. It was more common for mobile phone owners in Megiar to phone relatives than friends, although the majority phoned both relatives and friends (see Table 5.30). A small number of people used their mobile phones to communicate with business contacts.

Table 5.30

Recipients of Megiar mobile phone calls

	<b>Frequency</b>	<b>Percent</b>
Friends only	1	2.0
Relatives only	20	39.2
Both friends and relatives	25	49.0
Business contacts	5	9.8
<b>Total</b>	<b>51</b>	<b>100.0</b>

The recipients of phone calls originating from mobile phones in Megiar were most commonly located in urban centres within PNG, as shown in Table 5.31. This indicates that the mobile phone has created an important link between villages and towns. Phone call recipients were also located in other villages or within Megiar itself. Nearly all the phone calls were made within PNG, with only a very small number of respondents having phoned overseas.

Table 5.31

Location of Megiar phone call recipients

	<b>Frequency</b>	<b>Percent</b>
PNG urban centres	19	37.3
PNG urban centres and home village	7	13.7
PNG urban centres and other villages	18	35.3
Other villages	1	2.0
Home village and nearest town	2	3.9
Around PNG and overseas	4	7.8
Total	51	100.0

Mobile phone owners in Megiar felt the most important reason for making a mobile phone call was to check on their co-respondent (see Table 5.32). This indicates that the mobile phone had come to play a key role in social interactions. The interchange of requests for assistance and the provision of various forms of assistance was an important part of relationships and communication interactions, particularly between villagers and relatives in Madang town or other urban centres. In Megiar, a high number of respondents referred to seeking help, offering help or thanking others for assistance as important parts of their most common exchanges using the mobile phone. A small number of respondents said they used the technology for business or work-related matters, or to convey urgent news.

Table 5.32

Reasons for Megiar mobile phone calls

	<b>Frequency</b>	<b>Percent</b>
To check on them <sup>48</sup>	20	39.2
To ask for something	5	9.8
To check on them AND ask for something	6	11.8
To offer them help	3	5.9
To thank them for help	1	2.0
To offer help AND ask for it	5	9.8
Business or work	7	13.7
To convey urgent news	3	5.9
No reason	1	2.0
Total	51	100.0

<sup>48</sup> For Megiar people this means that they are thinking of the person(s) called and checking whether they are well. The caller is staying in touch, showing they care and keeping the communication active.

Mobile phone handsets are capable of performing other functions, in addition to making and receiving phone calls and sending and receiving text messages. Mobile phone owners in Megiar were asked to indicate whether or not they used a range of functions and mobile phone services. Table 5.33 through to Table 5.36 show their responses with regard to these questions. More detail follows, but in general it is found that some functions are used by a high percentage of respondents (such as the alarm clock and checking the time), while others are used by very few (for example surfing the Internet or taking photos) or indeed no respondents at all (such as mobile phone banking).

Looking firstly at the use of mobile phones to gain access to media formats, which is shown in Table 5.33, few mobile phone owners in Megiar used the handset to listen to the radio (only 7.8%), while none of them used it to watch television (0%) as this service was unavailable in PNG at the time. One of the people surveyed in Megiar had used her mobile phone handset to access the Internet. Respondents were asked whether they used their handset to compose music (which includes composing ringtones) or listen to music (which may have been taken to mean listening to ringtones in an unknown number of cases). The responses indicated that roughly a quarter of respondents had used their handset to create a ringtone or other musical progression, while nearly half said they listened to music on their mobile phones.

Table 5.33  
Mobile phone media access in Megiar

		Frequency	Percent
Listening to radio	No	47	92.2
	Yes	4	7.8
	Total	51	100.0
Watching TV	No	51	100.0
	Yes	0	0
	Total	51	100
Internet	No	50	98.0
	Yes	1	2.0
	Total	51	100.0
Composing music	No	37	72.5
	Yes	14	27.5
	Total	51	100.0
Listening to music	No	28	54.9
	Yes	23	45.1
	Total	51	100.0

Mobile phone owners located in Megiar were only able to receive reception provided by Digicel. There was no other mobile phone service provider with reception available in the area at the time of the survey. Digicel had established functionalities which allowed users to send and receive mobile phone credit. These options were widely used by mobile phone owners in Megiar (see Table 5.34). Digicel users were able to send a free text message to another phone number asking the owner to phone them. This ‘please call me’ service was used by 66.7% of mobile phone owners in Megiar. A similar service allowed users to send a message requesting credit and 58.8% of mobile phone users in Megiar said that they availed themselves of this service. The latter two functions were popular<sup>49</sup> and could be used even if the handset did not have any Digicel credit in it.

Table 5.34  
Use of Digicel services in Megiar

		Frequency	Percent
Send credit	No	5	9.8
	Yes	46	90.2
	Total	51	100.0
Receive credit	No	11	21.6
	Yes	40	78.4
	Total	51	100.0
‘Please Call Me’	No	4	7.8
	Yes	34	66.7
	No answer	13	25.5
	Total	51	100.0
‘Please Credit Me’	No	8	15.7
	Yes	30	58.8
	No answer	13	25.5
	Total	51	100.0

Other companies provided services for mobile phone users in PNG: Bank South Pacific offered banking services via text message which included checking account balances and transferring money to nominated accounts; superannuation company Nasfund offered a service whereby members could receive regular updates of their account activities through text messages; electricity provider PNG Power allowed people to top up their electricity meters using credit in their handsets; and

<sup>49</sup> The two services were more popular and widely used than these figures suggested as these items were left off some of the earlier questionnaires.

people could also subscribe to a range of regular text message services, such as religious messages, sports updates or news.

Table 5.35 shows that in Megiar, at the time that the survey was carried out, the usage of these services was generally low: no respondents were using BSP SMS Banking (0%); only one respondent was using Nasfund TextBal; and only three users (5.9%) had subscribed to a text message service. By contrast, about a third of mobile phone users were using or had at some stage used PNG Power Easipawa Easipay (39.2%), and it was felt by villagers that this was a very good service, allowing people to reactivate their household power without having to make a trip to town to do so. This service enabled the power to be restored sooner (if the power ran out late in the day, then the householders would otherwise have been without power and lighting until at least the next afternoon by the time someone caught a bus to town the next morning and then returned) and it could save money that would have been spent on the bus fare. (The return bus fare between Megiar and Madang town was 12 Kina.)

Table 5.35  
Use of company mobile phone services in Megiar

		Frequency	Percent
BSP SMS Banking	No	51	100.0
	Yes	0	0
	Total	51	100
Nasfund TextBal	No	50	98.0
	Yes	1	2.0
	Total	51	100.0
Easipawa	No	31	60.8
	Yes	20	39.2
	Total	51	100.0
SMS subscriptions	No	48	94.1
	Yes	3	5.9
	Total	51	100.0

Mobile phone handsets vary and do not all have the same functionality. At the time of the survey in Megiar, most handsets in Megiar did not have a high range of advanced capabilities, such as Internet surfing and video filming, but instead were basic models more suited to low income customers. Nokia handsets were the most

common in Megiar, with Nokia 1202 and Nokia 1200 the most popular. Motorola phones were reasonably popular, followed by Coral, which is a Digicel brand of cheap, basic handsets with limited functionality (Telephony World nd), and Konka handsets, which are manufactured in China (Global Sources 2010). About half of the mobile phones in Megiar had been purchased in Madang town and a large number had been received as a gift. The remainder had been purchased in Megiar itself or in other parts of PNG. Those purchases made in Megiar included purchases from travelling teams of Digicel salespeople.

Survey respondents were asked to assess their own usage of features that are commonly found on basic handsets. The responses indicate their actual usage and do not reflect the desires of respondents to have access to some of the facilities that their current handsets might not incorporate (such as torch lights or cameras). In Table 5.36, it can be seen that the most widely used functions were the clock (96.1%), the alarm clock (88.2%), the calculator (88.2%), the calendar (86.3%), and games (78.4%). Nearly two-thirds of mobile phone owners used the torch function in their handset to provide lighting (64.7%), while about half of these people used the reminders (or 'quicknote') function in their device (47.1%). Functions which were not extensively used in Megiar included the stopwatch (23.5% - mainly for timing soccer games and other sports or competitions), the countdown timer (15.7%) and the camera (7.8%). The latter function was not present in most of the basic models of mobile phones present in Megiar at the time.

Table 5.36

Mobile phone function use in Megiar

		Frequency	Percent
Use torch	No	18	35.3
	Yes	33	64.7
	Total	51	100.0
Check the time	No	2	3.9
	Yes	49	96.1
	Total	51	100.0
Alarm clock	No	6	11.8
	Yes	45	88.2
	Total	51	100.0
Reminders	No	27	52.9
	Yes	24	47.1
	Total	51	100.0
Calendar	No	7	13.7
	Yes	44	86.3
	Total	51	100.0
Play games	No	11	21.6
	Yes	40	78.4
	Total	51	100.0
Calculator	No	6	11.8
	Yes	45	88.2
	Total	51	100.0
Countdown timer	No	43	84.3
	Yes	8	15.7
	Total	51	100.0
Stopwatch	No	39	76.5
	Yes	12	23.5
	Total	51	100.0
Camera	No	35	68.6
	Yes	4	7.8
	No answer	12	23.5
	Total	51	100.0

The 51 people (or 50% of respondents) who did not own a mobile phone were asked whether or not they did use any type of phone. Just over half of those in this group (56.9% of non-owners) said they did use phones (see Table 5.37).

Table 5.37

Usage of phones by non-mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
No	22	43.1
Yes	29	56.9
Total	51	100.0

Of those 29 people who indicated that they did use phones, over half said that this was only on rare occasions (58.6%), while about a third used phones occasionally (31%) and only a few non-mobile phone owners in Megiar used phones frequently (10.3%). This data is conveyed in Table 5.38.

Table 5.38

Frequency of usage of phones by non-mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
Rarely	17	58.6
Occasionally	9	31.0
Frequently	3	10.3
Total	29	100.0

For most of the people in this group, phone calls took place less than five times in a month. For more detail regarding the frequency of phone usage by non-mobile phone owners in Megiar in given time periods, see Table 5.39.

Table 5.39

Time periods of usage of phones by non-mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
Less than five times per year	4	13.8
Less than five times per month	17	58.6
Less than five times per week	6	20.7
Between 5 & 10 times per week	2	6.9
Total	29	100.0

On the occasions when a non-mobile phone owner in Megiar wished to make a phone call, they typically used a mobile phone belonging to someone else (82.8%), as is indicated in Table 5.40. There were no landline telephones in Megiar, so if someone wanted to use a public phone or a phone in a house or an office, this would have required travel outside of the village. In the case of all those in the small group of respondents who used these types of phones, they said they did so in Madang town.

Table 5.40

Type of phones used by non-mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
Mobile belonging to someone else	24	82.8
Public phone and office phone	1	3.4
Public phone and mobile phone	3	10.3
Office phone and mobile phone	1	3.4
Total	29	100.0

When using someone else's mobile phone, this was most commonly a handset belonging to a relative (see Table 5.41). Devices belonging to spouses and friends were also used.

Table 5.41

Owners of mobile phones used by non-mobile phone owners in Megiar

	<b>Frequency</b>	<b>Percent</b>
Relative(s)	17	60.7
Friend	2	7.1
Partner (husband/wife)	7	25.0
Friends and relatives	2	7.1
Total	28	100.0

Table 5.42 shows that in very few cases (3.6%) did the mobile phone owner ask the non-owner for money to make calls on their device. It was a common practice for people to purchase a flex card and key this into someone else's handset when they wanted to use it.

Table 5.42

Does the owner charge the non-owner to make calls? (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No	26	92.9
Yes	1	3.6
No answer	1	3.6
Total	28	100.0

The primary reason why non-owners made phone calls was to speak to relatives who resided in another province or at a great distance from Megiar. Other important reasons for making phone calls included: sending a message if there was a problem or major event in the family such as a death, major sickness, or birth; ringing friends who were a long way away; and requesting assistance. Three women explained that they used the mobile phone to speak to their husbands when the men were travelling or away working. Only two people in this category mentioned use of the mobile phone for business purposes.

In summarising the survey findings around mobile phones in Megiar, half of respondents owned a mobile phone. There appeared to be a difference between the genders, with more male mobile phone owners than females. Although usage for phone calls was limited amongst most of the users, the mobile phone handset did include a range of other functions and their introduction into Megiar led to widespread usage (such as clocks and alarm clocks). Convergent functions (see Section 2.7.5), such as photography and Internet surfing, still had limited usage in Megiar. Mobile phones were mostly used for keeping in contact with relatives or friends, especially when far away.

## **5.9 PERCEPTIONS OF MOBILE PHONES**

One of the questions on the survey questionnaire asked respondents to indicate their like or dislike of mobile telephony in PNG. As indicated in Table 5.43, just over half of the Megiar residents surveyed (52.9%) felt pleased about the introduction of mobile telephony in PNG, while only a small group (6.9%) saw mobile phones as a negative development. A sizeable group (40.2%) of respondents had mixed feelings about the technology.

Table 5.43  
Megiar residents' judgement about mobile phones

	<b>Frequency</b>	<b>Percent</b>
Not good	7	6.9
Good	54	52.9
Both good and bad	41	40.2
Total	102	100.0

When asked for the thinking behind the answers shown in Table 5.43, there were some common themes that emerged. There follows a summary of the responses regarding positive aspects of mobile telephony, in descending order of prominence, measured by the frequency with which each benefit was mentioned. The negative issues raised will then be outlined, again in descending order of frequency.

By far the most frequently stated positive factor regarding the introduction of mobile telephony was that it made it easy to talk to friends and family members who were a long way away. The mobile phone was seen as enabling easier communication and many respondents indicated that it was easier to ring instead of going to town on a bus to use a public phone or post a letter. Related to this, people mentioned that it cost less money to ring than travelling on the bus and using payphones or buying stamps and envelopes. The mobile phone's usefulness in being able to send messages seeking assistance was acknowledged, along with its importance in emergency situations. The mobile phone enabled quicker communication, which was valuable in instances such as notifying relatives when there had been a death in the family. Only a few people mentioned using the device in business communication or for contacting the police.

For those who viewed the mobile phone negatively (or had mixed feelings about the advent of mobile telephony), there were three main areas of concern which came up repeatedly in responses throughout Megiar: money, sex and crime. In the first case, the device was considered to be wasting people's money. Many people said that it wasted money, while some people were more specific: the credit was used up too quickly, and villagers spent money on the mobile phone instead of on other necessities, such as children's clothes, food and school fees. One person mentioned a

negative experience when a disagreement arose within a married couple over use of money after one partner took credit from their spouse's device. With regard to the second main area of concern, the mobile phone was seen as leading to marriage breakdown as it was viewed as a facilitator of extra-marital relationships. A number of respondents also expressed concerns about young people forming inappropriate boy/girl relationships since the advent of mobile telephony. One person expressed concern about mobile phone usage leading to an increase in HIV/AIDS transmission. In the third instance, crime was seen as being facilitated through the use of the mobile phone, as *raskols* or enemies could use the mobile phone to coordinate their activities, such as hold-ups on the road or store hold-ups. One person pointed out that those engaged in criminal activities could use mobile phones to warn one another if the police were approaching.

There were other areas of concern which were discussed by respondents. Ten people were worried that radiation from the handset could lead to health problems, although they were unclear as to what these might be. Two more were also concerned about health problems: one thought it was possible to contract HIV/AIDS from using mobile phones, and one was worried about radiation from mobile phone towers. Six people spoke with frustration about the disturbance caused by 'guessfire' calls. Guessfire calls were when people made up a phone number and dialled it, in order to see who might answer. For avid mobile phone users, particularly young people, guessfire calls provided the opportunity to expand their list of contacts, and potentially make new friends. For others, there were concerns that guessfire calls could lead to harassment, exposure to indecent language, men talking to young girls about sex, unexpected phone calls late at night which disturbed people's sleep, or the distribution of pornographic images. Several other people referred to the threat of pornographic images becoming available in the community, particularly expressing concerns with regard to children and young people being exposed to such images. Several others were worried about children and young people being distracted by mobile phones and not concentrating on their studies. A few Megiar residents said it was hard for them to charge the battery as they had no electricity available at home.

In order to further understand people's attitudes about the new service, survey respondents were asked why they thought that the mobile phone service had become available in Megiar. The most common response to this open question was 'to make

life easier for us',<sup>50</sup>, which was given by 47 people, or nearly half of the survey respondents. A large number of people (21 people, or about a fifth of respondents) said that they did not know why the service had been introduced. The remainder of the responses were mixed, with positive perceptions relating the change to 'development' or government service provision, and negative perceptions aligned with notions of Digicel or landowners<sup>51</sup> trying to make a profit.

In summary, it has been found that there were more people in Megiar who were in favour of the introduction of mobile telephony into PNG than were against it. The major benefits of this technology were seen as being able to stay in contact with friends and family members who resided elsewhere, and being able to save money, energy and time that would previously have been spent sending messages using other means (most or all of which involved travel to town). In summarising the negative perceptions surrounding mobile phones, it can be seen that the three major areas of concern were wasting money, increased risk of adultery and marriage breakdown, and the use of this technology by *raskols*. Other major negative concerns were evident, such as children's use of mobile phones, the spread of pornography, 'guessfire' calls, and radiation from handsets.

## 5.10 MONEY AND BUSINESS

To understand monetary sources and flows in Megiar, and to attempt to grasp the financial implications of the mobile phone in this setting, questions were asked of mobile phone owners about their monetary sources for purchasing handsets and for operating them. Table 5.44, Table 5.45 and Table 5.46 summarise the responses to these questions. Table 5.44 displays the data regarding monetary sources for purchasing mobile phones. The most common method of acquiring a mobile phone in Megiar was to receive it as a gift – this is shown in Table 5.44 as 'not relevant', meaning that a quarter of mobile phone owners in Megiar (25.5%) did not purchase their mobile phone. Another group of mobile phone owners explained that a relative paid for their mobile phone (17.6%). Among those who paid for their own handsets, the largest group used money from paid work (21.6%), while a similarly large group used money earned from market activities (15.7%). The other main source of income came from cocoa and coconut sales (totalling 15.7%).

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<sup>50</sup> These responses included phrases in Tok Pisin such as: "em i mekim isi long mipela" or "em wokim isi long mi".

<sup>51</sup> In PNG land is usually communally owned (Kunze 1925, 53).

Table 5.44  
 Monetary sources for purchasing mobile phones (Megiar)

	<b>Frequency</b>	<b>Percent</b>
Not relevant	13	25.5
Cocoa	1	2.0
Coconut	5	9.8
Cocoa and coconut	2	3.9
Market	8	15.7
Market and coconut and cocoa	1	2.0
Paid work	11	21.6
Relative paid for it	9	17.6
Bank	1	2.0
Total	51	100.0

For covering the ongoing operational costs associated with owning a mobile phone, a third of mobile phone owners (33.3%) indicated that they used their market activities for funds (see Table 5.45). About a fifth of mobile phone owners surveyed in Megiar (19.6%) sourced the money to cover mobile phone expenditure from paid work. The remainder engaged in a mixture of generally informal activities to accrue cash for purchasing mobile phone credit. These activities included selling cocoa, coconut, flex cards and betelnut. Some resident mobile phone owners volunteered the information that family members or relatives who worked assisted them with mobile phone credit (9.8%). A few mentioned that they sourced funds from the bank, but it was unclear whether these statements referred to savings or loans.

Table 5.45

Monetary sources for purchasing mobile phone credit (Megiar)

	<b>Frequency</b>	<b>Percent</b>
Unclear	2	3.9
Coconut	2	3.9
Market	17	33.3
Market and coconut	3	5.9
Market and coconut and cocoa	5	9.8
Relatives who work	5	9.8
Bank	3	5.9
I'm a flex seller	1	2.0
Paid work	10	19.6
Family business	1	2.0
Betelnut sales	2	3.9
Total	51	100.0

When asked directly if they received mobile phone credit from other people, three quarters of the mobile phone owners surveyed indicated that they did receive such assistance (74.5%). As can be seen in Table 5.46, various relatives gave mobile phone credit to mobile phone owners in Megiar.

Table 5.46

Money for mobile phone credit sourced from other people (Megiar)

	<b>Frequency</b>	<b>Percent</b>
No	13	25.5
Parent	1	2.0
Child or children	3	5.9
More than 1 relative	16	31.4
Friends	2	3.9
Friends and relatives	11	21.6
Niece or nephew	2	3.9
Sibling	3	5.9
Total	51	100.0

Another operational cost was incurred when some owners needed to recharge their handset battery. Mobile phone owners in Megiar were asked how they undertook this activity and how much money it cost them to do so. As is shown in Table 5.47, most of the mobile phone owners in Megiar used household electricity supplies to charge their batteries, either in their own home (39.2%) or in another home (51%). A small number of people recharged their batteries in the stores in the village.

Table 5.47  
Recharging methods in Megiar

	<b>Frequency</b>	<b>Percent</b>
PNG Power in own house	20	39.2
PNG Power in another house	26	51.0
Trade stores in home village	5	9.8
Total	51	100.0

For those respondents who recharged their batteries in their own homes, their recharging costs are shown as 'not relevant' in Table 5.48. For other mobile phone owners, some were not asked to pay any cash to charge their mobile phones, while the remainder paid varying amounts, up to as much as three Kina each time they recharged their handset battery. This meant that regular recharging could become a costly exercise for mobile phone owners.

Table 5.48  
Recharging costs in Megiar

	<b>Frequency</b>	<b>Percent</b>
No cost	14	27.5
Not relevant	20	39.2
Unclear	3	5.9
1 Kina	1	2.0
1 K or 2 K	1	2.0
2 K	10	19.6
3 K	2	3.9
Total	51	100.0

With regard to the usefulness of the mobile phone in catalysing or facilitating income generation activities, this was mentioned by a very small number of respondents as one of the perceived benefits. In an interview, the local priest explained that there were two ways that people received direct financial benefits from the introduction of mobile telephony, either as landowners who received royalties from mobile phone tower sites or as people setting up flex card selling businesses (Warangima 2009). This was in keeping with the experiences of a local man who had established a flex card selling business and felt that this was helping him to save money for his family's needs (Binib 2009). Figure 5.24 shows a bush material hut erected in front of a Megiar home for the purpose of selling flex cards. Upon registration, each flex card seller received an identity number that enabled them to purchase flex cards at wholesale prices, and signs like the one in Figure 5.24.



Figure 5.24. Flex card selling hut in Megiar

Copyright: Amanda H A Watson, 2009

When asked about people using the mobile phone in other ways to advance their businesses or save costs, the local priest asserted that people from the Highlands might have had that kind of approach, but it was not the way of people in the Megiar area (Warangima 2009). Indeed, the researcher observed betelnut buyers from the Highlands who were in Megiar to make purchases. While the couple were selecting nuts to buy, their mobile phone rang, as can be seen in Figure 5.25, and a phone call ensued about the travel arrangements for later that day. Evidently the mobile phone was a useful tool for these business people when they were travelling to make their purchases.



Figure 5.25. Betelnut traders from the Highlands  
in Megiar to purchase betelnut receiving a phone call

Copyright: Amanda H A Watson, 2009

In weighing up the financial implications of the introduction of mobile phone reception in Megiar, it could be helpful to consider the reasons why people did not own mobile phones. There were three main reasons that came up frequently, one of which was related to the perceived costs involved. Most of these answers referred to the expense of purchasing a handset, and some indicated that it was too costly to operate. The second reason given was that respondents did not know how to use a mobile phone. The third reason stated frequently was that the respondent had owned a mobile phone previously but it had been stolen or broken.

There were both costs and savings which had arisen for Megiar residents since the introduction of mobile telephony. The costs of owning a mobile phone could be substantial for low income families with a mainly subsistence lifestyle. Both owners and non-owners talked about the expenses associated with owning and operating mobile phones. In fact, the negative perception regarding mobile phones which was mentioned most frequently by survey respondents was the costliness of this technology. For some, there was a perception that there had been unwise spending on mobile phone use in the community:

a lot of money's being spent, not to meet the real basic need, but just for the sake of talking. Money's just spent - I would say unwise spending. Too

much has been spent ... the money can be used for something else, for daily use, for the really basic needs, you know, [but] it simply goes to buying all those flex cards to use. (Uamo 2009)

On the other hand, there were benefits as there were savings incurred through using mobile phones to convey messages, rather than paying for transport: “Before, everyone would run ... to town for using telephones. That costs money going and spending some money” (Uamo 2009). In the early stages of mobile phone access and adoption in Megiar, the costs of owning and operating a mobile phone were a burden for community members. Although there were some perceived savings (in that it was cheaper to call someone to convey a message rather than buying a bus fare), there was little evidence to suggest that mobile phones were notably benefiting locals through income generation.

### **5.11 COMMUNICATION WITH TOWN**

Survey respondents indicated that the ability to communicate with people residing beyond the borders of the village was one of the primary advantages of mobile telephone reception in Megiar. In addition, urban centres within PNG were the main localities people were phoning from their mobile phones. Of the mobile phone owners surveyed in Megiar, 26 of them (or half of the group) indicated that they phoned Madang town. Pancratius ‘Pan’ Lakot was from Megiar and was working in Madang town. He said that the introduction of mobile phone reception in Megiar had made it much easier for him to contact people in the village.

Prior to the mobile era I would go down and find someone and tell them “pass this message” or write a note and give it to someone to take down and deliver and then I get feedback tomorrow, and luckily you know there’s vehicles going down to the village daily so that’s not ahh, it helps, but what about the poor guy who lives in Bogia or Karkar? He must wait for a few days before he gets his share of the feedback. And um yeah, so in the past I’d send a message through some, you know, word of mouth, ear, mouth to ear, or a note, and wait for a response next day. Um, now, it’s pick the phone up, dial, and I get a response straight away. It’s cost-cutting in a big way too. Time and cost-cutting. (Lakot 2009)

In addition to enabling speedier and more effective communication, Pancratius ‘Pan’ Lakot felt that the extension of network coverage to Megiar had improved his

relationships with people in the village. Whereas previously there were relatives in the village with whom he might not have communicated for six months, it had become possible to let them know that he was thinking of them and that he still regarded them as being part of his life (Lakot 2009). He explained that even if he did not have a phone number for someone, or even if that person did not own a mobile phone, he could call another contact in the village and ask them to facilitate his communication with that person. In such cases, the mobile phone owner would usually walk to the person's residence and await the next phone call after an agreed number of minutes had elapsed, so that the two people could converse (Lakot 2009). Such interactions had helped to enhance relationships between relatives who were not living in the same locality, and to bridge the gap between Madang town and Megiar. As one survey respondent put it, the mobile phone had made it feel like family members who were living apart were now living close by<sup>52</sup>.

On the downside, Pancratius 'Pan' Lakot saw that the difficulties which were experienced by people in the village in relation to charging handset batteries adversely affected the success of communication between the town and the village. It was difficult to get through to the intended people in the village when their phone batteries were not charged (Lakot 2009). He realised that this was a logistical difficulty for the people residing in the village, as well as a financial burden for those leading a predominantly subsistence lifestyle (Lakot 2009).

## **5.12 MARRIAGE AND RELATIONSHIPS**

The survey showed that the mobile phone was seen as a facilitator of extra-marital relationships, which could lead to marriage breakdown. The parish priest asserted that married people were using mobile phones to express feelings for other people (Warangima 2009). The head of the local women's group confirmed that there had been a high number of instances in Megiar in which mobile phone use had led to disputes between married people (Fong 2009). In some cases, women who had been unhappy about their husband's mobile phone usage had broken their husband's handset (Fong 2009). In one family, the tension, fighting and ill will eased after the wife smashed her husband's handset with a stone as the man then understood that his

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<sup>52</sup> In Tok Pisin, the survey respondent said: "Famili ol stap long we, mi ken toktok wantaim ol, em mekim famili i stap klostu".

wife had been feeling jealous and he decided not to buy another mobile phone (Fong 2009).

The parish priest explained that people could use the mobile phone to arrange to meet people in order to commit adulterous acts (Warangima 2009). Another interviewee lamented the fact that marital problems were beginning to spread to rural parts of PNG (Uamo 2009). She felt that mobile phones were having a negative effect in marriages, meaning that marital breakdowns were coming about, even in “very good families” (Uamo 2009).

The parish priest provided two examples of families from Megiar who were experiencing marital problems due to mobile phones (Warangima 2009). In the two instances discussed, the mobile phone was the avenue through which one party connected with (or in one case, re-connected with) a new lover, and in both cases, the married couple involved was receiving marriage counselling (Warangima 2009). The mobile phone was seen as playing a pivotal role in each of these two situations, and the parish priest felt certain that there were many more instances which had not yet become known (Warangima 2009).

### **5.13 CHILDREN AND YOUNG PEOPLE**

There were three main sources of anxiety regarding mobile phones and children or young people in Megiar: the first was with regard to communication between male and female youths; the second questioned the extent to which school students were engaged with their studies since the advent of this distracting technology; and the third delved into the distribution of inappropriate or pornographic images amongst young people.

A number of survey respondents expressed concerns about young people forming inappropriate boy/girl relationships since the advent of mobile telephony. This was a weighty issue in a community like Megiar as it meant that parents were not able to monitor the friendships that their children were forming. Disputes within families could arise if parents did not know the potential partners of their children and the families that these people came from.

You will not know. If your son marries a woman, is she a hard worker or a slacker? You will not know. If you get her to come and she is a slacker, you'll be cross with her all the time. You'll be cross with your son as well,

saying: “why did you get this woman to come here? She’s not a hard worker. She’s a slacker”.<sup>53</sup> (Fong 2009)

As mobile telephony had created a concern for parents about the relationships of young people, it also exacerbated the problem in terms of parental control, as it was difficult to manage or minimise interactions which were occurring through this private medium:

And also parents are not controlling their youngest, especially young ladies and also as, as before, we are customarily bound, that you have to be matured, matured in your mind and in your spiritual level and also your body, your physical fitness. And then you have to get into marital, marital acts. But that ... is not on now. Most people make all kinds of calls and they follow up and you know parent, parental controls [have a limited impact]. (Warangima 2009)

Prior to the introduction of mobile telephony, parents in Megiar were aware of the interactions of their offspring and were able to consider the appropriateness of prospective partners (Fong 2009). Since mobile telephony had become available, adults were confused by young people’s uses of mobile phones and were not able to monitor with whom they were communicating (Binib 2009; Fong 2009). The use of mobile phones to facilitate relationships was unsuited to the traditional way of finding prospective marriage partners, which was practised in Megiar up until mobile phone reception became available:

In terms of culture it’s not a good thing. It’s not good as we didn’t have this kind of thing before. ... In our culture, everyone walks back and forth and talks. And you will see a person’s face ... Everyone knows. Everyone knows everyone else. They know their behaviours, attitudes or situation, their travels and what they say. But now, since the mobile phone came in, it’s, ah, it doesn’t go well with the culture in Megiar.<sup>54</sup> (Binib 2009)

This caused grave concerns for parents and leaders in Megiar:

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<sup>53</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Em bai yu no inap save. Man, pikinini man bilong yu, em maritim meri, meri bilong wok o lesmeri? Em yu no inap save. Yu kisim em kam tasol, em lesmeri em bai yu oltaim kros long em. Bai yu kros long pikinini bilong yu olsem ‘yu bilong wanem kisim meri hia kam, em i no meri bilong wok, em lesmeri’.”

<sup>54</sup> This text is an English translation of a quote from an interview in Tok Pisin: “Long kalsa em i no gutpela. Em no gutpela olsem, bipo i no gat dispela kain. [...] Long kalsa bilong mipela, ol i wokabaut go kam na toktok. Na bai yu lukim stret pes [...] Em ol save. Save long wanpela narapela. Em gat wanem kain pasin, wanem tingting em i gat o stap bilong em, wokabaut bilong em, toktok bilong em. [...] Tasol nau, ol taim long mobail fon i kamap, em em i ah, em i no go gut wantaim kalsa long Megiar.”

At this time, there's always a question in the minds of all the parents: 'Why is there the mobile system now and they all hide and have boyfriends and girlfriends and they all talk with one another and the parents don't know?' It makes all the parents have this question in their minds. They are always worrying.<sup>55</sup> (Binib 2009)

The second negative concern about children and young people to be discussed here is the role of mobile phones in the lives of school students. The Head Teacher at the primary school in Megiar believed that mobile phones were a distraction for school students, which could lead to lack of concentration in class, and could affect assessment results for slower learners, due to decreased commitment to studies:

Last year, students were doing that. They found the teachers giving them homework to do ...it was nothing to them. They play games on the phones, [and they're] not so serious. Because this modern technology's something, it just came in and [there's] lots of interest you know. So anyway I would say yeah, that was what I have been thinking. Others, also teachers have been thinking too and it's still going. It's ongoing yet. (Uamo 2009)

In addition to mobile phones being a distraction during class, there was also a concern regarding the late-night cheap rates which were being offered by Digicel. School students who used their mobile phones late at night in order to take advantage of these rates were then sleepy in class the next day (Uamo 2009).

The third concern expressed by Megiar residents regarding children and young people in Megiar in relation to mobile phones was about the ability to access, store and distribute pornographic images and videos using mobile phone handsets. This problem was realised at the primary school when a student informed the Chair of the School Board that he had been exposed to images which he did not wish to see (Uamo 2009). This resulted in the School Board holding a meeting with parents in which they asked parents not to allow their children to bring mobile phone handsets to school (Uamo 2009), effectively banning mobile phones from the school grounds. The student who had the images in his handset was asked to remove them (Warangima 2009). Nonetheless, this issue was deemed likely to come up again due to the difficulty of policing mobile phone use (Warangima 2009).

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<sup>55</sup> This text is an English translation of a quote from an interview in Tok Pisin: "long dispela taim em i save gat kwesten long tingting bilong ol mamapapa; 'bilong wanem em sistem bilong mobail nau na ol i hait [hide] na gelpren boipren ol i toktok long ol yet na mamapapa i no save.' Olsem em mekim ol mamapapa, oltaim ol i save gat kwesten. Oltaim ol i wari."

## 5.14 TSUNAMI WARNING

There are many stories of tsunamis in the oral history of Madang Province (Mennis 2006, 3), including a large tsunami about ten generations ago which “killed most of the inhabitants” (Mennis 2006, 3) of Karkar Island and would have had major consequences in the Megiar area as well. Geological evidence indicates that a tsunami of substantial proportions struck the north coast of New Guinea about 500 years ago “causing a tremendous loss of life” (Mennis 2006, 3). A calamitous tsunami overwhelmed the town of Aitape, around 500 kilometres along the same coast in another province, in 1998, causing over 2000 deaths (McLaughlin 1999; Kelly 2005) – an event in recent memory that stimulates current fears in coastal communities in PNG.

On October 8 2009, there was a tsunami warning issued for coastal areas of PNG following an earthquake near neighbouring Vanuatu. Travelling to Megiar on a public bus that morning, the researcher received a phone call on her mobile phone conveying this information. Upon arrival in Megiar, the residents were already aware of the warning, having received this information from a government car that was travelling along the coastal road spreading the news through the use of a loudhailer or loudspeaker. There was also a motorbike rider travelling up and down the north coast road with this information.

Initially, the villagers seemed calm, assuring the visitor that they would keep an eye on the ocean and would have sufficient time to react and move to higher ground if they saw the water retreating. They also asserted that the birds and other creatures would retreat if a tsunami was approaching. A short time later, conducting survey questionnaires became difficult as the researcher was being mobbed by excitable school children. Their presence, which was loud and also unnerving for respondents, was due to the tsunami warning – the school teachers had let them out of class when they received word of the threat. The children were nervous and frightened. They were carrying bags on their backs and apparently some had already retreated to the higher ground of the inland bush areas.

A little while later, a respected local leader, Felix Didol, received word that the warning had been cancelled. It sounded to the researcher as though he was listening to a radio and others were crowding around to hear the news being broadcast through the radio receiver. In fact, he was receiving notification of the cancellation from an

official in town through his mobile phone, which he had turned onto a loudspeaker setting and held up in the air so that others could hear. A large crowd of people, including many school children, gathered around him to hear the latest news. This experience illustrated that mobile phones could play a role in disseminating information about important events, such as tsunami warnings. However, other communication methods, like announcements through loudspeakers in cars, continued to play an important role in information access strategies.

In a number of cases, people in Megiar were sourcing up-to-date information on that day about the status of the tsunami warning, through their mobile phones, from contacts in Madang town or other urban centres who had Internet access. These experiences were evidenced in survey responses which showed that some villagers were aware that tsunami warning information could be found using the Internet (see Table 5.24). In one such case, Pancratius ‘Pan’ Lakot was able to reassure his relatives in Megiar that there was no need to flee up the hills by conveying updated and detailed knowledge.

I was at work when the tsunami threat came about, and we were on Internet, working in close consultation with the disaster centre and monitoring. While everybody was rushing, we were monitoring on the Internet the progress of the tsunami threat. Anyway, my *tambu* called up. He says “*tambu*, should I move to higher ground?”. And I said, “no, don’t move. Just stay put. We’re monitoring the situation here, on the screen through the Internet. We’ll be alright. Just stay put.” [But he replied,] “No, everyone’s carrying things, and they’re now going up the hills into the bush due to hearing this warning.” [I responded with,] “Just stay put. Don’t move yet. I’ll ring you back. If it’s not looking good, I’ll ring you back on your mobile and let you know.” So that, that was a real plus. And anyway, I called him back and said “no, it’s over now, things are normal, you can all just stay put.” And he said “yeah OK”.<sup>56</sup>  
(Lakot 2009)

It is also noteworthy that the events on October 8 2009 were in contrast to people’s experiences and reactions of panic as they fled to the mountains during a

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<sup>56</sup> The original interview excerpt contained some phrases in Tok Pisin: “I was at work when the tsunami threat came about, and we were on Internet, working in close consultation with the disaster centre and monitoring. While everybody was rushing, we were monitoring on the Internet the progress of the tsunami threat. Anyway, my *tambu* called up. He says “*tambu*, should I move to [word indistinguishable]?”. And I said, “no, don’t move. Stap tasol. Bai nogat. Em, mipela skelim long hia, on the screen long Internet, bai yumi orait. Stap tasol.” “Nogat, ol man karim samting, na ol go antap long bus nau, taim ol harim dispela tok lukaut.” “Just stay put. Noken muv yet. Bai mi kolim yu bek, sapos samting i luk nogut, bai mi kolim yu bek long mobil na toksave.” So that, that was a real plus. And anyway, I called him back and said “no, it’s over now, things are normal, yupela stap tasol.” Na em tok “yeah OK.””

tsunami warning in early 2007, prior to Digicel's launch in PNG. A large earthquake occurred in the ocean off the Solomon Islands on April 2 2007, which led to a tsunami warning being issued for Australia's East coast, and Pacific island nations such as PNG. Beaches were evacuated in Australia, and in Madang Province, a panic ensued. In Megiar, many people fled to the hills. In Madang town, which is situated on a low-lying peninsula, the one road out of town was crowded with people hurrying on foot or in motor vehicles to get away from the expected water. Figure 5.26 and Figure 5.27 show the panic on the main road in Madang town as people were fleeing.



Figure 5.26. Madang town residents fleeing town due to tsunami alert, April 2 2007

Courtesy of Jeffrey Elapa



Figure 5.27. A traffic jam on Modilon road as Madang town residents flee to higher ground due to tsunami alert, 2007

Courtesy of Jeffrey Elapa

As it turned out, there was no need for alarm. The introduction of mobile phone reception since the April 2007 event has enabled people to remain informed as events unfold and thus stay calm and react appropriately. In the case of Pancratius ‘Pan’ Lakot, he was noticeably pleased that he was able to help out his relatives during the 2009 tsunami alert. For his relatives, their experience of the two tsunami threats was quite distinct, and their reactions were influenced by the amount and kind of information that they had access to in each instance. In this family, mobile phones made a difference.

So that’s, to me, that’s, like, satisfying. And I can say what I was seeing on the screen to people in the village, so that they get something that’s, like, closer to the truth than people hearsay from mouth to ear. So that was quite good. You know, good. I was able to impart something to people in the village who had no, didn’t have the resource to be able to get the correct information. Because the previous one they packed up and they went, all ran into the bush. And it never struck me, but until, then the recent one, my *tambu* rang up and I was in front of the screen. ... So yeah, that was, really, I thought that was really great. (Lakot 2009)

## 5.15 TRADITIONAL COMMUNICATION METHODS

The traditional communication drum known as the *garamut* is no longer used for communication within Megiar or between Megiar and surrounding villages (Binib 2009; Lakot 2009; Uamo 2009). When there is a traditional song and dance performed, the *garamut* can still be used to provide the beat for the music (Binib 2009), but it is not used for sending and receiving messages as it was in earlier times (Binib 2009; Lakot 2009).

The reasons for the discontinuation of *garamut* usage were unclear. The change pre-dated the introduction of mobile phone reception. One interviewee suggested that the *garamut* had not been used as a communication tool since about 1970, and that no *garamuts* had been built since that time (Lakot 2009). He was unsure of the reasons behind the change, but wondered if the construction of a road network may have been the reason that the *garamut* had faded from daily life.

Yeah my guess would be the road network. The means of transportation, vehicle, the road came in, cars and bicycles and motorbikes came in and slowly it dissipated the need for the *garamut*. See, the *garamut* can only

sound to maybe five, ten kilometres. But you can cover it in a bicycle and motorbike or vehicle just as fast. So I think that ... sort of phased out the *garamut*. The ability to get around and pass the information to people you want to come to the meeting or come for a party or whatever, for a funeral, you could do it now faster on the road network and means available so it sort of phased out. When I was a young kid, they were running hand-in-hand for a while. But slowly the *garamuts* died and no new *garamuts* were being made. (Lakot 2009)

In the contemporary setting in Megiar, one *garamut* is used for a specific purpose that harks back to its traditional role in calling people to a gathering: it is beaten each morning as a signal for children to come to the primary school for classes (Uamo 2009). At the first beating of the drum on school mornings, children from Barikas, a village on the mountaintop about an hour's walk from Megiar, set out from home, and later signals are used by children in closer proximity to the school. Figure 5.28 shows the *garamut* at the primary school. Only male teachers and students are allowed to beat the drum, as females are forbidden to beat the drum in the local traditional culture (Uamo 2009).



Figure 5.28. *Garamut* at primary school in Megiar

Copyright: Amanda H A Watson, 2009

In earlier times, ancestors of the Megiar people would blow into shells such as conch shells as they were approaching other villages in canoes for the purposes of trading (Lakot 2009; also Kunze 1925, 42). The sound resonating from the shell was a sign to the trading partners that the canoes were steered by friendly folk who were hoping to conduct trade and did not have any ill intentions or harbour any ill will

(Lakot 2009). In current times, shells are no longer blown to convey messages (Lakot 2009).

## 5.16 ROAD TRANSPORT AND TRAVEL

The primary means of transport between Madang town and Megiar were buses known as PMVs (an abbreviation of ‘public motor vehicle’). The 17C route terminated in Megiar. A 17C bus is shown in Figure 5.29.



Figure 5.29. A bus stopped near a roadside store in Megiar

Copyright: Amanda H A Watson, 2009

Prior to the introduction of the mobile phone service, all prospective passengers had to wait at the bus stop in town, along the roadside or at the marketplace in Megiar (next to the area shown in Figure 5.3). The introduction of mobile phone reception meant that bus drivers and crew members could use mobile phones to arrange to pick up selected passengers. Passengers could arrange to travel on particular vehicles which they felt were safer or more reliable than others. As some vehicles were driven recklessly, and as there were noticeable differences in the standards (for example, some bus drivers and crew members drank alcohol while on the job, while others took the comfort and safety of passengers seriously), this was a substantial benefit for people travelling along this route. It also meant that passengers with heavy or bulky cargo could arrange for a vehicle to collect them from their starting point. For the bus operators, it was also advantageous as it was easier to fill the bus, which could save time that would have been spent driving around town looking for passengers, and it created the ability to provide a superior service for friends, family or repeat customers.

## 5.17 KEY FINDINGS REGARDING MEGIAR

The communicative ecology in Megiar encompassed a wide array of technologies and media sources, with many people having access to radio and television broadcasts, movies, newspapers and books. Computer access and use of computer-based communication technologies was very limited. The traditional drum known as the *garamut* was no longer used in Megiar as a communication tool, although one large *garamut* was beaten on school mornings as a signal for primary school students to attend.

Generally survey respondents and interviewees saw many advantages in mobile phone access. Nonetheless, there were serious negative concerns expressed throughout the community: the expenses associated with owning a mobile phone were seen as excessive; the ability to have relationships which were not monitored by community members was viewed with suspicion (as in the case of both married people and also young people); and the potential for mobile phones to be used by *raskols* created anxiety about theft and safety.

As there were no landline phones in Megiar, mobile phones made it possible for people in the village to talk to relatives in town. For mobile phone owners, money that would otherwise have been spent on a bus fare could be saved. The ability to add credit to a power meter at home using PNG Power Easipawa Easipay and a mobile phone handset was embraced enthusiastically. Despite the advantages of mobile phone ownership, there were still many people in Megiar who did not own a mobile phone, and indications were that women were less likely to own a mobile phone than men.

Since the introduction of mobile telephony into Megiar, some villagers had established businesses selling flex cards. The operator of one such business gave his assessment of the uses of mobile phones in Megiar, which bore many similarities to the findings of the data gathered in this research:

To my way of thinking, I think everyone uses it to talk to all their family members who live a long way away or they talk about work or business. [coughs, pause] They talk with their friends, [long pause] like their 'girlfriend' or 'boyfriend', or this kind of thing. They talk with them. And they talk if there's a big problem that's come up, a death or illness or this kind of thing. Or an emergency, like if they need the ambulance, or if they

want to quickly find a truck in the village to go to the hospital, or this kind of thing. Or they use them for the family members who are at the garden in the bush, if they need to quickly contact them to get them to come back to the house in the village. That kind of thing. That's why I think they come to buy flex cards from me.<sup>57</sup> (Binib 2009)

In conclusion, mobile phones have fulfilled various functions in Megiar. Some of these roles were viewed positively and others were viewed negatively. Indeed, different community members may have seen the same use of the mobile phone from a different perspective; for example a young person may have seen the mobile phone's enabling of communication with friends as a positive thing, whereas concerned parents were confused and worried by communication between youths via the mobile phone. In Megiar's complex and changing communicative ecology, the roles of the mobile phone were evolving, just as people's perceptions about this communication device may well change over time.

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<sup>57</sup> This text is an English translation of a quote from an interview in Tok Pisin: "long tingting bilong mi, mi ting ol i yusim long ah toktok long ol famili bilong ol husait ol i stap longwe o ol i ah toktok long wok bilong ol bisnis samting. [coughs, pause] Ol i toktok i go kam wantaim ol pren bilong ol. [long pause] Olsem ol ol gelpren o boipren, ol dispela kain. Ol i, ol i toktok wantaim. Na olsem ol i salim toktok i go long ol sapos hevi kamap, dai o sik o dispela kain. O emersensi, olsem ol i nidim ambulens, o ol laik hariap long painim wanpela trak [truck] long ples long go hariap long hausik, ol dispela kain. O ol i yusim long ah ol famili stap long gaden [garden] long bus [bush] ol mas hariap kontekim ol kam bek long haus long ples. Em dispela kain. Em mi ting ol i kam baim fleks long mi long yusim olsem."

# Colour Plate A

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Figure 4.5. Amanda H A Watson conducting a survey in Orora

Copyright: Amanda H A Watson, 2009



Figure 4.14. Orora children waiting for the solar charger to work

Copyright: Amanda H A Watson, 2009



Figure 5.9. The Digicel tower at Barikas

Copyright: Amanda H A Watson, 2009



Figure 5.10. Amanda H A Watson conducting a survey in Megiar

Copyright: Amanda H A Watson, 2009



Figure 5.23. Satellite dish for television viewing in Megiar

Copyright: Amanda H A Watson, 2009



Figure 5.24. Flex card selling hut in Megiar

Copyright: Amanda H A Watson, 2009



# Colour Plate B



Figure 4.1. A villager in Orora holding up a mobile phone

Copyright: Amanda H A Watson, 2009



Figure 4.7. Giragir Mahana beating the biggest of his three *garamuts*

Copyright: Amanda H A Watson, 2009



Figure 4.8. Albert Wowe points out a target plant in Orora (the target has long, red/maroon and green leaves)

Copyright: Amanda H A Watson, 2009

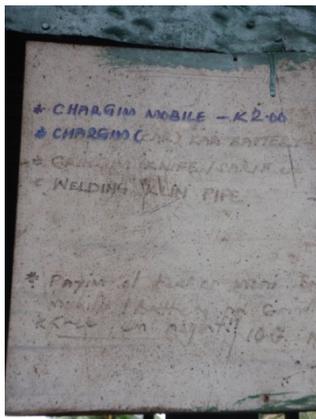


Figure 4.13. Sign indicating price of mobile phone battery charging

Copyright: Amanda H A Watson, 2009



Figure 5.25. Betelnut traders from the Highlands in Megiar to purchase betelnut receiving a phone call

Copyright: Amanda H A Watson, 2009



Figure 8.1. Digicel advertisement published in daily newspaper, 2008



Figure 5.28. *Garamut* at primary school in Megiar

Copyright: Amanda H A Watson, 2009



Figure 8.2. Detail from bembobile advertisement, 2009



# Chapter 6: Comparing Orora and Megiar

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## 6.1 INTRODUCTION

This chapter compares and contrasts the findings from Orora and Megiar. Comparison of the two villages is strategic as it highlights similarities in perceptions of mobile phones in these two very different settings. Other key findings are also drawn out.

## 6.2 COMPARING FINDINGS

Despite marked differences between Orora and Megiar in terms of location and available services, there were striking similarities in the perceptions held by the villagers in both places regarding mobile phones. When asked whether they thought the introduction of mobile phones into PNG was a good or bad thing, the responses were similar for each village. About half responded that it was a positive development, a very small number said that it was a negative change, and a sizeable group expressed mixed feelings (see Table 6.1). A Pearson chi-square test was performed (Moore, McCabe and Craig 2009, 531) to see if the proportions differed between the two villages. This test showed that there was no evidence of any differences in proportions between the two villages ( $p\text{-value} > 0.95$ ).

Table 6.1  
Comparing villagers' perceptions of mobile phones

<b>Village</b>	<b>Good N (%)</b>	<b>Not good N (%)</b>	<b>Both good and bad N (%)</b>	<b>Total N (%)</b>
Orora	37 (51.4%)	5 (6.9%)	30 (41.7%)	72 (100%)
Megiar	54 (52.9%)	7 (6.9%)	41 (40.2%)	102 (100%)
Total	91 (52.3%)	12 (6.9%)	71 (40.8%)	174 (100%)

The explanations given for these perceptions were closely aligned as well. In terms of positives, people in both Orora and Megiar saw the main advantage of mobile telephone reception as the ability to talk to family members and friends who lived a long way away. Two other positives were articulated in a high number of

responses in both villages: the mobile phone could be used to send messages seeking assistance, and it was easier to make a phone call than to travel. In relation to the latter point, a number of respondents in both villages also pointed out that they could save money by using the mobile phone to convey information rather than paying for transport. A smaller but still substantial number of respondents in both villages also mentioned the role a mobile phone could play in an emergency.

Negative changes in village life that were linked to mobile phones by survey respondents consistently related to three areas of concern: money, sex and crime. With regard to the first of these three categories, respondents expressed concern about the high costs associated with purchasing, operating and recharging mobile phones. They said that the mobile phone made villagers waste money, arguing that it was too expensive for village people, who lead mainly subsistence lifestyles. The second concern was linked to the perception that the mobile phone could facilitate the formation of inappropriate relationships. In the case of married people, this could lead to mistrust and arguments within couples, and even infidelity and marriage breakdown. With regard to young people, the mobile phone's enabling of private communication worried parents as it restricted their ability to monitor the friendships which their children were forming. They feared this could lead to young people having unplanned pregnancies or marrying partners who were not vetted by their parents and therefore may have been inappropriate or unsuited to them. The third concern related to crime. It was stated that potential thieves and other criminals were able to use their own mobile phones to coordinate attacks and thefts. Villagers believed that *raskols* could use mobile phones to arrange hold-ups on the road.

To establish whether gender had any bearing on whether or not villagers owned a mobile phone, a Pearson chi-square test was performed (Moore, McCabe and Craig 2009, 531). In the case of the Megiar data, this test found that there was reasonable evidence of dependence between these two variables, at 5% statistical significance ( $0.05 > p\text{-value} > 0.025$ ). This meant men in Megiar were apparently more likely to own a mobile phone than women. By contrast, there was not evidence in the Orora data to indicate that dependency existed between gender and mobile phone ownership, again using the Pearson chi-square test ( $0.8 > p\text{-value} > 0.75$ ). When considering all of the survey data from both villages combined, the same statistical

test showed that a person's gender did not have a bearing on mobile phone ownership (p-value=0.2).

To establish usage patterns, mobile phone owners were asked to recall how much they used their devices on the previous day (see Table 6.2). Mobile phone usage in Orora was very low. In Megiar, there were some people who used their mobile phones more, but there were many mobile phone owners who had low usage. Of the 51 mobile phone owners surveyed in Megiar, eight did not use their handset at all on the preceding day.

Table 6.2  
Comparing mobile phone use on the previous day

<b>Village</b>	<b>Phoned out N (%)</b>	<b>Received phone call N (%)</b>	<b>Sent text message N (%)</b>	<b>Received text message N (%)</b>
Orora	6 (33.3%)	5 (27.8%)	6 (33.3%)	5 (27.8%)
Megiar	33 (64.7%)	34 (66.7%)	21 (41.2%)	34 (66.7%)

The mobile phone handsets belonging to two residents of Orora had been stolen during road travel on foot on Karkar Island prior to the survey period. In Megiar, six people were without mobile phones after they had been stolen. Eight of the 18 mobile phone owners in Orora had no battery power in their handset at the time that they were surveyed. By contrast, only one of the mobile phone owners surveyed in Megiar had no battery power at the time, while a further two were without access to their handset that day as the battery was being charged.

A common feature of the basic mobile phone handsets sold in developing nations was the inclusion of a flashlight torch to assist with lighting in places where there was no electricity. It was noted that this function was used a great deal in Orora, particularly after nightfall if villagers were moving about, for example travelling on foot between houses or villages. Although this was not included in the survey in Orora (the magnitude of the phenomenon arose during the Orora fieldwork), in Megiar it was found that 64.7% of mobile phone owners used the flashlight torch function in their handset. Of the remainder, some did not have that feature in their device.

The researcher wished to ascertain whether the mobile phone was being used in income generation activities. In Orora, there was no evidence of the mobile phone being used in this manner, and interviewees were unsure as to what was meant by this line of questioning. Cocoa was the main cash crop in Orora, along with coconut. One interviewee was also the owner and operator of the only cocoa fermentary in Orora. He explained that there was no benefit in using the mobile phone to establish which buyer on the coast had the best purchasing price as his transport options were so limited that he was not able to take the cocoa to the buyer of his choice (Naing 2009b). The situation in Megiar was different, with more informal economic activities already taking place. Some families had established profitable flex card selling enterprises (Binib 2009; Warangima 2009). In addition, some survey respondents mentioned their use of the mobile phone in communicating with buyers who were based in the Highlands.

Although basic mobile phone handsets with limited capabilities were common in PNG, some people had handsets with cameras and/or the capacity to store images. In Megiar, 10.3% of mobile phone owners reported using their phone camera. It was discovered in September 2009 that there were pornographic images in children's handsets at the primary school (Uamo 2009). Attempts were made to ban handsets from the school grounds for this reason (Uamo 2009), although it may prove difficult to halt the distribution of inappropriate images amongst the children (Warangima 2009).

In terms of media access in Orora, there was no landline telephone infrastructure or television reception and no-one owned a television, computer or Internet connection. Less than one third of the survey respondents (30.5%) had access to a working radio receiver in their home at the time that the survey was carried out. In Megiar, there was no landline telephone infrastructure. Small numbers of Megiar survey respondents had a television or a computer in their home (7.8% and 5.9% respectively), but no home in Megiar had an Internet connection. About one third of the survey respondents (34.3%) had a functioning radio receiver at home. Table 6.3 compares the household figures for communication and media devices in the two villages.

Table 6.3  
Comparing household media devices in two villages

<b>Village</b>	<b>Landline telephone</b> N (%)	<b>Television</b> N (%)	<b>Computer</b> N (%)	<b>Internet</b> N (%)	<b>Radio</b> N (%)
Orora	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	22 (30.5%)
Megiar	0 (0.0%)	8 (7.8%)	6 (5.9%)	0 (0.0%)	35 (34.3%)

Only 15.3% of survey respondents in Orora had read a newspaper in the last month. A very small number of survey respondents from Orora had watched television or seen a movie within the last month during travels to places outside of Orora. In Megiar, the mass media was more common in the lives of the people than in Orora, although computer usage remained low (see Table 6.4). In Orora, radio was the most popular medium, whereas the newspaper was more popular in Megiar.

Table 6.4  
Comparing media access in the preceding month

<b>Village</b>	<b>Newspaper</b> N (%)	<b>Television</b> N (%)	<b>Movie</b> N (%)	<b>Computer</b> N (%)	<b>Internet</b> N (%)	<b>Radio</b> N (%)
Orora	11 (15.3%)	4 (5.6%)	7 (9.7%)	0 (0.0%)	0 (0.0%)	27 (37.5%)
Megiar	71 (69.6%)	51 (50.0%)	65 (63.7%)	8 (7.8%)	2 (2.0%)	62 (60.8%)

To gain further insights into communicative ecologies, the frequency of travel to an urban centre was considered (see Table 6.5). Survey respondents in Orora had travelled little within the preceding month. By contrast, a large number of villagers in Megiar (75.5%) had been to Madang town during the same timeframe.

Table 6.5  
Comparing travel away from villages

<b>Village</b>	<b>Travel to Bogia</b> N (%)	<b>Travel to Madang town</b> N (%)	<b>No travel to urban centre</b> N (%)	<b>Total</b> N (%)
Orora	1 (1.4%)	12 (16.7%)	59 (81.9%)	72 (100%)
Megiar	7 (6.9%)	77 (75.5%)	18 (17.6%)	102 (100%)

In Orora, the researcher noticed regular, almost daily, use of a traditional drum named the *garamut*. By contrast, the *garamut* was no longer used for communication within Megiar or between Megiar and surrounding villages (Uamo 2009; Binib 2009) as it was in earlier times (Binib 2009).

### 6.3 DISCUSSING THE COMPARISON

The levels of approval regarding mobile phones and the perceived advantages and disadvantages of mobile telephony in the village context were closely aligned between these two villages. This similarity was all the more striking given the differences between the two villages in terms of their communicative ecologies, development status, proximity to an urban centre and access to services. For survey respondents in both Orora and Megiar, the most frequently expressed benefit of mobile telephony was the ability to communicate with family members and friends who resided in other parts of the country. Another important benefit of mobile telephony in rural areas of PNG was the role it stands to play in emergencies, particularly in places like Orora where transportation was difficult to organise and other communication options were limited (Naing 2009b).

Although the mobile phone was viewed favourably by half the people in each of these communities, the negative concerns which were expressed were real and important to respondents, as evidenced by their explicit and firm comments. The high costs associated with owning, operating and recharging a mobile phone were major challenges for rural poor in the two villages. People were concerned about the advent of a new communication technology negatively impinging on marital stability.

Until the advent of mobile telephony, parents and community members in Orora and Megiar were able to monitor the communicative behaviours and friendships of young people and could advise them regarding the choice of partners (Fong 2009). The use of mobile phones to facilitate relationships was unsuited to the traditional way of finding prospective marriage partners, which was practised in Orora and Megiar until mobile phone reception became available.

In Orora and Megiar people worried the advent of mobile phone technology might decrease their safety, due to the potential use of mobile phones by *raskols* to coordinate criminal activities. Such fears may have been compounded by the

knowledge that in rural areas of PNG, emergency services such as police and ambulances were often unavailable or unreliable.

Mobile phone owners in both Orora and Megiar had been subject to mobile phone theft. Although the Megiar Parish Priest said the incidence of mobile phone theft had started to decline (Warangima 2009), these cases may have fuelled the concerns expressed regarding the possible connection between mobile telephony and criminal activities.

Mobile phone ownership rates in Orora in February 2009 were lower than ownership rates in Megiar later in the same year. Nonetheless, in both villages, there was relatively high penetration, given the short length of time that the service had been available. A high number of non-owners said they had not been able to afford to purchase a mobile phone. Although more people in Megiar owned mobile phones, there were still concerns in that community about the costs involved in operating these devices. Usage was low in Orora. Although usage patterns in Megiar were generally higher, many mobile phone owners used their devices very little. It was likely that low usage levels in both places related to the costs associated with operating mobile phones. Recharging handset batteries could also be time-consuming, costly and difficult, although this problem was more severe in Orora, due to the lack of electricity infrastructure there.

During the survey period in Orora, eight of the 18 mobile phone owners volunteered the information that their handset had no battery power at the time that they were surveyed. This meant that as few as ten mobile phones were working in the whole village at that time. In Megiar, the situation was different as there were houses with power connected. Nonetheless, recharging the handset battery remained a challenging and costly exercise for some Megiar residents, costing as much as three Kina per recharge in some cases. This usually meant the owner was without their handset for about a day. Another factor that may have impacted upon mobile phone usage rates was the location of flex card sellers. In Orora, there were no residents who sold flex cards, whereas in Megiar several residents had established businesses purchasing these cards in town at wholesale prices and then selling them in the village.

Mobile phone handsets offered various functions aside from voice calls and text messages. In both Orora and Megiar, a popular handset function was the torch

(or flashlight). According to Greenfield, designers added the torch function to mobile phone handsets after they observed users in developing countries using the screen's luminescence to provide light in locations with inadequate lighting (Greenfield 2009b).

In research conducted with poor market vendors in the Philippines, Tabinas and Guzman (2010) found that the mobile phone did improve communication and provide benefits, but it could not be linked directly to improved income. Similarly, in Orora and Megiar, there were weak indications of the use of the mobile phone to directly enhance household income. The potential benefit of mobile telephony in terms of income generation activities in Orora was limited due to other factors such as restricted access to both transport and markets.

Travel between Megiar and Madang town was frequent, and people had access to a range of services, communication tools and media products during such journeys. People from Orora travelled to town less. The communicative ecologies in Orora and Megiar were quite different from each other. In Orora, there was a virtual absence of media access and no use of computers, whereas in Megiar there was more access to media, but computer use remained minimal. In former times, communication drums were important in both villages, whereas in the contemporary setting their use has continued in Orora but not in Megiar.

# Chapter 7: Mobile Phones in Madang Province

## 7.1 PURPOSE

This chapter of the thesis will present findings from eight other rural villages in Madang Province where data has been collected. It will consider each village in turn, comparing and contrasting the data with the findings from Orora and Megiar. The chapter will conclude with consideration of the data generated from all eight villages as a group, portraying trends common across all eight villages. The eight villages which will be discussed here are: Yukyuk, Pepaur, Dangale, Kurum, Giri 2, Basamuk, Lalok, and Kawe (see Figure 7.1).

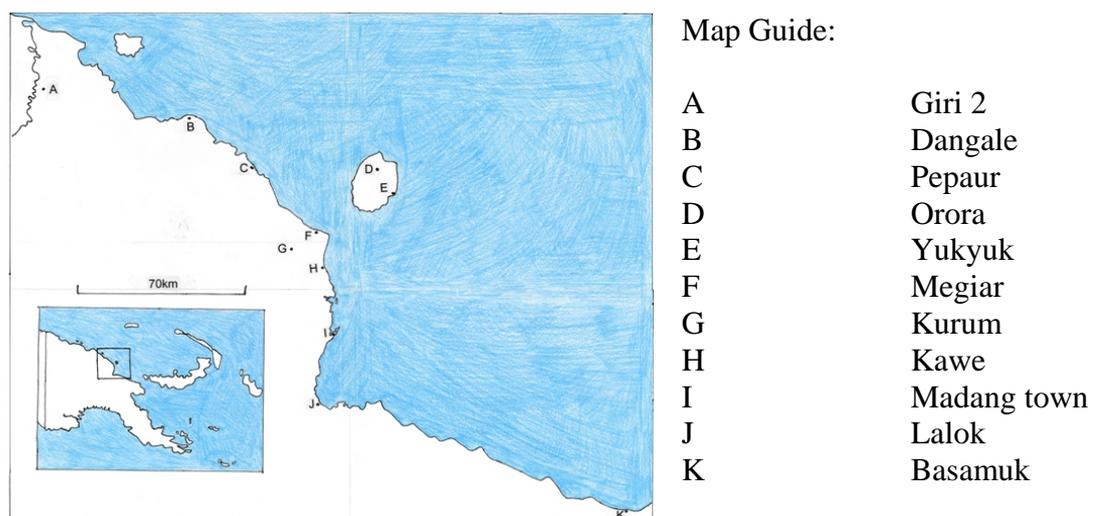


Figure 7.1. Map of Madang Province villages

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The data for these villages was gathered by research assistants selected from among the full-time, undergraduate students at DWU. The students conducted research in their home villages when they returned home after the conclusion of the semester, using standardised questionnaires. Before their departure from the campus in Madang town, the research assistants were briefed by the researcher. In each village, respondents were selected using a systematic approach, in an effort to gain a representative sample of the total village population. Factors which the research

assistants were encouraged to consider were: age range; gender; both mobile phone owners and non-owners; and including people from various geographical areas of the village.

## 7.2 YUKYUK

Karkar Island is divided into two areas, Waskia and Takia, each of which represents a different language group (see Figure 4.3). Orora is in the Waskia area, and the coastal village which will be discussed here, Yukyuk (also shown in Figure 4.3 and Figure 4.4 as Yagadun), is in Takia. This rural village is next to the main road, with access to vehicles every day. At the time of this research, to reach Madang town, villagers from Yukyuk travelled for half an hour on the back of a truck before boarding a ship. Most of the houses in Yukyuk were made of bush materials, although there were some permanent and semi-permanent houses. There was no mains power supply in Yukyuk and some houses had diesel generators. There were no landline telephones, television sets or Internet connections in Yukyuk. One survey respondent said they had a computer at home. Since December 2007, there had been good Digicel reception throughout Yukyuk.

The survey was conducted with 75 respondents by research assistant Stellah Kisekol late in 2009. 43 respondents (57.3%) were male and 32 (42.7%) were female. Just over half of the respondents owned a mobile phone: 41 people, or 54.7% of respondents. There was fairly low mobile phone usage, with 17 mobile phone owners not using their handset at all on the preceding day, mainly due to not having any battery charge remaining. Relatives in PNG urban centres were usually phoned, to check on them or to ask for something. No-one had used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Popular handset functions were sending and receiving credit, checking the time, setting an alarm, checking the calendar, playing games and using the calculator. The main reason non-owners did not have mobile phones was because they did not have the money to buy a handset. About half of the non-owners wanted to buy mobile phones and the other half were unsure if they would. The primary reason why mobile phone owners had purchased their handsets was to be able to ring family members. Nokia handsets were the most common.

The judgement percentages for Yukyuk were similar to Orora and Megiar: about half saw mobile telephony as positive (52.0%), a sizeable group had mixed feelings (36.0%) and a small group thought of it as bad (12.0%). The reasons behind these views were the same as in Orora and Megiar: the same positives (easy to talk to family and friends a long way away, followed by easier communication), and the same negatives (sex, money and *raskols*, in that order). In the month prior to being surveyed, only one person (1.3%) had used the Internet and email. There was very little understanding about the Internet or email in Yukyuk. In short, most of the statistics obtained from the survey in Yukyuk matched the results generated in Orora and Megiar.

### **7.3 PEPAUR**

Pepaur is a rural village on the main road between Madang town and Bogia, with daily access to vehicular transport. The bus trip from Pepaur to Madang town costs ten Kina and takes three hours. Pepaur is the furthest village in Sumkar District from Madang town. The next village along the road is in Bogia District. At the time of the survey, houses in Pepaur were mainly bush material houses. The people led a mainly subsistence lifestyle, with a diet of garden food. There were no schools in Pepaur. Some children walked up to two hours each way to attend school. There was no mains electricity supply. There were no landline phones, computers or Internet connections. Four survey respondents indicated they had a television set at home. Digicel service became available in October 2007 when a tower was constructed at some distance from Pepaur. This meant reception was not available throughout Pepaur. Instead, people had to find certain areas where there was coverage, so they could ring or receive messages.

The survey was conducted with 100 respondents by research assistant Wendy Wuluk late in 2009. These respondents represented an equal representation of the genders: 50 were male (50.0%) and 50 were female (50.0%). Only 30 people (30.0%) owned a mobile phone. There was extremely low mobile phone usage, with 22 of the 30 mobile phone owners (73.3% of mobile phone owners) not having used their handset on the preceding day to make or receive phone calls or send or receive text messages. The common reasons for this included: the handset battery was flat; the owner had the handset turned off to save the remaining battery; it was being charged; the owner had no credit; and there was no reception available. PNG urban

centres were most commonly phoned. Relatives were primarily phoned, and then friends. Only two of the 30 mobile phone owners mentioned having phoned business contacts. The most common reason for making phone calls was to check on people. This was followed by phoning to request assistance. No owners used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Most used the mobile phone to check the time, set an alarm or as a torch. It was also common for people to send and receive credit and play games. There was minimal use of cameras in mobile phones and no use of mobile phones to access the Internet. Nokia handsets were most common and nearly all of them had been purchased in Madang town, mainly using money from cocoa crops. About half of the mobile phone owners charged their handsets using generators in the village. Otherwise, they were charged in Madang town or using dry cell batteries. The average cost for charging was two Kina.

The judgement percentages were slightly different to Orora, Megiar and Yukyuk: 54.0% had mixed feelings; 34.0% thought mobile telephony was good; and 12.0% thought it was bad. The main benefit was viewed as being able to phone family members a long way away. Other benefits mentioned included using mobile phones in emergencies and saving money on travel. The same three main negatives came up: expenses were by far the biggest concern in Pepaur, followed by *raskols* and adultery. The difficulty of charging the battery in Pepaur was the fourth concern raised. In the last month, no respondents had used the Internet, email, or a computer. In the main, the results were similar to Orora, Megiar and Yukyuk. However, in Pepaur, reception issues were raised, and charging difficulties and costs were more frequently mentioned.

#### **7.4 DANGALE**

Late in 2004, the volcano on Manam Island erupted, forcing the evacuation of around ten thousand people to the mainland (ABC 2005). The majority of these Manam Islanders still lived in care centres in coastal areas by the time of the current research project (Fox 2010). The people from the village of Dangale were living in Asuramba care centre, which was located in Bogia District of Madang Province. The care centre was on the main road, with a thirteen Kina bus trip taking three and a half hours to reach Madang town. Housing in the care centre was mainly made of bush materials. There was no electricity, although some homes had generators or solar power systems. There were no landline telephones, television sets, computers or

Internet connections. There was a Digicel tower in Asuramba care centre, which became operational in November 2007, and therefore there was reception throughout the area where the people from Dangale lived.

The survey was conducted with 80 respondents from Dangale by research assistant Andrew Sepu late in 2009. There were 48 respondents (60.0%) who were male, 30 (37.5%) who were female and two (2.5%) who did not answer the question. Around a third of respondents owned a mobile phone (26 people, or 32.5%). Mobile phone usage levels were low, with nine people indicating they did not use their handset at all on the day before they were surveyed. Typically, relatives in PNG urban centres were phoned, to check on them. No-one used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Popular handset functions were receiving credit and using the torch, the alarm clock, the calendar and the games. Only one person had used a phone camera. Nearly all the mobile phone owners (25 out of 26) mentioned they regularly lent their handset to other people to use, indicating a strong community spirit amongst these Manam Island evacuees. Nokia handsets were the most popular. Solar power was mentioned here for the first time in this research project as an option for charging handsets, as there was a house with a solar power supply where people commonly went to recharge their batteries. By far the most common reason for not owning a mobile phone was not having enough money to buy one (38 out of 54 non-owners). The issue of money came up repeatedly, with respondents saying they found it very hard to make money. Given that the people did not have permanent rights to the land they were living on (Fox 2010), did not have adequate land to grow gardens, and did not have access to well-established gardens, this was a big problem.

The Dangale respondents were more in favour of mobile telephony than those from previous villages, as many said it was positive (80.0%), a small number had mixed feelings (12.5%) and a small group thought of it as bad (7.5%). The same main positive came through: contacting relatives and friends a long way away. By far the biggest concern was related to money and the costs associated with operating mobile phones and recharging them. Adultery and *raskols* were also mentioned. In the last month, one respondent had used a computer, but no respondents had used the Internet or email. Although these respondents were internally displaced people (UNHCR Regional Office - Australia 2002; United Nations Department of Public

Information 2008), whose future remained uncertain, the survey results were generally similar to the villages detailed thus far. Noteworthy points of difference were that the community was very much in favour of mobile telephony, while costs were often emphasised as a big hurdle.

## **7.5 KURUM**

Kurum is in the Garup area of Sumkar District, Madang Province. It is inland from the coast. To reach Madang town, residents caught a bus which took one and a half hours and cost eight Kina, or walked for half an hour to the main road to catch more frequent bus services (seven Kina for a trip of one hour). Housing in Kurum was mostly of bush materials. There were no permanent buildings and only a small number of semi-permanent houses. Subsistence agriculture was supplemented by cash crops such as cocoa, copra, and kava. There was no power supply in Kurum, although there were some generators present. There were no landline telephones, computers or Internet connections. There was a small number of televisions. Digicel reception came to Kurum in October 2007. The quality of the reception was very clear as Kurum was on a mountain, situated between two towers.

The survey was conducted with 80 respondents by research assistant Martin Banik late in 2009. 44 respondents (55.0%) were male and 36 (45.0%) were female. Ages were spread well across the spectrum from young to middle-aged to older. About half of the respondents owned a mobile phone (39 people, or 48.8%). Mobile phone usage levels were very low compared to other villages, particularly regarding text messages: no mobile phone owners surveyed in Kurum sent a text message the day before they were surveyed, and only two people had received text messages on the same day. Most of the owners who did not use their handset on the preceding day (19 of 39 owners) said their handset battery was flat, while others indicated they did not have any credit in their device. Relatives were most commonly phoned, both in PNG urban centres and within Kurum (which included people phoning home when away from the village). The purpose of calls most frequently was to convey news or messages. No-one used BSP SMS Banking, Nafund TextBal or PNG Power Easipawa Easipay. Popular handset functions were similar to other villages, with the most popular being sending and receiving credit and checking the time. Dry cell batteries were commonly used to charge mobile phones. Nokia handsets were the most popular handsets. Most non-owners did not use phones of any kind. This was

the first village surveyed where the top reason for not having a mobile phone was not related to money. Instead, it was not knowing how to use the device. Most non-owners did not wish to buy a mobile phone, which was different to other villages where people were generally keen to acquire one. Nonetheless, the main reason for not wanting to purchase a mobile phone remained the cost factor.

As in Dangale, a very high percentage said mobile telephony was good (77.5%). Only one person said mobile phones were bad (1.2%), and the remainder were divided evenly between mixed feelings (11.2%) and 'I don't know' (10.0%). The top advantage of mobile telephony was listed as 'easier communication'. This was the first village where 'contacting family a long way away' did not come up as the main benefit of mobile phone reception. It was still important though, as it came in second, after 'easier communication'. The same three negatives came up as in the other villages: cost, *raskols* and sex. No respondents in Kurum had used a computer or email in the last month. One respondent had accessed the Internet on their mobile phone. In summary, compared to other villages thus far, Kurum was similar overall, with two additions: the challenge of not understanding how to use the mobile phone handset; and the idea of 'easier communication' as a key benefit of mobile telephony.

## **7.6 GIRI 2**

Giri 2 is an inland village in Bogia District. From Giri 2, it took between seven and eleven hours to reach Madang town in a bus, at a cost of 27 Kina. At the time of the survey, housing in Giri 2 was changing from bush material to semi-permanent, and there were a few permanent houses. There was no mains electricity supply, although some homes had diesel generators or solar power systems. There were no landline phones or Internet connections in Giri 2. There was no television reception, but some people used satellite dishes to access the signal. Seven survey respondents said they had a television set at home, and two said they had a computer. Since the construction of additional Digicel towers in Bogia District in July 2009, Digicel reception became available throughout Giri 2. Some Digicel reception was available in 2008, but users had to stand in a particular place to find reception.

The survey was conducted with 57 respondents by research assistant Sylvester Marep late in 2009. 38 respondents (66.7%) were male and 19 (33.3%) were female.

Respondents were generally young, with only one respondent over 45 years of age. About a third of respondents owned a mobile phone: 22 people, or 38.6%. As in other villages, mobile phone usage levels were low, with twelve mobile phone owners (54.5% of owners) not making or receiving any calls or sending or receiving any text messages the day before they were surveyed. The main reason for this was the person was too busy with their garden work. Several people also had a flat handset battery. Relatives in PNG urban centres were most commonly called – either to check on them or to ask for something. No owners had used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Popular handset functions were similar to those in other villages. No-one used their handset to access the Internet, and only two people had used a phone camera. Almost half of the mobile phone owners (45.5%) said a relative had paid for their handset. Four mobile phone owners said they had paid work. Like in other villages, it was very common for people to receive credit (or money for credit) from relatives and friends. Handset batteries were charged using either generators or solar power systems. As in other villages, Nokia handsets were the most common. Most of the people in Giri 2 who did not own mobile phones had not had one before and were not sure if they would acquire one. As well as using other people's mobile phones, non-owners also sometimes walked to the nearest Catholic mission station to use the VHF radio for communication.

Perceptions were similar to Pepaur: about half had mixed feelings (49.1%), a small group saw mobile phones as bad (8.8%), and the remainder thought mobile phones were good (42.1%). Unlike in other places, in Giri 2, the main benefit of mobile telephony was seen as development: either mobile phones were thought to facilitate development (for example being able to contact government agencies) or mobile phones were viewed as a form of development. Easier communication and quicker communication also both rated very highly, followed by communication with family members who live a long way away, and the ability to ask for assistance. In terms of negatives, the same top three came up: mobile phones waste money, and facilitate adultery and criminal behaviour (in that order). One respondent had used a computer within the last month, but no respondents had used the Internet or email in the same period. In summary, the results for Giri 2 were similar to other villages thus far. Residents viewed mobile phone roll-out as a form of development, but expressed similar concerns about social changes related to mobile phones.

## 7.7 BASAMUK

At Basamuk, a processing plant has been established for a large nickel mine (Ramu Nico Management (MCC) Limited nd-b; McDonald 2007) since 2008 (Ramu Nico Management (MCC) Limited nd-a), following earlier exploratory drilling from around 2002. Where previously there were mainly subsistence farmers, people from Basamuk became able to gain employment with the mine. Basamuk was a coastal village in Rai Coast District. To reach Madang town from Basamuk took about one hour in a 'banana boat' (a fibreglass dinghy powered by an outboard engine), at a cost of 35 Kina. Before the mine started, most of the houses were bush material houses but more recently a few semi-permanent or permanent houses were built. At the time when this research was conducted late in 2009, there was no power supply in the village at Basamuk, although there was power at the mine site. There were no landline telephones in the village. At the mine site, staff members had landline phones and could be approached for assistance in emergencies, but no public phones were available. Television reception was available, and four survey respondents said they had a television set at home. Two respondents said they had a computer at home, but none had an Internet connection. In Basamuk in late 2009, mobile phone reception was available from both mobile phone providers: Digicel and bemobile. Both offered clear reception throughout the village. There was a Digicel tower at the mine site, which opened in July 2009, as well as others further afield which may have offered some reception in 2008. The bemobile reception came in during June 2008 through the mine's VSAT ('Very Small Aperture Terminal', a satellite-linked system sold by Telikom PNG).

The survey was conducted with 42 respondents by research assistant Emmil Yambel late in 2009. Most respondents were male (31, or 73.8%) and only 11 (26.2%) were female. The majority of the respondents were under 46 years of age (37, or 88.1%). Mobile phone ownership rates were high, with 37 respondents (88.1%) owning a mobile phone. These were all with Digicel. Usage levels varied, with some people making as many as nine phone calls or sending as many as ten text messages on the day before they were surveyed, while others did not use their handsets at all on the preceding day. Relatives were most commonly phoned, in nearby towns (Madang town or Saidor, a small centre on the Rai Coast) or other PNG urban centres, usually to check on them. As in other villages, no owners had

used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Popular handset functions were similar to those in other villages. No-one used their handset to access the Internet, and only one person had used a phone camera. As there was power at the mine site, most mobile phone owners charged their handset batteries there for free. Most respondents thought the reason mobile phone reception came to Basamuk was related to the start of the nearby mine (36 people, or 85.7%). Compared to other villages, there was evidence that more people were in paid employment, with 18 of the mobile phone owners (48.6%) saying they purchased their handset using their pay. The location of the mine site next to the village meant people could undertake paid employment while still living in the village. Nokia handsets were by far the most common.

Most people thought mobile phones were good (35 people, or 83.3%). The main benefit was seen as ‘easier communication’, followed by communication with people ‘a long way away’ and then notifying others of major crises (for example serious illness or death). The same three negatives were of concern: sexual promiscuity, *raskols* and money (in that order). In the month prior to being surveyed, only one person had used the Internet and email. This appeared to be a young person studying at DWU in Madang town, recently returned home for the holidays. In summary, compared to other villages thus far, Basamuk was unique in that the mine site’s proximity offered employment opportunities and therefore monetary issues were not as challenging as in some other rural villages. Mobile telephony was predominantly viewed as a positive development. Nonetheless, concerns around social changes related to mobile telephony were similar in Basamuk to other places in this research project.

## **7.8 LALOK**

Lalok is a coastal village in Rai Coast District. It is situated between Madang town and Basamuk. To reach Madang town from Lalok, residents walked for 30 minutes and then boarded a vehicle, which took a further 30 minutes and cost five Kina. Even in 2009, the walk included crossing two large rivers, which meant wading through them as there were no bridges. Most houses were made of bush materials. There were some semi-permanent houses, although the only permanent buildings were the church and the trade stores. The people led a predominantly subsistence lifestyle. There was no power supply, although some homes had

generators. There was no landline telephone service in Lalok. There was television reception, and seven respondents had television sets at home, but no-one had computers or Internet connections. A Digicel tower was erected in Lalok in July 2009, which provided good quality reception. Residents may have been able to utilise some Digicel reception from other towers before that date.

The survey was conducted with 76 respondents by research assistant Mathew Taleo late in 2009. Two respondents came from neighbouring villages. 42 respondents (55.3%) were male and 28 (36.8%) were female, while six respondents (7.9%) did not answer this question. Over half of the respondents owned a mobile phone: 45 people, or 59.2%. As in Basamuk, usage levels varied between high daily usage rates for some individuals and low use or no use by other mobile phone owners. However, text message sending appeared to be very uncommon, with 38 people (or 84.4% of mobile phone owners) not sending a text message on the preceding day. Thirteen people did not use their handset at all on the preceding day, with flat batteries being the most common reason for this. Relatives in PNG urban centres were most commonly phoned, usually to check on them. No mobile phone users used BSP SMS Banking, Nasfund TextBal or PNG Power Easipawa Easipay. Most popular features were similar to those in other villages. The most common method for charging mobile phones was using a generator in the village, usually costing one or two Kina. Nokia handsets were the most common, with over half of the mobile phones being a Nokia 1200. Handsets were mainly purchased either in Madang town or in Lalok itself during a Digicel promotion.

As in Pepaur and Giri 2, about half the respondents had mixed feelings about mobile phones (38 people, or 50.0%). However, this was the first case where a sizeable group of people saw mobile phones as negative (24 people, or 31.6%). A small group (14 people, or 18.4%) saw mobile phones as solely positive. The reasons behind the positive views were the same as in Orora, Megiar and other places: 'easy to talk to family and friends a long way away', followed by 'easier communication'. In terms of negatives expressed, the top two concerns were similar to other villages: people in Lalok were very concerned about mobile phones wasting money (both buying credit and recharging handset batteries) and also about the use of mobile phones to facilitate sexual relationships (leading to marriage breakdown and unwanted pregnancies). The next most frequently expressed concern was about

handset use causing sickness (like brain tumours). Finally, the use of mobile phones by *raskols* was mentioned by a number of people. In the last month, three respondents had used a computer and one person had used the Internet and email. In summary, compared to other villages thus far, the findings were similar overall, although there were more people who viewed mobile phones negatively, and the possible health effects of radiation were raised by a sizeable group of respondents for the first time.

## **7.9 KAWA**

Kawa is in the Rempi area of Sumkar District. To reach Madang town, the bus ride took one hour and cost three Kina. Most of the houses were bush material houses, some were semi-permanent and in late 2009 twenty were permanent. Power was available, although not all homes were connected. Landline telephones were not available. In 2009, television reception became easily accessible in Kawa. In the survey in late 2009, seventeen people indicated they had a television set at home, two people had a computer at home and no-one had an Internet connection. Digicel reception in Kawa was of a good quality, with nearby towers having commenced operations in October 2007 and July 2009. For some years, it had been possible to walk up the hill to use bemoile reception. However, once Digicel reception became available in the village, most bemoile users switched to Digicel.

The survey was conducted with 66 respondents by research assistant Almanzo Matbob late in 2009. 43 respondents (65.2%) were male, 22 (33.3%) were female and 1 (1.5%) was unknown. As with the samples in Giri 2 and Basamuk, most of those surveyed in Kawa were young, with most being under 46 years of age (57 people, or 86.4%), and over half being between 16 and 30 years of age (39 people, or 59.1%). The sample group from Kawa was more educated than the samples from Giri 2 and Basamuk. Ownership rates were high, with 50 people (75.8%) owning a mobile phone. Most of these people possessed Digicel phones (there were 45 Digicel owners, three people owned both Digicel and bemoile phones, and two did not answer this question). Usage levels were also comparatively high, although there were still nine people who did not use their handsets for calls or text messages on the preceding day. Both relatives and friends were the recipients of phone calls generated by those sampled in Kawa. These relatives and friends generally resided in other villages or PNG urban centres, and the main purpose of phone calls was to check on

them. In terms of handset functions and services offered: no owners used BSP SMS Banking; one person used Nasfund TextBal; thirteen people used PNG Power Easipawa Easipay; the popular handset functions were similar to those in other villages; no-one used their mobile device to access the Internet; and seven people used phone cameras. Nokia handsets were the most common.

The judgement percentages were somewhat similar to Pepaur and Giri 2: the largest group had mixed feelings about mobile telephony (46 people, or 69.7%); a sizeable group saw mobile telephony as positive (16 people, or 24.2%); and a small group had negative attitudes (3 people, or 4.5%). As in Kurum and Basamuk, the main positive was 'easier communication'. Unlike other villages, the other benefits which rated highly were business uses and emergency uses of mobile phones. The use of the device to contact relatives who reside at some distance did not hold much weight with this sample group. In terms of negatives, the same top three came up: sex, *raskols* and high cost (in that order). Another important concern related to young people and mobile phones (in particular handsets distracting them from studies, or causing discipline problems).

Seven respondents had used a computer within the last month, and three had accessed the Internet and email in the same period. In summary, compared to other villages in Madang Province, this younger sample group showed some differences, for example an awareness of the potential for mobile phone use in business. Nonetheless, amongst these predominantly young, comparatively well-educated males, many findings were similar to those in other villages, including the main negative concerns expressed. Although bemoiled reception was available nearby, most people had Digicel phones. Although friends rated better as phone call recipients than in other samples, relatives were still important phone call recipients and phone calls remained primarily for social purposes.

## **7.10 EIGHT VILLAGES AS A SAMPLE GROUP**

This section of the thesis reviews the data from the eight villages profiled above, to ascertain common trends. The statistics provided here are for 574 respondents in total. This is all the data from villages in Madang Province, apart from Orora and Megiar, and excluding two respondents referred to in the Lalok sample who resided in neighbouring villages.

Most of the respondents did not have electricity at home (478 people, or 83.3% of respondents). The most common power source was a generator, although a third of houses with generators did not have fuel for the generator present at the time when the survey was conducted. Other forms of power were PNG Power and solar systems. The use of kerosene lamps for lighting was extremely common (506 people, or 88.2%). No-one had a landline phone or Internet connection at home. Seven people (1.2%) had a computer at home. 44 people (7.7%) had a television at home.

There were more male respondents (338, or 58.9%) than female (228, or 39.7%), while eight people did not answer this question (1.4%). The sample was skewed towards youth, with nearly half of the respondents aged between 16 and 30 (273, or 47.6%). While it may be expected that younger people would be leaders in coming forward and talking about mobile phones, and while it is acknowledged that some of the research assistants were more inclined to talk to people closer to their own young age group than to older villagers, the overall age range is nonetheless consistent with general demographic patterns. In PNG, the life expectancy at birth is 60.7 years (United Nations 2009), and therefore it is reasonable that only 5.2% of survey respondents (or 30 people) were over 60 years of age. Similarly, the probability of not surviving to age 40 in PNG is 15.9% (United Nations 2009), which again correlates to the comparatively low number of respondents aged over 40 in this sample compared to what might be expected of a representative sample in a more developed country.

About half of the respondents owned a mobile phone (288, or 50.2%). There was low usage overall, when looking at calls and text messages on the preceding day. Across the eight villages, the average number of phone calls made in a day by mobile phone owners was one (see Figure 7.2) and the median was zero. The average number of text messages sent in a day was one (see Figure 7.3) and the median was zero. Considering just mobile phone owners in the youngest age bracket (aged 16 to 30 years;  $n = 163$ ), the average number of calls made in a day was one, with a median of zero and the average number of text messages sent in a day was two, with a median of zero.

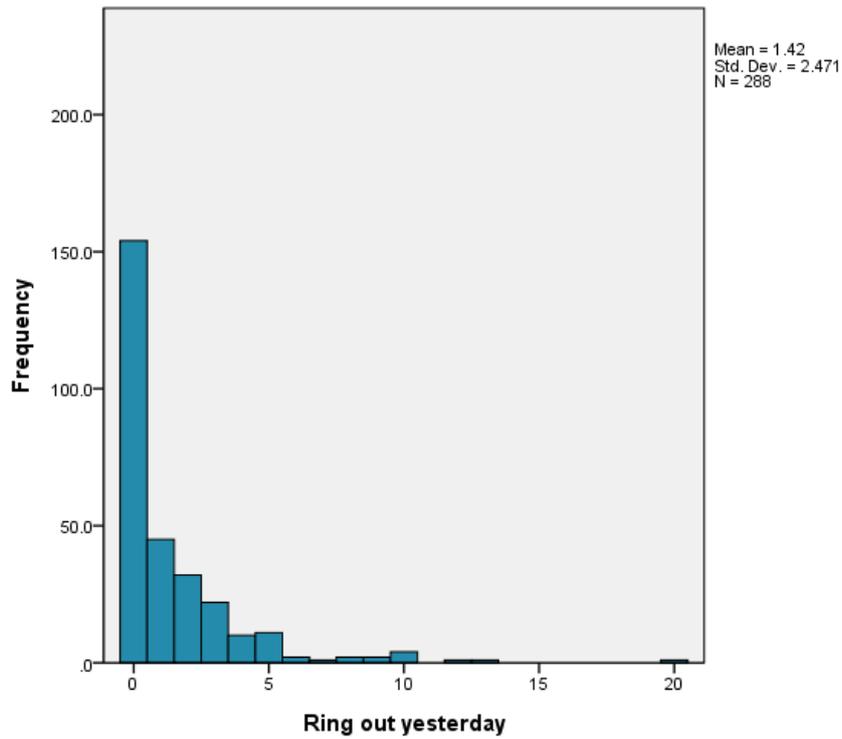


Figure 7.2. Calls made on preceding day

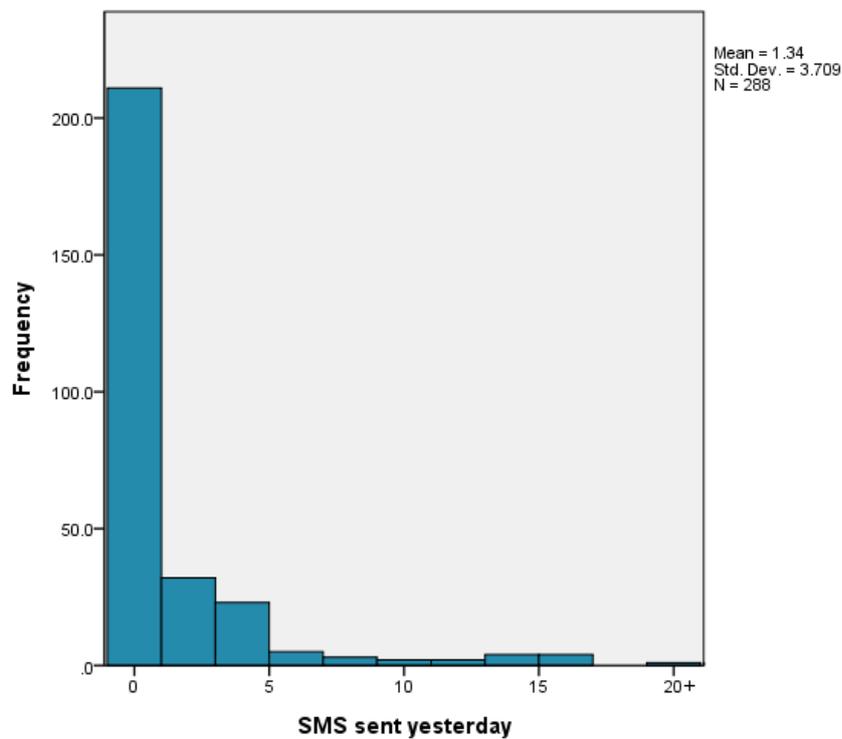


Figure 7.3. Text messages sent on preceding day

Relatives in PNG urban centres were most commonly phoned, usually to check on them. None of the mobile phone owners had used BSP SMS Banking. One had used Nasfund TextBal. Only 13 out of 288 mobile phone owners (or 4.5%) had used PNG Power Easipawa Easipay. The most popular handset features were: the torch; sending and receiving credit; checking the time; the alarm clock; the calendar; games; and the calculator. Only 19 mobile phone owners (or 6.6% of owners) had used a camera in a handset. The most common method for charging mobile phones was to use a generator in the home village. The cost ranged from no charge through to three Kina or even more. Most people paid nothing, one Kina or two Kina.

Most of the people without mobile phones had not had one before (252 people, or 88.1% of non-owners). The non-owners were fairly evenly divided between intending to get a mobile phone, not planning to get one, and not being sure. About two-thirds of non-owners said they did not use phones (181 people, or 63.3% of non-owners). Those who did tended to ring rarely, or less than five times a month. They usually used mobile phones belonging to relatives and they were usually allowed to do this free of charge. When asked to pay, they usually bought their own flex card to key into the handset. About a quarter of respondents lived in a house where no-one owned a mobile phone (142 people, or 24.7% of respondents), and another quarter lived in a house where there was only one mobile phone (140, or 24.4%). Nokia handsets were by far the most popular, with 185 of the 288 mobile phone owners (or 64.2% of mobile phone owners) possessing a Nokia. Most common Nokia makes were Nokia 1202 and Nokia 1200. Over half of the handsets had been purchased in Madang town (165, or 57.3%), with Ela Enterprises being the most popular store for purchasing mobile phones.

Total figures for judgement were about equal to Orora and Megiar, with half seeing mobile telephony in a positive light, a small number viewing it negatively, and the remainder having mixed feelings, as is shown in Table 7.1. A Pearson chi-square test was performed (Moore, McCabe and Craig 2009, 531) to see if the proportions differed between two samples: the eight villages sample group and the combined data from Orora and Megiar. This test showed that there was no evidence of any differences in proportions between the two sample groups ( $0.4 > p\text{-value} > 0.3$ ). This means that research in the ten villages reported on in this thesis generally found the same attitudes expressed about mobile telephony.

Table 7.1  
Madang Province perceptions of mobile phones

	<b>Frequency</b>	<b>Percent</b>
Not good	61	10.6
Good	288	50.2
Both good and bad	216	37.6
I don't know	8	1.4
No answer	1	0.2
Total	574	100.0

The most common benefits of mobile phones were seen as social: it is easier to talk to family members and friends who are a long way away, and communication in general is easier. The social value of the mobile device far outweighed the perception of other benefits, such as use in emergencies and business transactions. The figures shown in Table 7.2 are indicative of the number of times the most common benefits were mentioned. This was an open question in the survey and respondents were allowed to provide as many responses as they wished. Some people stated no benefits of mobile telephony, whereas others listed several.

Table 7.2  
Madang Province perceived benefits of mobile phones

	<b>Frequency</b>
Easy to talk to family and friends a long way away	170
Easier communication	162
Quicker communication	42
Emergency use (not specifically medical)	36
Can notify people if there is a funeral or other crisis	29
Development	28
Business calls	27
Helps rural people	24
Costs less money than travelling to convey a message	17
Can ring ambulance/hospital	14
Easier than travelling to convey a message	13
Can send messages to ask for assistance	13

The most common negatives expressed were the same as those found in Orora and Megiar: concerns about the money spent; beliefs these devices were increasing adultery and sexual promiscuity; and concerns about *raskols* using mobile phones to plan illegal activities such as roadside hold-ups and thefts. In Table 7.3, the figures are indicative of the number of occasions the most common issues were raised. Some respondents raised numerous objections to mobile telephony, whereas others did not mention any negatives.

Table 7.3  
Madang Province negatives associated with mobile phones

	<b>Frequency</b>
Monetary concerns	173
Adultery and promiscuity	147
<i>Raskols</i>	96
Youth-related issues (mainly discipline issues and lack of focus on schoolwork)	26
Hard to charge battery with no electricity at home	12
Health effects of radiation	9
Pornographic images	4

When asked why mobile phone reception came to the village, the most common reason given was to make life easier for villagers (233, or 40.6%). Money for phone credit commonly came from family members or was generated from market activities. Paid work was more common than would have been expected, with 78 of the mobile phone owners (or 27.1% of owners) having bought their mobile phone using money from paid work. About a fifth of mobile phone owners (62 mobile phone owners, or 21.5%) did not receive credit from others. Those in paid employment mainly bought their own credit and were less likely than other mobile phone owners to receive credit from other people, as was shown in a Pearson chi-square test (Moore, McCabe and Craig 2009, 531) ( $n = 288$  mobile phone owners). The test showed very strong evidence of dependence, at 1% statistical significance ( $p\text{-value} < 0.001$ ), between paid employment and not receiving mobile phone credit.

To determine whether a person's gender had any bearing on whether or not they were likely to own a mobile phone, a Pearson chi-square test (Moore, McCabe

and Craig 2009, 531) was performed on the dataset from the eight villages. Eight respondents were not included in this test as their gender was not indicated on the returned survey questionnaires. Thus, the total number of cases tested was 566 in this instance. From the test, there was very strong evidence of dependence, at 1% statistical significance ( $p\text{-value} < 0.001$ ), meaning that gender related to mobile phone ownership. The data indicated that males were more likely to own mobile phones than females. The Pearson chi-square test (Moore, McCabe and Craig 2009, 531) was also performed to assess whether age related to the likelihood of a person owning a mobile phone ( $n = 574$ ). There was very strong evidence of dependence, at 1% statistical significance ( $p\text{-value} < 0.001$ ), meaning that age did relate to mobile phone ownership. The data indicated that young people aged 16 to 30 were more likely to own mobile phones than older people.

General conditions of life were sparse, resembling the situation in Orora and Megiar. In the eight villages, people were drawing water from a range of different sources. In decreasing order, the common ones were: wells, springs, creeks, fast-flowing rivers, and tanks. Ten percent of respondents did not have access to a toilet. The rest did, with most of them using pit toilets, and a very small number of people having septic toilets (6 people, or 1.0%). 43.6% of respondents had a working radio receiver in their home. Most people had at some point in their lives listened to the radio or watched a movie. 44 people (7.7%) had used a computer during their lifetime. Only 13 people (2.3%) had used the Internet and only 12 people (2.1%) had used email. Nearly two-thirds of respondents had been to another province at some point in their lives, but only six people (1.0%) had been overseas.

Table 7.4 shows those respondents who had used various forms of media in the month before they were surveyed. Listening to the radio and reading a book was common, whereas it was rare to engage in written correspondence or read a magazine.

Table 7.4  
Madang Province respondents' media access in last month

		<b>Frequency</b>	<b>Percent</b>
Radio	Yes	435	75.8
Letter sent	Yes	47	8.2
Letter received	Yes	68	11.8
Television	Yes	187	32.6
Movie	Yes	300	52.3
Newspaper	Yes	232	40.4
Magazine	Yes	90	15.7
Book	Yes	365	63.6

Computer usage was rare, as is shown in Table 7.5.

Table 7.5  
Madang Province respondents' computer usage in last month

		<b>Frequency</b>	<b>Percent</b>
Computer	Yes	17	3.0
Internet	Yes	7	1.2
Website	Yes	7	1.2
Email	Yes	6	1.0

About half of respondents had been to Madang town in the last month (310, or 54.0%). The frequency of this travel was hugely variable, with people from places like Orora not having been much at all (Orora 16.7%, Yukyuk 30.7% and Pepaur 41.0%), but people from villages like Kawe, Megiar and Lalok having been to town in large numbers during the time period in question (Kawe 78.8%, Megiar 75.5% and Lalok 63.2%). It was most common for people to have left school at the end of grade 6 (182 people, or 31.7%). Only a small number of people had completed high school (24 people, or 4.2%). Most people had not engaged in any further education (485 people, or 84.5%) and only 8 people (1.4%) had been to university.

## **7.11 CONCLUDING REMARKS FOR MADANG PROVINCE VILLAGES**

In general the findings from villages around Madang Province supported the trends found in Orora and Megiar. Although there were variations between villages and key situational differences, such as the mine site next to Basamuk or the people from Manam Island living in care centres, the findings in relation to mobile telephony indicated there were commonalities across the province. In particular, the main benefits and key concerns articulated were commonly felt throughout rural areas: respondents were pleased about the social applications of mobile telephony but were concerned about the money spent, as well as social changes perceived to be occurring in terms of sexual and criminal behaviour.



# Chapter 8: Interviews with Key Informants

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## 8.1 PURPOSE

The material contained in this chapter of the thesis comes from a panel of informants which can confirm or moderate what has been found in the research conducted with rural communities. In this case, these interviews are with particularly authoritative people, such as managers of telecommunication companies, and they will be reported on below individually. This methodological device is a deliberate and explicit shift from the treatment of local interview subjects, aimed at allowing the knowledge of these key informants to be conveyed clearly. Whereas the thoughts of local interviewees from Orora and Megiar were interwoven into the presentation of results from those two sites, these interviewees were specifically approached in an effort to draw on their assessment of the role of mobile phones in PNG, due to their expertise and positions of authority. In Chapter 9, common themes or issues arising out of these interviews will be examined.

A full list of interviewees is available in Appendix 2. Three interviews conducted in Orora, and one with a person from Orora living in Madang town, were reported in Chapter 4. Four interviews conducted in Megiar, and one with a person from Megiar residing in town, were reported in Chapter 5. Here, interviews with eight key informants will be covered: John Mangos, Digicel Papua New Guinea Chief Executive Officer; Chris Raps, bemoobile Chief Commercial Officer; Paul Barker, Papua New Guinea Institute of National Affairs Executive Director; Richard Lepi, Department of Communication and Information Senior Public Relations Officer; Patrick Matbob, DWU Communication lecturer; Trevor Pinggah, Telikom PNG Team Leader Market Research and Systems Audit, Marketing; Colin Mileng, Telikom PNG Transmission Network Team Leader, Madang Province; and Murphy Sefa, Michaela McConnel company Operations Manager, overseeing Digicel tower maintenance, servicing and fuelling in the Madang Province north coast area.

## 8.2 JOHN MANGOS, DIGICEL PNG

John Mangos was interviewed on August 21 2009 at the Digicel offices in Port Moresby. He conveyed a positive view of mobile phones and their potential benefits

in developing countries like PNG. He was pleased with Digicel's success in PNG to date but explained it had been much more difficult to rollout mobile phone reception in PNG than in other countries. This was mainly due to two factors: the logistics of dealing with poor pre-existing infrastructure, and landowner issues.

I think it's been a hard, you know, a harder road than some of the other ones, simply because of the lack of infrastructure, and the landowner issues in PNG are very specific to PNG. You just, you won't face them anywhere else in the world, what we've been through. So I think it's been a bit of a harder road. (Mangos 2009)

The logistical complications of establishing a network in PNG have made the process rather difficult.

I mean the roads aren't there. Some of these towers weigh like 50, 60 tonnes, so you know ... for us to try and get 50, 60 tonnes worth of equipment to these areas is incredibly difficult. So the bridges can't take the weight, so you have to put it in smaller and smaller trucks, you've got to hand-carry stuff, you've got to fly it by helicopter, so it, it's actually very, very difficult. Now if it's a site right beside the road, it's OK. But you'll find up through the Highlands is a lot more difficult. Ahh, you'll find up through, we're going up through Aitape at the moment, so a lot of the stuff is barged around to get to the sites. And then we sort of carve a road in the side of the hill to get it to the top. So there's no infrastructure, ... there's no roads running right beside it. Ahh, there's no decent bridges. There's a lot of river crossings. Everything. (Mangos 2009)

While dealing with landowners had been a major task for Digicel during the process of establishing the network, the issues could be ongoing even after towers have become operational.

It's continuing. Like it never stops. Even once the site's up. The demands just keep coming. So one clan'll say that it owns it, versus the other one that you've just paid. Ahh, there'll be a dispute on ... land, there'll be commissions that'll go through, there'll be arguments that'll go through. But it, it doesn't stop once the site's up. It's continuing. (Mangos 2009)

Despite complications arising from dealing with landowners, community members have generally realised the benefit of mobile phone service once it has become available. In some cases this has meant the communities have placed

pressure on the landowners, or others making demands of Digicel, to allow the tower to remain operational.

Once you've got the logistics worked out, once you've got the site on air, and people can see the benefit, there's a bit of pressure comes back on the landowner to leave the site alone. That works in some cases. Doesn't work in other cases. ... So I've got some off the air at the moment coz of landowner issues. Now they've been on air for a year and a half, you know? And all of a sudden something'll crop up. (Mangos 2009)

John Mangos also mentioned security issues which Digicel has faced.

So it's just logistically a lot more challenging here. And we have site acquisition teams, we have landsite security teams so, you know, various areas, the sites get vandalised, quite often you get a lot of fuel theft, ah, so we have to have security on a lot of the sites as well, which again you wouldn't see in a lot of places. (Mangos 2009)

Digicel extended their service to rural areas for two reasons: this was mandated in the licence agreement, and it was a key component of Digicel's plan to create a complete network so people in towns across PNG were able to phone relatives in their home villages. Uptake in rural areas was very quick once towers were up and running. People did not need any information sessions about the service and its benefits but instead they were able to "know what the benefit is straight away" (Mangos 2009).

John Mangos said the Digicel network was the basic system onto which other things could be "bolted" (Mangos 2009), for example mobile phone banking, health-related SMS services, and so on. He indicated that Internet access was already available to all mobile phones in PNG at the time of the interview, although he admitted there were slow Internet speeds in some parts of the country due to the use of a satellite link. BSP SMS Banking and PNG Power Easipawa Easipay were both mentioned in the interview. In particular, he explained the benefit of PNG Power Easipawa Easipay for people who lived some distance from an urban centre.

He explained some problems Digicel had experienced with government regulations, particularly around fees charged, and also with negotiating interconnection rates with their competitor. At the time of the interview, the two companies were going through arbitration with the ICCC to agree upon termination

rates associated with interconnection. Nonetheless, he was pleased overall with Digicel's progress in PNG and felt the company's service was benefiting the people of PNG.

### **8.3 CHRIS RAPS, BEMOBILE**

Chris Raps was interviewed on October 23 2009, during a business trip he made to Madang Province. He expressed a generally positive view of mobile phones and their potential benefits. He said building towers was "extremely expensive" (Raps 2009) in PNG compared to other parts of the world due to two substantial problems his company had faced: mountainous terrain, and landowner disputes. He felt the landowner issues in PNG were like nowhere else in the world. He also mentioned vandalism of tower sites, including theft of fuel. He said this was happening on a regular basis.

Having taken over the management of bemobile from Telikom PNG, Chris Raps felt bemobile was still trying to overcome the negative perception of the company linked to Telikom PNG's past failures. Part of the strategy around creating a new image for bemobile had included changing the company's name from B Mobile to bemobile, designing a new logo, choosing new colours (orange and purple) and commencing a new marketing campaign.

He expressed the belief that government laws and interconnection rates were keeping phone call and SMS prices higher than they needed to be. He also acknowledged that the handset price was a sizeable obstacle for a large number of people in PNG: "You know the biggest barrier [to] entry on the lower-end market is the actual initial cost of the phone" (Raps 2009). Despite various difficulties, he felt a managed duopoly, with each company having roughly 50 percent of competition, was a desirable model which would drive prices down.

In a developing country a managed duopoly is very good, as long as either person doesn't have more than about fifty five percent of the market. And if you're in that ten percent band, fifty five, forty five, you have good competition, you have a little bit of churn from people [going] backwards and forwards then rates will generally come down. No-one's gonna take advantage of it. ... It's in our benefit and the competition's benefit to get as many people on the networks at once. We spent a lot of money on them. And if you can lower the price down a bit to seven, eight, nine [US] cents a

minute, we're both gonna do it to get six million people using cell phones. And then everybody wins. And if you have a managed duopoly and the prices are equivalent to world economy, to world prices, no-one should think anything of it. (Raps 2009)

Regarding the benefits of mobile phone access, Chris Raps viewed the social use of phone calls, and also the connection between urban centres and villages, as important.

An example is the funeral. You know when someone dies, someone out in the bush can run for four or five days to get to everybody to tell them. Now it's a quick phone call. Those are huge benefits. (Raps 2009)

He anticipated Internet access through mobile phones would come to villages in years ahead and would be taken up, although he was uncertain about how this would unfold in such communities. With respect to negatives arising from mobile phone access, he felt these included the use of mobile phones by *raskols*, as well as use in facilitating adultery. But he argued the mobile phone could also lead to detection of illicit affairs. He suggested this in turn could lead to violence, particularly in PNG “where violence and domestic violence and violence against women is quite high” (Raps 2009).

#### **8.4 PAUL BARKER, PNG INSTITUTE OF NATIONAL AFFAIRS**

Paul Barker was interviewed on January 8 2010 over the phone. As the head of a research institute, he had followed closely the developments regarding telecommunications in PNG in the preceding years. He had participated in various consultative forums and workshops on the topic and, in the early days of mobile phone competition, he gave a presentation about this (Barker 2008). He generally viewed mobile phones as advantageous for PNG, although there were mixed outcomes (Barker 2010). Positives related to sourcing information, gaining access to some services, business uses, and being able to call for help (in the latter case, he admitted that people might not get much assistance from the police or health services, but said people could phone relatives for assistance). Negatives related to the money flowing out of rural communities, and the use of mobile phones in tribal fights and criminal activities.

It sometimes does get misused in a number of areas. So it's used in tribal fights sometimes. People are phoning up and organising raids when they think the other side's sort of susceptible. And some crimes involve mobile phone use. Umm, and sometimes it's actually at their cost because sometimes the mobile phone use has been tracked and the perpetrators have actually been identified and on the basis of their mobile phone. So it's not all good for the criminals. But it's certainly, it can be used for countering crime but it can also be used in crime as well. (Barker 2010)

Paul Barker asserted that Telikom PNG was not interested in rural areas before competition came in. Even in urban areas, they did not invest money to ensure the technical capacity met demand. Since competition, their service became cheaper and more reliable. But they were still, even with the new business partner on board, not investing sufficient funds in expanding the network to rural areas. Towers tended to get built when local members of parliament invested their discretionary electoral funds.

What is happening is to some extent that Digicel is the company that's been going out and extending the service and the other company really isn't putting any money in themselves. But their extension and their towers are being provided by members of parliament who, using their electoral funds, go and stick a tower in and extend the bmobile service. That can be obviously quite an arbitrary network. (Barker 2010)

Paul Barker felt Digicel's advertising campaign (see Figure 8.1) was slick compared to bmobile's (see Figure 8.2). He wondered if bmobile was trying to appeal to people's feelings of nationalism, but he was clearly unconvinced by their strategy.



Figure 8.1. Digicel advertisement published in daily newspaper, 2008

There's Digicel with their marketing campaign with clearly healthy, vibrant, young people in their advertising. And here's bembile come in with an advertising campaign with a bunch of overweight, sort of middle-aged characters who look a little bit like the sort of the concept of what Telikom would be: sort of slow in responding [laughs] and not terribly responsive anyway. (Barker 2010)



Figure 8.2. Detail from bembile advertisement, 2009

He suspected Digicel was surprised to find the lack of infrastructure and services in PNG when they started up, for example the lack of electricity supply in rural areas. He viewed landowner issues as a problem at tower sites. Nonetheless, he felt that mobile phones were beneficial for rural communities and he understood the

importance of a communication link between rural and urban areas. He emphasised the lack of services in rural areas, for example banking.

[Rural areas] have basically been forgotten. As I say, we used to have better services. We used to have around the country something like 280 different banking outlets in district offices and sub-district offices and most of them have closed down for various reasons like the lack of reliable road infrastructure or air services or law and order and other factors and, and I think [to] have access to affordable mobile phones enables the rural communities to feel that they're actually still part of Papua New Guinea and that they can talk to their relatives. (Barker 2010)

Interviewed at the time when a new ICT policy was being prepared, he felt it looked promising, although he explained that much implementation work still lay ahead. He was reasonably pleased with the consultation process that had preceded the formulation of the policy.

I think that by and large they did a surprisingly rigorous exercise. They did go out and they did have a number of workshops, including with ourselves ... where we brought different players in, gave an opportunity. They talked to the business council, to other players. (Barker 2010)

He viewed the introduction of competition in the telecommunication sector as having had positive outcomes. He said people in PNG started to view competition favourably and began to wonder if competition or privatisation could help in other sectors dominated by government entities.

I remember bumping into a former minister from the Highlands who I knew, [at the airport] before Christmas in 2008, saying to me 'Paul, do you know if Digicel operates an air service?', because he was stuck in an enormous queue, with one or two check-in staff behind the counter and little chance of actually getting to his destination. (Barker 2010)

## **8.5 RICHARD LEPI, DEPARTMENT OF COMMUNICATION AND INFORMATION**

Richard Lepi was interviewed on December 10 2009 in Port Moresby. As he came from a rural village in the Highlands, he talked about the traditional method of communication over a distance there, which involved shouting from mountaintops. It could be argued that this was roughly equivalent to the coastal areas' use of the

*garamut* as a communication method. He said this practice of shouting was probably happening much less since people could use mobile phones.

He expressed his belief that rural villagers were enthused about mobile phones.

The excitement about that is there because of the coverage. Network coverage is very clear all the way right into the very rural villages, where it used to be very hard for years. Like in my village. Now my mama has a mobile phone. She has a mobile where I can speak [to her] here from [Port] Moresby. But when I went to school back in 2004 and that, I don't speak to her, I just write letters. And then I write to the mission, and the mission, when the preachers go into the village, he takes the letter. But right now I can speak to her just directly from here. And they are doing the same. And they can speak to the world too. So communication is very important now. (Lepi 2009)

He thought criminals could (and did) use mobile phones to coordinate their activities, but he pointed out that the police could also use them to apprehend criminals. He also discussed 'enemies' in the context of tribal fights in the Highlands and their use of mobile phones to coordinate attacks. He mentioned the importance of a village-town communication link and the role that mobile phones played in facilitating this link. He also said mobile phones could save rural people money they would otherwise have spent on transport to get a message out. The decreased need for travel also meant decreased exposure to the risks associated with travel, such as hold-ups by *raskols* on the roads. He saw marriage breakdown as a major disadvantage of mobile phones.

Richard Lepi said mobile's pricing and coverage had improved since competition came in. Not only did mobile commence occasional promotions offering cheap phone calls, they also introduced smaller units of flex cards, such as three Kina and seven Kina, whereas previously people had to purchase credit for their devices in larger increments. Richard Lepi expressed a positive view regarding competition in the mobile communication sector, and felt there was continued government support for competition.

Recently the minister actually announced, after the 2009 ICT Bill was passed, announced that the Department is happy about supporting mobile competition. Because actually with competition there's more service and

more attraction and more communication being done between people and, I mean around here, rural areas and in town. (Lepi 2009)

## **8.6 PATRICK MATBOB, DWU COMMUNICATION LECTURER**

Patrick Matbob was interviewed on March 9 2010 over the phone. His journalistic work is regularly published in the newspapers and magazines in and about PNG and he has trained many of the practicing journalists in PNG. He has a Master of Journalism Studies from Cardiff University in Wales and has undertaken academic research projects about the media in PNG. Heralding from the Kawe area of Rempi, he was interviewed not just for his expertise regarding communication in PNG, but also to gather the town end perspective regarding communication between Kawe and Madang town. Patrick Matbob said he did not use mobile phones to call Kawe. The village was so close to town he could drive there in his vehicle to visit when he wanted to talk to his relatives there. He said he preferred to do this.

He speculated that mobile phones could be useful for villagers in emergency situations. He thought mobile phones could help make informal businesses more cost effective and efficient, but explained that the money brought in might not necessarily be used in ways which improved people's standard of living. He believed mobile phones were more popular with young people than with older people. He thought young people used them for socialising, whereas people with children were likely to be more restrained regarding the money they spent on mobile phone calls.

He explained the traditional methods of finding wives/husbands were breaking down, and this caused concern for parents and older people in the village. He said young people could be distracted from their studies by mobile phones. He argued that adultery did happen before, but mobile phones made it easier to coordinate. He said the mobile phone would also make it easier for sex workers to contact clients, but he was not sure whether this would lead to increased rates of infection of sexually transmitted diseases. In his case, he said the mobile phone had strengthened his marriage as it made it easier for him to stay in touch with his wife, particularly when she was travelling in her work role. He said he mainly used his mobile phone for contacting his wife.

In Patrick Matbob's opinion, Telikom PNG's past performance was incompetent: "we had problems all the time with Telikom, you know, you never get

your phones fixed and you know that sort of thing” (Matbob 2010). Therefore, people were pleased when Digicel came in.

You know a lot of people use Digicel simply because of the way Telikom had operated. Now if Telikom was an efficient company in the past, then I think maybe the situation would be slightly, probably different. But a lot of people welcome Digicel’s entry, mainly because Telikom wasn’t a smooth and efficient operator in the past. (Matbob 2010)

He felt the introduction of competition was a positive influence on Telikom PNG.

Personally I think it has pushed them to become efficient. It has pushed them to re-think their whole organisation, their structure, and what they were doing. They had to become competitive and they had a competitor to measure against. And I think that’s a good thing. But you know so far I think they’re still struggling. They’re still struggling a lot at the moment. (Matbob 2010)

In Patrick Matbob’s opinion, the bemobile ‘orange men’ marketing campaign (see Figure 8.2) was poorly designed and executed. He felt they needed to do much better to win people back over. He did not like the advertising campaign.

It’s annoying. You know, it’s a concept that, you know they want to use something, but I think people are virtually laughing at them. You know they’re just laughing at them. They’re laughing at what they’re doing, and then they’re actually laughing at them all along, because they say um, ‘you really can’t do it, can you? I mean, and that’s why you’re doing what you’re doing.’ You know? So for me that’s how I’m approaching [it]. And like after so many years of using Digicel now, you know, you really have to convince me to switch to bemobile. They have to come up with a campaign that’s much stronger than that, the ‘orange men’ [laughs]. (Matbob 2010)

## **8.7 TREVOR PINGGAH, TELIKOM PNG, MARKETING**

Trevor Pinggah was interviewed on August 20 2009 in Port Moresby. Trevor Pinggah’s role with Telikom PNG was in the marketing area and at that time he had been with the organisation for about 2.5 years. In Trevor Pinggah’s opinion, mobile phone pricing was brought down due to competition. Nonetheless, bemobile lost many customers to Digicel when it came in. Trevor Pinggah asserted consumers

would return to bemobile, due to the nationalistic pride of the PNG people. Telikom PNG's vision was to have telecommunications accessible to every person in PNG by 2020. Their installation of VSAT systems was their main way of trying to achieve this goal, coupled with wireless phones.

Landowner disputes were mentioned as the major problem with spreading coverage. The other considerable problem Telikom PNG had, before the partial sale of bemobile, was a lack of funds to expand the network. Telikom PNG did not go into rural areas as they surmised rural people could not afford the service. They understood the financial difficulties faced by people in rural areas and they deduced they would not make as much money from towers in rural places as in urban centres.

Putting up a mobile phone service out in a rural village or area in Papua New Guinea, it doesn't really look good in terms of how are the people going to use it because definitely the mobile phone costs money. And these poor people they have all kinds of problem in getting an income. They have to go to the gardens which are very far from the village and after harvesting their food from the garden, they have to go, travel some very long distance to go to marketplaces to sell it and you know the cost involved in this and by the time they get the cash they are, well, left with just a little to buy probably their sugar and salt and all this you know, to go back home and continue on living. And I mean with the introduction of mobile phone going in there, it's definitely going to wear them out. And I think that's what most people are now facing in the rural areas. They think that it's easy using mobile phones, but then the bad side of it is they get to spend more, you know? (Pinggah 2009)

Trevor Pinggah thought mobile phones in PNG were good overall. He saw the main problems as increased adultery and the overly high cost for rural people which strained their already tight budgets. He felt mobile phones could protect people from crime, as they could ring for help if need be. He realised the importance of a village-town communication link. He also saw an important role for mobile phones in times of emergency, for example accidents or natural disasters.

## **8.8 COLIN MILENG, TELIKOM PNG, MADANG PROVINCE**

Colin Mileng was interviewed on October 9 2009 at the Telikom PNG facility in Madang town. Colin was a senior manager for Telikom PNG in Madang Province

and at that time had worked for the company for 25 years. He said the first mobile phone service in Madang Province was for a South Pacific Forum held in Madang town. The mobile phone service did not continue once the conference was over. Mobile phone service came later to Madang Province, but remained only available in town. The main problem Telikom PNG had which held them back from expanding the network to rural areas was a lack of funds. He suggested “competition was brought on by the government’s need to provide communications to everybody at the cheapest price” (Mileng 2009). He did not think there was room for a third carrier as the market was not large enough. He thought the main factor influencing people’s choice between carriers was price.

Colin Mileng saw mobile’s rural rollout as important as this would enable rural villagers to have a choice of service providers. Colin Mileng perceived benefits of mobile telephony such as: use in a village-town communication link; use in crises like notification of funerals; use by police to coordinate their activities; and use in coordination and logistics. Negatives were regarding planning of crimes and sexual liaisons. Also his school-aged daughter has been exposed to pornographic images on mobile phone handsets at her school.

## **8.9 MURPHY SEFA, MICHAELA MCCONNELL COMPANY**

Murphy Sefa was interviewed on November 19 2009 in Madang town. His role involved overseeing Digicel tower maintenance, servicing and fuelling in the Madang Province north coast area. The company he worked for was a locally owned company, sub-contracting to Digicel. In the interview, the discussion focused on the technical aspects of his work and how the company’s role was to keep the towers on the air at all times. In the event of a generator problem, the back-up battery lasted for four hours. Therefore, Murphy’s team had four hours to get to the site and address the problem. If they arrived within this time period, users should not ever notice any disruption in the service. However, if a main tower in Lae (Morobe Province) was offline, the whole of the Digicel network in Madang Province would be down.

Murphy Sefa thought landowner issues were not as considerable in coastal areas, compared to the Highlands. In the Highlands, unhappy landowners might block the path of work teams like his, which could lead to a loss of service and could also be a safety issue for the workers.

PNG coastal areas it's OK. Normal issues, land issues are not that, umm yeah it's OK. Not like in the Highlands - Highlands it's really rough. When there's no payment they don't allow Digicel or anybody, contractors, to go through. When there's a call-out they stop [them]. They shut [the road]. No matter the tower's on battery for four hours and it cuts off, they don't care. Down here in the coastal areas it's OK. The people are understanding. Most, most coastal areas they understand. (Sefa 2009)

Generally Murphy Sefa's team had good relations with the landowners at tower sites in Madang Province or had little to do with them. He noted that there were still some places in Madang Province where there was no reception. He also explained that when there was congestion on the network, for example if Digicel had a promotion with cheap calls or text messages within a set time period, there could be difficulty getting calls or texts through. The main negative Murphy Sefa saw regarding mobile phones in PNG was the problem of marriage breakdowns.

# Chapter 9: Discussion

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## 9.1 PURPOSE

The discussion chapter will relate the research findings to the relevant literature, particularly material from two distinct schools: mobile phone studies, and the ICT4D movement. To frame the analysis, du Gay et al.'s model known as the 'circuit of culture' (du Gay et al. 1997, 3) will be used. This model suggests that there are five facets of the relationship between technology and society that are worthy of examination: representation, regulation, identity, consumption, and production (du Gay et al. 1997). The demonstration of links between these five concepts and the research findings on mobile telephony in rural villages in PNG should enable the reader to perceive the thorough, rounded and complete nature of the present study. The present chapter will progress as follows: the perceptions of mobile phones (both positive and negative); why mobile phone service spread to rural areas in PNG; how this change occurred, and the obstacles encountered during this process; explication of the du Gay et al. model and how it relates to the findings discussed; the communicative ecology within which the mobile phone is situated; the question of the economic impact of the mobile phone in rural villages; and the possible future scenarios which may emerge.

## 9.2 POSITIVE PERCEPTIONS OF MOBILE PHONES



Figure 9.1. Positive perceptions

The perceptions regarding mobile phones in PNG were generally positive (see Figure 9.1). In both Orora and Megiar, just over half of the people surveyed viewed the technology favourably (51.4% and 52.9% respectively), and in the other eight villages the result overall was similar (288 people out of 574, or 50.2%). In the interviews related to both Orora and Megiar there were negatives expressed, but there was largely a more positive disposition towards this development. In the interviews with key informants, it was generally felt that mobile telephony was an advantageous change for PNG. Unsurprisingly, the managers from the two mobile phone companies were particularly enthusiastic about the benefits of mobile telephony (Mangos 2009; Raps 2009), while other key informants also saw it as generally positive (for example Barker 2010; Pinggah 2009). In a similar manner, positive feelings regarding mobile telephony were evidenced in Jamaica (Horst and Miller 2006, 167), and in developing countries in general (Nkwi 2009, 50).

Some writers have described the experience of using mobile phones as being akin to ‘magic’ (Donner 2008b, 143; Fogg 2007, 8; Katz 2006, 6) or like a ‘miracle’ (Levinson 2004, 1). “For many who have grown up without mobiles, the initial experiences with mobiles can truly seem magical” (Katz 2006, 6), as with the excitement conveyed by many about being able to hear the voices of loved ones in other parts of PNG (for example Lepi 2009). In a similar manner, notions of magic were attributed to electricity when it first became available in some countries (Marvin 1988, 136).

The benefit which emerged from the village survey as the most important was the social use of the mobile phone to speak to relatives and friends who reside at some distance. This finding was supported strongly by the mobile phone literature, which has shown through research in other countries that social uses of mobile phones are of central importance for users (Aakhus 2003, 30; Bakke 2010, 365; Bell 2005, 71-72; Chib 2009, 3-4; Donner 2008b, 150; Heeks 2008; Johnsen 2003, 163-166; Law and Peng 2008, 55; LIRNEasia 2007; Mpogole, Usanga and Tedre 2008; Pelckmans 2009, 30; Souter et al. 2005; Tabinas and Guzman 2010; Walsh, White and Young 2007, 126). While social use of the mobile phone was mentioned often in survey responses, one interviewee believed there were age differences in types of use, with social uses of the device being particularly prevalent among the young: “I feel that a lot of people who buy and use mobile phones for social purposes, like just

ringing up friends and talking and chatting and that, are probably younger people” (Matbob 2010).

An important component of communication which became evident in the survey data was communication between the villages and urban centres (often the nearest urban centre, which was in most cases Madang town). This village-town communication link was also mentioned by key informants (Barker 2010; Lepi 2009; Mileng 2009; Pinggah 2009; Raps 2009). For those living in urban areas, there was an appreciation of the connection with relatives in home villages: “In the urban centres, we are here but we have our relatives back at the rural, in the villages, and we need to communicate with them and with the inclusion of this [mobile phone access] it’s more easier [*sic*] for everyone” (Pinggah 2009). A similar experience was found among poor people in China, where those who had moved to urban centres for work used mobile phones to stay connected with their home villages (Law and Peng 2008). Villagers reported that relatives were the people most commonly phoned<sup>58</sup>. This was in keeping with some relatively early mobile phone research which found similarly that ties maintained over distance through phone calls tended to be blood ties (de Gournay and Zbigniew 2003, 58). Perhaps it also reflects the high value placed upon such relationships in the local value system (Mantovani 1991, 6; Vallance 2007, 7); Vallance discusses the key role of relationships in Melanesian thinking, and suggests that communal relationships within the clan and village are highly important (Vallance 2007, 7; see also Pech 1991, 16).

Miller and others have argued that communication itself should be viewed as an essential human need (Douglas and Ney 1998, 46-73; Harms, Richstad and Kie 1977; Horst and Miller 2006, 2, 89, 173; Miller 2006, 41, 47-48) and therefore studies should include “the evaluation of communication in its own right” (Miller 2006, 41). In this research, communication was mentioned as one of the main benefits of mobile phone technology availability by many respondents (see Table 7.2, in which ‘easier communication’ and ‘quicker communication’ were the second and third most commonly expressed benefits in Madang Province villages, after social contact). To be explicit, this means that communication itself was valued by

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<sup>58</sup> Survey respondents often used terms to indicate close relations such as uncles, aunts, cousins, and so on. However, it is worth noting that people in PNG can use such terms to refer to people with whom they may not have a biological linkage. For example, a close friend may be referred to as a ‘brother’. Therefore, the survey findings suggested that relatives were very important, but the commonly elastic interpretation of relational titles may mean that the terms refer to a wider network of relationships across the *wantok* (‘one language’) group or even beyond.

the rural villagers – not as a means for increasing income, gaining material goods, or addressing other ‘needs’, but as a benefit in its own right. To suggest that the rollout of mobile phone reception into rural areas has resulted in better, more effective, and more efficient communication appears to be stating the obvious. But for these rural people who have never had access to landline telephones, postal services, facsimile machines, pagers and so on, communication itself is a key concern and therefore this is a major outcome.

Network coverage is very clear all the way right into the very rural villages, where it used to be very hard for years. ... And they can speak to the world too. So communication is very important now. (Lepi 2009)

Use of mobile phones in emergencies was mentioned in interviews (Balipini 2009; Binib 2009; Matbob 2010; Mileng 2009; Naing 2009a; Naing 2009b; Pinggah 2009), for example in relation to time-critical medical emergencies such as snakebite or childbirth complications. The potential benefit of the mobile phone in emergency situations was particularly heightened in places like Orora where transportation was difficult to organise and other communication options were extremely limited (Naing 2009b). In mobile phone research conducted in both Africa and India, Souter et al. found the device was highly valued as a tool for use in emergencies and could thus reduce the vulnerability of poor, rural people (2005, 17). The mobile phone was seen as having “exceptional added value compared with other communications media, in particular because of its immediacy, interactivity and ability to secure assistance from afar” (Souter et al. 2005, 17). Similarly, Chib asserted that mobile phones were appropriate in situations where time was sensitive, such as childbirth (2009, 16; Chib, Lwin and Jung 2009, 216). Other scholars have discussed the importance of mobile phones in emergencies (Brinkman, de Bruijn and Bilal 2009, 81; Donner 2008b, 147; Green and Haddon 2009, 77; Heeks 2008; Horst and Miller 2006, 138, 140; LIRNEasia 2007; Mante and Heres 2003, 132-133, 143; Mpogole, Usanga and Tedre 2008; Walsh, White and Young 2007, 130), although it was pointed out that the mobile phone was unlikely to save a life without the implementation of a range of other tools (such as vehicles, roads, fuel, health workers etc) (Balipini 2009; Hawk and Rieder 2003, xviii). The use of mobile phones in emergencies has been covered in the print media in PNG (Bro 2008; Kaiok 2007b, 52; Post-Courier 2008h, 9, 2007f, 3, 2007h, 6; The National 2009c, 12; Tseraha 2009, 9). Likewise, an earlier

investigation found that where landlines were available in rural and remote areas in PNG, they were used in about five percent of cases for “emergencies and medical reasons” (Jussawalla 1994, 157, referring to the Maitland Commission).

The two experiences of tsunami alerts in the Madang area outlined in Chapter 5 differed in one key respect: in the interim, mobile telephony had become available in rural villages, including Megiar. This case therefore provides a compelling opportunity to evaluate the use of telephony when time is sensitive. It is argued that mobile phone reception in rural settings, combined with Internet access at workplaces in urban centres, enables rural villagers to gather more reliable, timely information. In the case of Pan Lakot, he was able to read material on the computer screen and convey it to his relatives in Megiar. During the earlier tsunami alert, these villagers suffered from a paucity of information and responded in fear and panic. By contrast, they were able to source reliable, timely information in the second instance and therefore could employ measured responses. In this way, this example shows that “information enables enhanced control” (Bennett, Grossberg and Morris 2005, 187) over one’s environment and one’s behaviour. The value of mobile telephone systems in emergencies can be greater in rural, poor settings where other ICTs and emergency services (such as ambulances and police) may be non-existent or unreliable. Although some writers focus on other technologies such as the Internet (for example van Dijk 2005, 1), “when it comes to a direct link to poor communities and poor people, the telephone still plays a key role” (von Braun and Torero 2006, 3).

Weigel outlines several elements of ICTs which have impacted upon information, knowledge and communication: interactivity, speed, lower costs, and integration (2004, 20-21). In the case of interactivity, Weigel argues that ICTs can “facilitate dialogue” (2004, 20), which is certainly true in the present example, as mobile telephony is more interactive than other mediums, such as radio or television broadcasting or newspaper publishing. Weigel also mentions speed as a key factor regarding contemporary ICTs (2004, 21). In particular, he refers to the speed with which information can be published on the Internet (Weigel 2004, 20-21), and the introduction of mobile telephony has also made communication between villages and other places quicker. With respect to lower costs, Weigel suggests modern ICTs can be cheaper than traditional means of finding information such as books and

newspapers (2004, 21). Despite this, “the cost factor is still a challenge in general” (Weigel 2004, 21), particularly for poor people, as will be discussed below (see Section 9.3). Finally, Weigel argues that the integration of different types of media is a crucial element in the contemporary changes taking place (2004, 21). On the day of the 2009 tsunami alert, access to mobile telephony would have been of little value to people in the Madang area without some access to the Internet in urban offices.

There was some suggestion by key informants that access to mobile phone technology could help make informal businesses more cost effective and efficient (Barker 2010; Matbob 2010). However, in the survey, few respondents mentioned business use as a perceived benefit (no respondents in Orora, four respondents in Megiar, and only 27 people out of 574, or 4.7%, in the other villages). In a large survey conducted in India and two countries in Africa, the number of people who saw phones as leading to positive outcomes in terms of business was also low (Souter et al. 2005, 12)<sup>59</sup>. There will be a detailed discussion of the economic factors related to these research outcomes below (see Section 9.8).

While direct benefits in terms of business gains were not rated highly by villagers, some people suggested that use of the new communication technology could save them money they would otherwise have spent on transportation. A similar experience was found in another developing world study, in which respondents felt they could save money by using a telephone and thus “replacing the need to travel” (Souter et al. 2005, 10; also Heeks 2008; Mpogole, Usanga and Tedre 2008). As well as saving money, not travelling could also decrease exposure to dangers and risks that could be encountered during journeys (Lepi 2009). Another benefit mentioned by some respondents in this study was being able to use the mobile phone to ask for assistance. This trend corresponded with the situation observed in Jamaica, where mobile phones were commonly used for finding sources of money for unexpected expenses, and this use of the technology was highly valued (Horst and Miller 2006).

The idea of police using mobile phone systems for apprehending and intercepting criminals was raised (Lepi 2009; Mileng 2009). Indeed there is some evidence that police officers in PNG do use mobile phones in their work (Editor 2009, 14; The National 2009f, 10, 2009j, 3), and this was also found to be the case in Jamaica (Horst and Miller 2006, 144). Likewise, people could use mobile phones to

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<sup>59</sup> About 5% of users rated business use as their main use of the phone.

decrease their risk of being victims of crime and to increase their sense of personal safety (Mileng 2009; Naing 2009b; Pinggah 2009). Other writers have mentioned the experience of carrying a mobile phone as important to a sense of personal security (for example knowing that one could phone for help if needed) (Brinkman, de Bruijn and Bilal 2009, 81; Horst and Miller 2006, 168; Katz 2006, 10-11; Overå 2008, 50).

Two key informants discussed the perceived benefits of mobile phone banking (Barker 2010; Mangos 2009). This use of mobile phones has also been lauded in literature about developing nations more generally (Allam 2008; Wroe 2008), in informed commentary specifically about PNG (Barker 2008), as well as in the newspapers in PNG (Bashir 2009, 31; Post-Courier 2008b, 25, 2009k, 33; The National 2009p, 26, 2009d, 24). Given that “rural banking in PNG collapsed, and branches [were] being closed in the 1980s and 90s, partly over poor law and order and infrastructure, made worse by poor telecommunications, and incapacity to handle data transfers which banks now required” (Barker 2008, 1-2), the potential for mobile phone banking to provide banking services to rural populations is clear. However, in this rural survey, there were no respondents who used this service (this question was not asked in Orora, but there were no users in Megiar or the other eight Madang Province villages). By contrast, the PNG Power Easipawa Easipay service had been used by some respondents (although this question was not asked in Orora, it would not have been used there as there was no mains electricity supply, but in Megiar 39.2% of respondents had used PNG Power Easipawa Easipay, and in the other villages 4.5% had used this service). For people with a mains electricity supply residing some distance from an urban centre, this service has important benefits (Noho 2009c, 8, 2009b, 7): “the people living further and further out, it costs them more to get in on a PMV, buy the Easipawa and get back home than what the Easipawa’s worth. So now they don’t have to spend that money” (Mangos 2009).

### **9.3 NEGATIVE PERCEPTIONS OF MOBILE PHONES**

The three major concerns about mobile phone technology expressed by villagers were the high cost of purchasing and operating devices, use of the mobile phone to arrange extramarital sexual liaisons, and its use by criminals (as shown in Figure 9.2). Other concerns which were raised and will be discussed below included the dissemination of pornographic images, youth-related concerns, and the difficulty of recharging handset batteries in non-electrified communities.

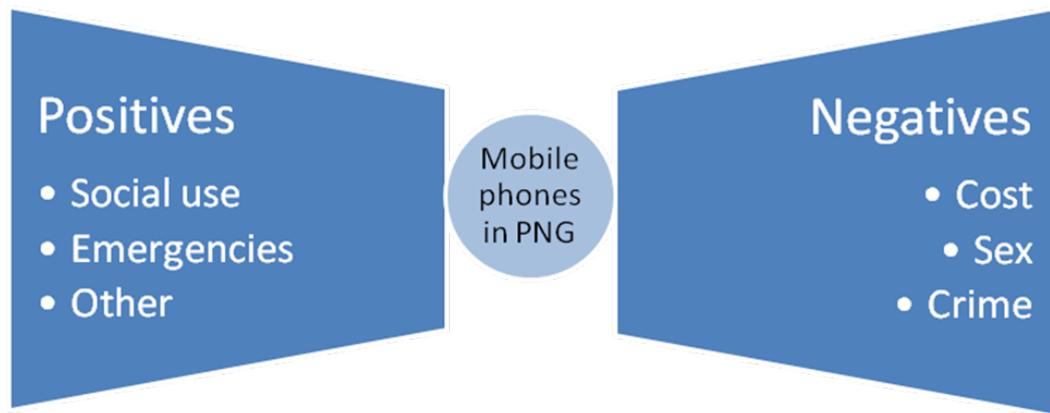


Figure 9.2. Positive and negative perceptions

When new technologies are introduced into communities there can be “unanticipated consequences that are indirect and undesirable” (Rogers 1995, 31), particularly where there might be “tension between ways of life and potentialities to be found in these new technologies” (Miller and Slater 2000, 21). Some literature uses the term ‘moral panic’ to describe occasions in which a change “arouses strong opinions and horror scenarios as to how it will alter everyday practices” (Oksman 2006, 111; also Burgess 2004; du Gay et al. 1997, 116; Goggin 2006, 107-125; Höflich and Hartmann 2006, 11; Miller et al. 1998, 9, 215-221). Typically such panics are described as being temporary (Miller et al. 1998, 215). In this research project, the term ‘moral panic’ is not used as this can have connotations of irrationality (Miller et al. 1998, 221) or artifice, through overstatement of negative effects (see Miller et al. 1998, 9 for other criticisms of moral panic theory), whereas it was felt that the concerns conveyed by the villagers in PNG were genuine and were likely to be enduring. Also, literature regarding ‘moral panic’ has often been based in very different contexts to the PNG setting (Burgess 2004, 26-28; Miller et al. 1998, 221).

The financial burden of mobile phone technology was a weighty concern for villagers. The initial cost of purchasing a handset can be a barrier to entry for poor people (Raps 2009). Therefore, the mobile phone companies made an effort to offer cheap handsets (Nott 2008, 8; Rheeney 2008a, 14; Telephony World nd), sometimes subsidising the cost (Miller 2006, 46; Raps 2009). Cheap, basic handsets have also been offered in other developing nations such as Jamaica (Horst and Miller 2006, 60; Miller 2006, 46), and India and China (Greenfield 2009b). The most popular

handsets for respondents were Nokia brand handsets, which have been designed with deliberately basic functionality so that they can be sold cheaply (Greenfield 2009b). In research conducted in Sudan, it was found that workers tended to buy handsets for family members, such as their village-based parents (Brinkman, de Bruijn and Bilal 2009, 78). A similar trend was evident in PNG, with a good proportion of mobile phone owners in the villages that were studied having been given their handsets (27.8% in Orora, 43.1% in Megiar, and 25.3% in the other villages). In PNG there was a high turnover of handsets, evidenced by stories from respondents about handsets having been lost, broken, stolen or given away. Similarly, frequent loss, theft or breakage of mobile phones was observed in Jamaica (Horst and Miller 2005, 60, 757) and handset theft appeared high in Africa (Allam 2008; Overå 2008, 46). Whereas the worldwide overall average handset life is three years (Kuntze 2009), in a developing country setting like PNG the cost of the handset could probably come up again more frequently than might be expected, thus increasing the financial challenge of handset prices for poor people.

Once the handset had been acquired, villagers found they experienced high ongoing operational costs – some were most surprised to find they spent more on phone credit than they had on the actual handset. Difficulties were particularly felt in poorer communities, such as isolated communities like Orora, or disadvantaged communities like the Manam Island evacuees. Most mobile phone owners in PNG used the pre-paid system, where phone credit was purchased before it was used, rather than entering into a contractual agreement and receiving a monthly bill after the calls had been made. Typically, villagers purchased credit only when it was needed, as they were still able to receive calls and messages if they had no credit. The pre-paid system has been utilised extensively by poor people in other developing countries (Brinkman, de Bruijn and Bilal 2009, 82; Donner 2008b, 145; Greenspan 2004, 120; Horst and Miller 2006, 77-78, 118; Kibora 2009; Mariscal and Bonina 2008, 66; Maroon 2006, 200; Miller 2006, 46; Srivastava 2008, 15).

Research with poor people in Asia found that “affordability remains the biggest obstacle to phone ownership” (LIRNEasia 2007, np), and similar problems have been felt in Sudan (Brinkman, de Bruijn and Bilal 2009, 75), in Ghana (Overå 2008, 46), in Indonesia (Chib 2009, 9), in Mexico (Mariscal and Bonina 2008, 72) and amongst the poor throughout developing nations in general (Day and Greenwood 2009, 335;

Donner 2008c, 33-34; Srivastava 2008, 24; Thussu 2006, 239). The high costs associated with owning, operating and recharging a mobile phone were likewise found to be major challenges for rural poor in PNG, evidenced by generally low daily usage patterns disclosed in the survey data.

Concerns have been expressed by key informants and village interviewees about the use of mobile phones in facilitating sexual liaisons, including both extra-marital affairs, and young people's relationships (Fong 2009; Lepi 2009; Matbob 2010; Mileng 2009; Pinggah 2009; Raps 2009; Sefa 2009; Uamo 2009; Warangima 2009). Apprehension about mobile telephony negatively impinging upon marital stability was found to be substantial in the village survey, and has also been discussed more widely, such as in the media in PNG (Kolo 2009b, 9, 2009a, 5, 2009c, 1). One parliamentarian claimed that married people were committing adultery through the use of multiple SIM cards (Moresby North-east MP Andrew Mald's comments in parliament reported in: *The National* 2009m, 7), and a local leader in the Highlands suggested that violent incidents had occurred "which involved a lot of married couples resulting from the use of mobile phones" (president of the Nondugl Local Level Government Talu Aipe reported in: *Post-Courier* 2007b, 5). Similar concerns about technology facilitating extra-marital affairs were felt in the late 1800s in the USA with the advent of landline telephones (Marvin 1988, 69), and within the last decade regarding mobile phones in Jamaica (Horst and Miller 2006, 169-170) and in Sudan (Brinkman, de Bruijn and Bilal 2009, 80). Such concerns also echo fears expressed about the role of the Internet-based social networking site Facebook in marriage breakdown in several developed nations (mX 2010, 9, 2009, 8) and explicitly in Trinidad (Miller 2010b).

A related aspect of the association between mobile phones and sexual relationships is that the technology can be utilised to uncover illicit relationships, as well as to conduct them: for example in Jamaica the mobile phone "made these relationships easier to organise but also more open to revelation" (Horst and Miller 2006, 170). Mobile phones allow for more private communication than may have been possible previously (particularly in the communal lifestyle of rural villages in PNG) and thus the mobile phone "provides its users a site to explore their desires, versus traditional face-to-face communication which may act to restrain such expression" (Ellwood-Clayton 2006, 125). However, the text-based communication

of SMS exchange “provides a main means by which infidels are exposed” (Ellwood-Clayton 2006, 140) in the Philippines and elsewhere (Ellwood-Clayton 2006, 140), such as in Malaysia where “for suspicious partners, the mobile phone is seen as a useful tool” (Mustafa, Siarap and Suan 2009, 223). Whereas in some parts of PNG polygamy has been traditionally practised (Whiteman 1984, 134), in the Madang area, the customary form of marriage was that “most men had only one wife” (Morauta 1974, 12) and therefore marital relationships were viewed as being monogamous and infidelity would have been seen as “a breach of trust or relationship agreements” (Ellwood-Clayton 2006, 127). These attitudes remain today, as is evidenced by the concerns raised during both interviews and survey questionnaires regarding the use of mobile phones in adulterous behaviour. In the fieldwork in Orora and Megiar, there was some anecdotal evidence presented to suggest that mobile phones had aided in the detection of extra-marital affairs.

One of the top three concerns raised in survey responses was the use of mobile telephony to coordinate criminal activities. This was also brought up as an issue in interviews (Barker 2010; Lepi 2009; Mileng 2009; Raps 2009; Warangima 2009) and in the parliament in PNG, where one Member of Parliament suggested that “criminals were using their phones to monitor large transactions of money and the movement of police before planning their attacks” (Moresby North-east MP Andrew Mald's comments in parliament reported in: *The National* 2009m, 7; also *Post-Courier* 2009f, 5). As well as *raskols* using this technology to identify targets and plan hold-ups, it has also been suggested there is some usage in inter-tribal rivalry and fighting (Barker 2010; Lepi 2009), particularly in the Highlands (Lepi 2009). In other countries, similar concerns have been felt: it was suggested that in Jamaica the mobile phone has been used as a tool by professional assassins (Horst and Miller 2006, 169); in Sudan, many people viewed mobile phones as “encouraging theft and offering increased opportunities for criminals” (Brinkman, de Bruijn and Bilal 2009, 81); and in other parts of Africa mobile phones have been used to inform robbers about travellers possessing cash or valuable goods (Nyamnjoh 2009, 9).

The storage and sharing of pornographic images in mobile phones has led to a tribal fight in the Highlands of PNG (Alphonse 2010b, 2010a) and has been raised both in court cases (Kelola 2009, 4; Tiden 2008, 6) and in the national parliament (Pendene 2009, 3; *The National* 2009m, 7). Pornography was of particular concern in

Megiar, where mobile phones were banned from the primary school (Uamo 2009; Warangima 2009). This strong response was mirrored at a primary school in the Port Moresby area which has also banned students from using mobile phones in school, due to similar concerns about students sourcing and sharing pornography (Post-Courier 2009g, 21). A Madang-based telecommunication company manager explained in an interview that his school-aged daughter had been exposed to pornographic images on mobile phone screens at her school:

I have a daughter who was telling me that a lot of male students in the school in the senior grades carry pornographic shots on their mobiles. That's the sick side of mobile technology. They can have pornographic shots and pornographic videos on mobile phones and to get back at people they just send that as a video file to somebody's mobile. ... [Then] they open that text up and they see this pornographic picture. That I think is sick and that's one of the bad things of mobile phones. And hopefully there can be a way to stop this but from now it's starting to proliferate in and out of the high schools. (Mileng 2009)

With respect to young people, there were three commonly raised concerns, relating to: relationships and sex; pornography; and schooling. Until the advent of mobile telephony, parents and community members in rural villages in PNG were able to monitor the communicative behaviours and friendships of young people and could advise them regarding the choice of partners (Fong 2009). More recently, adults have expressed confusion and apprehension about young people's uses of mobile phones due to their inability to monitor with whom they are communicating (Binib 2009; Fong 2009). In other places, mobile phones have also been associated with young people's relationships (Mustafa, Siarap and Suan 2009) and concerns about the dissipation of traditional courtship patterns (Bell 2005, 80; Blakely 2010, 9; Brinkman, de Bruijn and Bilal 2009, 80). The use of mobile phones to facilitate relationships was seen as unsuited to the traditional way of finding prospective marriage partners, which was practised in rural communities until mobile phone reception became available (Binib 2009; Fong 2009; Matbob 2010), in which "the ideal procedure for a first marriage was arrangement by the parents of both partners" (Morauta 1974, 12).

Concerns about pornography have been discussed above. The third concern related to youth was about schooling, discipline and in particular a perceived

decrease in studious behaviour and focus on studies. In Australia, young mobile phone addicts have demonstrated problematic behaviours such as texting during classes (Walsh, White and Young 2007, 125). Senior education leaders in PNG have stated that mobile phones have been causing disturbances in classrooms (Post-Courier 2008f, 3). A communication scholar explained his concerns regarding mobile devices being a distraction from studies, arguing that the technology could be disruptive in the classroom setting (Matbob 2010) and suggesting that mobile phones should be switched off in classrooms in primary and secondary schools (Matbob 2010). He mentioned that a primary school in Madang town attended by his youngest children had banned mobile phones, which he took to mean that they did not want children using handsets during class times (Matbob 2010). The Head Teacher at the primary school in Megiar said mobile phones were a distraction for school students, which could negatively impinge upon learning outcomes (Uamo 2009).

There was also a concern regarding the late-night discounts offered by Digicel. School students who used their mobile phones late at night in order to take advantage of these rates were then sleepy in class the next day (Uamo 2009). This aroused fears that such after-hours usage might detract from educational performance:

It's also another issue of them not concentrating on their studies, because sometimes they're texting all night to each other. And I know from my own children and they text, not necessarily to boyfriends or girlfriends but just amongst themselves. They'll be texting each other all night and not sleeping. (Matbob 2010)

The other negative associated with mobile phones by rural villagers was the difficulty of recharging mobile phone handset batteries, particularly in villages like Orora where there was no mains electricity supply. Costs associated with recharging batteries were also of concern (Lakot 2009). As in PNG, it was found in Tanzania that most rural poor mobile phone owners had to pay a fee to recharge their handset battery and they “walk long distances and spend a lot of time” (Mpogole, Usanga and Tedre 2008, 7) on this activity. Recharging handset batteries can be time-consuming, costly and difficult. Although some efforts have been made to explore alternative options such as solar charging (Harakuwe and Korugl 2008, 18; Rheeney 2008b, 28), such challenges are likely to continue into the future as mobile phone battery life spans are not likely to improve for at least five years (Usborne 2010, 19) and the

extension of electricity grids to rural areas would be an expensive undertaking (Day and Greenwood 2009, 331).

#### 9.4 WHY MOBILE PHONE SERVICE SPREAD TO RURAL AREAS

Digicel was the company which extended mobile telephony throughout Jamaica, as it has done in PNG. In both cases, the incumbent had a monopoly until Digicel commenced operations. Thus, an ethnography focusing on mobile phones in Jamaica by Horst and Miller provides a valuable comparison with this research in PNG. As Horst and Miller argued in the Jamaican case, some policy-level decisions were influential in enabling rural people to be able to access mobile phone reception (2006, 19-36). A similar argument has been made in PNG (Barker 2008) (see Figure 9.3). Macro-scale factors, such as government decisions and corporate strategies, which influenced the rural setting in both Jamaica and PNG included: the governments granting licences to new mobile phone companies (Horst and Miller 2006, 33; Barker 2008; Marshall 2008a; Post-Courier 2007g, 3); Digicel's determination to quickly establish a wide network (Horst and Miller 2006, 25; Barker 2008; Mangos 2009); and negative public perceptions of the incumbents (Horst and Miller 2006, 22, 35, 162; Miller 2006, 42; Matbob 2010; Raps 2009). In both countries, mobile telephone availability is "the product of commercial and governmental decisions as opposed to the preferences of users" (Horst and Miller 2006, 30).

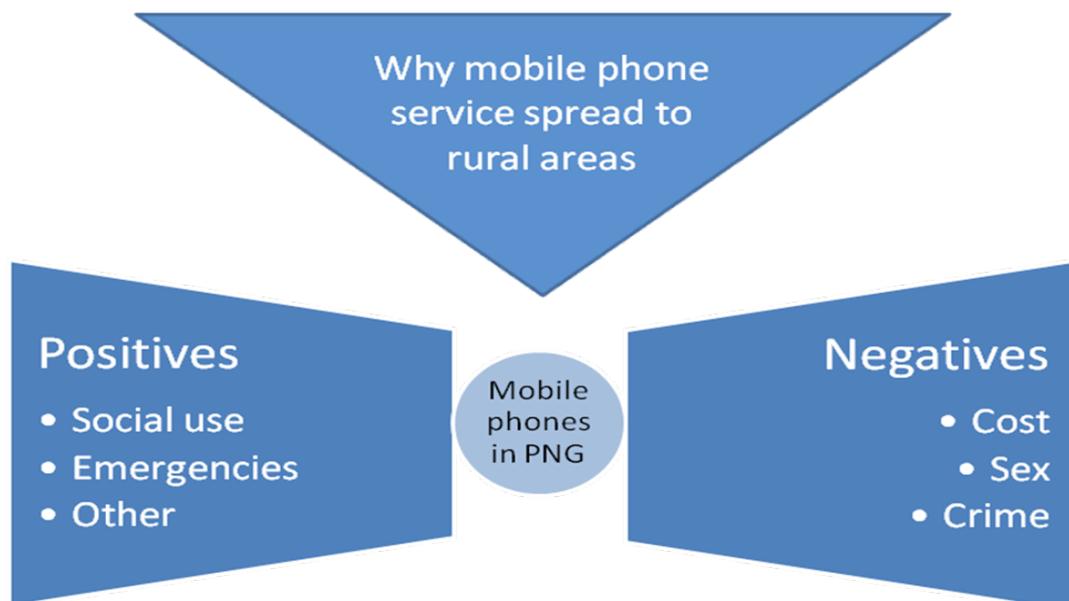


Figure 9.3. Why mobile phone service spread

Throughout the developing world, there has been in recent years an “unabated uptake of mobile technologies among hitherto unconnected sections of society” (Chib, Lwin and Jung 2009, 220; also AFP 2009, 41; Beschorner 2007; Day and Greenwood 2009, 335; Donner 2008b, 143; Greenspan 2004, 6; Souter et al. 2005, 6). This trend was catalysed by widening competition within the sector in many countries, such as: Jamaica (Horst and Miller 2006, 19-36); Cameroon (de Bruijn, Nyamnjoh and Brinkman 2009a, 18); Ghana (Overå 2008, 43); Morocco (Maroon 2006, 190); and Tanzania (Mpogole, Usanga and Tedre 2008). Worldwide, there has been a general trend towards the introduction of competition and the cessation of monopolies (Hamelink 1995, 94), promoted by the World Bank and others (Miller 2006, 42). From a global perspective, telecommunication sector competition came about relatively late in PNG, as it was in the 1990s when many government monopolies in various countries were brought to a close (Goggin 2006, 3-4), whereas competition did not commence in PNG until 2007 (Barker 2008). In fact, “the Pacific has been the last region to open up to competition” (Barker 2008, 2), with most Pacific nations still retaining telecommunications monopolies in 2006 (Nadkarni 2006c, 36).

Prior to 2007, Telikom PNG provided only a limited mobile telephone service (Barker 2010; Matbob 2010), mostly restricted to urban centres (Barker 2010; Mileng 2009; Pinggah 2009). Since the introduction of competition in 2007, Telikom PNG has made efforts to compete with Digicel and has extended its mobile phone capacity and infrastructure (Muri 2009b, 28; also Barker 2008; Raps 2009). The sale of Telikom PNG’s mobile phone arm (Joku 2009, 13; Kaiok 2008i, 5; Raps 2009; The National 2008a, 1) has provided much-needed funds (Mileng 2009; Pinggah 2009; Raps 2009), but according to one analyst bemoans has not been expanding their network as much as may have been anticipated (Barker 2010). Where towers have been erected, these projects have sometimes involved the use of funds from other sources, such as parliamentary representatives (Barker 2010) or provincial governments (for example Banige 2009, 11).

Despite such criticisms, bemoans has announced its intention to extensively expand its network (Poka 2009, 7; Raps 2009). Meanwhile, Telikom PNG has been installing VSAT in some rural communities (Pinggah 2009). The VSAT program has involved the use of other funds in some localities (for example provincial

government funds, Post-Courier 2007d, 45; or funds from the local member of parliament, Post-Courier 2008a, 7). Telikom PNG's stated aim is to ensure that every household will have access to a phone by the year 2020 (Pinggah 2009; Pondros 2009, 31) – either through fixed wireless phones (branded by Telikom PNG as the Xccess phone), mobile phones or VSAT stations.

A detailed discussion of the relevant government regulations and fees, including the new ICT policy drafted and passed by parliament in 2009 (Barker 2010; Lepi 2009; Talu 2009b, 9; The National 2009i, 10; Vuvu 2009, 11), is beyond the scope of this research. The issues which will be discussed here relate more closely to the lives of rural people in PNG, including: interconnection (which enabled Digicel customers to be able to phone bemoible customers as well as landlines in houses, hospitals, offices and so on); rollout to rural areas; and pricing.

Interconnection means that “calls that originate on one network can terminate on another” (Donner 2008b, 145). Effective interconnection is ideal for rural mobile phone access (Samarajiva 2006, 64). Rates charged by the providers against each other for interconnection are known as interconnection rates, and these have inevitable flow-on of extra cost to customers. Interconnection rates were discussed with some dissatisfaction by key informants (Barker 2010; Mangos 2009; Raps 2009) and have been the subject of much media attention in PNG (for example Kaiok 2008g, 3; Kenneth 2009, 7; Lasibori 2009, 6; The National 2009s, 3, 2009r, 14). Although detailed analysis of the interconnection rates is beyond the bounds of this research project, it is worth noting that there have been suggestions at various times since the commencement of interconnection at midnight on June 26 2008 (Kaiok 2008i) that interconnection has failed and customers have been unable to make calls or send text messages between networks (Barker 2010; Tapakau 2009c, 10; The National 2009q, 3, 2009e, 3, 2009o, 14).

The major change which was most relevant to rural villagers in PNG, and therefore to this research project, was the expansion of mobile phone network coverage into rural areas from mid-2007. Prior to this time, the incumbent, Telikom PNG, had not rolled out mobile telephony to rural areas (Barker 2008, 2010; Mileng 2009; Pinggah 2009) due to a perception that rural people were unable to pay for telecommunications (Pinggah 2009). For mobile phone operators, “the low density of rural populations, together with their relative inability to pay for services, often

makes deploying network infrastructure too much of a financial risk” (Day and Greenwood 2009, 335). In PNG, the divide between rural and urban telecommunications access had long been felt, as it was deemed more profitable to install landline telephones for businesses in urban centres than to provide services to people living outside of towns (Jussawalla 1994, 158). However, even in urban areas, there was a slow pace of providing landline connections, or fixing damaged or malfunctioning landlines (Jussawalla 1994, 158, 159; Matbob 2010; Tito 2008). All these factors contributed to a negative perception of Telikom PNG (Matbob 2010; Raps 2009; Sete 2008, 5).

Like in Jamaica, there was swift uptake of Digicel phones once the company commenced operations (Horst and Miller 2006, 1; Miller 2006, 42; Mangos 2009; Matbob 2010). Similarly, “the growth of mobile telephony in Morocco has outpaced even the most optimistic forecasts” (Maroon 2006, 190) since the introduction of a second provider (Maroon 2006, 190). According to commentators, writing only about two months after Digicel commenced services in PNG, Digicel was “beating down upon PNG like a super-speed tropical cyclone” (Tai and Tabureguci 2007, 24), which had caused the nation to be taken with “mobile frenzy” (Tai and Tabureguci 2007, 24). According to Rogers’ innovation theory, rapid adoption like that evidenced in this case, could show that the new technology was perceived as advantageous and desirable (Rogers 1995, 15). In the PNG case, the introduction of competition was seen as a positive development (Barker 2008, 2010; Lepi 2009; Matbob 2010). The benefits included: cheaper call costs (Kaut 2008, 52; Nicholas et al. 2009, 2; Pinggah 2009; Tai and Tabureguci 2007, 27); the expansion of mobile phone communication to rural areas (Barker 2010; Kaut 2008, 52; Nicholas et al. 2009, 2); and cheaper handsets (The National 2009i, 10).

## **9.5 DIFFICULTIES FACED WHEN EXPANDING MOBILE PHONE SERVICE**

Although the construction of mobile phone towers costs a fraction of the price of laying landline telephone cables (Donner 2008c, 33; Levinson 2004, 126; Srivastava 2008, 15, 23), several factors have made this process more difficult and costly in PNG than it has been in other countries (see Figure 9.4). These include: landowner issues; lack of infrastructure; rugged terrain; and security concerns. Negotiations with landowners at prospective or existing tower sites have been the

major obstacle experienced by both bemoobile and Digicel (Barker 2010; Mangos 2009; Pinggah 2009; Raps 2009). Confrontations with landowners can be less severe in coastal areas than they may be in PNG's Highlands (Sefa 2009), where there have been reports of Digicel workers being attacked (Per 2008, 4), and towers being vandalised (Gumuno 2008, 8; The National 2009l, 7). Before mobile phone technology was available, Telikom PNG's landline telephone infrastructure was subject to vandalism (Jussawalla 1994, 163). Landowner disputes regarding mobile phone towers have been reported in the PNG media (for example Post-Courier 2007a, 5), while some leaders have publicly asked constituents not to damage equipment (Toreas 2007, 17).

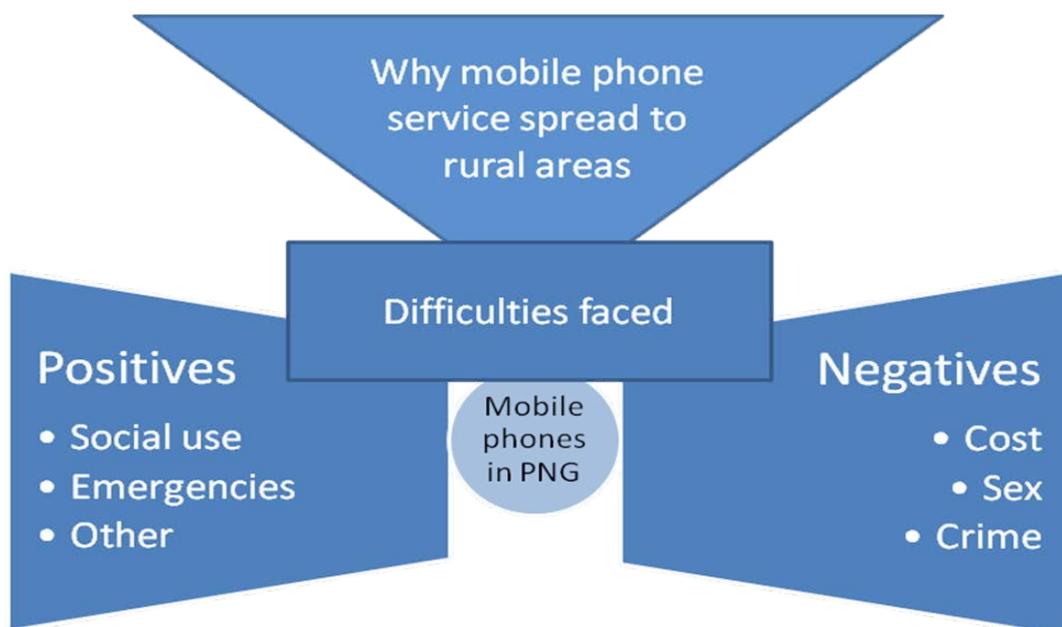


Figure 9.4. Difficulties faced

Where infrastructure has been deficient (including poor roads, limited electricity grids, and lack of bridges over rivers), this has created further challenges (Barker 2010; Mangos 2009). In addition, mobile phone companies have been faced with rugged terrain in PNG (such as steep mountains, remote islands, and the like) (Raps 2009). Both the lack of pre-existing infrastructure and the harsh terrain have combined to make the logistics of installing mobile phone towers in PNG rather difficult (Mangos 2009; Raps 2009). Coupled with these issues, security concerns (which can involve vandalism and theft of fuel from tower sites) have been an added burden (Mangos 2009; Raps 2009), as has been mentioned above. Such problems

have made it very costly to construct mobile phone towers in many parts of PNG: “it’s extremely expensive to build sites here: it’s cheaper to build sites in downtown London than it is to build sites here” (Raps 2009).

## **9.6 CIRCUIT OF CULTURE**

Interactions between the five components of the ‘circuit of culture’ designed by du Gay et al. (shown in Figure 2.1) show “the inescapable articulations among spheres that jointly bring a cultural artefact to life” (Goggin 2006, 14). It is through these interactions that “the meaning that an artefact comes to possess” (du Gay et al. 1997, 3) evolves and emerges in society (Green and Haddon 2009, 3). As the five elements in the model “continually overlap and intertwine in complex and contingent ways” (du Gay et al. 1997, 4), no particular element is more important than the others. For the purposes of this analysis, regulation and representation will be discussed first. This will be followed by some comments regarding the three remaining elements from the model: production, consumption and identity.

### **9.6.1 Regulation**

In PNG, government regulatory decisions regarding licensing and competition were key precursors to the expansion of mobile phone services into rural areas, as has been discussed in Section 9.4. Government regulations stipulating the requirement for coverage in specific geographic areas, including rural localities, combined with Digicel’s desire to establish a comprehensive network which expanded beyond urban centres (Mangos 2009). While government regulations can be valuable (Weigel 2004, 30) and influential (Green and Haddon 2009, 5), the term ‘regulation’ can also refer to societal, institutional or individual responses to any change which is viewed “as a threat to order and to established patterns of conduct” (du Gay et al. 1997, 117; also Churchill and Wakeford 2002, 159; Green and Haddon 2009, 68-70). Concerns are usually about specific technological capabilities (such as image storage capacity) or particular uses of technology (such as in courtship or criminal activities) (Campbell 2006, 151), while regulations typically take three possible forms: social norms outlining acceptable behaviours which are developed over time by the group; laws which are enacted; or new technological developments which are designed to overcome perceived technical flaws (Levinson 2006, 15-16).

Thus, the banning of mobile phones from some schools in PNG is a clear example of regulation, responding to concerns about the perceived proliferation and dissemination of inappropriate images through students' handsets. Along a similar vein, schools in many Asian countries banned mobile phones, ostensibly due to concerns about the technology distracting pupils from their lessons (Bell 2005, 79). Studies in Britain found that where school rules attempted to regulate mobile phone use, pupils often flaunted the rules, even when risking confiscation of their handsets (Green and Haddon 2009, 70). In the early stages of mobile phone network expansion into rural areas of PNG, survey respondents enunciated particular worries about the technology "reflecting an unwanted shift in cultural values" (Campbell 2006, 142), for example with young people using mobile phones to communicate with potential partners, thus avoiding traditional checks on courting processes. It is likely that the development of social codes around acceptable behaviours (Goggin 2006, 39; Höflich 2006, 22; Levinson 2006, 15) will emerge through negotiations within such communities over time. For example, a leader in the Orora area suggested that women should not own mobile phones, due to their role in adultery. While it is unlikely that communities in PNG would agree to this form of regulation, unmarried women in some parts of India have been banned from using mobile phones due to similar concerns there about the breakdown of traditional marriage arrangements (Blakely 2010, 9).

### **9.6.2 Representation**

Churchill and Wakeford (2002) have suggested that an important element of the du Gay et al. model is representation, particularly representation through advertising. Advertising of mobile telephony in PNG has been very prominent since mid-2007, with many billboards and newspaper advertisements displaying the colours of the telecommunication companies. There have been radio and television advertisements, competitions (Post-Courier 2009i, 9, 2009c, 7; The National 2009b, 10), television shows and rock concerts (Pawa 2009, 9). Mobile phone companies have also participated in community development activities (Post-Courier 2007e, 13; Talu 2009a, 4; The National 2009a, 9, 2009k, 8) and emergency responses (Noho 2009a, 13; Post-Courier 2007h, 6) as well as sponsorship of major events such as sporting competitions (Nebas 2007, 63; Pangkatana 2007, 42; Post-Courier 2007c, 13, 2007i, 45) and cultural shows (Muri 2009a, 20). In some cases, the prominence

of the two main brands has been criticised (for example The National 2009n, 10; Lahies 2009b, 6; 2009a, 6, reported a dispute between a government planning board and the two companies over prominent public displays of company colours and logos in Lae). Mobile phone company advertisements and promotions have also been prominent in some other developing countries, such as Sudan (Brinkman, de Bruijn and Bilal 2009, 85), India (Kavoori and Chadha 2006, 228) and Jamaica (Horst and Miller 2006, 161). Since its establishment as a public-private partnership company, bemoobile has created marketing with a nationalistic flavour (Barker 2010; Matbob 2010; Pinggah 2009), which has been criticised by some observers (Barker 2010; Matbob 2010).

While many of these events and marketing campaigns are beyond the life experience of most rural people in PNG, the term ‘representation’ as it is used in the model by du Gay et al. can also refer to representations of a technology “in language, in discourse and in the concepts and ideas in our heads” (du Gay et al. 1997, 40). Thus, the findings regarding the perceptions of rural villagers about the advantages and disadvantages of mobile telephony in their lives and communities (see Section 9.2 and Section 9.3) present ‘representation’ of the mobile phone by these people. Their responses were mixed, explaining both positive and negative consequences of mobile telephony, similar to findings in Asia (Bell 2005, 71-80), and in Sudan (Brinkman, de Bruijn and Bilal 2009, 69). Linked to these findings, the notion of ‘identity’ in the model refers to the “various groups and types of people [who] came to be associated with” (du Gay et al. 1997, 4) the technology, and so in this case that principally refers to relatives, adulterers, young people, and *raskols*.

### **9.6.3 Production, Consumption and Identity**

While the technical production process of designing and manufacturing a mobile phone handset or tower is beyond the scope of the present research project, ‘production’ can be discussed here in the sense of how mobile phone reception reached rural people: how and why towers were constructed, starting with granting of licences, as discussed in Section 9.4 and Section 9.5. Linked closely with production is the concept of ‘consumption’, which refers to how technologies are consumed, or in other words, what people do with them (du Gay et al. 1997, 5). Findings related to this found lower patterns of usage for phone calls, text messaging, and mobile phone banking than may have been expected. As relatives in urban centres in other parts of

PNG were the most common phone call recipients, findings about usage (or ‘consumption’) were also closely tied to understandings of ‘identity’. While in the early days of access in rural areas of PNG mobile phones may not have yet reached a situation where they became socially regulated, normal components of everyday life, it is suggested by some authors that consumption and use of new technologies will become normalised and integrated into everyday behaviours through the final stages of adoption (Mante and Heres 2003, 128).

Also related to identity was the question of the relationship between gender and mobile phone ownership. A survey conducted in Mexico found that more men owned mobile phones than women (Mariscal and Bonina 2008, 67). Similarly, the current research project found that men in villages in PNG were more likely to own mobile phones than women. This may have been an extension of the gendered control of traditional communication practices, as *garamut* use was dominated by males (Naing 2009a; Uamo 2009; see also Leach 2002 regarding the gendered nature of such drums).

An early missionary on Karkar Island understood that only men ate pig meat while women were not allowed to do so (Kunze 1925, 29, 39). In traditional societies in the Madang north coast area, initiated men “knew themselves to be the responsible custodians of their people’s past and the human guarantors of its future” (Pech 1991, 21) and this notion of male responsibility may have extended to contemporary technology ownership. There may also be a sense of status attached to owning a mobile phone, as has been found with male ownership of other modern material possessions in contemporary PNG (Sai 2007, 65). By contrast, in Ghana “there was no clear correlation between gender and [mobile] phone ownership” (Overå 2008, 48). In Holland, men were early adopters of mobile telephony, but ownership among women later reached the same level (Mante and Heres 2003, 141). Again in Mexico, it was found that young people were more likely to own mobile phones than older people (Mariscal and Bonina 2008, 68) and again this was in keeping with the present research findings.

Villagers in this sample made on average only one phone call per day, whereas young college students in the USA typically made four phone calls each day (Bakke 2010, 361). Focusing only on the young people in the village sample, who might have been expected to make more use of their mobile phones (Ling 2006, 146;

Mariscal and Bonina 2008, 71; Matbob 2010), it was found that the average number of phone calls on a given day was still only one – substantially less than the average for young people in the USA. Looking at text messages, the difference was even more striking, with people in PNG sending on average one to two text messages per day (one for the whole sample, or two for the younger cohort), while college students in the USA usually sent 63 text messages in a single day (Bakke 2010, 361)<sup>60</sup>. While this is an extreme comparison, it helps to highlight the low usage rates evident among villagers in PNG. A closer comparison would be to other developing countries; in Ghana mobile phone usage was found to be very low (Overå 2008, 48); in Jamaica most people sent and received less than six text messages in a day (Horst and Miller 2006, 70); while in numerous developing countries poor people have employed strategies to keep their mobile phone-related costs down (Brinkman, de Bruijn and Bilal 2009, 75; Donner 2008b, 148; LIRNEasia 2007; Overå 2008, 48; Pelckmans 2009, 28-29) (see Section 2.8.3).

## 9.7 COMMUNICATIVE ECOLOGY

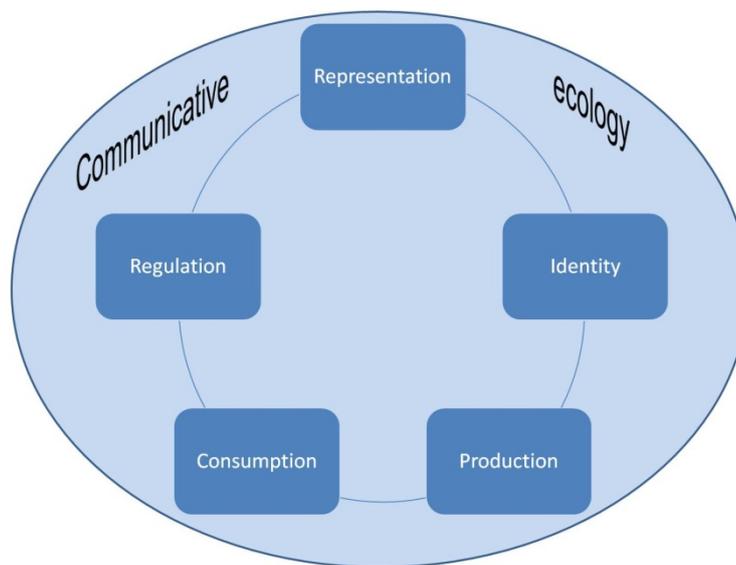


Figure 9.5. Communicative ecology and circuit of culture

Goggin has expressed concern that the du Gay et al. model does not fully convey all the facets of mobile phone culture (Goggin 2006, 14), suggesting that the device also needs to be viewed as a “technology, among the many other technologies

<sup>60</sup> The averages were also calculated for the same age range as Bakke (ages 18 to 45; n = 243 mobile phone owners) and the results were: average of one phone call per day (mean = 1.45; median = 0), and average of one text message per day (mean = 1.50; median = 0).

that surround and constitute us” (Goggin 2006, 10). Therefore, Tacchi et al.’s notion of ‘communicative ecology’ (Tacchi, Slater and Hearn 2003, 15) is utilised to paint a picture of the media and communication landscape in the villages where this study was conducted. As depicted in Figure 9.5, the communicative ecology provides the context within which the five components of the circuit of mobile phone culture are situated.

The survey established that villagers had limited access to media output and extremely limited access to computers. They generally travelled reasonably often to urban centres, but much less often to other provinces or countries. Radio was the most popular medium (the percentages of respondents who had listened to the radio within the last month were: 37.5% in Orora; 60.8% in Megiar, and 75.8% in the other villages surveyed), perhaps as “radio is the most suitable medium of mass communication in PNG because it corresponds better to the oral traditions of the country” (Rooney, Papoutsaki and Pamba 2004, 3). As Mennis pointed out, radio broadcasting in Madang Province could be valuable for communication, but only to the extent that people were tuning in (2006, 254). Few people regularly read newspapers (the percentages of respondents who had read a newspaper within the last month were: 15.3% in Orora; 69.6% in Megiar, and 40.4% elsewhere), and this finding was in keeping with previous research about media in PNG which suggested “newspapers rarely circulate outside of urban areas so the vast majority of Papua New Guineans are excluded from information” (Rooney, Papoutsaki and Pamba 2004, 4). Not only is newspaper distribution limited, due to logistical impediments and high transportation costs, but also “high rates of illiteracy make newspapers inaccessible to many people, not to mention that the cost of a daily newspaper is not affordable for poor people” (Rooney, Papoutsaki and Pamba 2004, 7).

There was very limited usage and little understanding of computer-based communication technologies (the percentages of respondents who had used a computer, Internet or email within the last month were: 0.0%, 0.0% and 0.0% in Orora; 7.8%, 2.0% and 2.9% in Megiar, and 3.0%, 1.2% and 1.0% elsewhere, respectively). Traditional communication techniques were used on an almost daily basis in Orora, but had died out in Megiar (and data was not collected on this in the other villages surveyed). All of the above information about media consumption, access to communication technologies and use of traditional communication

techniques combines to give an image of the communicative ecologies which were present in the villages at the time of the data collection.

## 9.8 ECONOMIC IMPACT

This study did not set out to undertake an economic analysis of the impact of mobile telephony in communities, as has been done in other studies, for example Horst and Miller asked for detailed information about income and expenditure from households in Jamaica (2006, 37-57), while Diga undertook similarly detailed studies of expenditure in Uganda (2008). While social impacts and the perceptions of rural villagers in PNG were the main focus of this study (see Figure 9.6), nonetheless some information was uncovered about economic life, poverty, money and mobile phones. The question of whether mobile phones are a financial burden or an economic boon for poor people remains vexed and divisive. While “it is not easy to quantify the direct or indirect benefits of any telecommunications system” (Jussawalla 1994, 157), there remains little data and an inconsistency of views regarding such technologies and economic outcomes (von Braun and Torero 2006, 2).

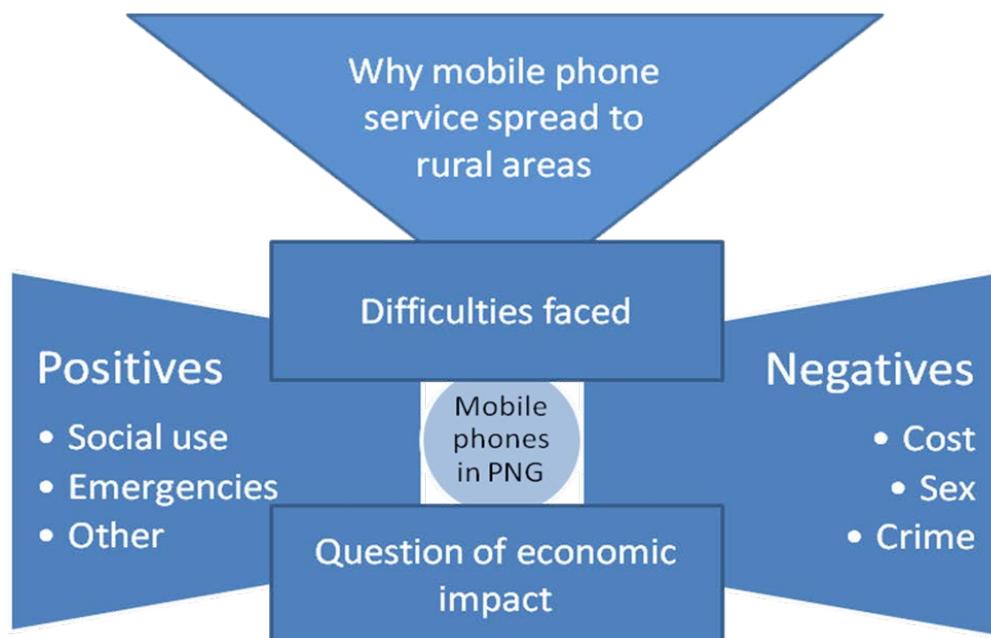


Figure 9.6. Question of economic impact

There is some division between mobile phone literature and ICT4D literature. The former tends to be sceptical (for example Miller 2006, 41; Molony 2009;

Tabinas and Guzman 2010), while the latter is typically more optimistic (such as Beschorner 2007; LIRNEasia 2007) about benefits outweighing costs or burdens. Even so, it is worth noting that the ICT4D literature can also be hesitant about direct economic benefits (for example Day and Greenwood 2009; Souter et al. 2005, 12-14; Weigel 2004, 24-26). There may also be some overlap or crossover between the two research areas.

ICT4D literature presents a dominant view that communication technologies lead to economic improvement (DeMaagd 2010; Unwin 2009b, 1; von Braun and Torero 2006, 4-5; Weigel 2004, 16). Therefore, based on this body of literature, it was hypothesised that an increase in the presence and success of income generation activities would be evident in the field sites in PNG. Although generally villagers were in favour of mobile telephony, the primary benefit they cited was in the use of this technology in social communication (see Section 9.2), and there appeared to be little evidence of mobile phones greatly enhancing household incomes, at least in these early stages.

While early communication and development advocates thought increased penetration of mass media would enhance the wellbeing of recipient communities (Melkote 2002, 421, 424; Mody 2002, 415-416; Paterson 1997; Smith 1980, 27; Thussu 2006, 43; Toyama 2010; Waisbord 2001, 3), it became evident that “mere access to communication technology was not enough” (Mody 2002, 416). It is likely this is also the case when it comes to mobile phones: the mere expansion of telecommunication networks is not likely to lead to radical improvements in living standards. However, an important difference inherent in mobile telephony, which gives rise to some hope for future benefits, is that this technology is not a device for the dissemination of one-way communication messages (like radio or television), but instead facilitates the kind of two-way dialogue which development theorists have been advocating (Mody 2002, 416). This perhaps in part explains why “currently the international-development community is having a love affair with the mobile phone” (Toyama 2010, np), in what is effectively a revised version of the earlier mass media paradigms, demonstrating “an almost blind faith” (Thussu 2006, 46) in newer technologies. Nonetheless, various structural constraints have limited the beneficial impact of the mass media (Melkote 2002, 432) and it is difficult to see how mobile telephony would be sufficient, in isolation, to overcome the many barriers to local

empowerment and progress which are evident, such as lack of: transport options; market access; banking facilities; and health services. A longer-term trend regarding technology and development “in which new technologies generate optimism and exuberance eventually dashed by disappointing realities” (Toyama 2010, np), may mean that the anticipated benefits generally remain hypothetical (von Braun and Torero 2006, 6). In sum, research and surrounding debates need to look “beyond immediate physical access to technologies” (Tacchi and Watkins 2007, 3) and examine the wider social and economic contexts.

While mobile phone scholars are becoming increasingly unified about the importance of non-economic benefits of mobile phones (see Section 9.2 on social uses), debate continues as to the place of mobile phones in economic life and their economic impact in developing nations, particularly in the lives of poor and disadvantaged people (Donner 2008c, 29). Some researchers have suggested that mobile phones are an economic boon for the poor (for example Beschorner 2007, 2-3): Brinkman et al. found many business people in Sudan used the mobile phone in their businesses, for example in arranging appointments and deliveries (2009, 74), and reaching new markets (2009, 87); Jensen (2007) showed fishermen in India were using the devices to find a suitable buyer or the best price for their fish; Belt (2008, 95) suggested farmers in India were using mobile phones to conduct trade; and Tabinas and Guzman (2010) found vendors in the Philippines were using mobile phones to help with transactions and communication. However, in the latter case, the researchers found no definite indication of an improvement in income (Tabinas and Guzman 2010). This may have been due to the difficulty of measuring the net effects on income, as there is evidence that mingling of business and personal uses of the mobile phone is common in various countries (Donner 2008b, 146; Heeks 2008; Horst and Miller 2006, 85, 96; Miller 2006, 42). Indeed, social and economic factors can be closely linked, for although social interaction does not have a direct monetary value, it can lead to increased support in times of financial crises or other emergencies (Heeks 2008; Horst and Miller 2006, 165; Miller 2006, 44).

On the other hand, some mobile phone scholarship “suggests mobiles are doing more economic harm than good, and sometimes making poor people poorer” (Heeks 2008, np), or becoming a financial burden for them (Donner 2008b, 149). For example, Diga (2008) found that poor people in Uganda were sometimes going

without other basics like food or sanitation to source money for mobile phone use. Mpogole et al. (2008, 8) established that nearly half of the people surveyed in rural communities in Tanzania sometimes spent money on mobile phones instead of other important needs like food and clothing.

Rather than being wholly negative, a more nuanced argument has been proposed which suggests that mobile phones may be beneficial for the more well-connected and well-educated rural poor, while the poorest, most marginalised and most disadvantaged will not reap any such benefits (Souter et al. 2005, 12-14). This argument therefore suggests that mobile phones will further increase the divide between the poor and the very poor (Souter et al. 2005, 18). At the very least, it seems apparent that “for some poor consumers, the financial benefits of mobiles outweigh the costs [while] for some poor consumers they do not” (Heeks 2008, np). Unwin has posited that ICTs can enhance macro-economic turnover, but they may lead to greater inequalities and further disadvantage for poor people (2009a, 26). Thus, the fact that mobile telephony has contributed to growth in output for PNG (Australian Government 2008, 43) does not necessarily mean that wealth generation is guaranteed for poorer users of the technology.

In the present research, there was only minimal reference to business use in survey responses and interviews in Orora. In Megiar, economic benefits were raised by a few stakeholders: four people (3.9%) described business uses of the mobile phone as beneficial, and eleven people (10.8%) suggested conveying messages using mobile phones was cheaper than other means, such as travelling to town to use a public phone or post a letter. In the other villages, 27 people out of 574 surveyed (4.7%) mentioned business calls as an advantage of mobile telephony, while 17 people (3.0%) felt they could save on travel costs by using mobile phones. In Orora, the potential benefit of mobile telephony in terms of income generation activities was limited due to other factors such as restricted access to both transport and markets. This finding matched the outcomes of computer modelling which showed that if transportation costs were prohibitively high, then communication technologies may be of limited value for poor farmers (DeMaagd 2010). It also aligns with the experience of farmers in Tanzania for whom the mobile phone is of limited benefit as they “have little choice but to accept the price they are given” (Molony 2009, 107). Some instances of mobile phones being used in trade were observed in Megiar, but in

the research overall there were as yet weak indications of use of the mobile phone to directly enhance household income.

One key informant was quite convinced there were economic benefits of mobile phones in PNG (Barker 2010). Although he realised that mobile phone expenditure meant that money was flowing out of rural communities, he also pointed out that much of this capital was flowing in from wage earners in urban areas who were sending phone credit to relatives in village settings (Barker 2010). Credit transfer was also seen as important in other places (Allam 2008; Brinkman, de Bruijn and Bilal 2009, 74; Horst and Miller 2006; Miller 2006, 44). However, this research has found little evidence of substantial direct economic benefits in terms of new business enterprises or income generating activities (at least in the short term). Economic benefits, if any, were not seen as important by village people (and by many of the key informants) when compared to social uses, use in emergencies and other advantages of mobile telephony.

As Daniel Miller has pointed out (2006, 43), the publication *The Economist* has made some rather optimistic assertions about the ability of mobile telephony to improve the livelihoods of poor and disadvantaged people. For example, the periodical has asserted that mobile phones will help to decrease, or even close, the digital divide (*The Economist* 2005a, 94, 2005b, 53, 2005c, 11). It has also argued that access to mobile telephony increases economic activity within poor communities (*The Economist* 2005a, 94, 2005c, 11) and leads to development (*The Economist* 2005c, 11). The language used in these articles tended to be buoyant and hopeful: “all governments have to do is issue licences to operators, establish a clear and transparent regulatory framework and then wait for the phones to work their economic magic” (*The Economist* 2007, np). The economic boon was expected to be felt at both the local level, as well as at the national, macroeconomic level where, it was argued, mobile telephony led to growth in GDP (*The Economist* 2005a, 94, 2005b, 53).

Miller has argued that the assumptions and conclusions published by *The Economist* did not hold true in the case of Jamaica, where low-income people were not using mobile phones to become entrepreneurs or find employment (Miller 2006, 43). It was found that “the expected opportunities for income generation through the phone have largely failed to materialise” (Horst and Miller 2006, 165). A lack of

direct economic benefits has been found in some other mobile phone studies (for example Tabinas and Guzman 2010). The Economist’s claims have also not been supported by the present research project in PNG either, at least not in the early days of adoption in that country. This research is therefore in keeping with the latest mobile phone literature in that respect.

## 9.9 POSSIBLE FUTURES

Having analysed the key findings in relation to the relevant literature, this chapter will finally consider possible future scenarios regarding mobile phones in rural villages in PNG (see Figure 9.7). As Digicel head John Mangos explained (2009), the mobile phone network is the basic infrastructure, upon which other services or products can be built, such as mobile phone banking, health-related SMS services, mobile phone content provision, farmers’ pricing information feeds, news updates and so on. According to Nokia researcher Adam Greenfield (2009b), more functionality will become available at the village level in the near future. Anthropologist Daniel Miller (2010a) concurs, suggesting that most people in the world, even the very marginalised, will have access to a range of communication tools within a few years.

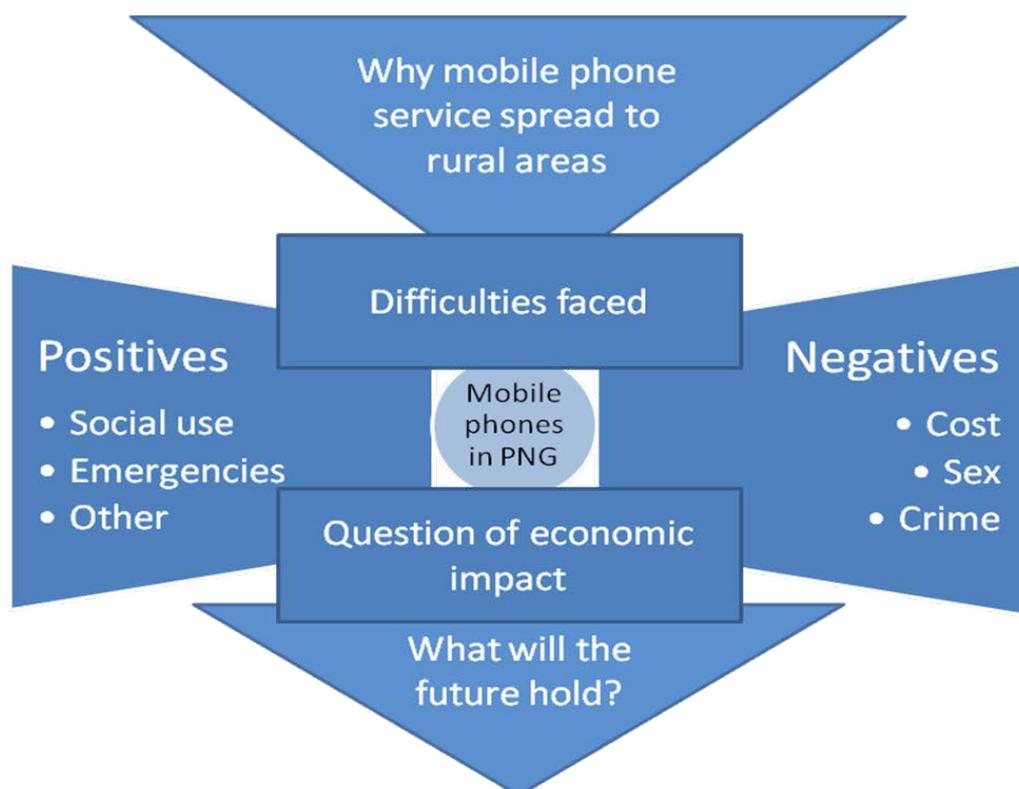


Figure 9.7. What will the future hold?

In PNG, Internet access was already available across the Digicel network in mid-2009 (Mangos 2009) and bemoBILE expected to have Internet capacity by late 2012 (Raps 2009). Digicel launched Blackberries (mobile devices designed for accessing emails and Internet) in PNG in February 2009 (Mangos 2009; Post-Courier 2009b, 25; The National 2009g, 24), initially mainly targeting businesses and people who regularly travel overseas (Mangos 2009). These were reportedly “selling like hot cakes” (Islands Business 2009d, 13) in offices in Port Moresby by July 2009. Although this research conducted in 2009 did not find evidence of their use amongst rural villagers (only two people, or 0.6% of mobile phone owners, had ever used a mobile phone to access the Internet), it is possible that Blackberries and other Internet-enabled devices will be utilised in rural areas in the future.

Convergent, Internet-enabled devices, or in some cases even simple mobile phone handsets, have the capacity to offer: farmer information (Wroe 2008, 35); sophisticated mobile money transfers and mobile banking (Wroe 2008, 35); health information and interventions (Almasy 2009; Boland 2007; Chib, Lwin and Jung 2009, 216, 220; Chib 2009, 2, 16; DFID 2008a; Funnell 2009; Levine 2007); language education (Prosser 2010, 31-33); teacher training (Selinger 2009); and other development-oriented programs. However, in the early stages of mobile phone use in rural villages in PNG there was little evidence of such occurrences. Farmer information was offered through Digicel phones in PNG since October 2009 (Barnabas 2009, 40; Post-Courier 2009e, 30), but was not mentioned by any survey respondents, even though most of the survey questionnaires were conducted after that month. Mobile phone banking was offered since April 2009 (Bashir 2009, 31), but had not been used by any of the 357 mobile phone owners surveyed<sup>61</sup>. A superannuation scheme’s mobile phone service had barely been used (only two people, or 0.6% of mobile phone owners, had ever used Nasfund TextBal)<sup>62</sup>. Health information and interventions were not mentioned by any respondents, and use of mobile phones in education or other development-oriented programs was not referred to. As it is not likely that rural areas will gain access to landline telephones in the immediate future (Islands Business 2009b, 41), if at all, it is possible that some of these mobile phone-based services will be taken up in rural villages like those

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<sup>61</sup> Given that the percentage of people in PNG who have bank accounts is very low, it is unlikely that many of the rural people surveyed had bank accounts.

<sup>62</sup> As most people in rural areas lead mainly subsistence lifestyles, sometimes supplemented with occasional work or sales of crops, usually for cash, it is unlikely that many of the respondents had superannuation funds.

studied in Madang Province. Uptake may take some time (Rogers 1995, 7), dependent on whether any innovators adopt these technologies (Rogers 1995, 22), and whether the remaining community members see the benefits as being sufficient to spend the resources required to use such services (Rogers 1995, 15). However, it is also possible that such services will be of most use to people in urban centres, or people closer to urban centres with better educational backgrounds and other resources, such as bank accounts, rather than more remote and disadvantaged villagers.

In late 2010, Digicel launched a mobile phone lottery (Bashir 2010c, 1, 2010a, 6, 2010e, 10) which immediately generated concerns about poor people and children having easy access to gambling (Laepa 2010, 3; Post-Courier 2010c, 24, 2010a, 49). The lottery was suspended, pending public consultation (Bashir 2010d, 3, 2010b, 5). The future of this scheme appears undecided (Post-Courier 2010b, 4). Perhaps of more immediate benefit would be the dedication of more resources to the development of innovative methods for recharging handset batteries (see Section 10.6). Some methods have been explored to date (Kaiok 2007a, 9; Post-Courier 2009h, 27; Rheeney 2008b, 28), with apparently limited success in addressing this problem for villagers.

The future of mobile telephony in PNG is uncertain. Utopian scenarios would have rural villagers sourcing health and other development-related information through Internet-enabled, solar-charged handsets. Dystopian scenarios could envisage one of the two mobile phone companies pulling out, collapsing or having its licence revoked, which would leave a monopoly in play, and many areas without reception. It is more likely that mobile telephony will be a good thing for PNG rather than a negative force or a failure, but there may be some problems in the future. Radio broadcasting has failed in many parts of the country (Boden 1995; for example Sennitt 2004; The National 2005), but still is a reasonably popular medium and helps rural people. Mobile telephony is unlikely to radically alter the lives of rural people, at least for some long time, but instead it is liable to continue to provide them with contact with loved ones in other provinces and to cause some beneficial outcomes as well as some unsettling of social norms.

## **9.10 CONCLUDING REMARKS FOR DISCUSSION CHAPTER**

The focus of this chapter has been the confluence of the key findings of this research project and the relevant literature, in particular mobile phone scholarship and ICT4D research. While the findings have emphasised the attitudes of rural villagers, they have also unveiled behaviours and social norms, as well as perceived social changes taking place. The fieldwork was undertaken in Madang Province, but when combined with similar insights from key informants and the two daily newspapers published in Port Moresby, the evidence presents a picture of the joys and concerns being felt across PNG. The key results in the social domain have shown connections with published literature on the spread and uptake of mobile phones in developing nations. The literature is divided as to the economic impact of mobile telephony in poor communities, although ICT4D work tends to be more enthusiastic about potential benefits than mobile phone literature. This research project has found social benefits, social anxieties and as yet limited economic benefits arising from the introduction of mobile telephony into rural communities in PNG. The next chapter will reach conclusions, highlight the implications of this research into mobile phones in rural areas of PNG, and provide some suggestions with respect to further research avenues that could be pursued.



# Chapter 10: Conclusion

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## 10.1 PURPOSE

In some parts of PNG, the local death rate from snake bites “is amongst the highest in the world” (Lalloo et al. 1995, 178). Swinging long knives to clear land for planting food crops, bending down to weed around existing crops, or even just walking through dense tropical greenery, people can inadvertently disturb snakes. Immobilised by the painful bite of a poisonous reptile, a victim has to be carried to the nearest road or medical facility, or may simply have to wait for help to arrive. With the relatively recent advent of mobile phone reception in rural areas of PNG, the communication tools can be used to greatly reduce the time taken to obtain medical attention during time-critical emergencies such as snakebite. As this thesis has shown, it is possible for communication devices to save many people’s lives.

This chapter will conclude the thesis by addressing the following: the main findings, and how these relate to the research questions established at the outset; why the findings could provide useful insights for the whole of PNG; the significance of the findings; the implications, with respect to policy, practice and theory; the limitations of the project; suggestions for further research; and the original contribution which this research makes to knowledge.

## 10.2 MAIN FINDINGS

This thesis demonstrates that the introduction of mobile phone reception into rural areas of PNG is generally viewed in a positive light by those living in such regions. However, this launch is perceived to bring with it social changes which cause concern. These negative concerns are expressed not only by villagers with limited formal education, but also by senior telecommunication company executives and other knowledgeable key informants. Historically, the introduction of other new communication technologies (such as the landline telephone) into various societies has caused the same kind of negative concerns, for example about people utilising the technology to engage in adultery (see Marvin 1988, 69). Further research would need to be undertaken in the contemporary setting in PNG to determine whether the perceived social changes are in fact occurring. Another important finding is that rural

people think the mobile phone service is too expensive. The managers of both bemoobile and Digicel who were interviewed agreed that the cost per text message or per minute for calls was higher than it could be. It would require detailed economic analysis to determine which factors contribute to the higher prices. These factors could include: landowner issues, terrain and logistics affecting the construction of infrastructure; Digicel's effective monopoly in many rural areas; government charges; and interconnection rates between the two services.

The question which this research was attempting to address was: what are the roles of mobile phones in the 'communicative ecologies' of rural villages in PNG? The findings and discussion have addressed this question, with particular reference to the information sought in the related sub-questions, specifically: attitudes of rural villagers to mobile telephony; ways social relationships are changing or being reinforced; relevant economic issues; factors limiting or facilitating uptake and use; uptake rates; and usage. To be explicit: mobile phones have a valuable role in enabling rural villagers to communicate with relatives and friends in other parts of PNG, particularly given poor access to other communication technologies, such as landline telephones and the Internet; attitudes to mobile telephony are generally positive, although there are serious negative social concerns; some social relationships are changing (such as parental relationships with young people), while others are being reinforced (particularly connections with relatives residing away from the village); costs are seen as prohibitive or inhibitive by rural villagers, while mobile telephony has not led to a clear improvement in household incomes; uptake and use have been limited by lack of electricity infrastructure and by cost factors, although aided by urban and waged relatives who have purchased handsets and mobile phone credit for rural villagers; and uptake rates have generally been good, even while actual usage has often been low.

### **10.3 TRENDS THROUGHOUT PNG**

Although the rural field sites were all in Madang Province, it seems likely that the findings could be generalised throughout PNG, based on the comments made in interviews with key informants such as telecommunication company managers, as well as information found in articles sourced from the daily national newspapers. The data came from ten villages across three districts of Madang Province: Sumkar District, Bogia District and Rai Coast District. Both mainland and island villages

were included in the sample. Certainly the similarities between the data from the ten villages help to show that these claims are not unique to the context of Orora or Megiar but are a broader phenomenon with implications for policy, practice and theory.

#### **10.4 SIGNIFICANCE OF THE RESEARCH**

This research is significant as it addresses a new phenomenon. It is the first independent research project on any large scale which has been conducted on mobile phones in PNG. Importantly, this research project began in the very early days of mobile phone sector competition in PNG. This means that it has been able to take advantage of a singular opportunity to report on early adopter attitudes, adoption rates and usage patterns. Additionally, it documents the first instance of any form of telephony in these communities, as none of the ten villages discussed had landline telephone infrastructure prior to or during the research period. It is unlikely that these villages will be connected to the landline phone system in the near future, and therefore this research refers to the only form of telephony that the villagers under consideration have access to. Thus, while some facets of ‘mobility’ are important, this is a study of the introduction of telephony of any form into these communities. Further, as there is limited access to other modern communication technologies, such as the Internet, this study is in effect documenting the only form of technology which is likely to have much impact in the lives of rural villagers in PNG for the foreseeable future.

The knowledge generated from this research project may be relevant to other Pacific nations or to other developing nations more broadly. Certainly it increases knowledge about the contemporary situation in PNG, especially the current lifestyles of village people. The project highlights the stark contrast between rural and urban areas, with respect to media access, communication infrastructure and other development indicators. While some scholars discuss ubiquitous computing (for example Greenfield 2009a) or appear to assume universal access to the Internet (as with much work in developed economies), the statistics revealed in the data collection in Madang Province show few people are using the Internet, and there are low levels of mobile phone use as well. Theorists write about active leisure (Florida 2005), knowledge capitalism (Leadbeater 2004, 24-30), or the proliferation of technologies in people’s lives (Goggin 2006, 10), all of which are powerful forces in

developed cities (Duffield 2006b, 2-3). However, the situation in a PNG village is very different. There are no microwave ovens, vacuum cleaners, baby monitors, computerised fitness machines, trains, or elevators (see Goggin 2006, 10 regarding the ubiquity of these technologies and others in developed societies). There are few wall clocks, televisions or computers. Instead, the mobile phone might be the only modern technology in a household, or one of a very few. The data gathered in this research project helps to paint a picture of contemporary village life in PNG. Furthermore, this research is significant, especially considering its implications for policy, practice and theory, as will be explained below.

## **10.5 POLICY IMPLICATIONS**

This research has policy implications which may be of interest to telecommunications companies (in particular Digicel, bemobile and Telikom PNG), relevant departments of the PNG government (most particularly the Department of Communication and Information), development organisations (for example the PNG Sustainable Development Program which has a project commencing in 2011 supporting mobile phone infrastructure construction in Western Province of PNG), and regional bodies (such as the Pacific Islands Telecommunications Association).

As with research conducted in Jamaica (Horst and Miller 2006), this study has shown the role that the opening up of competition has had in determining communication access for people in rural areas. Countries without competition in the mobile telecommunication sector would do well to consider opening up to competition, while stipulating requirements for rollout to rural locations. Digicel's success in PNG and elsewhere has shown that companies can do well, even in poorer communities and rural areas of developing nations (see Wroe 2008, on African mobile phone magnate Mo Ibrahim).

Impediments to development in PNG arise from both landowner issues and poor infrastructure in rural areas. These difficulties are well known. Landowner issues are complex and appear likely to continue in the medium to long term. What new strategy the government could implement to address infrastructure development effectively is not clear. Perhaps the government could commit some funds from the new liquefied natural gas project (see Gouy et al. 2010) to invest heavily in infrastructure. Although much is unclear about how to tackle this large, country-wide

challenge, what is certain is that a policy implication of the present research project for the government of PNG is that improved infrastructure will make rural areas more accessible for companies and other organisations wanting to expand services into these regions.

This research has shown the importance of evaluating the social, as well as economic, consequences of telecommunication technologies. It has also shown that mobile telephony can be extended into rural areas comparatively quickly (compared to the Internet and landline services). The fast pace of expansion may have negative social consequences as it limits the time that communities have to adjust to the phenomenon, but it also has benefits as areas which have never had adequate communication infrastructure are now able to communicate.

## **10.6 PRACTICAL IMPLICATIONS**

There are three practical (or ‘real world’) implications of this research. Firstly, mobile telephony weighs on rural people as a cost burden, which means that efforts to reduce the prices for phone calls, text messages and other mobile-enabled services would be materially welcome. Secondly, recharging handsets is difficult in communities where some houses are without mains power supply, and much more challenging in locations where there is no electricity infrastructure at all. While some efforts have been made to offer solutions to this problem (such as wind-up chargers and solar-powered handsets), the reality on the ground is that most people have basic Nokia handsets, and no easy way of charging them. Where power is available in a small store or another house, people often have to pay for the service of recharging their handset batteries, further exacerbating the financial strain already felt in relation to this technology. Possible types of chargers designed to suit the environment may include: a sturdy charger with no moving parts; a wind-up charger which can be wound in both clockwise and anti-clockwise directions; or a solar charger with a padlock on it or a loop through which a padlock could be attached to prevent theft.

Thirdly, mobile phone handsets can break in the standard living conditions in rural villages, for example when they are exposed to dust, sunshine, sea-spray or rain. Manufacturers and retailers may like to consider making available handsets which are more robust, so that they do not break as easily in village conditions. These handsets may be similar in style and function to mobile phones designed for

tradesmen and others working on construction sites or in similarly difficult circumstances. If mobile phone companies could offer cheaper rates, a method for easier, cheaper recharging, and more resilient handsets, this would greatly enhance the use of mobile phones in rural villages. These three practical problems, of cost, battery recharging and breakage, may warrant some attention from government departments and interested groups, as well as telecommunication providers.

## 10.7 THEORETICAL IMPLICATIONS

In a research project conducted in Khartoum, in Sudan, respondents conveyed mixed reactions to mobile phones, including both positive and negative concerns (Brinkman, de Bruijn and Bilal 2009). In an attempt to generalise from these findings or relate the findings to the literature, the authors made the following remark:

These worries do not reflect baffled Africans confronted with externally imposed modernity that they are unable to handle nor do the positive evaluations offer proof of the development potential of new communication technologies in Africa. It might be more fruitful to view the mobile phone in Africa in terms of a process of familiarisation than as a hegemonising or developing force *per se*. (Brinkman, de Bruijn and Bilal 2009, 89, emphasis in original)

While a similar approach could be employed with regard to the mixed reactions gleaned from villagers in PNG, there are nonetheless some additional theoretical implications which are relevant. In brief, the current research project debunks some of the assertions of the ICT4D movement, whereas it supports recent research findings from mobile phone scholars. Furthermore, it fits into the communication field more generally and it has value in discussions of technology and society. Lastly, it increases theoretical understanding of PNG, for example with respect to traditional communication techniques.

On the evidence of this study, it appears worthwhile not to overestimate the economic rewards of access to mobile telephony. This may be apparent as an error in some ICT4D literature. The present research would contradict ideas of mobile phones being the solution to poverty, inequity, the digital divide, access to markets, and so on. Rather than being wholly beneficial, the PNG evidence suggests that mobile telephony creates problems, just as it solves others (Levinson 2006, 15). In fact, rather than the technology influencing or changing society, the devices are tools

that are implemented in various ways by those who hold them in their hands. Mobile phones “can be used for good or bad” (Levinson 2004, 158). For example, some users feel the technology is beneficial as it allows for increased communication within married couples (Matbob 2010), whereas others are concerned that mobile phones are used by married people to establish or strengthen contact with other lovers (Fong 2009; Lepi 2009; Matbob 2010; Mileng 2009; Pinggah 2009; Raps 2009; Sefa 2009; Uamo 2009; Warangima 2009).

By contrast with ICT4D literature, mobile phone scholarship generally tends to match up well with the findings of this study. For example, villagers in PNG rated social uses of the technology as of the highest value, and the importance of this experience was also found in numerous other mobile phone studies (see Section 2.7.3). Of particular relevance to this study is the anthropological research which was conducted in 2004 amongst low-income Jamaicans (Horst and Miller 2006). The latter study was undertaken in the context of a similar backdrop, with: the same company Digicel entering a market where previously there had been a monopoly (Horst and Miller 2006, 19-28); mobile phones being taken up at a rapid pace, after a virtual absence of any kind of phone access (Horst and Miller 2006, 1); and cheap, basic handsets being widely used (Horst and Miller 2006, 60-62). As in the Jamaican case (Horst and Miller 2006, 2, 173), communication itself was found to be an outcome in PNG. Communication has value of itself, not just as a means to other ends like increased access to markets or the achievement of development goals. Importantly, the Jamaican study also generated some other findings which closely match those found in PNG several years later:

The cell phone can be used by criminals and to stop crime. It has a potential for education, but is currently detrimental to education. It can save money, but also becomes an unbearable cost. It can help short-term coping, but possibly at the expense of long-term wealth. And it can make sexual liaisons easier to arrange, but also harder to keep private. (Horst and Miller 2006, 180)

While the similarities between the findings in the two countries are striking, there are some differences as well. The role of traditional communication techniques and the continued use of the *garamut* for communication in some rural areas is a unique feature of the communicative environment in PNG. In Jamaican families,

there are often parents, siblings or cousins who are working overseas and sending remittances back to the home country. While there are some people from PNG living in other countries, support received from relatives in villages in PNG tends to come from urban centres within PNG – this may explain why international phone calls were of more importance in Jamaica, while the village-town communication link was more evident in PNG.

As was discussed in Section 2.2, scholarship around mobile phones is situated within the larger field of communication theory. Thus, the current research project also fits into the broad framework of communication studies. Although it distinguishes itself from ICT4D literature, this research project has links with the development communication strand of communication theory. While this research has not employed the action research cycle or involved a development communication project, it has been informed by debates surrounding development and communication technologies more broadly. It has utilised methods employed by both arms of development communication: the first associated with mass communications theory and modernisation theory, and the second influenced by the political economy approach and dependency theory. In the former case, it has collected and presented quantitative data regarding mobile phone uptake, as well as use of mass media products. In the latter sense, the thesis has viewed rural areas as places with lack of access to resources, rather than as the abode of people demonstrating inadequacies (economic, political, cultural, individual and so on) (Melkote 2010/2003, 116). Whereas early modernisation theory proponents believed people's attitudes and values needed to change (Melkote 2010/2003, 107; Waisbord 2001, 3), this research has foregrounded the opinions of rural villagers.

Technologies (particularly those available to the poor in the developing world and those typically used in development projects) could be said to have developed along the same lines as a shift in thinking (see Melkote 2010/2003, 115-117; Waisbord 2001, 2): in the first iteration of development communication, one-way information flow was central, displayed most notably by radio and television broadcasting; whereas in the second form of development communication, there was a realisation that communication is most effective when it is two-way, and mobile phone calls typify two-way interactions. This thesis contributes to understandings of new technologies, particularly in the developing world context. While most directly

relating to mobile phone literature, the research forms part of the most recent scholarship within the decades-long history of the study of communication.

As a study of technology and society, this research project may provide insights for reflections upon the introduction of new communication technologies into a range of communities and societies, for example the recent negative concerns regarding Facebook and divorce rates in some Western countries (mX 2009, 8, 2010, 9). Scholarship on technology can encounter two main pitfalls: an over-committed technological determinism, and utopian discourse. The current research project has attempted to avoid both of these traps, as outlined below.

This thesis might be criticised for having an “exaggerated focus on technology” (Weigel 2004, 17), but it attempts to avoid being trapped in a technological determinism. As an example, a collection of African mobile phone studies (de Bruijn, Nyamnjoh and Brinkman 2009b) is replete with repeated assertions that the analyses are not deterministic in thrust. Rather than picturing a one-way relationship in which technology affects communities, the book argues for a two-way model in which “Africans and their societies are, in turn, shaping the technologies of communication” (de Bruijn, Nyamnjoh and Brinkman 2009a, 11). As has been discussed in relation to the notion of regulation (du Gay et al. 1997), this does not only lead to the development of new technical innovations or design modifications, but can also involve societies developing codes about acceptable behaviour or enacting laws to limit abuses of technologies (Levinson 2006, 15-16). Thus, “society and technology are interdependent” (de Bruijn, Nyamnjoh and Brinkman 2009a, 11; also Brinkman, de Bruijn and Bilal 2009, 70; Donner 2008b, 143; Nkwi 2009, 51), meaning that “the way in which the phone has been integrated into society cannot be separated from the specific culture, economy and history of a society” (Nkwi 2009, 51; also Pfaff 2009, 139). For the present study of rural communities in PNG, the approach which has been adopted is that “new communication technologies are not seen in deterministic terms: the introduction of the mobile phone does not automatically dictate changes in society” (Brinkman, de Bruijn and Bilal 2009, 70). Although some statements in this thesis may appear to suggest that the introduction of mobile telephony into rural areas of PNG has led directly to certain occurrences, these statements should be understood within the context of the approach outlined here.

Some writing on ICTs has been criticised for containing “a wave of enthusiastic statements on the alleged effects” (Weigel 2004, 16) and benefits of the introduction of these technologies. Utopian writing about mobile phones and their potential positive impact regarding development could be seen as a re-iteration of post-World War Two predictions of mass media solving the world’s woes. Such enthusing was demonstrated most notably in modernisation theory and media effects theory, both cornerstones of mass communications theory at the time. Development communication emerged around the same time as modernisation theory amid “high hopes” (Paterson 1997, np) that mass media (radio and television especially) could save the world’s poor from disadvantage and poverty. In more recent times, optimistic assessments of mobile telephony could be said to be making the same mistakes. Certainly the ICT4D movement’s hopes of improved incomes and other economic benefits are not borne out by this study, or by some other recent studies in the mobile phone scholarship arena. While the current research project does not support the idea that mobile phones have economic benefits, at least in isolation or in the short term, it does show social impacts of mobile telephony – both positive and negative. In particular, the ability to communicate is itself a momentous advantage in places where previously no other communication technologies have been available, with the exception of traditional communication forms such as the *garamut*. Harvey suggests that scholars might recognise great change without enthusing in a utopian manner about developments in communications technologies:

It is easy to make too much of this. The newness of it all impresses, but then the newness of the railroad and the telegraph, the automobile, the radio, and the telephone in their day impressed equally. These earlier examples are instructive since each in their own way did change the way the world works ... and the ways in which social relations between people could become converted on an ever widening scale into social relations between things. And it is clear that the relations between working and living, within the workplace, in cultural forms, are indeed changing rapidly in response to informational technology. (Harvey 2000, 62)

The point about not being overly enthusiastic about new technologies is an important one (see also Curran 2010). However, Harvey’s argument about living already with the impacts of past technologies is far removed from the experiences of people residing in rural parts of PNG, who have ‘leapfrogged’ many of the stages of

technological development (see Section 2.4.4). Unwin has referred to the evolution of communication technologies, many of which have never reached rural PNG areas: “in less than 50 years we have moved from letters and fixed-line telephones as dominant modes of communication, to faxes, then e-mails, mobile phones, instant messaging, and now video conferencing and TelePresence using the internet” (Unwin 2009a, 19). While “communications technology is the well-recognised determiner of change in many areas” (Duffield 2006b, 2), this research project attempts to avoid overly utopian or dystopian perspectives. At the same time, the study foregrounds the communicative ecologies in the village field sites, which have never had access to rail, telegraphs, landline phones, fax, email, and many of the more recent information technologies.

An illustration may help to highlight the rapid pace of technological change in rural villages in PNG. An early missionary on Karkar Island talked about the people using stone axes to fell trees and suggested that clearing land for a garden required great physical strength (Kunze 1925, 22). During the fieldwork in Orora in 2009, the researcher was told by the older matriarch of the host family that she remembered when the first metal axes came to the village. In her lifetime, she has witnessed the village landscape change from literally being in the stone age to being within the coverage area of handheld devices that enable conversations with people at great distances.

This study goes beyond the examination of the communicative ecology in isolation to also consider factors such as development status, socio-economic situation and culture. The thesis reveals that in many contexts the study of communicative ecology could be extended to include these other factors, in much the same way that an ecological study in the natural sciences might also consider related factors such as soil type, climate patterns, air quality and so on.

The final theoretical implication of this research to be discussed here is the valuable knowledge acquired about PNG, its communication processes, communities and communicative ecologies. This new understanding of PNG may guide ideas about what might happen in PNG regarding the uptake of the Internet or future communication technologies. For cultural imperialism scholars (Schiller 2010/1991, 247-259), the spread of Irish-owned Digicel into developing nations in the Caribbean and the Pacific could be seen as yet another example of the global domination of

Western-owned companies. Those scholars might also view the PNG government's moves to open up the market to competition as part of a linked global trend of probusiness deregulation (McChesney 2010/1999, 209). However, in PNG, increased competition is generally viewed favourably, as people have realised its benefits in terms of increased services. While marketing campaigns by bemoobile have tried to invoke a fear of foreign ownership and foster a sense of nationalistic pride in PNG, this has been largely unsuccessful, due at least in part to bemoobile's link to Telikom PNG and the public's disenchantment with the former monopoly. Dependency theorists might argue that the widespread adoption of Digicel's services in PNG, and the purchase of handsets manufactured overseas, has created or exacerbated reliance on external countries, expertise, technology, companies and so on. Such concerns were not raised by rural villagers or key informants during the data collection phase of this research project, which suggests that foreign ownership of mobile phone companies is not a major concern for people in PNG.

The thesis has also provided some insights regarding traditional communication techniques (Balipini 2009; Binib 2009; Lakot 2009; Lepi 2009; Uamo 2009; Wowe 2009). The continued use of the *garamut*, a traditional communication method which has for hundreds of years "enabled limited messages to travel very rapidly over great distances" (Unwin 2009a, 17) is important as it provides some perspective regarding the introduction of the mobile phone. Through using the *garamut*, people in many parts of Madang Province "have never actually needed to move physically to be able to communicate with one another" (Unwin 2009a, 18), which means that "very rapid communication over considerable distances is not a particularly new concept" (Unwin 2009a, 18). Servaes is concerned the introduction of modern communication devices in such settings means that "more than one teenager has lost his pride in the media his parents have culturally and traditionally cherished" (2000b, xi). This question has also been raised in a newspaper article in the PNG press which quotes a man from Bogia District, Madang Province, saying that *garamut* use in his area has decreased since mobile phones became available (The National 2009h, 13). What is of proven value needs to be cherished, yet we might hope also that as time progresses ways of using the 'new *garamut*' may arise that instil justifiable pride on the part of the many who come to employ it in everyday life.

## **10.8 LIMITATIONS OF THE RESEARCH**

A key limitation of this work has been that the research sites were all in Madang Province. This was at the same time a strength in that it enabled close attention to a phenomenon within a manageable geographic area. As has been discussed above, the focus on Madang Province was balanced by interviews with key informants who had knowledge about broader, country-wide issues, and broader issues were also monitored in the national press. As there was some correlation between the village findings, press coverage and comments from key informants, it is possible to conjecture that the observed occurrences were taking place in other provinces as well as in Madang Province.

Research sites were limited to rural areas. Given the differences in terms of communicative ecologies between rural and urban areas, there may be dissimilar attitudes towards and uses of mobile phones in urban centres. The current research project does not claim to provide an explanation of developments regarding mobile telephony in towns and cities, although, once again, the comments made by interviewees can provide some guide. Also, some understanding of the value of communication between urban and rural areas can be gleaned from the present study, given comments made by rural villagers and by urban informants (Lakot 2009; Naing 2009a).

This study was not longitudinal (Bijleveld and van der Kamp 1998). Policy level analysis was not the focus of the present research (for example, the PNG government drafted a new ICT policy in 2009/2010, but detailed exploration of this bill was beyond the scope of the research project). The current research did not undertake detailed legal investigation pertaining to the various court cases and protracted negotiations between the telecommunication providers and the relevant government entities. Nor was an economic analysis of the costs of phone calls and interconnection rates entered into.

## **10.9 RECOMMENDED FURTHER RESEARCH**

To extend understanding about mobile phones in PNG, further research of the following types would be recommended: research in rural villages in other provinces; research in urban centres; a longitudinal study (Bijleveld and van der Kamp 1998), for example to ascertain whether mobile telephony is having an impact on the use of

traditional communication tools such as the *garamut*, or to determine whether perceived social impacts such as increased adultery rates are in fact taking place; more policy level analysis; legal investigation of agreements and disputes between the telecommunication companies and the PNG government; and economic analysis of the costs of phone calls and interconnection rates.

The relationship between gender and mobile phone ownership could also be explored. Much research has been done on the uses of mobile phones by young people in other countries (for example Brinkman, de Bruijn and Bilal 2009; Javier and Guzman 2010; Katz 2008b; Kreutzer 2008; Mustafa, Siarap and Suan 2009; Walsh, White and Young 2007), and thus it could be illuminating to study youth in PNG and their mobile phone use.

Drawing on the experiences of tsunami alerts in Megiar, further research could examine the place of ICTs in emergencies and the value of mobile telephony for rural villagers' access to information, in PNG or throughout the Pacific. A multi-country, longitudinal study over a number of years could generate highly valuable data about the experiences of tsunami alerts in an effort to ascertain the extent to which these experiences might be changing, and might be changed with improved safety as the outcome. With technological developments and the phenomenon of convergence possibly enabling villagers in the future to have ready access to the Internet and other services through their handheld devices, such a study should continue to generate rich and insightful data for years to come.

Other potential research topics regarding mobile phones in PNG which could add to the foundation provided by this study include: exchange, reciprocity and gifting of mobile phone handsets and credit; detailed analysis of family budgets and economic impacts of mobile phones; transport, distance and mobile telephony compressing distance; public/private communication; language, literacy and text messaging; mobile phone advertising; gendered uses of mobile phones; and the role of the *garamut* in contemporary PNG communication behaviours.

#### **10.10 IS THE MOBILE PHONE THE NEW COMMUNICATION DRUM OF PNG?**

The thesis title implies that mobile telephony could be viewed as being synonymous with traditional communication as practised primarily through the

rhythmic beating of a drum known as a *garamut*. This idea came about during field research in Orora when villagers described the *garamut* as “Digicel Bilong Ples”, meaning ‘The Digicel of the Village’ or ‘The Mobile Phone of the Village’. A parallel experience in Africa, with informants referring to traditional communication forms in order to situate newer technologies in their lives, led researchers to use a similar metaphor about ‘talking drums’ in the title of a book regarding mobile phones on that continent (Brinkman 2009; de Bruijn, Nyamnjoh and Brinkman 2009b). In research conducted in the Rai Coast District of Madang Province, PNG, James Leach found that the people there “playfully liken their slit-gongs to a telephone system” (2002, 719)<sup>63</sup>.

The mobile phone and the *garamut* differ in some key respects. Importantly, messages transmitted using *garamut* beats are public whereas the very nature of private communication enabled by mobile phones is at the root of some of the primary negative concerns raised by respondents (such as the coordination of sexual liaisons). On the other hand, both devices have played (or do play) an important role of connecting people within family, extended family and community networks. In modern PNG, it could be said that every person has both a village and a town. The mobile phone has helped to link these two locations. Families which have members residing both in the ancestral village and in the provincial centre can be connected through this medium. In earlier times, the *garamut*’s voice reached far enough to encompass all the necessary members of the extended family, clan or *wantok* group.

Despite differences between mobile phones and communication drums, both are mediums which help to fulfil an enduring human need for communication. The *garamut* met communication needs in an effective manner during earlier times as its voice was heard over great distances and it conveyed key messages quickly. In contemporary PNG, as families find themselves dispersed across the nation, the mobile phone fulfils a felt need to be able to keep in touch and check up on one another. But like the drum, the mobile phone is imperfect. The drum did not afford people a means of private communication and it has been overtaken by modernity in many places. The mobile phone enables communication over greater distances and fits in with the literacy and numeracy taught in schools but it does not operate

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<sup>63</sup> As the research by Leach was conducted prior to the expansion of mobile telephony into the area, the people were referring to a landline telephone system.

without the availability of some form of electric power, nor can it directly broadcast community-wide messages of import. Clearly the mobile phone is not the same as the *garamut*. In its literal sense, the thesis title is misleading. However, as a metaphorical allusion, the title aims to remind the reader that the mobile phone has not entered a void, but instead has joined communities where people have been using their voices (and the voices of their communication drums) for centuries.

### **10.11 ORIGINAL CONTRIBUTION TO KNOWLEDGE**

This thesis makes an original contribution to knowledge. It is the first research of its kind to explore what mobile telephony means for rural villagers in PNG. It is a threshold study focusing on a novel phenomenon (the rapid expansion of telephony into rural areas of PNG), which is perhaps the first major change that has occurred in rural communities in PNG for decades. The novelty and import of the phenomenon could be compared to the first sightings of planes by villagers who thought they were birds, or to the earliest extension of road networks beyond trading port towns. Although some research has been conducted in PNG in fields such as anthropology and media studies, the country is relatively under-researched, especially the rural areas. This research adds to understanding about PNG and helps to create greater awareness about PNG in the international community.

Through documenting people's attitudes to technological change, this study makes a contribution to debates around technology, society and development. Indeed, as electronic communication devices are widespread in many countries around the globe (including many nations categorised as 'developing'), this study has captured one of the very few remaining instances of people experiencing the adoption of modern technologies for the first time. Thus the opinions conveyed have provided a unique insight into early adopter attitudes and experiences.

Mobile telephony, on the evidence of this study, is taking its place among the array of factors introducing the shock of modernity (see Toffler 1970), as well as potential for economic and community development, into PNG life on an ongoing basis. It is a powerful medium which people have a desire to possess (shown by quick uptake and relatively high ownership rates in these communities), regardless of their existing communicative ecology. A potent factor in this mix is the prompt establishment of coverage across wide areas of the country, meaning there is less

time available to adjust to the impacts of this medium of communication, compared with the previously slower introduction of other novel communication technologies like television or print media. There is evidence here that the culture, or “way of life” (Williams 1988, 90), is changing in these villages as mobile telephony is being integrated into day-to-day activities. Even so, the mobile phone is not at this early stage enhancing lives in rural villages to the extent that may have been envisaged. It is not a revolution. It is not changing communities in radical ways. It is not altering social conditions in a cataclysmic or miraculous manner. People are coping with it and will continue to cope with it. Villagers involved in this study generally viewed mobile phones as a positive change, although there were negative social concerns frequently expressed regarding their uptake and use. While mobile phone “users in the developing world experience many of the same joys and frustrations as people elsewhere on the globe” (Donner 2008b, 152), there are certain situations and responses which are unique to the rural PNG context, and these have been outlined in this thesis.



# Epilogue

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My initial surprise upon finding out that mobile phone reception was spreading to rural areas of PNG soon transmuted into excitement. I saw this as an opportunity for people in rural areas to be able to change their lives in positive but unspecific ways. Thinking about it further, I wondered if the man whose bush material guesthouse I had once stayed in on the Sepik River would be able to reach more potential guests through this technology. Along with others, I too thought that the introduction of mobile telephony could radically improve the lives of the rural poor in a range of ways, including possibly economically.

However, once I had conducted research in Orora, I came to understand to what large extent life in isolated, disadvantaged places is difficult due to the lack of many services; having mobile phones will not solve all the health, education, water and transport problems in Orora overnight. Even so, I felt that particularly in emergencies the technology could literally be life-changing (and life-saving). I also came to learn about the bad sides of mobile phones in such communities. I had been aware that the research might reveal various mysterious outcomes, but I did not expect to learn of women smashing their husbands' handsets with axes due to suspicions about unfaithful behaviour.

This research project has been a fascinating, enjoyable process for me. It has helped me to understand how complex lives and communities can be, and how technology can play various roles in societies. The recruitment and management of research assistants was itself made much easier through mobile phone communication (almost a proof of the pudding in the eating). I have enjoyed the chance to stay in touch with my friends and contacts in PNG through mobile phones. But I have also experienced frustration as I have been contacted by people using this new medium, wanting me to call them, buy things for them, give them money or help in other ways, where I have not been in a position to oblige.

As I reflect upon what I have learnt, I think that communication is a wonderfully enjoyable and important part of human life. Being able to communicate through mobile phones is a special gift for rural areas of PNG. I understand more clearly now that new technologies can have wide and unexpected impacts. But unlike

what some writers might have us believe, the mobile phone is not a panacea or 'wonder drug' to cure all ills, and on its own is not enough to mitigate substantially the hardship and challenges of life in such places.

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# Appendices

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## Appendix 1 Research Assistants from other Provinces

Research assistant	Village, District	Province	Number of survey questionnaires
Anton David	Norba, Nondugl	Jiwaka	80
Joshua Klagia	Haniak, Kubalia	East Sepik	80
Quinette Mursau	Walis Island, Wewak	East Sepik	71
Hildegard Kuias	Amaki, Ambunti	East Sepik	80
Bennett Kotong	Malai, Tewai Siassi	Morobe	57
Marthalina Sinaki	Buakap, Huon	Morobe	80
Enoch Arunge	Yiliwombuk, Nuku	Sandaun	80
Christopher Malingi	Pureni, Koroba	Hela	84
Romi Joel	Aseranka, Obura Wanenara	Eastern Highlands	16
Priscah Hezeri	Famo, Kainantu	Eastern Highlands	55
Joseph Joe	Pari, Kundiawa-Gembolg	Simbu	73
Michael Kapu	Eslip, Margarima	Southern Highlands	73
Ronnie Boli	Porolo, Mendi	Southern Highlands	86
Karmel Samuel	Drimdamasuk, North Fly	Western	80
Aimson August	Ivere, Gazele	East New Britain	75
Valentine Kapak	Pelipowai, Pobuma	Manus	60
Ruben Wia	Pompabus, Wapenamanda	Enga	75
Catherine Adiunegiya	Lakulakuya, Bolubolu	Milne Bay	70

**Appendix 2**  
**List of Interviewees**

<b>Name</b>	<b>Position</b>	<b>Type</b>	<b>Place</b>	<b>Date</b>
Albert Wowe	Community leader	Villager	Orora	February 2009
Shong 'Moks' Naing	First owner	Villager	Orora	February 2009
Gering Balipini	Member of different clan	Villager	Orora	February 2009
John Mangos	Digicel	Key informant	Port Moresby	August 2009
Trevor Pinggah	Telikom PNG	Key informant	Port Moresby	August 2009
Colin Mileng	Telikom PNG	Key informant	Madang town	October 2009
Chris Raps	bemobile	Key informant	Madang town	October 2009
Benjamin Naing	Town link with Orora	Town resident from village	Madang town	November 2009
Kathy Uamo	Primary school head teacher	Villager	Megiar	November 2009
Willy Binib	Flex card seller	Villager	Megiar	November 2009
Jacinta Fong	Women's group	Villager	Megiar	November 2009
Fr Arnold Warangima	Parish Priest	Villager	Megiar	November 2009
Murphy Sefa	Maintenance team leader	Key informant	Madang town	November 2009
Pancratius 'Pan' Lakot	Town link with Megiar	Town resident from village	Madang town	December 2009
Richard Lepi	Government department	Key informant	Port Moresby	December 2009
Paul Barker	Research institute	Key informant	Phone interview	January 2010
Patrick Matbob	Communication scholar	Key informant	Phone interview	March 2010

**Appendix 3**  
**Survey Questionnaire Used (in Tok Pisin)**

Man / Meri Ples: .....

Yu stap long dispela ples? Yes / Nogat (Sapos nogat) Yu save stap we? .....

Yu gat mobail fon bilong yu? Yes / Nogat (Sapos nogat, go long section 2)

Em i Digicel, B Mobile o yu gat tupela? Digicel / B Mobile / Tupela

Asde, yu bin ring i go long hamas lain? .....

Asde, hamas taim sampela lain i bin ring i kam long yu? .....

Asde, yu bin salim hamas text message o SMS? .....

Asde, yu bin kisim hamas text message o SMS? .....

(Sapos em i tok i no bin yusim fon bilong em asde) Bilong wanem yu no bin yusim fon bilong yu asde?  
.....  
.....

Yu save ring i go long we? / Yu save ring i go long husait? Bilong wanem?  
.....  
.....  
.....

Yu yusim fon bilong yu long:

Givim lait, olsem tos (torch)	Yes / Nogat
Salim kredit long narapela fon	Yes / Nogat
Kisim kredit	Yes / Nogat
Salim moni	Yes / Nogat
Kisim moni	Yes / Nogat
BSP SMS Banking	Yes / Nogat
NasFund TextBal	Yes / Nogat
PNG Power Easipay	Yes / Nogat
Long sekim taim (yusim olsem klok)	Yes / Nogat
Alarm klok (clock)	Yes / Nogat
Lukluk long Internet	Yes / Nogat
Kisim SMS long sampela organisation save salim long olgeta dei, SMS long nius, SMS long spot, etc)	Yes / Nogat (e.g. SMS Pope i
Reminders	Yes / Nogat
Kalenda (Calendar)	Yes / Nogat
Pilai ol gems (play games)	Yes / Nogat

Calculator	Yes / Nogat
Countdown timer	Yes / Nogat
Stopwatch	Yes / Nogat
Komposim musik	Yes / Nogat
Harim musik	Yes / Nogat
Harim redio	Yes / Nogat
Lukluk long television/TV	Yes / Nogat
'Please Call Me'	Yes / Nogat
'Please Kredit Mi'	Yes / Nogat
Kamera (Camera)	Yes / Nogat

Yu save yusim fon bilong yu long wanem ol narapela samting?

.....  
 .....

Wanem senis i bin kamap long laip bilong yu taim yu gat dispela fon?

.....  
 .....

Yu ting mobail fon i kam insait long PNG em i gutpela o i no gutpela? ☺ / ☹

Bilong wanem?

.....  
 .....

Bilong wanem yu ting sevis bilong mobail fon i bin kam long ples bilong yu?

.....  
 .....

Yu gat wanem kain fon? .....

Yu baim long wanem mun? .....

Yu baim long wanem ples? Na wanem stoa? .....

Bilong wanem yu bin baim dispela fon? .....

.....  
 .....

Yu kisim moni olsem wanem long baim dispela fon?

.....  
 .....

Yu save kisim flex o kredit olsem wanem? Yu kisim moni olsem wanem long baim kredit?

.....  
 .....

Sampela moa lain i save halivim yu long kisim kredit long dispela fon? Yes / Nogat (Sapos Yes) Husait? .....

Yu save sarsim dispela fon olsem wanem? .....  
Em hamas moni? .....

Yu pilim wanem long fon bilong yu?  
.....  
.....  
.....

GO LONG SECTION 3

SECTION 2

Bilong wanem?  
.....  
.....

Yu bin i gat wanpela fon bipo? Yes / Nogat

Yu ting yu bai kisim wanpela fon? Yes / Nogat / Mi no save

Bilong wanem?  
.....  
.....

Yu ting mobail fon i kam insait long PNG em i gutpela o i no gutpela? ☺ / ☹

Bilong wanem?  
.....  
.....  
.....

Bilong wanem yu ting sevis bilong ol mobail fon i bin kam long ples bilong yu?

.....  
.....

Yu save yusim fon tu o nogat? Yes / Nogat (Sapos nogat, go long section 3)

Hamas taim yu save yusim fon? Planti / Sampela taim / I no planti/wanwan taim  
Long wanwan wik? ..... Mun? ..... Krismas? .....

Bilong wanem yu save yusim fon?  
.....  
.....

Yu save yusim wanem kain fon? Long haus? Long opis? Pablik fon? Mobail fon  
bilong narapela man o meri?

(Sapos em i no mobail fon) Yu save go we long yusim fon?  
.....

(Sapos em i mobail fon) Em fon bilong husait? .....  
Ol i askim yu long sampela moni? Yes / Nogat

(Sapos Yes) Hamas? .....

### SECTION 3

1. Narapela man o meri long haus bilong yu i gat mobail fon bilong em? Yes / Nogat

(Sapos Yes) Em i man o meri? Man / meri

Dispela man/meri em i husait long yu? (papa, etc) .....

Hamas mobail fon olgeta i stap long haus bilong yu? .....

2. Haus bilong yu i gat;

a. Pawa Yes / Nogat

(Sapos Yes) Em i wanem kain pawa? PNG Power / generator / narapela kain

.....

(Sapos generator) Em i wok nau? Yes / Nogat Yupela gat piul long em? Yes /

Nogat

b. Lait Yes / Nogat

(Sapos Yes) Em i wanem kain? PNG power / kerosin lamp / narapela kain

.....

(Sapos kerosin lamp) Nau yet, yupela gat kerosin? Yes / Nogat

c. Wara Yes / Nogat

(Sapos Yes) Em i wanem kain? Tank / Paip na tap / Wel wara/ narapela kain wara

.....

d. Toilet Yes / Nogat

(Sapos Yes) Em i wanem kain? Septik / Pit/Hul / narapela kain toilet

.....

e. Redio Yes / Nogat

(Sapos Yes) Nau yet, em i wok o nogat? Yes / Nogat

(Sapos nogat) Bilong wanem? Nogat bateri / bagarap / narapela

.....

f. Landline telephone (olsem fon long haus – i no mobail fon) Yes / Nogat

g. Television/TV Yes / Nogat

h. Computer Yes / Nogat

i. Internet connection Yes / Nogat

3. Tingting i go bek long laip bilong yu. Yu bin wokim dispela pasin long laip bilong yu?;

Putim yau long redio Yes / Nogat

Salim pas Yes / Nogat

Kisim pas Yes / Nogat

Lukluk long TV Yes / Nogat

- Lukluk long wanpela movie Yes / Nogat
- Ridim niuspepa Yes / Nogat
- Ridim magazine Yes / Nogat
- Ridim buk Yes / Nogat
- Yusim computa Yes / Nogat
- Yusim internet Yes / Nogat
- Lukluk long wanpela website Yes / Nogat
- Salim o kisim e-mail Yes / Nogat
- Go long Bogia Yes / Nogat
- Go long Madang Yes / Nogat
- Go long narapela province Yes / Nogat
- (Sapos Yes) wanem ol province? .....
- Go long narapela kantri Yes / Nogat
- (Sapos Yes) wanem ol kantri? .....

4. Tingting long mun i go pinis. Yu bin wokim dispela pasin long mun i go pinis?;

- Putim yau long redio Yes / Nogat
- Salim pas Yes / Nogat
- Kisim pas Yes / Nogat
- Lukluk long TV Yes / Nogat
- Lukluk long wanpela movie Yes / Nogat
- Ridim niuspepa Yes / Nogat
- Ridim magazine Yes / Nogat
- Ridim buk Yes / Nogat
- Yusim computa Yes / Nogat
- Yusim internet Yes / Nogat
- Lukluk long wanpela website Yes / Nogat
- Salim o kisim e-mail Yes / Nogat
- Go long Bogia Yes / Nogat
- Go long Madang Yes / Nogat

(Sapos 'Yes' long sampela samting, kam bek long em nau na askim long sampela moa infomesen, e.g. wanem buk yu bin ridim? Em i Baibel o narapela buk? Wanem magazine yu bin ridim? Yu bin lukluk long dispela movie long wanem hap? Yu bin baim tiket long lukluk long dispela movie? Em i hamas? Etc.)

.....

.....

.....

5. Yu gat sampela pren o wantok husait i save yusim internet na email? Yes / Nogat

6. Sapos em i tok 'yes' long wanpela askim long computer/internet/e-mail; (sapos nogat, go long namba 7)

a. Long tingting bilong yu, internet em wanem samting?

.....  
.....

b. Sapos yu gat internet, yu bai yusim long wanem samting? / Yu yusim internet long wanem samting?

.....  
.....

c. Long tingting bilong yu, e-mail em wanem samting?

.....  
.....

7. Yu bin skul i go inap long wanem gred (grade)? .....

Yu bin go long college o University? .....

8. Hamas krismas bilong yu? .....

PINIS



Countdown timer	Yes / No
Stopwatch	Yes / No
Composing music	Yes / No
Listening to music	Yes / No
Listening to radio	Yes / No
Watching TV shows	Yes / No
'Please Call Me'	Yes / No
'Please Credit Me'	Yes / No
Camera	Yes / No

What else do you use your mobile for?

.....  
 .....

How has your life changed since you have had a phone? .....

.....  
 .....

Do you think that mobiles coming to PNG are good or bad? Good / Bad

Why? .....

.....  
 .....

Why do you think mobile phone reception came to your village?

.....  
 .....

What type of phone have you got? .....

When did you buy it? .....

Where did you buy it? (What town? What store?) .....

Why did you buy it? .....

.....  
 .....

How did you raise the money for your phone? .....

.....  
 .....

How do you buy credit top-ups? How do you raise the money for credit top-ups?

.....  
 .....

Does anyone else give you credit top-ups? Yes / No (If yes) Who? .....

.....  
 .....

How do you recharge your phone? .....

How much does this cost you? .....

How do you feel about your phone? .....  
.....  
.....

GO TO SECTION 3

SECTION 2

Why not?  
.....  
.....  
.....

Did you ever own a mobile phone? Yes / No

Do you think you will get a mobile phone? Yes / No / Not sure

Why? / Why not?  
.....  
.....  
.....

Do you think that mobiles coming to PNG are good or bad? Good / Bad

Why?  
.....  
.....  
.....

Why do you think mobile phone reception came to your village?  
.....  
.....

Do you sometimes make phone calls? Yes / No (If no, skip to section 3)

How often do you make phone calls? Frequently / Occasionally / Rarely  
In one week? ..... In one month? ..... In one year?.....

Why do you make phone calls usually?  
.....  
.....  
.....

What type of phone do you use? House / office / public phone / other person's mobile

(If it's not a mobile phone) Where do you go to make a phone call?  
.....

(If it is a mobile phone) Whose phone do you use? .....

Do they ask you for some money? Yes / No

(If yes) How much do you pay?  
.....

SECTION 3

1. Does anyone else in your household own a mobile phone? Yes / No

(If yes) What relation are they to you?

.....

What gender are they? Male/female

How many mobile phones are there in your house altogether?

.....

2. Does your household have:

a. Power Yes / No

(If yes) What kind of power? Mains electricity / generator / other

.....

(If generator) Is it working now? Yes / No Do you have fuel for it? Yes / No

b. Lighting Yes / No

(If yes) What sort? Mains electricity / kerosene lamps / other

.....

(If kerosene lamps) Do you have kerosene at the moment? Yes / No

c. Water Yes / No

(If yes) What sort? Tank / Pipe / Well / other .....

.....

d. Toilet Yes / Nogat

(If yes) What sort? Septic / Pit / other

.....

e. Radio Yes / No

(If yes) Is it currently working? Yes / No

(If no) Why not? No batteries / broken / other

.....

f. Landline telephone Yes / No

g. TV Yes / No

h. Computer Yes / No

i. Internet connection Yes / No

3. Have you ever done this thing in your life?:

Listened to radio Yes / No

Sent a letter Yes / No

Received a letter Yes / No

- |                                 |          |
|---------------------------------|----------|
| Watched TV                      | Yes / No |
| Watched a movie                 | Yes / No |
| Read a newspaper                | Yes / No |
| Read a magazine                 | Yes / No |
| Read a book                     | Yes / No |
| Used a computer                 | Yes / No |
| Used the internet               | Yes / No |
| Looked at a website             | Yes / No |
| Sent or received an e-mail      | Yes / No |
| Travelled to nearby centre      | Yes / No |
| Travelled to urban centre       | Yes / No |
| Travelled to another province   | Yes / No |
| (If yes) Which provinces? ..... |          |
| Travelled overseas              | Yes / No |
| (If yes) Which countries? ..... |          |

4. Think about the last month. Did you do the following in the last month?:

- |                            |          |
|----------------------------|----------|
| Listened to radio          | Yes / No |
| Sent a letter              | Yes / No |
| Received a letter          | Yes / No |
| Watched TV                 | Yes / No |
| Watched a movie            | Yes / No |
| Read a newspaper           | Yes / No |
| Read a magazine            | Yes / No |
| Read a book                | Yes / No |
| Used a computer            | Yes / No |
| Used the internet          | Yes / No |
| Looked at a website        | Yes / No |
| Sent or received an e-mail | Yes / No |
| Travelled to nearby centre | Yes / No |
| Travelled to urban centre  | Yes / No |

When a person says 'yes' to something, come back to it after completing the list and ask for more information, e.g. what book did they read? Was it the Bible? Etc. What magazine(s) did you read? Did you have to pay to watch the movie? Etc.

.....

.....

.....

5. Do you have any friends or family who use e-mail or the internet? Yes / No

6. To ask only if participant answers 'yes' to any of computer/internet/e-mail questions; (otherwise, skip to question 6)

a. In your thinking, what is the internet?

.....  
.....

b. What might you use the internet for if you had access to it? / What do you use the internet for?

.....  
.....

c. In your thinking, what is e-mail?

.....  
.....

7. Highest education level: .....

8. Age: .....

END OF SURVEY