Introduction

Over the Easter weekend of April 2012, thousands of people gathered in Sir John Guise stadium in Port Moresby to protest at the political crisis gripping the country. Social media played a significant role in organising these protests, and key bloggers addressed the crowd. The weekend's events saw commentators mark it as the beginning of a 'PNG Spring' — a new era in Papua New Guinean politics driven by the upsurge in information and communication technology (ICT) use following the liberalisation of the telecommunications (telecoms) market in 2007.

There is strong research on and evidence of the impact of ICT on economic growth and poverty reduction (Aker and Mbiti 2010; Qiang and Rossotto 2009). This impact is also evident in Papua New Guinea (despite there being little Papua New Guinea-specific research). The liberalisation of the telecoms market in 2007 led to a 0.7 per cent increase in GDP the following year, and innovative projects in microfinance and financial services draw on extensive experience elsewhere in the developing world (Digicel 2007; Muente-Kunigami 2011). These projects exploit ICT's ability to 'leap-frog' infrastructure deficiencies — one of Papua New Guinea's longstanding development obstacles.

There is also abundant, though ultimately inconclusive, evidence on the political impact of ICT use. Various studies point to its benefits in terms of increased transparency — a positive impact on non-civil society and empowerment of marginalised groups (Ling 2004; Goodman 2005; Sinha 2005). However, there is little specific research on the political impact of ICT in Papua New Guinea. This paper begins to address this gap by drawing together and outlining existing research that points to the potential impact of

ICT on Papua New Guinean politics. It asks: can ICT 'leapfrog' obstacles to a strong Papua New Guinea state such as weak political institutions and corruption? Does it intensify longstanding problems and introduce new ones? Or does it simply mean very little? The research is by no means conclusive and is often scarce, but this paper seeks to outline key issues and possibilities in a critical fashion and situate them in the Papua New Guinean context, laying the groundwork for future research.

Section 1 outlines the dramatic increase in Papua New Guinea's mobile coverage and internet access since 2007. Section 2 puts these increases into the context of literature on the political impact of increased ICT access, relating this literature to the particular circumstances of Papua New Guinean politics. This literature focuses on ICT as changing the way information flows among citizens and between citizens and the state, and the impact of these increased information flows on political practice. This section focuses specifically on the following potential effects of increased information flows: 1) increased transparency; 2) changes in collective political identity, including changes in the nature of civil society and changes in protest politics, and; 3) changes in political participation, including changes in gender politics and the role of the diaspora. The paper concludes by proposing two key themes for further research on this topic in Papua New Guinea.

1. Papua New Guinea's Telecoms Boom

Years of neglect of network infrastructure meant that, until relatively recently, Papua New Guinea experienced only minimal coverage by landlines and even less by mobile networks. In mid-2007, total teledensity was just four per cent countrywide

Digicel advertising, Port Moresby, 2010. Photo: Richard Eves

and zero in the majority of rural areas (World Bank 2007). The sector was liberalised in 2007, and Irish company Digicel entered the market soon after (Stanley 2008). Prices dropped quickly, and innovative retail models and advertising campaigns meant that consumer uptake was swift. Mobile networks have expanded exponentially over the past five years to now cover some 75 per cent of the country's population (Mangos 2011). Phone ownership has increased apace, and some estimates suggest that over 30 per cent of the population now has a mobile phone, dwarfing the number of fixed-line connections (Mangos 2011). Mobile phone penetration is growing fast — from just 1 per cent in 2005 to 35 per cent in 2011 (World Bank 2012).

Conversely, internet penetration is still relatively low, at approximately two per cent of the population (IWS 2012). Access is largely limited to young, educated urban elites, although increasing numbers of Papua New Guineans are accessing the internet via mobile phones following the introduction in 2011 of a mobile broadband service (InterMedia 2012, 10). The International Telecommunications Union estimates internet access from mobiles in Papua New Guinea may increase to about 50 per cent of the population by 2017 (World Bank, 2009; Berschorner 2008).[1] This is in line with predictions made for internet access in much of the developing world — that is, access will largely be via mobiles

and will increase exponentially. As in other developing countries, illiteracy in Papua New Guinea is likely to be an impediment to at least some aspects of ICT use. The country's literacy rate is decreasing and now stands at below 50 per cent. However, research elsewhere suggests illiteracy need not pose an ultimate barrier to ICT use (Webster 2011; Gitau et al. 2010; Medhi et al. 2007).

Despite relatively low levels of internet access, Papua New Guineans are using social media in ever-increasing numbers. There are close to 140,000 Facebook members in Papua New Guinea — a country of seven million — a majority of internet users. Most users are aged 18–24, and there are more males than females. Usage has more than doubled over the past six months and looks set to continue (SocialBakers 2012). Most users are aged 18–24, and there are more males than females. Usage has more than doubled over the past six months and looks set to continue (SocialBakers 2012). Statistics on Twitter users are less readily available, but during recent unrest Twitter users were extremely active, and hashtags such as #PNG regularly broke news far faster than any other source in Papua New Guinea. Ultimately, considering Papua New Guinea does not have a fully functioning national landline network, and, arguably, no functioning national radio network or truly national newspapers or TV,[2] the phenomenal

expansion of mobile telephony and internet access has the potential for significant expansion of the public sphere, particularly as it relates to the practice of politics.

2. The Political Impact of ICT in Papua New Guinea

This paper characterises ICT as an increase in information flows. It argues that the importance of increased use of mobile phones and access to the internet comes from the way they change information flows among Papua New Guinean citizens and between those citizens and their government. Given the dearth of research on Papua New Guinea's experience, the following paragraphs draw out useful comparisons from research conducted elsewhere, where appropriate, though noting that ICT use is influenced by conceptions of 'information culture'. This means culturally mediated understandings of information flows and related concepts such as space and time are important when considering the political impact of ICT. Therefore research conducted elsewhere is ultimately limited in its application to Papua New Guinea (Recabarren et al. 2007; Li and Kirkup 2007; Zheng and Heeks 2008).

The following paragraphs organise research on the potential impact these changed information flows on Papua New Guinea politics as follows: a) increased transparency; b) changes in collective political identity, including changes in the nature of civil society and changes in protest movements, and; c) changes in political participation, including potential changes in gender politics and the role of the diaspora.

2a. Increased transparency

International anti-corruption non-government organisation Transparency International (TI) ranks Papua New Guinea as one of the world's 30 most corrupt nations (TI 2011). Indeed, a former head of TI in Papua New Guinea alleged that two-thirds of Papua New Guinea's annual revenue was being stolen by corrupt politicians and bureaucrats (Pacific Magazine 2007). Internet and mobile phone access can affect this process by changing the way information flows occur. ICT allows citizens to access information about political processes that may affect their interaction with the state and their expectations of it. Scholars argue that prioritising information flows can help overcome corruption and improve service delivery by giving citizens incentives to hold their governments accountable (Reinikka and Svennson 2005). These scholars argue that traditional anti-corruption measures focus on capacity-building of legal and financial institutions — the judiciary, police and financial auditors. This top-down approach relies on weak and often corrupt institutions to monitor corrupt behaviour — often with predictably poor results.

In contrast, ICT access can overcome the problems of the traditional approach in two key ways: by making information available more widely, and by allowing citizens and non-state actors to generate information themselves. The following paragraphs outline the promise of these features but also show their application is problematic.

Numerous studies suggest that public access to information via ICTs can be a powerful deterrent to the capture of funds at a local level (Bertot et al. 2010). For example, the Kenyan government's online Budget Tracking Tool enables Kenyans to examine the national development budget in detail, particularly the locally relevant Constituencies Development Fund. A similar website in The Philippines documents bribery, and both Kenya and Indonesia have recently introduced effectively anonymous online corruption reporting systems. Kenya's system, in particular, has recorded substantial increases in the number of reports submitted and now figures as one of the major sources of corruption reports (Osore et al. 2008; KACC 2011) to the country's anti-corruption commission. Most literature on anti-corruption shows a link between the revelation of corruption, the creation of an expectation and citizen incentives to act against corrupt governments (Gerring and Thacker 2004). In these arguments, the introduction of such online anti-corruption measures and the impact of digitised, networked information about corruption serves to highlight government failures, with appropriate electoral responses.

Examples of ICT being used for anti-corruption purposes in Papua New Guinea are largely

nonexistent — there are no co-ordinated citizen monitoring projects of parliament or revenue streams.[3] However, the internet does enable access to public documents about government corruption, whereas hard copies are either inaccessible for most or actively hidden by government. For example, in 2010, Papua New Guinea experienced its first attempts at government censorship of the internet in reaction to anti-corruption efforts by internet users. Bloggers circulated leaked reports of a major corruption enquiry[4] that directly implicated senior political figures, and which the government was unwilling to release. When the report started surfacing on blogs, the government delivered a writ to the country's major internet service provider (ISP), ordering it to block blogs which hosted the report. This clumsy and ultimately unsuccessful attempt shows the government was rattled by the effect of the leaked publication. This sort of exposure of government corruption, which filtered into the country's print media only after it appeared on the internet, is a new phenomenon in Papua New Guinea, due solely to internet access. Recent rumours of a media control bill[5] planned for parliament in response to recent unrest, as well as newspaper advertisements placed by government representatives warning against the spread of 'subversive' comments online, show that the concept of ICT as a disruptive source of information has increasing currency in Papua New Guinea.

However, transparency in itself cannot account for either incapacity or a lack of shared citizen understandings of corruption. On the first of these, political will and prosecutorial capacity matter just as much as transparency when combating corruption (Brinkerhoff 2004). As Tavits (2007) argues, the ability of citizens to detect unsatisfactory outcomes and to hold people accountable for them depends on those mechanisms of identification and accountability being available. That is, the efficacy of governance itself has an effect on the ability of citizens to respond meaningfully to corruption — transparency alone is not enough.

Additionally, in an environment of increased transparency, a government's incapacity to act means that citizens are, arguably, more aware of the extent of corruption and, in turn, more aware

of their government's failure to act, meaning citizen expectations may be raised by ICT-driven initiatives, and then unmet.[6] Some research even suggests that increased transparency, without effective enforcement, may even increase rates of corruption (Persson et al. 2010). Other research finds that the management of expectations is particularly important in fragile states — both low expectations and unreasonably high expectations for government (Braithwaite and Levi 1998; Hoff and Stiglitz 2005). Dinnen et al. highlight this effect in Melanesia when they note that 'excessive expectations by local and external actors, and perceptions of repeated failure to deliver, are a significant source of weakened state legitimacy and effectiveness' (Dinnen et al. 2010, 15). There is little research on the impact of ICT-driven accountability mechanisms on creating such high expectations, and of the effects.

A second important aspect of the impact of ICTs and transparency is the need for shared 'transparency and accountability literacy' between citizens, governments and donors (Avila et al. 2010, 20). That is, if people do not agree on what corruption actually is, how does increased transparency matter? This is particularly pertinent where increased transparency via ICTs is progressed not only via citizens accessing information about corruption, but by citizens generating that information themselves. For example, some of the most innovative models of ICT-based transparency collate reports of corruption or nefarious political practices reported by citizens using their phones. Roskonvzyatka in Russia, praguewatch in Czechoslovakia and Zabatak in Egypt are all generated using similar mapping software that allows citizens to add real-time data to a central database, and cover everything from incidents of police corruption to election monitoring.[7] The results are then mapped and shared on a public website in real time.

However, defining activity and reporting it in a standardised manner are relatively straightforward when instances of corruption are easily defined — by legal definitions, for example, regarding the number of observers in a voting booth. But the system's utility may be diluted when definitions are less clear. Work on the mismatch between state/donor-driven ontologies and local community

ontologies in corruption reporting shows such mismatches can be significant, with important effects on outcomes (Wallack and Srinivasan 2009) — defining corruption is difficult at any level, particularly the personal. Given this, citizens may also disagree with each other and with the state or donors regarding, for example, transparency, public duty, or perceptions of the right to public goods: one person's corrupt official might be another person's generous official. Recent research on citizen-generated corruption reporting initiatives in Liberia, for example, has noted the problems of such ICT-driven corruption reporting initiatives where 'rumours and mob violence are rampant' (George 2011; Cummings 2011), and others note the problem of rumour in Mozambique, Kenya and Guinea (Osborne 2008; allafrica 2012).

There are no citizen-generated ICT based corruption reporting programs in Papua New Guinea as yet — reporting of corruption is rather dominated by blogs. However, Papua New Guinea's striking rate of corruption and increase in ICT uptake suggests it is only a matter of time until this changes. The issue of matching community definitions of corruption — of 'accountability literacy' — in any future citizen-generated corruption reporting initiatives is, arguably, particularly problematic given the specific role of clan-based patronage in Papua New Guinean politics (Martin 2010). Dominant systems of patronage and exchange rely on concepts of trust, truth and loyalty, which may not necessarily align easily across different groups, or with citizens, the state and donors. This is problematic in citizen-generated systems of corruption reporting and generally in 'alternative information flows', which characterise ICT anti-corruption initiatives. Particularly in Papua New Guinea, corruption is not always an absolute: transparency initiatives will struggle to manage this. Innovations regarding verification in other citizen-generated reporting initiatives like Ushahidi point to the possibility of a solution to the problem more generally, but reporting on corruption is, arguably, a special case that merits specific attention (Ford 2011).

The overarching effects of changes in information flows on politics are addressed to some extent by theories of institutional change. The most relevant of these to understanding the political impact of ICT on politics in Papua New Guinea is work by North, Wallis, Webb and Weingast (2007, 2009). Put simply, this work argues that states with 'limited access orders', where the rents from control of resources (political, social and physical) are held by powerful individuals or groups, exhibit a type of political stability because rent seekers have an incentive to avoid violence between themselves as this risks disrupting the provision of rent. Given the level of corruption in Papua New Guinea, and deeply ingrained systems of patronage, Papua New Guinea is by all measures indeed a limited access society. Open access orders, by contrast, rely on competition, open access to organisations and the rule of law to avoid violence. Importantly, North et al. note the role of media as a source of rent (2007, 36–38) and note that the impact of ICT on 'limited access' states is unknown, but likely important. Again, although little work has been conducted that reviews this effect in specific ICT-based examples, research on media development in fragile states in general underscores the potential of changed information flows to induce political volatility (Beckett and Kyrke-Smith 2007; Putzell and Van Der Zwan 2006; Miller 2009).[8]

2b. Changes in collective political identity, including changes in the nature of civil society, changes in protest movements

Research on the political impact of ICT suggests that it has an impact on political identity, particularly the formation of certain types of collective political identity. This section outlines the potential impact of ICT on two such identities in Papua New Guinea: a civil society identity and a 'protest' identity.

On the first of these, Bimber's seminal (2008) work argues that internet use facilitates engagement in politics in new and expansive ways, diluting the impact of elites. This thinking is behind much of the work on internet access as a 'liberation technology' (Diamond 2010). Such scholarship emphasises ICT, specifically the internet, as a technology which facilitates the development of civil society, with

positive effects on democratisation (although there are ongoing debates about the link between online and offline political action (Tufekci and Wilson 2012; Shirky 2011; Diebert and Rohozinski 2010; Goldberg 2011; Stromback and Shehata 2010; Centola and Macy 2007).

Recent events in Papua New Guinea support this thesis, suggesting that ICT use has had a positive impact on the development of an online civil society identity in Papua New Guinea. The successful organisation of protests, the link between online and offline political gatherings and actions such as petitions, and the apparently increasing tempo of online political debate suggests the link between civil society focused online and offline political action seems to have some currency given recent events.

However, the positive effect of ICT on the development of civil society is not a given. Scholars such as Sunstein (2008, 2009) and Baum and Groeling (2008) suggest that the new media environment fragments political identity — that it does not allow for or encourage mechanisms for common attention or deliberation, fostering splinter groups, division and homophily (where users cluster with other like-minded users). Other scholars point to the role of the internet in fomenting rumour, conspiracy and scandal, and factionalisation at the sub-state level (Bartlett and Littler 2011). Studies of the link between scandal politics, networked media and political legitimacy suggest the internet has an intensifying effect on scandal politics, although, again, this effect in non-Western states is understudied (Toepfl 2011; Castells 2007).

This potentially fragmenting effect is not evident in Papua New Guinea. Observations of the Papua New Guinean blogosphere, for example, indicate, for the most part, that it is collegiate, and dominated by a common commitment to civil society. It is important to note, however, that most, if not all, of the research on this aspect of ICT focuses on it as speeding 'deintegration' of the public sphere. In Papua New Guinea, the 'integration' of the public sphere characteristic of Western democracies has, arguably, never existed, or at least does not currently exist. What does ICT mean in this context? How does it fit into a process which aims at the very *genesis* of a public sphere? (Lunat 2008; Etlin et al. 2009).

A second key topic of recent interest in Papua New Guinea is the impact of ICT, particularly the internet and social media, on collective action. The 2012 Easter weekend protest on the disputed prime ministership showed the organising power of social media and the internet, and led to claims that ICT would lead to a new generation of collective political identification in Papua New Guinea, as in the uprisings in the Arab world in early 2011.

However, this is unlikely in the Papua New Guinean context, for two reasons. The first and most important reason is the still-limited number of internet and social media users. Although the rate of increase is striking, overall user numbers are minimal — only about two per cent of the population (IWS 2012). The Easter weekend protest was important in that it linked online activity with significant offline organisation activity in the planning phase: the organisation was not restricted to the online sphere but included significant offline co-ordination between traditional and non-traditional civil society actors.[9]

Given the limited numbers of actual internet users in Papua New Guinea and the apparently significant role of offline co-ordination, it is, perhaps, useful to focus on the impact of mobile phone-based interactions rather than social media in understanding and predicting protest action. The number of mobile connections far outstrips the number of internet users, and even further dwarfs the number of mobile broadband connections (IWS 2012). Basic mobile phone connections arguably facilitate certain types of protest. For example, during Kenya's 2007 post-election violence mobile phones fuelled protests via simple text messages delivered along rival clan groupings, amplified via interaction with radio broadcasts (Goldstein and Rotich 2009; HRW 2008).

Radio has long been an important source of news in Papua New Guinea and, although the radio network is underfunded in many rural areas, it is thriving in urban centres. Indeed, a recent study shows that mobile phones and radio are the most readily accessible media devices

BeMobile advertising, Port Moresby, 2010. Photo: Richard Eves

in Papua New Guinea, and that most young people listen to the radio via their mobile phone (InterMedia 2012 10, 36).

In any case, it is instructive to consider the organisational capacity of various technologies for protests which are *not* well planned and peaceful — as recent protests have been — but are instead chaotic, fluid and largely opportunistic. For example, anti-Asian riots in Papua New Guinea in 2009 were non-clan based, but were definitely not oriented towards civil society. There is important research to be done on the impact of ICT on traditional modes of protest in Papua New Guinea — around land-based grievances, for example.[10]

Secondly, despite the temptation to make comparisons, the explosive impact of social media in protest movements in Egypt and Tunisia was due to political circumstances not evident in Papua New Guinea. Scholars argue that repressive, authoritarian regimes with effective state security services induced a collective action problem in Arab states, which social media helped to overcome by allowing individuals to establish an important collective protest identity (Tufekci and Wilson 2012). This identity reassured individuals of both their likely personal safety and of the potential success of the protest in ways not possible without

the 'many-to-many' communication facilitated by social media. There is very little history of repressive government action against protests in Papua New Guinea: the collective action problem in Papua New Guinea is fundamentally different. Instead, the issue is one of fragmentation (Reilly 2001) underpinned by geographic and cultural constraints.

Finally, understanding the impact of the internet on collective action in Papua New Guinea means expanding our understanding of ICT's role in diffusing ideas about politics, including ideas generated outside Papua New Guinea. Ultimately, in-depth research on the way information diffusion occurs via mobile phones and the internet in Papua New Guinea does not exist — whether on ideas generated within Papua New Guinea or without. More generally, linking this history with the impact of ICT means asking important questions about how technology interacts with pre-existing systems of information flows and understandings of authority and truth. We cannot assume that older research on knowledge transfer between Papua New Guineans — for example in agricultural extension research — is replicated in the ICT context. Recent work in social movement theory examines the role of ICT in such movements and offers useful insights into the way 'global' ideas about governance, rights

and politics spread in an ICT-facilitated global public sphere (Earl and Kimport 2011; Volkmer 2003; Rane and Salem 2012; Caren and Gaby 2011; Givan et al. 2010).[11] Again, however, none of this research addresses the specific features of Papua New Guinean politics.

2c. New political actors

The internet enables important changes to political actors in Papua New Guinea, potentially facilitating changes in gender relations and diaspora participations.

There is neither useful survey data linking ICT to womens' political participation or specific measures such as increased female candidacy, nor is it likely to be possible to separate out the effects. However, it is important to note that in a country where women's rights are as dire as they are in Papua New Guinea (Eves 2012), ICT may play a role in gender relations, with possible effects on women's financial empowerment, including politics by extension.

The positive impact of ICT on gender politics is well studied and forms a significant component of many donor projects on ICT, given its potential to empower women (Ng and Mitter 2005; Garrido and Roman 2006; World Bank 2009a). In time, this process of empowerment can induce change in gender relations, including political participation, especially where deep power imbalances between genders exist, and especially where donor programs focus on using mobile phones to extend women's access to financial services, education, and health information (Al-Saggaf 2004; Melham et al. 2009). At least anecdotally, technology in Papua New Guinea is enabling women's political participation in new ways: over half of the regular users of the key Papua New Guinea online activist portal Act Now! are women (Chandler 2012).

Research on mobile phone use in Papua New Guinea suggests that the technology has a disruptive effect on gender relations in other ways with users raising concerns about marital stability, pornography, and the effect of phones on traditional courtship patterns (Watson 2011, 246–49).

Interestingly, detailed studies in Sub-Saharan Africa suggest that gender usage of mobile phones changes over time as the technology becomes less novel (Porter 2012).

Increasing ICT access may also introduce the diaspora as political actors. Studies of so-called 'digital diasporas' elsewhere (Brinkerhoff 2006, 2004; Tynes 2007; Bernal 2006; Candan and Hunger 2008; Smith and Stares 2008) show increasing recognition of the development and political roles of such diasporas.[12]

Although work exists on Pacific diasporas in general as generators of remittances (PIFS 2011), the Papua New Guinea diaspora is understudied and exact numbers are unknown. The most recent data from Australia and New Zealand shows a combined population of about 25,000 Papua New Guineans (Bedford and Hugo 2012), with populations in both countries increasing steadily over the past decade. It is expensive for most Papua New Guineans to travel, getting visas is difficult and, at present, remitting money to Papua New Guinea internationally via mobiles or the internet is not easy, cheap or, in many cases, possible. However, diasporas in countries such as Australia and New Zealand have access to fast, relatively cheap internet access. And it appears they are using it to engage politically — around 50 per cent of the members of Act Now! live outside the country.[13]

Conclusion and Recommendations

This paper has sketched the potential impact of ICT on the practice of politics in Papua New Guinea. Categorising changes in ICT access as changes in information flows, it proposes that key effects arise in transparency, collective identity and action, and the participation of new political actors. However, outlining these potential effects serves largely to emphasise the dearth of research on ICT in Papua New Guinea. Examples from elsewhere are useful, but unlikely to be conclusive in as diverse a country as Papua New Guinea.

1. As Papua New Guinea's largest donor, Australia should expand its investment in ICT as part of both poverty reduction and governance programs.

2. Donors should invest in large-scale research exploring the use of ICT in Papua New Guinea.

Useful projects include mapping the Papua New Guinea blogosphere, mapping differences in ICT use between different demographics and mapping the online diaspora. Further research should draw on insights from communication theory — especially social impact theory, studies of the diffusion of innovation, collective action theory and social network analysis — to understand how information, influence and authority function in Papua New Guinea via ICT (Bimber et al. 2012; Morris 2003; Tufekci and Wilson 2012; Castellano et al. 2007).

3. Key donors should link scholarship programs for Papua New Guineans to ICT-relevant training in computer science, software engineering and computer engineering at the Australia-Pacific Technical College and Papua New Guinean and Australian universities.

4. Papua New Guinea can benefit from the experiences of other states in broadly similar political situations who have already experienced ICT-generated change. The Papua New Guinean government and key donors should work to build civil society and business links between Papua New Guinea and ground-breaking ICT innovators such as Kenya, via virtual or real-life exchanges and networking support.

5. Drawing on US-based tech volunteering models such as Geekcorps, donors should adapt Australia-based business and youth volunteer programs to include the largely untapped ICT community.

6. Donors should fund group-based networking and skills development for ICT users in the civil society realm. Programs such as the US Department of State's Techcamps build networks between like-minded ICT users, foster a positive ICT culture and encourage skills transfer.

Ultimately, Papua New Guinea offers a useful and important opportunity for further research given the relatively small number of ICT users and the limited number of ISPs, and especially given the likelihood of large increases in the future.

In many ways, the country's experience is a perfect storm of weak political institutions and leap-frogs in infrastructure that have relevance not only for Papua New Guinea itself, but also for its major donors and for other countries experiencing similar changes. Detailed research that takes advantages of the new data-driven questions enabled by ICT in the context of Papua New Guinea's unique cultural and political features would potentially add much to the field of communication research, to donor understanding and to the practice of politics in Papua New Guinea itself.

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Endnotes

1   Given this link between mobile phones and internet access in Papua New Guinea (and indeed the world over), many of the arguments made in this paper apply equally to mobile phone access and internet access, except where specified.

2   See InterMedia 2012 for an overview of Papua New Guinean media consumption habits, including mobile phone, radio and internet use.

3   Note: see the recently introduced program on Bougainville trialling Frontline SMS to distribute election results. This technology is often used in anti-corruption efforts, including those focused on election monitoring (CoL 2012).

4   See, for example, Sullivan 2010.

5   See, for example, Garamut 2012.

6   Similarly, a recent study in Tanzania found that increased voter's access to information on political campaigns, via internet use, led to increased cynicism and political disengagement rather than increased engagement with the political process (Bailard 2012).

7   These examples all use Frontline SMS — a cheap and simple technology used for citizen-generated data collection, and information distribution in many different guises. See <www.frontlinesms.com>. The first Frontline SMS project in Papua New Guinea was initiated in 2010 on Bougainville, and facilitates distribution of health and community information. See CMS 2012.

8   See (Groshek 2011; Allen and Stremalu 2005) on the problematic aspects of links between media liberalisation and dmeocratisation.

9   For example, PNG Social Networking Partners, an online/offline hybrid organisation, joined with various unions and traditional civil society groups such as unions, student representative associations and anti-corruption groups in offline meetings prior to the event.

10 Similarly, surveys in rural Papua New Guinea have suggested that mobile phones are being used to co-ordinate criminal activity — collective activity of a criminal nature. Similar reports emerge from detailed country studies in sub-Saharan Africa (Watson 2011, 247; Hubschle 2011; Longe et al. 2009).

11 The role of 'Occupy' imagery and inspiration in recent protests in Papua New Guinea is one such striking example.

12 For example, the US State Department's International Diaspora Engagement Alliance (IdEA), launched in 2011, harnesses the global connections of diaspora communities to promote sustainable development in their source countries.

13 Effrey Dademo, Founder and Program Manager, Act Now! PNG, personal communication 2011.

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