

Chapter One

ICT4D: The Making of a Neoliberalized Meta-discourse (with Bjoern Surborg)

A little over a decade ago Africa was being written about by some commentators as a “lost” or “hopeless” continent (*The Economist*, 2000). However, recent growth success stories in the continent have made some in the popular media, investment analysts and academics “bullish” about Africa’s economic prospects (e.g., Mahajan, 2009; Radelet, 2010; Robertson *et al.*, 2012; *The Economist*, 2013a). Figures are often cited from the International Monetary Fund (IMF) that Africa has recently hosted seven of the top ten fastest growing economies in the world, that poverty is now falling quickly, and that many of its countries are successfully “emerging” and integrating favorably into the world economy through increased trade and investment relationships (Radelet, 2010; Sala-i-Martin and Pinkovskiy, 2010). For these commentators, Africa is finally becoming primed to “take-off” and develop “modern” economies able to sustain growth, reduce poverty, attract investment, and support new value-adding industries in the coming decades.

Although it is clear that Africa is one of the fastest growing regions in the world, there is little evidence of positive structural transformation in the region, even in the most successful “developmental states” on the continent (Kelsall, 2013). Indeed, there is evidence of structural retrogression as the share of manufacturing in gross domestic product (GDP) falls and that of the primary and informal sectors increases (United Nations

Conference on Trade and Development [UNCTAD], 2012). Moreover, state-level institutions in most countries remain poorly equipped to manage and guide economic development, provide basic social services, and/or maintain or upgrade vital infrastructures (roads, energy) needed to sustain productive industries (Rotberg, 2013). Foreign aid remains a key source of support for such investments and it accounts for a substantial proportion of the GDP of many African countries. In short, the positive news regarding Africa's recent growth renaissance needs to be tempered by a critical and careful reflection about whether and how the benefits of growth can be channeled into the kinds of structural changes needed to empower people and firms on the continent and favorably reposition the region in the world economy.

The challenges associated with deeper, structural changes to Africa's political economies are daunting, but some view the current age of growth as qualitatively distinct from prior eras (e.g., Radelet, 2010). This is due in part to the changing nature of international trade and investment relations, that is, from relatively linear value chains to more spatially dispersed and extensive production networks (Broadman, 2007), and because the contemporary global economy is now characterized by information-driven and guided forms of capitalism. In this context, mainstream analysts (e.g., Friedman, 2005) argue that firms and industries in developing regions have much greater potential to access international markets for higher-value goods and services, provided they can "plug in" to globalized flows of information and capital able to foster and sustain industrial innovation. Doing so will require both institutional changes to support global market integration, and the uptake of technologies (e.g., logistics, transport, telecommunications) that can enable African firms to reach out and productively connect to buyers and consumers in the world economy (World Bank, 2009).

For some, new information and communications technologies (ICTs such as mobile phones, computers, and the internet) are essential tools for Africa's economic transformation, having already played a significant role in the region's recent growth transition (Africa Partnership Forum, 2008). Mills and Herbst (2012) noted that African telephone connection rates were just 10% of the global average in the mid-1990s, but had risen to half of the average by 2011. While there is little doubt that the diffusion of ICTs – especially mobile phones – into and across Africa has been nothing short of remarkable, it remains unclear what their everyday availability and use has meant specifically for socioeconomic development, manifest here as improvements to livelihoods and/or social upgrading, strengthened (endogenous) industrial systems, and the more favorable positioning of African firms and industries structurally vis-à-vis GPNs. While ICTs alone cannot be expected to accomplish all of these outcomes, the literature on Africa's growth "miracle" sometimes presents them as a core

aspect of the region's socioeconomic transformation. For example, Radelet (2010: 20) argues this point with regard to the more than a dozen "emerging" African economies:

These new technologies are raising economic productivity, increasing incomes, helping to deliver basic services, and facilitating transparency and accountability, all of which strengthen the prospects for continued growth and development in these countries.

As evidenced by quotes like this, the development of the global informational(ized) economy (GIE) and society is often thought to be overwhelmingly positive for developing regions (Smith *et al.*, 2011; Rotberg and Aker, 2013). In contrast, this book argues critically that there are inherently problematic aspects to the transformations that are accompanying Africa's information revolution, and that the practices associated with the diffusion of new ICTs are often embedded in, and help to reproduce, existing (often exploitative) social relations.¹ Our analysis of the impacts of new ICTs on South African and Tanzanian industries demonstrates the limitations on ICT for development initiatives (commonly referred to as ICT4D). A central argument is that the meta-discourse and governance strategies that have accompanied ICT4D initiatives tend to focus on imminent forms of development (intentional, often individuated) whilst overlooking or oversimplifying the immanent structural drivers of socioeconomic change: realities that limit the prospects for rapid, radical, and progressive forms of information-driven and enabled development within the region. Before detailing our conceptual and methodological approach, the book's first two chapters examine broadly the nature and construction of the discourse around new ICTs globally, the political economy of the genesis and propagation of the ICT4D movement, and the literature documenting the relationships between development outcomes and the diffusion of new ICTs in Africa.

ICT4D

There are a variety of definitions of what constitutes the information and communication technologies for development (ICT4D) project (Heeks, 2007). According to Kleine (2013), the broad idea is that ICTs are considered to be the means, whereas development is the end. While few would deny that new information and communications technologies can make valuable contributions to development, the sharp or exclusive focus on information technology is interesting. There are no comparable fields of industry or agriculture for development, or infrastructure for development. This may in part be because economic sectors are thought to be development, whereas ICTs

are meant to facilitate development. However, this might then be seen to call into question the means–ends relationship to which Kleine alludes.

Another perspective is that the strong focus on new information and communication technologies arises from the fact that these have long been seen as “heartland” technologies of the new global information economy (Cole, 1986; Freeman and Perez, 1988). There is an extensive literature on the nature and impacts of technological change on socioeconomic development (e.g., Rogers, 1962; Ruttan, 2001; Nye, 2006; Wilson, 2007). A core framing of the technology–development nexus draws upon and advances Schumpeter’s (1939) argument that long-wave cycles of economic growth are driven by changes to the sociotechnical paradigm, which effectively shifts a country’s production-possibilities frontier to higher value-added and more productive economic sectors (Freeman and Soete, 1997). However, Freeman (2001: 121) cautioned that “bubbles, euphoria and panics” are common phenomena during the early diffusion of new technologies, and ICTs are thus no different in this regard. He also argued that although ICTs were meant to make markets function more efficiently by reducing information failures, that information about prices did not necessarily lead to better investment decisions, for example, and that consequently their impacts should not be overstated.

Accompanying the often euphoric and overblown claims regarding the transformative power of new ICTs, there is a technological determinism that posits that the adoption of mobile phones, computers, and the internet will inevitably drive progressive forms of modernization in regions like Africa. As Bimber (1990) argued, techno-deterministic accounts arise from both universal logical sequences of socioeconomic development that accompany the uptake of new technologies (e.g., the steam mill follows the hand mill), and/or somewhat paradoxically, the potential for unintended social, economic, political, and/or environmental outcomes given the partial autonomy of new technologies once they are “released” into society. In the case of the ICT4D discourse, both conditions apply albeit in an essentially positive manner: universal smart phone and Wi-Fi internet access/use must follow from voice communications and texting; unintended consequences such as “Twitter revolutions” and mobile application development industries emerge and will spur democratization and innovation. All told, real, material, and social development impacts will/must result as ICTs contribute to knowledge- and communication-driven gains in productivity, innovation, employment, and the delivery of critical social, financial, and government services. However as Graham (1998: 180) noted:

The very notion of a “technological impact”, so long a central feature of mainstream technological debates in urban and regional studies... is problematic, because of its attendant implications of simple, linear, technological cause and societal effect.

For example, the US\$204.8 million World Bank sponsored *infoDev* (www.infodev.org) program seeks to leverage enhanced ICT capabilities and new, largely mobile, platforms to spur entrepreneurship and innovation in developing regions. Importantly, and as is the case with many initiatives, the underlying premise is “there is no alternative” (TINA) to rapid ICT diffusion and integration, given the scale and scope of the existing socioeconomic challenges, the exigencies of global capitalism, and the perceived need to fast-track electronic (e-) and mobile (m-) based development initiatives as means to create a foundation for economic transformation.

Innovation drives competitiveness, and maximizing competitiveness is indispensable to achieving sustainable job creation. Business leaders and policy-makers are wisely emphasizing the innovation imperative – a focus on continuously strengthening every economy’s capacity to create new products, processes and techniques – and are putting innovation strategies at the center of their economic agenda. The Financial and Private Sector Development Network of the World Bank Group supports this priority as the only way to prosper in the relentlessly competitive global economy. *infoDev* is a key part of our effort to contribute to innovation, competitive economies and job creation. By focusing on access to knowledge, services and finance for technology-enabled start-ups and high-growth small and medium-sized enterprises in developing countries, *infoDev* is helping to shore up the cohort of businesses that creates the most jobs worldwide. (Janamitra Devan, Vice President and Head of Network, Financial and Private Sector Development, The World Bank Group: *infoDev*/World Bank, 2013: 4)

ICTs are viewed as critical for innovation, and the *infoDev* program and other World Bank initiatives broadly reflect a deep-seated belief in the (imminent, guided) growth possibilities that can accompany the diffusion of ICT artefacts and the development of related capabilities.

The ICT4D discourse also carries with it an air of inevitability to the changes that are accompanying both ICT diffusion and the evolution of the global economy, an attitude that reflects the TINA perspective and the notion that developing regions can deterministically leapfrog past the structural features that have held them back from a more progressive engagement with the world economy. Such transformations are manifest both at the global scale, where the promise of ICTs lies in their contribution to the international competitiveness of African enterprises, and more locally with respect to their ability to improve livelihood possibilities and strategies.

Mobile applications not only empower individuals but have important cascade effects stimulating growth, entrepreneurship, and productivity throughout the economy as a whole. Mobile communications promise to do more than just give the developing world a voice. By unlocking the genie in the phone, they empower people to make their own choices and decisions. (World Bank, 2012b)

Viewed from these perspectives, the primary challenge for African societies and economies is to effectively integrate ICTs into livelihood strategies and business practices, such that the dynamics of ICT-driven forms of socio-economic and industrial development can gain momentum as ties to global knowledge flows are enhanced, deepened, and expanded. In other words, *material* transformations will emerge once the information-communication and knowledge management infrastructure and capabilities are put into place.

Many proponents of ICT4D acknowledge the problems associated with the hype and determinism that often accompanies new artefacts, applications, and websites, yet maintain an optimistic and often uncritical perspective on the (progressive) directionality of contributions by ICTs to development processes. Moreover, they argue that because ICTs are so pervasive and transformative, they transcend economic sectors and are thus worthy of an entire field of study and an international movement. The fact that the ICT4D “movement” has achieved such international and high-level traction, and given that it commands billions of dollars of support from the public and private sectors, speaks to a particular political economy that we now explore. This critical evaluation is not intended to deny the (socially) transformative nature of new ICTs (although it is important to specify the limits of this), but to understand their drivers and the structural context in which this takes place.

Electronic and Mobile E-/M-Business

In the most direct sense, ICTs are central contributors to the electronics industry, one that has provided a basis for the “emergence” of value-added, high-tech industries within many post-colonial countries in Asia (e.g., Malaysia, India) and other parts of the Global South. These industries co-exist with more “traditional” economic sectors in an example of what Whittaker *et al.* (2010) called “compressed development”. The electronics industry has transformed the world economy, from cars to computer-aided stitching equipment and cell phones, and enabled the radical “informationalization” and globalization of sectors once confined to national boundaries and spatially concentrated value chains. As such, the products of the electronics industry (e.g., ICTs such as computers, the internet, and mobile phones) have enabled some degree of time–space compression with regard to the trade, investment, and production relations that constitute the contemporary global economy. While the electronics sector itself is worthy of detailed study (e.g., Park and Roome, 2002), our focus is instead on the impacts of new ICTs on other business and commercial activities in regions like Africa, with an emphasis on understanding their contributions to the “D” in ICT4D strategies.

While much of the academic literature focuses on ICT4D, arguably the most extensive use of these technologies has taken place outside of these parameters, in terms of their social and business uses. In recent decades, in particular, there has been a huge growth in e-business and e-commerce globally. This bifurcation of the field is worth exploring, because in a sense ICT4D may serve as a Trojan horse for certain types of e-business. Moreover, electronically enabled business activities may serve as important conduits for development in a broader sense (e.g., employment, livelihoods), rather than most ICT4D initiatives, which strive to link directly the uptake of ICTs and development objectives such as improvements to education, health, and/or government.

There are a variety of definitions of what constitutes e-business. It is often thought to be synonymous with e-commerce by internet-based stores or merchants, or business conducted online in virtual markets. Amit and Zott (2001) defined an e-business as one that derives more than 10% of its revenue online. Rather than trying to determine when the 10% benchmark is reached, this book instead adopts Molla and Licker's (2005: 90) broad definition of e-business as commercial activities that are enabled by ICTs; we would add mobile telephony networks to this definition as well:

Conducting one or more core business functions internally with organizations or externally with suppliers, intermediaries, consumers, government, and other members of the enterprise environment through the application of solutions that run on Internet-based and other computer networks.

E- and m-business activities are referenced frequently in mainstream business culture, manifest particularly as ICT-facilitated business-to-business (B2B), business-to-customer (B2C), and business-to-government (B2G) transactions. Such transactions include wholesale input, supply, and service purchasing activities (B2B), online and phone-enabled retail sales (B2C), and electronic tax payments and bids for government purchasing contracts (B2G).

In terms of definitional clarity, the difference between ICT4D and e-business can be highlighted in two ways. First, rather than focusing on the impacts that ICTs can have on particular transactions (i.e., B2B, B2C, or B2G), the ICT4D discourse focuses on broader transformations to government (e-/m-governance), financial systems (e-/m-banking), and key economic and social sectors (e.g., e-/m-health, e-/m-agriculture). Development in this context is captured in ICT-enabled changes to the everyday practices associated with these institutions and sectors. Second, the contrast between ICT4D and e-business can be linked to the distinction between imminent and immanent development (Cowen and Shenton, 1996; Hickey and Mohan, 2005). Imminent development is intentional development, as when governments promote economic development or

poverty alleviation programs. Immanent development refers to the structured patterns of socioeconomic activity and outcomes that arise from the unfolding of the capitalist mode of production on a world scale.

We characterise e-business as a form of immanent development given both its influence on the emergence of new forms of capitalist relations within the global economy, and its complicity in the reproduction of long-standing inequalities within and between nations. While some have argued that the advent of new ICTs is effectively eliminating the core-periphery distinction globally by “flattening” the world (Friedman, 2005), we argue that it is instead reconfiguring it in ways that reproduce inequality and dependency, albeit in new, informationalized ways. Global capitalism is subject to “laws of motion” or development trends, such as uneven development (de Janvry and Garramón, 1977) and extraversion (Bayart, 2000), which new ICTs are now contributing to, whilst also reshaping into new patterns and processes. For example, Dicken (1998) argued that new ICTs have enabled the creation of an integrated global economy that functions in “real time”. This has, in turn, meant that shocks can be transmitted throughout (much of) the system much more quickly and forcefully than was previously the case (Freeman, 2001), as evidenced by the recent “global” financial crisis. Rather than “ending” geography (O’Brien, 1992), new ICTs are reconfiguring it. However, this does not mean that processes of over-accumulation of capital, creative destruction or economies of scale are no longer operative. Rather, the context in which these take place has been altered.

Whereas e-business represents a form of immanent development, ICT4D, arguably, is a form of imminent development where non-governmental organizations, governments and international agencies attempt to harness ICTs for intentional developmental ends. Common examples of ICT4D projects include government sponsored and supported telecenters in the developing world. In another example, more recently development agencies have experimented with projects that enable aid recipients to receive money via mobile phones (Datta *et al.*, 2008). While ICT4D promoters tout the power of these technologies for transformative forms of socioeconomic and political development, the success rate of these initiatives has been modest at best. For example, a recent evaluation of World Bank ICT4D initiatives revealed that while the Bank had been successful 60% of the time when developing policy and regulatory frameworks in support of ICTs, it was largely unsuccessful (70% failure rate) in its attempts to provide ICT access to impoverished or marginalized groups (World Bank, 2011). Moreover, the Bank had a 75% failure rate with its efforts to develop ICT sectors in developing economies, and more demand-side interventions (e.g., e-governance, m-banking, m-health) had modest results, with most projects failing to meet their expectations or requiring significant modification from their initial designs. As the Bank’s self-assessment notes, projects failed in large part due to the poor quality of their design – manifest in failures to account

for context-specific capabilities, circumstances, and needs, overly complex project designs, inadequate or inappropriate forms of capacity building, and/or poor ownership of, or commitment to, the project's objectives (World Bank, 2011). More generally, ICT4D projects often fail because of lack of demand by the intended target group, and the concomitant excessive focus on the supply-side and consequent lack of financial sustainability over the longer term (Kleine, 2013).

The high failure rates of ICT4D projects is in contrast with the high level of interest in both academic and "donor" communities around the potential of information technology to reduce poverty and enable development. Thompson and Walsham (2010: 112) identified that there is a mismatch between the unprecedented level of interest in ICT4D in the African context, but very little IS [information system] literature that engages with "development" in an explicit way, with much work having focussed upon "point" implementation of these technologies. As Heeks (2002a) demonstrated, there is no direct correlation between productivity increases and ICT investments in developing regions. In spite of the evidence, however, the World Bank and others continue to promote a somewhat fantastical image of the transformative power of ICTs, even as the Bank's own evaluation unit notes that the more than 4 billion dollars it has spent on ICT projects was "largely unsuccessful" (World Bank, 2011: 4). As elaborated below, this suggests that ICT technologies and the ICT4D discourse are (sublime) objects of ideology: much more than tools or narratives aimed at enabling development (Žižek, 1989).

The focus of this book is largely on e- and m-business, as it is immanent development which is most important in shaping developmental outcomes.² However, e-business, to date, has not received nearly the same amount of attention in the academic literature as ICT4D has, at least in developing country contexts, for reasons explored below. Through our focus on e-business and immanent forms of development, this book seeks to move the debate over the "power" of ICTs beyond the scope of the imminent and into deeper questions regarding the long-term implications for Africa's development and its positionality in the world system. Before delving into the specific links between ICTs, business, and development in Africa, we first situate our analysis within the meta-discourse and governance strategies that have accompanied the rise of the global information economy that we describe below.

The Making and Materialization of a Meta-discourse

The origin of the dominant discourse around the transformative role of new ICTs in international development has a number of roots. It is, in part, related to the increased empirical importance of these technologies

globally, but most significantly the discourse has taken on substantial global power through the work of scholars and practitioners, and the powerful imaginaries that corporations and mainstream (and even alternative) media outlets have constructed regarding the potential of new ICTs. Figure 1.1 exemplifies this imagery, as do the various entries on the World Bank's ICT4D blog (<http://blogs.worldbank.org/ic4d/>) that highlight the multitude of ways that ICTs can impact poverty, employment, finance,

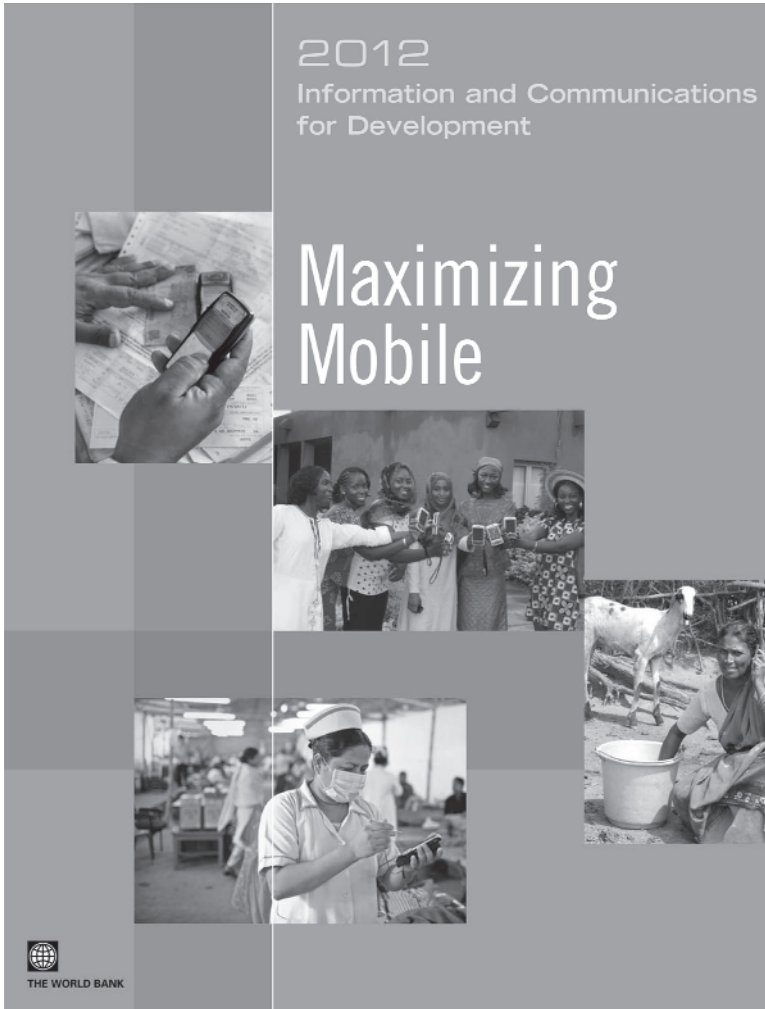


Figure 1.1 ICT4D imagery as promoted in the World Bank's 2012 *Information and Communications for Development Report: Maximizing Mobile* (World Bank, 2012a). Reprinted with permission of The World Bank and Naylor Design.

education, health, governance, gender equality, and so on. The power of this discourse stems from its technological basis, its modernist gaze on the “development problem”, its optimism, and because ICTs are framed as tools to provide individuated solutions to socioeconomic and political challenges.

Thrift (2005) questions the fundamentally transformative nature of new ICTs, but notes how their widespread diffusion across socioeconomic activities makes them both more and less important than is commonly thought. According to Sterling (2009), we live in an era of the “security-entertainment complex” which has produced, as Thrift (2011: 7) would see it, “a stance towards the world which is naturally experimental and which is able to ... employ technology to make this experimental stance ‘irresistible’.” Whereas Latour (1987) wrote about “immutable mobiles”, such as maps, which embody and convey information and meaning, new ICTs are arguably mutable mobiles which convey an almost infinite array of information and meaning through their operation, given the complexity of human and other forms of interaction that they enable. This results in an individuation of meaning around them, even as their physical features may remain relatively constant. This new cultural political economy or ontology of ICTs as enabling individuation and experimentation entrains both ICT4D practitioners (some might say governors) and subjects through a dominant discursive ideology.

The very mutability and adaptability of new ICTs has captured both “mainstream” or conservative writers, such as Thomas Friedman, and some more critical ones such as Manuel Castells. However, both perspectives continue to suffer from a technological determinism that limits their explanatory power. Friedman’s claims about the world being “flat” can be easily dismissed by ongoing globally uneven development, reflected or mirrored in new digital divides such as the fact that Tokyo or Manhattan have more geo-coded content than all of Africa. Although Castells (1998) initially emphasized the importance of information technology as a tool to empower individuals, firms, and economies, his own work should have given him pause to reflect on the determinative nature of new ICTs in the version of economic development he was propounding. In *End of Millennium* (p. 122) he wrote that South Africa “is neither a low-wage dependent economy, nor a higher-skilled competitive emerging economy”, albeit noting that it had the highest number of Internet hosts of any non-OECD country. The implication should have been clear – and is evident in more recent works by Castells (e.g., 2005) – that having a globally competitive economy requires a much broader suite of infrastructure and capabilities than just those associated with ICT, at least for a country the size of South Africa.³ The possibility that marginalized or peripheral regions/peoples might tap into the potential benefits made possible by ICTs and the global network society depends upon their ability to

counteract or circumvent the power relations that unevenly dictate the direction, scope, and scale of the networked flows of commodities, knowledge, and finance in the world economy (Castells, 2011). As such, the immanent power of ICTs and Africa's information revolution might be realized if they help disrupt or discontinue Africa's long history of extraverted economic relations.

Nonetheless, in the academic literature it is new ICTs (mobile phones, internet, and computers) that have generated the most interest, perhaps in part because mobile phones are relatively cheap inverse infrastructures that can travel with users, and are therefore accessible to the poor. Their potential to serve as equilibrating and poverty-reducing devices has attracted many from the mainstream ICT industry to the ICT4D community. Through organizations like the Bill and Melinda Gates Foundation and Google's foundation, ICT professionals and executives are striving increasingly to find ways of leveraging the power of information and enhanced communications toward long-standing development challenges. This is an intriguing development given that, as Richard Heeks (2008: 26) argued:

... most informatics professionals spend their lives serving the needs of the world's wealthier corporations and individuals because ... "that's where the money is". Yet seeking to squeeze a few extra ounces of productivity from firms that already perform relatively well, or to save a few minutes in the life of a busy citizen, pales in ethical importance when compared to the potential benefits of applying new technologies to our planet's megaproblems.

For Heeks and others in the ICT4D community, ICTs can be used in much more innovative and societally important ways and should be considered as critical tools to be used in the service of all kinds of environmental and socioeconomic challenges.⁴

While this recent ethical or moral shift is most welcome, the prospects for ICT-driven solutions to global mega-problems seem, at best, unlikely. This is due in part to the scale of these problems, and the vested interests that often benefit from current arrangements and resist potential solutions, given the costs of their implementation. Moreover, an alternative argument could be made that the spread of ICTs facilitates increased consumerism, which is ultimately unsustainable and a contributing factor to some of the very mega-problems that ICTs may seek to address. The "poverty-washing" of ICTs, where they are presented as the cure to global poverty, but in actuality are being primarily used to promote capital accumulation, may then serve to disguise deeper problems of the ideology of consumerism and over-consumption (Sklair, 2001). As Castells (2011) recently argued, interdependent and intertwined global finance and multimedia networks play a dominant role in promoting and enabling such consumerist ideologies, and they wield tremendous power and control

over the world economy today. While it is clear that new ICTs are facilitating the rise of new forms of consumption and value chains globally (e.g., through e-commerce, B2B transactions), their implications for pressing development challenges remain far less certain.

Wade (2002) and Russill (2008) have written about the historicity of the ICT4D discourse, movement and practice. In terms of discourse, Wade (p. 443) noted:

ICT tools can help people learn how to absorb knowledge generated elsewhere and combine it with local needs and local knowledge, and they can help raise real economic returns to investments; but they are being touted in the development community as though they can leapfrog over the more familiar development problems. This is like saying that cheap books can cure illiteracy.

This is one of the factors that explains the high ICT4D project failure rates. According to Wade, the digital divide barely exists when ICT usage is standardized against income, and may be merely a reflection of the more familiar global income divide. Despite the paradox, however, ICT4D appears to have an ineluctable momentum.

The rise of the global ICT4D movement can be related to the emergence of a North-centered global information(alized) economy in the later part of the 20th and early part of the 21st century (Heeks, 2008). As Castells (1999) argued, the collapse of the Soviet Union was partly an outcome of its missing out on the information technology revolution from the mid-1970s onwards. The rollout of the GIE can be considered not just a spontaneous economic phenomenon, as low-income consumers in the developing world access mobile phones for example, but also a planned one, with a highly developed social infrastructure behind it.

The co-founder of Microsoft Corporation, Bill Gates (2008, quoted in Roy, 2010) has argued for “creative capitalism” which could eliminate poverty through profits. Roy (2010) argues that this represents a form of “millennial development” characterized by celebratization, democratization (in the sense of Western publics being involved) and an emphasis on microfinance in particular. She asks whether (p. 23) “poverty [can] be transformed into poverty capital” through microfinance initiatives and whether the new forms of accumulation, speculation, and profit-making that accompany such programs can ever truly empower the poor within neoliberal capitalist systems. While different models and benefits of microfinance are hotly debated, microfinance is ultimately a form of global market integration of the poor: what some have labelled grassroots neoliberalism (Karim, 2011). In the context of millennial development, mobile phones are another vector of market integration and what Roy (2010: 53) considers a “new frontier of capital accumulation”.

Mobile phones as vectors of market integration for the poor have a variety of axes. According to Joseph Stiglitz (1999), what separates less from more developed countries are combined knowledge and capital deficits. In the literature, mobile phones are often touted as enabling knowledge transfer and access to capital and markets – in effect market creators. We consider this assemblage (see McFarlane, 2009) of artefacts, agents, and goals to be a social movement organized and driven by corporate, celebrity, NGO, governmental and inter-governmental actors who view the creation and deepening of capitalist markets as the central challenge facing African states in an age of informational capitalism. Within this movement, ICTs are seen as critical tools to achieve these goals and are thus highlighted in much of the grey and applied literature about how to “do” development in the millennial age.

Whereas social movements are often thought to be oppositional forces, the rollout of neoliberal or corporate globalization is conducted as a social movement of its own, organized within a number of key organizational nodes such as international financial institutions or the World Economic Forum (Carmody, 2007). Elements of the ICT4D and e-business movement can be considered as forming one arm of this global social movement, which contains powerful corporations (e.g., Microsoft, Nokia, Ericsson). These business actors impact the social movement directly by serving on the committees of the European Union’s Africa ICT strategy, for example (Ayonka, 2010). Corporate actors exert power through a variety of direct and indirect channels and there is much at stake for these firms with respect to their growth and shareholder value. For example, Microsoft has a 95% market share in productivity software market globally.⁵ It also has a 75% share in the global operating systems market and approximately the same in the server software market (Forbes, 2013). Such market dominance by American headquartered companies such as Google, Apple, and Microsoft is facilitated both by high barriers to entry, rapid technological turnover, high rents, and complex and controversial tax avoidance structures which enable them to pay very low rates of taxation globally.⁶ Simply stated, the ICT4D market is theirs for the taking, provided the consumption of software products produced by transnational corporations (TNCs) is enabled to expand through diffusion initiatives.

The mobile phone industry is dominated globally by a handful of transnational corporations (e.g., Apple, Motorola, Nokia and Samsung) based in North America, Europe, and East Asia. In recent years China has become the world’s largest producer of mobile phones, accounting for over 40% of current world production (Imai and Shiu, 2007). There are approximately 50 Chinese handset makers, which account for over half of domestic market sales in that country. Some of these, such as Huawei, have expanded overseas and developed research and development centers in Scandinavia, for example, and put established companies such as Nokia under intense

competitive pressure (Cooke, 2012). Nokia had, until recently, accounted for 40% of global mobile phone sales (Corbett, 2008) but the company posted a US\$1.2 billion dollar loss in the first quarter of 2012, and now accounts for less than 30% of global sales (Huuhtanen, 2012).

Chinese mobile companies sometimes use independent design houses to develop their mobile handsets and produce phones for the African market.⁷ Many of these companies benefit from government-provided subsidized credit and other development interventions (e.g., clusters, industrial parks) designed to make them competitive in world markets. Moving up the value chain into research and design is enabling them to capture increasing amounts of rent, which can then be reinvested for further growth (Yeung *et al.*, 2006; Fan, 2011). Consequently the GIE is almost completely Euro-American and East-Asian dominated and it is highly profitable for the biggest market players – namely US, Japan, and Korean based brand-name handset, smart phone, chip, and notebook makers such as Nokia, Microsoft, Intel, Toshiba, PortalPlayer, Samsung, and Apple (Dedrick *et al.*, 2010). China too has a significant stake in the industry, particularly as an assembler of these new technologies. However, despite the US\$179 production cost of an iPhone, China captures only \$6.50, largely from the cost of labour, whilst the major beneficiaries are transnational corporations (TNCs) based in North America and Japan, particularly Apple and retailers (Hart-Landsberg, 2013).

ICT manufacturers who successfully innovate and develop brand names in major consumer markets wield tremendous control over upstream and downstream value chains, garnering huge per-unit profit margins in some cases. For example, Apple's gross profit on each of its 30 GB video iPods (in 2005) was estimated to be \$80 or 36% of the wholesale price. Despite changes in product sales and profiles, Apple's profit rates remained extraordinarily high at 22% for the first quarter of 2014 (Miller, 2014). In contrast, the Taiwan-owned, Chinese-based assembly firm Inventec Appliances could capture only \$3.86 per unit or 1.7% of the wholesale price (Dedrick *et al.*, 2009). While such disparities in value capture/profits are unsurprising, the differences in operating margins and return on assets reveal the disproportionate and increasing power that lead ICT firms based in the US, Europe, and Japan hold over East Asian component manufacturers. Specifically, even though the bulk of the production of iPods occurs in East Asia, manufacturing firms in Japan, Korea, and Taiwan (the main producers of iPod components) only capture about 16.9% of the iPod's value in contrast to US-based suppliers (namely Apple) who capture 44.6%. The remainder of the value (38.5%) goes to firms that distribute and sell iPods to consumers – markets generally controlled by large-scale retailers (including Apple) based in North America, Europe, and Japan (Linden *et al.*, 2009). The often highly profitable nature of info-capital corporations mean they are able to fund not only extensive

advertising and corporate social responsibility campaigns, but also other “outreach” efforts. For example, Microsoft funded the transition to open access by the journal *Information Technologies and International Development*, which is a key information-diffusion node for the global ICT4D community (Russill, 2008).⁸

Russill (2008) further traced the development of the ICT4D discourse through events and processes such as the United Nations ICT Task Force (2000–2005) and the World Summit of the Information Society. At their summit in Okinawa, Japan, on July 23rd, 2000, the leaders of the Group of 8 (G8) industrialized countries announced their faith in ICTs as a means to enable citizens to express themselves freely, economies to grow, and countries to better provide for the welfare of their citizens. The digital divide was to be at least narrowed, if not eliminated, and a Digital Opportunities Task Force (Dot Force) was to seek ways to provide “digital opportunities” to all (Digital Opportunities Task (DOT) Force, 2001; Alden, 2003; Molina, 2003). The potential of ICT was considered so high that the Dot Force asserted that “the basic right of access to knowledge and information is a prerequisite for modern human development” (May 2008, p. 82; see also DOT Force, 2001). The end result of these efforts was the creation of the G8 (Okinawa) Charter for the Global Information Society, which provides the basic vision for global telecommunication liberalization.

The general tenor of this discourse – that ICTs are inherently liberating, empowering, and progressive technologies – has remained largely intact since the Okinawa Charter, and there is a continued belief that information-communication driven forms of “leapfrog” development are possible in Africa.⁹ Echoing controversial opinions of the former French President Sarkozy that the (Hegelian) challenge for Africans was to “enter into history” (McGreal, 2007), European Union officials have recently characterized new ICTs as “time portals” (Graham, 2011). Thus ICTs were/are seen to be fundamentally transformative, emancipatory, and deterministic technologies: a means to finally impose modernity on Africa and elsewhere in the “developing” world. This imposition of a particular (ideological) vision of modernity allows for the (material) opening up of markets for exports of hardware, software and cultural products (Ayonka, 2010). Moreover, because new ICTs can be integrated into almost every aspect of development assistance, such as health, education and agriculture, they have taken on an almost Messianic-like status within parts of the development policy and practice community. Whereas under colonialism, subject normalization was to be achieved through Christianity and commerce, now it is to be achieved through information and commerce, both for transnational corporations and local farmers and fisher folk. Entrainment in market relations is to dilute the importance of “primordialist” identities (i.e., traditions, ethnic, localized), which are seen as largely non-instrumental and self-limiting. New ICTs then become enrolled in a project of creating market subjects,

normalizing (global) citizens, and facilitating a (Durkheimian) shift from mechanical to organic forms of social solidarity.

On the one hand the Okinawa Charter specifically addressed the digital divide, recognizing that there were significant inequalities in the “digital world”, while on the other it expressed the belief that, if only done right, ICTs could deliver manifold benefits. ICTs could be an apolitical “magic bullet” for the problems of the developing world. However, Couldry (2004) argued that the prominence given to the “digital divide” in the 2000s arose initially from attempts by industrialized nations to open up telecommunications markets globally, rather than being primarily an effort to reduce global poverty. This is linked to “low geopolitics” (Agnew, 2012) or geo-economics, with the United States Department of Commerce claiming that “America’s destiny is linked to our information infrastructure”, which would help American firms “compete and win in the global economy” (quoted in Birdsall, 1996). Since the Okinawa Charter was promulgated, following advice from the World Bank, IMF, and International Telecommunication Union (ITU), most African countries, with varying degrees of enthusiasm, liberalized their telecoms markets. By way of example, this resulted in the replacement of the former public monopoly by a virtual private monopoly in Senegal where France Telecom held a 64% market share (Chéneau-Loquay, 2009). Often these companies generate substantial profits in the context of weak regulatory regimes, with Safaricom in East Africa recording almost a billion dollars of profit in 2008, for example (Chéneau-Loquay, 2009).

Safaricom’s signature product is the M-Pesa mobile money platform, which is often touted as an example of how Africa has “leapfrogged” more developed regions. However, there are a number of points which should be remembered when discussing this popular service. Firstly, Safaricom is largely owned by the UK-based company Vodafone, which is the world’s largest telecommunications company (Muwanguzi and Musambira, 2009), thus replicating patterns of economic extraversion. Secondly, the ability to transfer money does not result in economic transformation, but is rather an example of broader financialization in the global economy and of development.¹⁰ In other words, it creates access to transactional forms of financial services but does not, in and of itself, enhance the ability of client individuals or firms to accumulate capital. Thirdly, the popularity of the service in Kenya results from the extent of uneven development in that country and the migrant labor system which was instituted under colonialism, with families often left behind in rural areas (International Labour Organization [ILO], 2008). M-Kesho is a new service that has been introduced to allow customers to access loans and insurance, in addition to savings. While this may encourage a broader culture of savings, it can also denude rural areas of capital which is channelled to more profitable ventures in cities more connected to the globalized economy, as has been the

case in other countries such as Zambia (de Luna Martinez, 2007), exacerbating uneven development. Furthermore, according to one small to medium-sized enterprise in Tanzania, “transactive or fully integrated web-based e-commerce ... won’t work here because we are already doing e-commerce using M-Pesa” (quoted in Kabanda, 2011: 7). Consequently, services like M-Pesa may impede the emergence of a more developed “digital economy”.

The point here is not to be excessively pessimistic about initiatives like M-Pesa, but instead to demonstrate that the discourse of the “digital divide” has a political economy undergirding it, even if objective facts can be brought to bear in its support. The narrative of a borderless world created by ICTs, allowing for a free flow of information and opportunities around the world, implies a diffusion of economic development through market access and other channels. This could be justified on the basis that large parts of the so-called “global village” remained unconnected. Around the time of the Okinawa Summit, most of Africa was practically a blank spot on the internet map. Of the 192,544 internet host computers on the continent in July 1999, 172,179 were located in South Africa, the regional economic powerhouse (ITU, 1999). This left approximately 20,000 internet host computers, or 0.04% of the world’s total, for the rest of Africa. In fact, there were more internet hosts in New York than in all of Africa at that time, including South Africa. Growth in internet use in Africa has increased significantly since this time, and this, when coupled to recent economic success stories in the region, has further empowered the underlying discourse regarding how overcoming the digital divide will enable Africa to become more fully integrated and empowered within the global economy.

Although such essentialisms are powerful ideological tropes, the true story behind the “digital divide” as development challenge/opportunity is far less promising than the ICT4D community often assumes. While information technologies are often presented as levelling artefacts, they also contribute to global class stratification through their concentrated ownership structure, research and development clusters and other effects. In terms of their usage, as Unwin (2009) noted, ICTs can make important differences to the lives of poor people but they can also be used to enable the rich to maintain their positions of privilege. Indeed, the World Bank and academic researchers have found that telecommunications rollout has historically increased inequality and only benefitted the wealthy (Forestier *et al.*, 2002). More recent research found only a weak association between ICT usage and per capita income (Kottemann and Boyer-Wright, 2009), yet they are widely touted as technologies that will reduce poverty. That said, ICTs are “levelling” technologies in the sense that they contribute to the further development and deepening of global consciousness (Burawoy, 2000) or awareness of contemporary events, processes, and the fact that we

share one planet. Whether such a shared consciousness coincides with a levelling of material differences and economic opportunities is another question altogether, and a key focus of the chapters to follow.

Governance and ICT4D

It is important to remember that the global ICT4D movement is not homogenous. It meets annually at the ICT4D and other conferences and contains both critical and “mainstream” voices, even if there is sometimes a common tendency to fetishize the technology as enabling empowerment or promoting domination. Moreover, and again despite the heterogeneous array of actors in the community, there is a consistent gaze or frame regarding how ICTs can and will be complicit in the (re)governance of economic activities in regions like Africa. But which actors are empowered in this ICT4D discourse, and along what axes?

Some ICT4D writers are well aware of the self-serving hype promoted by information technology companies (Unwin, 2009). As markets are saturated in many rich countries, the Global South presents an enticing market opportunity for ICT (info)capital. This is reflected in growing interest in and greater focus on selling to the “bottom of the pyramid” (BOP) (Pralhad and Hart, 2002; Hart and Christensen, 2002; Prahalad, 2004; Hart, 2005). BOP approaches could be seen as another example of capital’s spatial fix (Harvey, 1999) to problems of over-accumulation, of which colonialism was another iteration. According to Osumare (2012), given the (oligopolistic) nature of competition amongst telephone service providers, it is necessary that dominant players like Vodafone compete in the whole range of markets available to them in developing countries, from the poorest to the wealthiest.

One example of the commercial interest of the BOP strategy is evinced by a deal (“Facebook Zero”) which allows mobile phone users in 45 African countries to access Facebook even if they do not have credit on their smartphones (Wasserman, 2011). As Facebook is paid for in time (advertising), this will further consumerize populations in the affected countries. As noted earlier, this is not to deny the potential of ICTs for poverty alleviation, enjoyment or empowerment. However, diffusion does not equate to economic transformation or political empowerment as problems of exclusion may arise from pre-existing institutional configurations and hierarchies (Bratton, 2013), and from “the knowledge economy where know-how replaces land and capital as the basic building blocks of growth” (Qureshi, 2007: 312).

According to Harvey (2013), technology is natural processes harnessed to human ends. However, these human ends may not be just narrowly instrumental, such as enabling communication through mobile telephony,

or making of profit, but may also serve psychological functions for the instigator of the ICT4D intervention, in addition to being forms of governance, thereby reproducing or deepening extant power relations. As Barnett (2011: 12) argues, “any act of intervention, no matter how well intended, is also an act of control... it is still a form of governance and governance always includes power”.

In much of the literature on ICT4D, one of the main propounded benefits of the use of these technologies is meant to be the empowerment they generate for small-scale producers through disintermediation. Exploitative “middlemen” are meant to be bypassed and more value captured by direct producers (Jensen, 2007). ICTs are thus seen to be tools to allow for the reconfiguration of the governance and shortening of value chains. Using a Foucauldian lens, they could then be seen to facilitate forms of counter-conduct to dominant social relations, operative at the local or regional scale. However, on the supply side these technologies are provided by global corporations, so their usage strengthens these social forces, to the (sometimes) detriment of local capital, however exploitative. Thus in terms of value flows there is a potential “double movement”, downwards to direct producers and upwards to global corporations, arising from ICT diffusion and usage.

Furthermore, and in contrast to what is often assumed, the fact that ICTs are often absorbed into unchanged business practices in formal sector enterprises may create inefficiency (Wade, 2002), another source of the “productivity paradox” (Brynjolfsson, 1993), in addition to the well-known effects of people using social media during working hours, for example. Thus the development, production and diffusion of new ICTs and associated systems result in restructuring of different types amongst different fractions of capital, such as information and communication TNCs (ICTNCs) or fish traders, while also often being used to monitor workers (Bain and Taylor, 2000). Transnational (info)capital benefits, while other fractions may be disempowered or the benefits may not be immediately apparent. Whereas Marx (1887 [1967]) saw the concentration and centralization of capital taking place within economic sectors, informationalization allows this process to take place transnationally and indirectly across sectors. As such, and as we detail later on, new ICTs may be implicated in other forms of uneven accumulation, economic extraversion, and market concentration.

ICTs then impact on the governance of economic processes, although not always in the way that is commonly thought. They are also increasingly thought to have impacts on political governance. For example, mobile phones are thought to be capable of reducing political corruption (Baillard, 2009), uplifting “failed states” (Rotberg and Aker, 2013), enabling democracy (Bratton, 2013), and contributing to progressive revolutions like the “Arab Spring”, although Gregory (2013) notes the way in which the use of new ICTs interacted dialectically with particular places in this movement.

Others are more sceptical, asking whether ICT4D is “merely an extension of academic and political imperialism” rather than a tool through which more emancipatory forms of democratization might be achieved (Raiti, 2007: 4). For Bratton (2013), ICTs are at best “neutral tools” that can both enhance citizen awareness and engagement, and help to foment intolerance, violence, and distrust in society.

Given that democratizing potentialities may conflict with vested political interests, it is perhaps not surprising to note that authoritarian regimes in Africa, particularly since the start of the new century inaugurated by the Arab Spring, are paying close attention to ICTs and closing down or restricting the digital public sphere. The Ethiopian government recently sentenced a blogger to 18 years in prison, and using Skype in that country is punishable by a jail term of up to 15 years. Likewise, in Mozambique during the recent food riots, mobile phone companies seem to have allowed the government to block all text message signals (Wasserman, 2011). Thus the usage of ICTs is informed by and embedded in existing social and political relations, despite their purported multifold benefits. This again suggests the imperative of analysing them as objects of ideology that cannot be unlinked or separated from the sociopolitical processes that frame their deployment.

ICTs as objects of ideology

The diffusion of new ICTs is supported by ideology as they are represented as enabling individual empowerment and cumulative (inter)national interconnection, which when combined together constitute twin axes of neoliberalization. Some go so far as to argue that there is an international ideology of information technology that combines “free-market economies, neo-conservative politics, and technological determinism” (Birdsall, 1996). Ya’u (2004: 20–21) further claimed that ICTs have prompted a new age of imperialism in Africa:

This new imperialism is characterised by the attempted creation of knowledge dependence in the newly re-colonised countries. It is a “soft” type that does not involve physical occupation of countries, and whose paths are mediated by the vast networks of ICTs. It is signposted by a control mechanism exerted through the WTO [World Trade Organization], which acts on behalf of western powers and their transnational corporations. It is supported by an array of means of ideological internalization that control the flow of news, entertainment and literature, as well as cultural space as a whole.

This “imperial” power is expressed through the dominance of English on the internet (55% of web pages) (W3Techs, 2013), the hegemonic standard of (Western) knowledge, and transnational capital’s ability to instantaneously move capital and (profit-generating) information around the world.

As Castells (2003: 77) argued, the “networked society” has and is imposing a particular form of production that shapes social relationships globally, despite the fact that ICTs are commonly represented as tools of personal empowerment.

ICTs have also been complicit in the wider and deeper penetration of neoliberalism into the Global South, manifest principally in intensified forms of market-based competition and financialization. According to Dean (2012), the proliferation of information facilitated by new ICTs has been depoliticizing, although there are also counter-examples such as the “Facebook Revolutions” of the Arab Spring. As such, ICTs arguably have enabled the development and maturation of capitalist contradictions such as “free” initiatives like Facebook Zero. Another example relates to the financialization of the global economy and the most recent global economic crisis: an outcome of the misrepresentation of use values as many-layered exchange values in financial derivatives, whose creation and trading have been facilitated by ICTs (Knox-Hayes, 2013). This is not to say that these technologies may not be used for transgressive purposes, but they are also used by existing power holders and embedded in extant networks of power (Wasserman, 2011).

Zižek (1989) described objects of ideology as ones onto which are projected properties serving psychological functions for subjects. As Wilson (2014: 312) further notes:

... [a] sublime object is a common material object which acquires a peculiar fascination for the subject, due not to some inherent essence, but to its symbolic location as an object that both obscures and embodies the void of the Real.

Considered in this manner, mobile phones, computers, and the internet are implicitly viewed by many in the ICT4D community as sublime objects of ideology. Whereas Western involvement in Africa, from slavery through colonialism and neoliberalism, resulted in deplorable dehumanization, ICTs can be represented as bringing development and modernity and serving the psychological function of expiating previous Western “sins”. Sublime objects are then ones that have profound symbolic and overloaded meaning for the subjects who observe, and in the case of ICTs, also use them.

Roy (2010) traced the discourse around the “liberation” of Third World women through microfinance. She (2010: 72) noted that in one World Bank microfinance report, a picture of a peasant woman using both an abacus and a calculator presents her as “a fetish, a magical object” that has transcended primitivism to embrace modern, calculative technologies. Similar imagery is often used by mobile phone companies showing Maasai warriors in traditional garb using cell phones, for example, but in this instance it is arguably the mobile that is the magical object which serves as the sign of

modernity (e.g., see Figure 1.1). A central argument of this book is that such fetishizations and objectifications within the ICT4D community elide many of the contradictions that have accompanied the mobile phone (and soon to be internet) revolution in Africa, particularly as they relate to their potential to transform firms, industries and economies. We identify and interrogate some of these contradictions in the chapters that follow.

Conclusion

There are different discourses surrounding ICT4D. Minority voices, such as Ya'u (2004, 2005) are highly critical of the GIE and the knowledge dependence which it has fostered in Africa. Others are much more positive and celebratory, focussing on the prospects for a new age of informationalized, liberalized, and distributional capitalism. In part, the differences arise because the technologies themselves have different uses and consequently different ideologies associated with them by different actors; that is, they are objects of ideologies for users, development practitioners, scholars, governments and others. The fact that these different ideologies about the use, exchange, symbolic and cultural values that are projected on to ICTs is a large part of what gives them their power. Their multiple meanings, uses, ends and effects – their adaptability/mutability – promote their adoption, even if their rationalities for different actors are divergent or even contradictory. These contradictions and ideologies become attached to and in some sense embedded in the technologies and contribute to their mystique. However, they are objects of agency for different social actors, with no necessary essential (teleological) impact, outside of the fact that they are produced in global production networks by transnational corporations, and with definite developmental impacts in particular places.

While an extensive literature has examined the ways in which new ICTs can or might contribute to poverty reduction, these works often ignore the ways in which these technologies are embedded in a broader political economy structured by power. As Castells (2011) describes, ICTs, the global information economy, and the network society are produced, embedded and diffused through powerful actor-networks, even as less powerful actors derive a variety of forms of utility from the use of these artefacts and their entrainment in the global space of flows. This book attempts to strip away the mystique and demystify these technologies, and informationalized capitalism more generally, to examine their concrete impacts on economic development in Africa. In particular, while much of the literature on ICT and its impacts has focussed on ICT4D projects, we seek to examine the informationalization of production and service provision as a (new?) round of immanent development, and to interrogate this empirically through detailed case studies of small, medium, and

micro-scale enterprises (SMMEs). Before doing that, however, it is worth taking the time to theorize the channels through which ICTs influence economic structures, and consequently poverty, in more detail. We turn to that in the following chapter.

Notes

- 1 At a broader global scale the sometimes troubling nature of the global informationalized economy is evidenced by recent scandals concerning illicit government surveillance of social media through the US government's PRISM program, electronic waste (e-waste), or worker suicides in the factories in China that produce Apple products (Schmidt, 2006; Chan and Pun, 2010).
- 2 We use the term "e-business" throughout the remainder of the book to signal both electronic (e-) and mobile (m-) forms of business activities.
- 3 Ironically, when Castells met with the South African president in the late 1990s he told him that unless the country dramatically promoted ICT it would be "delinked" from the global economy (Alden, 2003).
- 4 For example, Ty *et al.* (2012) examined how new ICTs may be used in climate change adaptation, through participatory geographic information system mapping of soil erosion.
- 5 Productivity software refers to that dedicated to accomplishing a specific task, such as word processing, spreadsheets, database management, or graphing.
- 6 Examples of such tax structures include the so-called "double Irish" and "Dutch sandwich" ones which allow profits to be channeled to tax havens. In order to attract economic activity, the Irish government has also negotiated lower corporation taxes for Apple Corporation. Google Ireland paid an effective tax rate of 0.14% on sales of €47 billion over seven years (Burke, 2012).
- 7 For example, Huawei produces the best-selling phone in Kenya (Jidema, 2011).
- 8 Perhaps ironically, Bill Gates has argued that there are other more pressing priorities than ICTs, such as clean water, for people living in poverty (Wade, 2002) and this has been reflected in the funding priorities of the Bill and Melinda Gates Foundation.
- 9 Leapfrogging refers to the idea that new, modern technologies might enable developing countries to skip past the more problematic "stages" or periods of the development process (e.g., environmentally destructive or socially exploitative). It assumes a singular pathway (Rostow's stages of growth) for "development" and is often applied in highly (technologically) deterministic ways.
- 10 M-Pesa was started partly with seed funding from the UK's Department for International Development (DfID).