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Book title – Gendered Power and Mobile Technology: Intersections in the Global South

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Background and rationale

For over a decade, the dominant development narratives surrounding mobile communication technologies have emphasized that they can be used to narrow socio-economic disparities across genders, countries, and regions. The basic premise of this media and policy rhetoric is that the economically less privileged populations of the global South have leapfrogged into modernity via information and communication

technologies (ICTs), with especially mobile phones having become 'the latest champions of poverty reduction' (Sey 2011, 376). If the focus is purely on *technological connectivity* in its most basic sense, it can be argued that the digital divide between *societies* has narrowed considerably over the past two decades. Mobile phones have been widely adopted among even the poorest of the poor in low-income countries, and they enable communication and information exchange in the remotest parts of the globe. In the global South, mobile phones have rapidly become the communication technology with the broadest and most intensive social impact on the everyday lives of individuals. Many in the developing world are just as much members of the new digital generation as those living in the global North (Gajjala 2014). Given the increasing availability of smartphones, the effects of mobile-transmitted data and communication are only poised to increase in the developing world.

At the same time, this techno-optimism has come under criticism. Enthusiasm over mobile communication for development (M4D) relies on assumptions that mobile phones can function as 'smart catalysts to development' because they are frequently the most complex technological device in rural villages, and the only modern technology owned personally by those in poverty. Yet the benefits of mobile technology can only reach marginalized persons in developing countries if users are not disadvantaged by access to these technologies or gaps in usage ability (Dodson et al. 2013, 79; Murphy & Priebe 2011). Digital and communicative divides are gendered, as well as structured by age, socio-economic status, education, language and geography. Thus M4D and feminist technology research need to map out the place of mobile phones within a broader ecosystem of social power dynamics.

Although feminist technology studies (FTS) have been instrumental in developing the theoretical and methodological tools to analyze technology and gender simultaneously,

there has been relatively little attention to the experiences from non-western societies. This has meant that theoretical and methodological standards have been largely informed by Western accounts (Bray 2009, 47; Mellström 2009). Having organized and participated in mobiles-for-development (M4D) conferences and events, the editors of this volume acknowledge that gendered experiences in the developing world and its attributes are not always made visible in academic events and discourse. The impetus for producing this anthology arose from this lack, contributing to existing debates how gender and mobile telephony mutually constitute each other in processes of design, use and access.

Redressing the relative lack of non-western experiences with technology, especially those related to gender, race, and class, is necessary to help gender and technology research realize its transformative potential and embrace the diversity of human-technology relations from a gendered and feminist perspective. As Mellström (2009, 888) notes, in order to develop the 'gender' in gender and technology studies, the 'huge spectrum of variations in gender subjectivities in relation to artefacts and technology' should be explored.

The focus of this volume is the role of mobile phones and their epistemologies in shaping the production of gender in non-western realities. Its aims are three: to extend discussions within feminist technology studies to include scholars from the global South; to present a critique of the techno-optimism still proclaimed in policy and media discourses; and to encourage more intersectional debates around uses of mobile technology. Because the majority of empirically-based, theoretically-informed investigations regarding the impact of mobile telephony on identity and power focus on societies in the global North, in our volume we bring the 'margins to the centre' in that we adopt a non-Euro/American-centric perspective, expanding our knowledge of

mobile technology use to communities in Ecuador, Ghana, Kenya, Mexico, Peru, Tanzania, and Uganda.

Using empirical case studies, this book calls for more sensitivity to the gendered, socio-cultural, and political contexts of behaviors linked to mobile use, as well as the consequences of that use (Masika & Bailur 2015; Horst & Miller 2006; Tenhunen 2008; Tacchi et al. 2012). In addition to research focusing on mobile telephony itself, research that asks empirical questions about mobile phone can, for instance, be used as a methodological tool for perceiving and identifying social hierarchies that are not readily visible (Ling & Horst 2011; Wamala-Larsson this volume; Stark this volume). Practices linked to mobile telephony can indicate gendered power differences even at the simplest level of usage. One example is Caroline Wamala's (2013) research on beeping in Sub-Saharan Africa. Beeping practices follow social resource hierarchies and encode performances of masculinity and femininity. By giving a girlfriend airtime and encouraging her to beep him, the boyfriend defines himself as responsible and in charge of the relationship, in opposition to a 'cheap' man who cannot provide for his female partner.

The critiques of techno-optimistic views of mobile communication technologies can be reduced to three main arguments. First, development discourses surrounding the promise of poverty reduction through mobile phones have been accused of reflecting neoliberal perspectives in which only 'the rapid flow of information via the mobile phone combined with individual initiative and entrepreneurialism' are seen to be necessary to create an even playing field within the market (Wallis 2011, 473). These perspectives represent 'narrow technological visions that ignore complex rural realities and long-term gendered dynamics of technology usage' (Murphy & Priebe 2011, 15) and display insufficient regard for gender- and class-related inequalities (Wallis 2011,

473). The ideology of technology-enabled ‘entrepreneurship-for-all’ embedded in mainstream development policies directed toward the poor may disempower those women who, for lack of education, aptitude, access to starting capital, or necessary social networks cannot take a market-driven path out of poverty (Cai et al. 2015). Rather than ‘becoming dazzled by the shiny new vista that the digital age appears to open up’, the authors in this book view information technologies as ‘a significant lens’ through which we can critically examine everyday life, relationships, and power dynamics (Green & Singleton 2013, 36).

A second critique centers on which transformations mobile phones can actually bring about in the global South. Recent research on gender and mobile communication in the development context has provided evidence that mobile connectivity neither solves poverty nor shifts the hierarchical boundaries of class, but is incorporated with surprising ease by previous social structures (Wallis 2011; Murphy & Priebe 2011; Doron 2012; Tawah 2013). Kibere (2016), for instance, discusses how widespread mobile connectivity among Kenyan youth in Africa’s most infamous slum cannot overcome the stigma of their place of residence, a social marker that excludes them from social networks and makes it difficult for them to find employment. Slum youth find it easier to network with foreigners who visit the slum or have worked for international aid organizations than to digitally engage with members of more privileged classes in their own society (Kibere 2016).

Scholarship on gender, technology and the global South has been criticized for conceptualizing both oppression and resistance from Eurocentric perspectives (Mohanty 2003; Narayan 1997; Parameswaran 2007). In such universalizing assumptions, a woman of colour, lower class or caste, or a Third World inhabitant is ‘imagined as somehow frozen in time, living a life without leisure or fun, and

oppressed by the men in her community' (Gajjala 2014, 290). In fact, both men and women in third world contexts of poverty and exclusion do in fact use digital technologies for leisure, pleasure and consumption (Tenhunen 2014a, 44). Measuring women's empowerment through income levels or financial independence, a common approach in gender and technology research, can be a problematic gauge since many of the benefits women report gaining from mobile phones are subjective and intangible such as freedom from danger (Murphy & Priebe 2011) and feelings of greater self-worth and competence in serving one's community (Chib and Chen 2011).

Since societies are the medium through which all humans understand the world around them and themselves as agents (with greater or lesser freedom of choice), 'freeing' people from structural disadvantage requires transforming the very fabric of society itself. This may not increase agency, but may instead remove the frameworks of intelligibility within which people know how to operate, leaving them unable to be pursue any goals at all. Subordinate persons often use 'patriarchal bargains' – also in mobile phone usage – to gain status or agency even if through these bargains, unequal power structures are validated (Kandiyoti 1998; Kleine 2013; Masika & Bailur 2015; Paxling this volume).

Researchers who engage with developing contexts of, often use western terminology even where there are local conceptualizations. To a certain extent feminist researchers must engage with known and established scholars in the field in order to be published, but both gender and technology and feminist technology studies continue to be overwhelmingly monolingual. This volume engages with other ways of thinking as it opens up local vocabularies that would otherwise remain obscure to a wider audience.

If every language is a world we need to not only use colloquial terms as an occasional spice, but to take these worlds seriously and explore not only the analytical terminology but take the entire worlds of academic thought seriously. Being academically and intellectually monolingual hampers our ability not only to analyse but also to think different worlds. This is not simply using one term instead of another, it is using local vocabulary that might be closer to the local understanding of the world but also opens up hitherto obscured paths of thought. In this anthology we see the use of terms ‘digital snails’ (Martínez Suárez and de Salvador Agra in this volume) ‘girl geek’ (see Paxling this volume) from developing contexts as useful metaphors for technology analyses. Language is an important social variable of inequality that needs to be taken into account in intersectional analyses.

We consider both gender and mobile phone practices to be deeply cultural, and we similarly argue for gender as a cultural expression that is historically dynamic, structurally informed and systematic. While these expressions are held in check by individual interactions, they are also shaped by them. The intersections of variables in this volume acknowledge power relationships between and within genders, where hierarchical uses informed by age or class contribute to the expression and affirmation of variable gendered identities.

Use of mobiles by women in the global South: benefits and barriers

It is by now axiomatic in the literature that mobile phones help many women in developing countries to keep in touch with relatives, friends, and, if they have

professions or businesses, to run them more effectively (Tawah 2013; Svensson & Wamala-Larsson 2016). For migrant mothers communicating with children in Philippines and in rural South Africa, where many children live with grandparents while parents work in distant cities, mobile phones are a communication tool for so-called 'stretched households' (Madinou & Miller 2011; Porter et al. 2012, 14). Women use phones for social networking and to expand their culturally-constructed spheres of activity (Tenhunen 2014b; Gustafsson this volume; Stark this volume). Mobile phones have been used by women in India and Sub-Saharan Africa to circumvent gendered norms and constraints and to extend their contacts and social space without violating physical gendered boundaries of movement. Mobile phones help deliver agricultural information to female farmers in India (Balasubramanian et al. 2010; Mittal 2016) and medical advice to midwives in Indonesia (Chib & Hsueh-Hua Chen 2011). The use of mobile phones also creates safety nets in case of emergency, and reduces the need for travel in settings where travel may be time-consuming, expensive and even dangerous (Murphy & Priebe 2011; Jouhki 2013; Tenhunen 2014b, 166).

As Porter et al. (2012) point out, calls, text messages, and beeping in which the caller lets the phone ring once before hanging up as a signal for the call recipient to call back are not merely social chitchat or keeping up with news. In Sub-Saharan Africa, for instance, livelihood and resource networks (money for schooling, medical care, housing, jobs in the city, and capital for starting businesses) are dependent on social, usually kinship relationships (see also Molony 2007; Donner 2008). These relationships require nurturing, and when key contacts are located at distances that are expensive and hazardous to travel in person, the mobile phone becomes the key enabler of social ties vital to physical and economic survival (Porter et al. 2012).

Women in both India and East Africa who have married into patrilocal marriage arrangements use phone calls to stay in close touch with birth relatives (Murphy & Priebe 2011; Tenhunen 2014b). Resource networks maintained through mobile phones are also important for men (see Wamala-Larsson this volume), but particularly so for women, given their relative lack of access to services and livelihoods – even informal livelihoods – in many countries.

This is linked to an important trend in the recent gender and M4D research: the recognition that beyond more measurable benefits as increased income and increased communication, it is important to focus on the *subjective and intangible* benefits or barriers expressed and understood by women themselves. This calls for broader visions of development and empowerment and a shift from the assumption that financial independence is the best – or even clearest – indicator of empowerment to a recognition that benefits can only be understood within social contexts. In societies where individuals are dependent on family and informal networks rather than official social institutions for their well-being and security, social relationships maintained via the mobile can be very important in maintaining freedom from hunger, drudgery, fear and danger, as well as possibilities for maintaining social interaction (Murphy & Priebe 2011).

Mobile devices have become an extension of self and identity, signifying the interconnected nature of lives. They have become unique portals that carry, transmit, create and archive various aspects of our selves and are conduits to external worlds where our perceptions of self, other and realities collide (see Martinez Suárez and de Salvador Agra this volume). Mobile technologies permit a range of new developments that undermine the traditional model of democracy by allowing for shifting and

multiple identities, enabling persons to belong simultaneously to a number of different constituencies. They also make it possible for individual identity to be concealed. Mobile technologies can thus open up new forms of participation (Huws 2008, 47; Tenhunen 2014a, 2014b; Svensson & Wamala-Larsson 2016). Mobiles have enabled especially women to initiate interactive dialogues by helping rural women run local, voluntary support groups and setting the agenda of public debates through participation in public service broadcasting, which is particularly effective in discussing domestic violence and abuse of women's rights in rural areas or (Murphy & Priebe 2011; Millanga 2014, 291).

Mobile phones can therefore be implicated in the persistence of gendered and other social inequalities (Barreto Ávila & García Abad this volume; Crentsil, this volume; Wamala-Larsson this volume). However, the ways in which technologies mediate access to political information and democratic voice is constrained by many factors (Wamala-Larsson et al. 2015). A lack of literacy, lack of global language skills, and lack of access to training in technological literacy all limit democratic participation in ways that are analogous to historical requirements in many Western countries until the 20th century that in order to vote, one had to be socially identified as male *and* possess wealth or property. To a certain extent, the digital age has reinforced older gender inequalities by introducing new necessary skill levels which women often find it difficult to access (see Gustafsson this volume). In terms of economically less privileged populations in general, it has been argued that access by much of the world's poor to the Internet is often not direct, but mediated through activists and NGO volunteers and workers (Gajjala et al. 2013, 38).

Technological literacy includes a wide range of skills, including mastery of the language used on menus and interfaces, visual interface literacy in interpreting icons and navigating hierarchical menus (which vary greatly from one handset model to another), and unfamiliarity with memorizing number sequences such as PINs. Important services such as mobile money offered by providers like Kenya's Safaricom are deeply embedded in the phone menus and hard to find for low-literacy users. Users in complex linguistic environments such as the Moroccan Berber women studied by Dodson et al. (2013) face problems of learning and navigation of mobile devices that do not support familiar scripts (in this case Arabic) in contexts where SMS messages must be written, for example, in 'Arabish'. Low quality counterfeit phones may be sold at a higher price to non-literate buyers who are unable to distinguish the correct brand from fake ones, and mobiles of 'questionable provenance do not come with instructions or manuals.' (Dodson et al. 2013, 84).

The quality and condition of mobile devices themselves are often a problem for women: women often have devices that are in poor condition, with broken and jammed keys, or cracked or cloudy screens (Dodson et al. 2013; see also Martinez Suárez & de Saleta Agra this volume). This problem is further exacerbated by the widespread problem of poor eyesight in developing countries, since good vision is vitally important in mobile phone use (Wyche et al. 2016).

Material and structural barriers to mobile use include lack of a regular electricity supply or reliable mobile service, lack of free time to browse the Internet, and lack of means to pay for information services such as mobile airtime (Huws 2008). A major gap is cost and affordability. There are still many in the global South who cannot

afford the cost of purchasing or replacing broken or stolen mobile devices, and these persons are severely disadvantaged in an increasingly connected world (Wallis 2011). The cost of airtime and calling is also a major barrier for both men and women in using mobile phones (Tenhunen 2014a). For instance, the Filipina and Indonesian migrant women in Singapore studied by Chib et al. (2014) spent a significant part of their salary on mobile phone bills to keep in touch with their families back home, which limited the quality of conversations (Cabanes & Acedera 2012). The impact of cost is also linked to a person's position within the household, since in many societies decisions on use of mobiles are made not by individuals but by household heads or following household hierarchies (Doron 2012; see Fernández-Ardèvol this volume).

One important barrier is the high relative cost of mobile service for the poor (Abraham 2009; Wallis 2011; Murphy & Priebe 2011; Tenhunen 2014a; Chib et al. 2014; Cabanes & Acedera 2012). At the same time that mobile communication is expensive for the poor, telecom providers in developing countries reap large profits. Indeed in Sub-Saharan Africa, the main beneficiaries of widespread communication in Africa appear to be for-profit mobile network providers who profit at the expense of rural and less-educated users through providing services which are not targeted at the capabilities of the latter (Murphy & Priebe 2011; Han 2012).

While gender is shaped by socio-economic status, educational levels, and age, it is worth focusing on gender as a factor of inequality for recent research has pointed out that many *barriers exist that are specifically gendered*. The gendered division of labour and home and childcare responsibilities placed on women in many societies creates obstacles to women's mobile usage in terms of finding the time to learn how to

use a phone. Even finding the time to join support groups or training sessions can be difficult (Chib & Hsueh-Hua Chen 2011). Women's use of mobile communication is much more controlled than men's in many parts of the global South. Men in both East and West Africa have been reported to feel threatened by new freedoms afforded to women in mobile phone and internet use, and in many cases monitor their partners' mobile and internet use and check their call logs and contact lists (Huyer et al. 2005; Zainudeen et al. 2010, 551; Svensson & Wamala-Larsson 2016). In India, husbands can ban their wives from using the phone to call their natal relatives, if they feel that she abuses this privilege or that her relatives are provoking social friction and discord in the marital home (Doron 2012, 423). The control exercized by husbands over women's access to mobiles is not always direct. Although mobile communication has expanded the scope of Sri Lankan housewives' activities beyond the household and increased their access to information, their use of the mobile is limited by the husband's control of household finances (Handapangoda & Kumara 2013).

Given these barriers and disparities in access, mobile telephony appears in some contexts to be expanding the social networks, activities, and technological literacy of men more rapidly than those of women and reinforcing patriarchal power relations. Recent research has expressed concerns that the benefits of mobiles will remain with socio-economically privileged groups and that gender-based inequities will be exacerbated (Primo 2003; Zainudeen et al. 2010; Jouhki 2013; Wamala 2014; Svensson & Wamala-Larsson 2016; Hafkin & Taggart 2001).

An intersectional approach to mobile use in the global South

This volume examines mobile technology use in the global South through the lens of intersectional understandings of power. Intersectionality is the notion that a person's subjectivity is constituted by mutually reinforcing aspects of power such as race, gender, age, class, and sexuality. It implies that one cannot fully understand the dynamics of power unless one understands all subject positions to be fundamentally constituted by these factors (Crenshaw 1989, 1991). To explain the multiple oppressions faced by that women of colour in terms of both their gender and their race, Kimberlé Crenshaw (1989) relied on the analogy of a four-way traffic intersection, in which cars coming from multiple directions could be the cause. If a black woman were a victim of violence, this could arise due to sex discrimination or race discrimination. In this vector-based metaphor, the resulting intersection is more than the sum of its axes, producing new kinds of oppression, that is, in the event of intersecting the inequalities themselves can undergo change (Walby et al. 2012, 228). Intersectionality does not, however, need to be approached using the spatial metaphor of an intersection of lines or vectors of power: variables of difference can be depicted as interacting, interlocking or co-constituted (Hill Collins 1990; Razack 1998; Dhamoon 2011; McNally 2017) and thus as dialectically constitutive of each other from the very beginning to more fully grasp the *systemic* relations between sources of social oppression.

Intersectionality helps us to take into account the multiplicity of power, oppression, inequality, and privilege (Nash 2008), and to critique and problematize identities that are often treated as fixed and essentialized but are products of political processes (Lykke 2010). An intersectional approach also allows us to challenge those identity politics that do not take into account intragroup difference, revealing important power

differences *within* social categories such as gender, race, ethnicity, class and caste. Since intersectionality focuses on the experiences of marginalized subjects whose voices have been ignored, an intersectional approach allows marginalized subject to contribute a uniquely 'bottom up' perspective well suited to envisioning an equitable society (Matsuda 1987; Crenshaw 1989, 139; Nash 2008). This bottom-up perspective is complemented by the finer-grained analyses of empirical data collected through ethnographic interviews and participant observation, which are better suited to measuring the subjective benefits of mobile telephony than large-scale surveys (see Murphy & Priebe 2011; Chib & Hsueh-Hua Chen 2011; Doron 2012). Moreover, large-scale surveys cannot capture the nuances of users' *own perceptions* of the barriers to mobile information access (see Fernández-Ardèvol this volume) or the expectations motivating people's use of mobile technologies, not to mention the multidimensional cause-and-effect relationships behind particular uses and consequences of that use (see Wamala-Larsson this volume).

Two reasons stand out for why an intersectional approach is vital to studying gendered aspects of ICT uptake. First, it is vitally important that researchers specify *which* women and *which* men we are talking about. A persistent problem in mobile-for-development research is the failure of most large-scale studies to distinguish among different education levels, socio-economic statuses, ages, marital statuses, and rural/urban residences of the men and women studied. Higher-income persons with more education in developing countries lead lives that may be unrecognizable to the poorest in the same society, and older persons can have very different approaches to mobiles than younger persons. Policies and technologies designed to benefit all women can thus end up affecting rich women differently than poor, elderly women

differently than younger women, or women within minority groups differently than in so-called majority populations. Without data and analysis disaggregated for numerous variables, it is likewise impossible to build explanatory or predictive theory within the M4D field.

Second, an intersectional approach alerts us to the inherent biases in the imagination and design of information technologies. In our increasingly interconnected world, all users represent living intersections affected by multi-dimensional issues. When technologically is added as a factor to this already complex analysis, it becomes clear that technology, too, is devised from the outset by other elements of social power and has no independent existence outside of them – a conclusion already drawn in the 1980s and 1990s by the Social Shaping of Technology (SSA) and Social Construction of Technology (SCOT) approaches. These approaches rejected views of technological determinism and saw the impact of a particular technology as deriving not from the design itself but from the struggles and negotiations among interested parties (Pinch & Bijker 1984; Bijker et al. 1987; Williams & Edge 1996).

Technology is thus never neutral with regards to power, but is a product of power relations, with social configurations already ‘built-in’ to its structures and functions (Wajcman 2010). Social constructionist approaches view technologies as broad-based systems comprising not merely physical artefacts, devices and infrastructures, but also social and cultural patterns of behaviour, regulatory laws and policies, education and know-how. Technologies are cultural enterprises that reflect systems of relations such that they comprise ‘an integrated system of programmed structures, organized

mechanisms of management and control, and processes of production and reproduction' (Terry & Calvert 1997, 5; see also Wajcman 2004, 7). Seeing technology as a social construct means recognizing that technologies embody gender differences (Litho 2005). This has not gone unnoticed by software developers and designers who seek to anticipate and design for unexpected use-cases when conceiving and planning a technology, tool, or when addressing political, health care, security, education or environmental issues.

Usage can be shaped by the ways in which people adapt technologies to their needs and interests, which means that users themselves can drive change (Wamala 2013). Platforms and services originally designed to solve particular problems for a subset of people in North America or Europe can spread to other parts of the world and be used for entirely different purposes such as conducting mass political demonstrations (cf. Hermanns 2008; Kim 2003; Min 2003). The mobile money transfer systems invented first in the Philippines, then separately by informal users in Uganda to remit money long-distance at least one year before Kenya's M-pesa (Chipchase & Tulusan 2006) are now helping poor households organize same-day cash to buy meals (Stark this volume). Yet without more information on how mobile phone use varies across socio-cultural contexts in the global South and how it is implicated in gendered relations, power structures, local meanings and practices, user-driven change is difficult if not impossible to anticipate.

At the same time, assumptions about functions and uses built into technology can limit the benefit and utility received from them. For instance, the hierarchical structures of

operating systems and text-based searches may not be useful for oral-knowledge communities with limited access to quality education (Winschiers-Theophilus et al. 2010; Dodson et al. 2013, 81; also Martinez Suárez & de Saleta Agra this volume). Designers often view a greater number of features as desirable in a mobile product, but this often reduces usability for low-skilled users. To be more inclusive, mobile features would need to be guided by the low-skilled user's motivational needs rather than by market pressures (van Biljon et al. 2007; Dodson et al. 2013, 81). On the other hand, as Akrich (1992) and Latour (1992) argue, the 'scripts' written/designed into mobile telephony are open to various interpretations when users interact with mobile phone features because users not only challenge, but at times even rewrite or reject these 'pre-scriptions' in the technological design of mobile phones. Users can also renegotiate the meanings, symbolism and uses of the phone. Thus what a technology is or becomes is open to interpretive flexibility, and in this becoming, users-as-agents are equal contributors to the design process and to shaping their relationship with technology.

Key variables used in an intersectional analysis in M4D research include not only gender and age but also rural vs. urban residence, education levels, and income. One of the most important factors contributing to inequality is infrastructure and how users are positioned – through locality and use-rights – to access it. Infrastructure gaps such as lack of reliable electricity or low network coverage can disproportionately affect girls and women in especially rural settings. For rural women with no electricity, even travelling to nearby market towns to charge their phones is inconvenient and expensive (Murphy & Priebe 2011). Porter et al.'s (2012) study of mobile phone usage among the youth in Ghana, Malawi and South Africa indicates that where phone usage

is low and the technology newly adopted, as in rural areas of Malawi, male users predominate, but as phone usage grows, as in South Africa, girls start to predominate. This is because the use of mobiles is impacted by girls' relative lack of free time and constraints on their independent mobility where network access is only available when a journey is made to a site away from home. As Porter et al. (2012, 13) point out, '[i]n high-use areas, better reception will enable females to fit phone use more easily into their busy working days tied to the domestic sphere, since they do not have to walk to remote areas to obtain a signal' (also Pérez this volume; Martinez Suárez & de Saleta Agra this volume).

Another factor often neglected in gender-related M4D literature is *language* (see Martinez Suárez & de Saleta Agra, this volume). Mobile access and literacy are greatly complicated by the fact that there may be as many as 7000 languages spoken today, of which two-thirds do not have a written form; and there are roughly 500 million non-literate and low literate women in the world (Dodson et al. 2013). The first language of many users is not supported by the mobiles available for sale or resale in their locality. For example, in Morocco where Dodson et al. (2013) studied the challenges faced by Berber women where numerous different writing and numerical systems are already in use, the situation is complicated by the fact that used phones owned operate in unfamiliar Western European languages. Since the English-language numerals used in Chinese-manufactured phones are often not the numerals familiar to users in many societies including those in Asia or Arab-speaking regions, and since smartphones are more complex to use than the older feature phones, it is education levels rather than other demographic factors that often enable phone use especially among the younger generation (Tenhunen 2014a).

An overview of the book

This volume applies an intersectional lens to the use of and access to mobile telephony in developing contexts, gathering scholars focused on development from disciplines such as medical anthropology, gender and technology, media studies, philosophy, ethnology and feminist technoscience. The methods employed in the data collection for these chapters are just as richly diverse, from online ethnographies, to interviews, surveys, oral narratives, and observations Some draw on mixed methods to examine the intersection between gender and mobile telephony. Its research can broadly be located within the field of gender and technology, a discipline that has benefitted from feminist inquiry, and its chapters highlight the complexity that development adds to the gender/technology relationship. Its authors use the study of mobile telephony as a point of departure to investigate the production of gender and other social variables implicated in social inequalities, as well as how these variables produce situated mobile telephony practices. It illustrates how social variables other than gender are at times have a significant impact on the types of relationships that users develop with mobile technologies.

The volume is divided into three sections. Some sections explore the same intersectional variables or theoretical analyses. Other sections have chapters that examine the same mobile platform in exploring the gender-mobile relationship. The sections are: 1) Mobile money in transacting femininities and masculinities; 2) Mobile

connectivities: negotiating age, gender and agency; and 3) Mobile continuities at the intersection of ethnicity, class and gender.

Part I: Mobile money in transacting femininities and masculinities

Mobile phones function as more than communication devices, and their proliferation has encouraged a diversification of services aimed at retaining customers. One such service is mobile money, in which the SIM number acts as an identifier similar to what would conventionally be a bank account number. Mobile financial transfers are being used in most transactions in East Africa, there has been a growing interest in the impact the platform is having on social relations and on gender in particular. Mobile money in Africa began when informal users in Uganda began to remit money long distance (Chipchase & Tulusan 2006), and mobile money transactions are today a daily practice for millions of East Africans. The chapters in this section examine the co-construction of mobile money and gender in Kenya, Tanzania and Uganda, making visible the convergence of mobile phone features other than calls and SMS in the shaping of representations and practices linked to femininity and masculinity.

The chapter *Gender and mobile phone usage in Kenyan women's everyday life* by Jessica Gustafsson explores the integration of mobile phones in the lives of women from Gishu county in Kenya, and the meanings and symbolism attributed to this technology. At times, the women engage in what Gustafsson refers to as 'adaptive preferences' (Masika & Bailur 2015, 43) by actively choosing the ways *not* to engage with the technology in response to the power structures that order their lives. The

mobile phone is used to nurture social ties, and within these negotiations some women find spaces to exercise a modicum of agency. When their male urban migrant partners send them mobile money, these women – who live with their in-laws or extended family members – can decide without the family's interference how the money sent will be distributed or spent. The mobile phone encourages these women to be entrepreneurs, because as women acquire the technology they find opportunities to earn income and many transactions are mediated through the phone. Gustafsson suggests, however, that even with new spaces for agency and opportunities for income generation, entrepreneurship increases women's workload and the additional money earned by women has not challenged the gender order but has actually reinforced it. This is because kinship ties and gender-based expectations for women remain strong despite any new economic opportunities that might open up for them.

The chapter *Sex, social reproduction, and mobile telephony as a response to precarity in urban Tanzania* by Laura Stark focuses on chronically poor residents of Dar es Salaam, Tanzania. The chapter engages with the material-feminist concept of social reproduction to understand the deepening precarity of the urban poor in Tanzania and their gendered responses to it. The use of mobile telephony by the poor centers on daily negotiations of survival. As families rely on each other, working husbands or adult children send mobile money home on a daily basis to ensure the family members at home can purchase food for the day. Working family members need not return home in person to deliver the money, but can do so through the phone that allows them to invest more hours in the day seeking work or earning money. The mobile phone also facilitates transactional intimacy for mothers who seek male providers. In some cases, the women cultivate sexual/intimate relations with multiple men that

makes it possible for these women to obtain enough money to support themselves and their children. The mobile phone is crucial in these negotiations as it both allows for mobile money remittances and gives the poorest women a small amount of security and control over their sexual relationships.

In *Rethinking financial inclusion: social shaping of mobile money among* bodaboda *men in Kampala*, Caroline Wamala-Larsson explores the concept of young men's financial inclusion linked to the proliferation of mobile money in Uganda. The adoption of mobile money as a platform for financial transactions has facilitated enthusiasm that the service can assist in alleviating poverty. Mobile money has exploded across all sectors in Uganda, but it has had an transformational impact on the informal sector. Wamala-Larsson looks at male drivers of informal transport motorcycle taxis colloquially referred to as *bodabodas* in order to understand their mobile money experiences. The *bodaboda* industry is dominated by young men and relies heavily on mobile money to manage their private and business affairs. Wamala-Larsson takes mobile money as a point of departure to explore how the practices around it feed into and shape *bodaboda* masculinity. Young men in a profession that garners little social respect use mobile money to construct a positive masculinity and thus participate in co-constructing technology and gender.

Part II: Mobile connectivities: negotiating age, gender and agency

The second section takes up mobile phone use practices such as phone sharing and proxy agents in use. For Peru, the first chapter discusses on the marginality of old

women and their mobile phone relationships, while the second addresses the marginality of young rural women and how mobile phones open up spaces for negotiating agency. The third focuses on the marginality of HIV positive women in Ghana and their reliance on mobile communication for counselling and other health information. In these contexts, sharing mobile phones is at times the only access options the women have to the technology. Some women require the assistance of relatives or friends in using certain mobile phone features such as SMS. This type of proxy use and the sharing of devices extend access but it also structures a limited type of use for women.

In *One phone, two phones...four phones: older women and mobile telephony in Lima, Peru,* by Mireia Fernández-Ardèvol contributes an important social variable to the discussion of mobile communication inequality: age. Women over 60 represent a growing demographic of often marginalized users of digital technologies world-wide. In Lima, social class intersects with age in shaping 'affordances of use' through the quality and type of device used, the usage modalities afforded by the device, and female users' skills. Fernández-Ardèvol considers age to be a social construction made visible in social relations. In some cases, the non-use of mobile phones for these women is as the result of a lack of social networks to assist the women in their communication, in other cases women have limited resources and rely on their children to purchase a phone for them or replace a broken one. Women also described their mobile phone use in comparison to their male spouses, and suggested that they are more skilled in this use. Fernández-Ardèvol identifies degrees of competence and affordances of use among the women, concluding that age is a significant factor in

shaping these affordances, but also interfaces with gender and class in restricting or expanding mobile use.

In the chapter *Redefining Relations: The Appropriation of New ICT by Young Rural Women in Peru,* Mariana Barreto Ávila and Andrea García Abad examine the mobile phone use of young women in rural Peru and draw interesting comparisons with the older Peruvian women in the previous chapter. Young rural women's mobile phone experiences are shaped by their dependency on family members, the sharing of phones and their limited education. Here Barreto Ávila and García Abad suggest a rethinking of women's agency. These women are between the ages of 14 and 35, and many of them marry young. Before they marry, parents also give phones to their daughters in order to monitor their whereabouts throughout the day. As they leave home, they are often given a phone as a gift from their parents. Husbands and in-laws rely on the phone to maintain contact with the young woman throughout the day. In domesticating mobile technology, these young women also use mobile phones to sidestep this control. The same technology used to monitor them allows them the opportunity to challenge others' control over them by developing their social networks and ties with other rural young women and helping them counter familial surveillance.

In *Reinforcing inequalities? Mobile telephony and HIV/AIDs in Ghana*, Perpetual Crentsil discusses the growing use of mobile phones to counsel and provide information to HIV positive women in Ghana. Those who have mobile phones call their counsellors and then hang up so that the counsellor will bear the cost of the call. Health workers are expected to call back their patients and give them information. Deliberate missed calling is thus common practice in sub-Saharan Africa, and it is

women who engage most with the practice in part due to limited financial resources. There is still a significant stigma surrounding HIV positive persons in Sub-Saharan Africa and women in particular are marginalized and blamed for infection, hence women strive to keep their HIV status secret from their spouses, extended families and the community at large. Here mobile phone access is helpful to many women who may not have the opportunity to go in person to health centers for counselling. Crentsil shows that most of the women she studied access mobile phones through husbands, neighbours or other persons, and this compromises their need for secrecy. Access to health information is mediated by mobile phones, but the same phones are also implicated in the spread of HIV. Crenstil shows how transactional sex between younger girls/women and older men is often mediated by mobile phones and the practice of gifting mobile phones is a common way for men to find intimate heterosexual partners in Ghana. The mobile phone is therefore implicated in both the reinforcement of inequalities and the marginalization of women in economic and health terms.

Part III: Mobile continuities at the intersection of ethnicity, class and gender

The third section of the book discusses movements by mobile phone user communities living on the social or geographic margins in Uganda, Ecuador and Mexico. These activities are emancipatory as communities consciously build their own communication infrastructures and design technologies, thus countering ethnic and gender stereotypes associated with use and access to mobile phones. Two chapters address the challenges to mobile telephony usage posed by geographical isolation and

mountainous terrain, and depict the lengths to which users in these regions will go in search of a mobile network signal. The material in all three chapters offers an alternative to digital divide narratives and highlights the commitment of so-called marginalized users to taking charge of their access and use.

In the chapter *Women's tech initiatives in Uganda: doing intersectionality and feminist technoscience* by Linda Paxling, the focus is on female coders and programmers in Uganda's tech hubs who seek to challenge the 'patriarchal structures in ICT' in which women are the recipients and not developers of technology. Paxling's chapter examines the women who design mobile apps and digital platforms for needs specific to Uganda. Paxling analyzes the Girl Geek Kampala and Women in Technology Uganda initiatives as spaces in which women are mobilized to develop and engage with technology. The visibility of women making technology casts them as agents in this context who challenge the enduring masculine image in the design and distribution of technology.

In *Digital snails? Shuar women and mobile communication in Ecuador*, Yolanda Martínez Suárez and Saleta de Salvador Agra look at a marginalized group of mobile phone users in Ecuador. The Shuar women in Ecuadorian Amazonia are off the state-supplied grid of communication, yet through the feminist image of the 'snail', the authors explore how these women counter discourses of mobile phone imaginaries in this context. The digital snail as a feminist analogy makes visible the symbolic meaning attributed to mobile phones by Shuar women. 'Like snails hiding in their shells, [these women] check their messages, admire their pictures, or call a friend or relative. But they may also escape the physical space they occupy and travel to virtual space of the cell phone'. The authors suggest that Shuar women's concept of home

travels with them in the form of the mobile phone, and for a group that has already been nomadic, the accompaniment of a mobile phone produces a new kind of nomadism. Part of this digital snail nomadism involves long-distance travel in search of mobile networks, and these women also manage to exercise a daily presence in their homes thanks to the mobile phone. In doing so, they must adapt the Shuar language to a digital platform that does not support their language. Even though the phone speaks 'Spanish only', Shuar women have devised a Shuar digital language that allows them to type and read text messages. As digital snails, Shuar women adopt and integrate the mobile phone into Shuar culture, but the Shuar culture and language have also impacted mobile phone use.

The chapter *Communitarian mobile telephony services in rural Mexico: Red Celular Talea de Castro and Telecomunicaciones Indigenas Comunitarias* by Lorena García introduces two indigenous mobile network projects in Oaxaca Mexico, a region that has been ignored by the major telecom providers in the country because they envisioned little or no economic return on their investment. These indigenous communities have built their own innovative communication infrastructure, demonstrating the agency of end users in these processes but also the democratizing potential of mobile phones. Although the use of mobile phones has been labelled as transformative, the utility of these devices lies in the infrastructure provided by mobile network operators (MNOs) expecting to reap a profit from it. Where no profit is envisaged, as in the case of the geographically isolated communities studied by Pérez, no infrastructure is provided. Pérez's chapter discusses users on the margins of this infrastructure and how they have circumvented these limitations. She analyses the agency of these indigenous groups through the capability approach and advocates for the ideology of ICT for Human Flourishing, extending Nussbaum's (2011) discussion

of human capabilities to include access to and use of ICT as a vital part of racial and ethnic equality.

Concluding remarks

Most gender and technology studies using an intersectional approach list race, gender and class at the top of the social variables whose mutually shaping forces and intersections are examined. Yet factors such as age, geographical residence and indigenous experience are also key factors in mobile technology use and access. Since the patriarchal global economic order reproduces itself as male-centered and capital-centered in all societies, it is important to disaggregate responses and innovations to it not only by gender and class, but also by age and ethnicity (Barreto Ávila & García Abad this volume; Paxling this volume; Pérez this volume, Martinez Suarez & de Salvador Agra this volume).

Moreover, investigating the use of mobile communication technologies in the Global South by using an intersectional approach entails not just looking at familiar things through the lens of new terminology. This intellectual roaming must be coupled with an empirical roaming in the choice of research questions and approaches. Just as there have crystallized established ways of thinking gender and technology in terms of metaphors, theories and scholars, there is also an established way of doing gender and technology. The field (from a development perspective) still tends to focus on women rather than men. For instance, mobile telephony is a flexible technology that has been used by men to respond to changing kinship relations and the norms and

responsibilities of masculine providership – both those that men are seeking to avoid as well as to maintain as part of their masculine status and identity (Stark this volume; Wamala-Larsson this volume). Research on mobile technology for development has also not given adequate analytical focus to alternative forms of engagement with the technology such as everyday uses of mobile money – a fruitful new avenue of exploration that connects with gender and the economy – or the use of mobile telephony and mobile money within more intimate aspects of women's and men's lives such as marriage or transactional sex (Crentsil this volume; Gustafsson this volume; Stark this volume; Wamala-Larsson this volume).

The field also needs to maintain its awareness of the structures and processes of inequality within the broader society and technology's role in them. Several chapters in this volume (Crentsil; Gustafsson; Martinez Suárez & de Saleta Agra) discuss how increased connectivity through mobile phones by more privileged members of society is resulting in a relative disadvantage for the less priviledged. Indeed, this disadvantage reflects broader socio-economic systems of inequalities, with mobile technology being merely one medium and mechanism of these processes, not necessarily their driver. Benefits of mobile technology follow the lines and fractures of pre-existing social structures, and particularly socio-economic and educational differences are leading to new digital divides.

One observation that can be gleaned from several chapters in this volume (Crentsil; Stark; Wamala-Larsson; Pérez; Martinez Suárez & de Saleta Agra) is that in Sub-Saharan Africa and Latin America mobile phones are being used to bridge the 'need gap' between what people need in terms of services, infrastructure, and resources and

what is actually being provided to them. That the use of mobile technology can facilitate the meeting of these needs is a positive development, but also as a matter of concern if mobile service delivery – a profit-seeking industry – becomes the primary or only service enabling survival for groups such as the poor, rural residents, and HIV-positive patients.

This has important implications for gender as well. In several chapters (Barreto Ávila & García Abad; Gustafsson; Stark), a spotlight on women's mobile usage underscores their severe economic dependency on family and male partners. There is abundant evidence that mobile telephony is creating spaces for women's agency in many societies in the global South. However, the question arises whether it also perpetuates economic inequalities by being a quick-fix tool for marginalized groups to cope with the increased stresses and burdens of neoliberal capitalism and patriarchy.

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