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# Mobile Money: Communication, Consumption and Change in the Payments Space

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**ABSTRACT** *This article explores the emerging field of ‘mobile money’: mobile phone-enabled systems for value transfer and storage, primarily in the developing world, which are heralded as signal interventions in the effort to broaden financial inclusion and bank the ‘unbanked.’ Focusing on the stories that circulate in the emergent network of expertise that is calling ‘mobile money’ into being, it discusses how economic techniques and social narratives about markets – specifically, narratives about the opportunities for profit and financial inclusion in the ‘payments space’ – format a consumer market for mobile money. Furthermore, it asks whether end-users’ repurposing of mobile money – and the use of airtime as currency – heralds a new means of exchange or store of value, potentially remaking money in the process.*

## **The Social Life of Airtime**

In Kenya, over 13 million people subscribe to a service called M-PESA to send money to friends and relatives cheaply and securely over mobile phones. M-PESA is a mobile-phone money transfer service using text-messages and a network of retail agents as cash in/cash out points (Mas and Morawczynski, 2009; Jack and Suri, 2011). In the Philippines, people remit money to family members on remote islands through a similar service called Globe GCASH, used by over two million. And in India, a company called Eko is trying to use people’s existing familiarity with instant messaging to provide funds transfer and financial services in a nation where mobile phone subscriptions are increasing at a rate of 10 million per month. An information technology consultancy firm declared in late 2009 that mobile money transfer would be the number-one consumer mobile application for 2012 (Gartner, 2009). Major international industry consortia like the GSM Association (GSMA), representing the world’s mobile network operators, and giants in poverty alleviation like the Consultative Group to Assist the Poor (CGAP), the World Bank’s International Finance Corporation (IFC), the UK Department for International Development (DFID, recently re-branded UKAid), and the Bill and Melinda Gates Foundation have joined forces to harness ‘mobile money’ as a means of financial access for the world’s poorest people. Launching a ‘Mobile Money for the Unbanked’ grants competition in 2009, these organisations are collaborating with the goal of providing access to banking services to 20 million new people by 2012.<sup>1</sup>

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Mobile money appears to be an example of melding private interest and the greater good, the kind of convergence that is exemplary of C.K. Prahalad's 'bottom of the pyramid' (BoP) approach to development (Prahalad, 2009; see Cross and Street, 2009). Mobile network operators and device manufacturers, looking to increase revenue, turn towards a relatively untapped market among the world's poorest and, in the process, provide services that enhance financial access. Profitability and financial inclusion go hand in hand. Central to the BoP framework is the idea of 'the poor' as consumers, a framing that depends on a prior formatting of large segments of the world's population as an undifferentiated 'poor' capable of being turned into consumers. In this framing, the poor are rendered relatively passive, aside from their consumer choices.

Mobile money complicates the story. Instead of finding people simply adopting a new system for value transfer and storage, we find people adapting and modifying those systems. These systems involve money itself – the means of exchange usually assumed to be the medium that facilitates consumption, and not (at least not for poor people) a consumable good in itself. Users of new mobile money services transform that means of exchange when, for instance, they sideline value transfer in favour of value storage: figuring out ways to save via mobile services in addition to transferring credit to another person. In addition, in the process of transforming money, they are also inspiring an emergent network that encompasses the personnel of industrial, non-governmental and development aid organisations. As people experiment with mobiles and money, they reformat the expertise of each other, whether they are rural Ugandan villagers sending airtime minutes to one another for use as currency, or policy experts at major multilateral organisations.

In this article, I bring together two theoretical literatures in order to understand the emergent phenomenon of 'mobile money,' both as a set of new services being rolled out and used, and as a globally distributed social network of expertise. The first literature is actor-network theory as it has been applied to the socio-technical arrangements that generate relations which come to be named 'economic' (for example, Muniesa et al., 2007; Caliskan and Callon 2010). Focusing on the stories that circulate in the emergent network of expertise that is calling 'mobile money' into being, I explore how economic techniques and social narratives – specifically, narratives about the opportunities for profit, financial inclusion and other goals in what participants term the 'payments space' – format a consumer market for mobile money.

The second literature is critical studies of consumption that draw attention to the socialities it generates as people creatively appropriate, reformat and modify consumer goods and services. Scholars of consumer appropriation of information technologies have demonstrated the importance of user/producer relationships that motivate change through user-driven innovation (Bar and Riis, 2000). As Bar notes, technology evolves in ways not anticipated by its designers. New applications 'often result from the accumulated experience of users themselves' (Bar, 2005: 52). If consumption foreshadows the 'creation, maintenance and modification of social ties' (Sassatelli, 2007: 54), and users of new products become crucial players in their building and maintenance (Bar and Galperin, 2007), the case of mobile money is significant in two respects. First, as a layering of a new service on a communications technology, it is already 'doubly circuited,' insofar as communications technologies are 'circuits to create [new] circuits' (Strathern, 1994: viii; see Silverstone et al. 1994). Communications technologies are never simply consumed and then finished; they remain in an active state of readiness to forge new relations (as long as they maintain an electrical charge – no trivial matter). Second, as people repurpose elements of mobile communications – whether airtime or a full-blown mobile money service – they set in motion a vast array of agencies, technologies, individuals and organisations all concerned with *money*, another consumable communications media, potentially remaking money in the process.

Since 2006, a new 'paradigm' has come into being in the mobile money space, a paradigm for how best to promote mobile money in order to further 'financial inclusion.'<sup>2</sup> This article is limited to a core issue underlying the mobile money for financial inclusion paradigm. The object of market research, planning and development, and the object of consumer desire, is a payments technology – often understood as 'money' itself. And the network of actors coming together over

the past five years to remake money has included the so-called clients of mobile money services and targets of financial inclusion interventions. Their use of mobile services, prior to and alongside the development of mobile money, expands the academic and development conversation about consumption, money, and the socialities they both inspire.

Arjun Appadurai's (1986) essay on 'the social life of things' re-oriented scholars of consumption to go beyond dichotomies of the West versus the rest, commodity versus gift, disembedded markets versus embedded socialities. With the phrase 'social life of things' he meant to bring the lives of things and people together in one frame to highlight their mutual relationships. People have always been innovative with their things, and things have always inspired novel action in their people. My contention is that the new socialities here require a shift in the analytical conceit that holds consumer, commodity, and exchange as stable and mutually exclusive, because new socialities are remaking *money*, which supposedly mediates those categories.<sup>2</sup> It would be easy to see mobile money as either a top-down affair (emanating from corporate and donor agencies) or a bottom-up affair (emanating from people's practices 'on the ground'). Instead, I argue that the networked relations among all the parties to the mobile money phenomenon, human as well as technological, confound the analytical separation of top and bottom, producer and consumer, person and commodity. Indeed, relationality itself plays a significant role in the creation of this new social space, as evidenced in the instability of mobile phone airtime. Airtime can be a commodity in one instance, an actualised, technologically-mediated relationship in another (through talk and text) and a method of payment, means of exchange and store of value in a third moment (when used as an alternative currency). It can continuously pass into and out of each of these moments – it is unstable, and reversible.

Airtime trading is archetypal in my analysis, which I intend to spur further analysis of mobile money and what it can do to social scientific and philosophical reflections on money. Airtime trading inspired mobile money service development. It also sparked regulatory concern. And people continue to practise it, alongside the deployment of mobile money services. As people find new things to do with those services – saving up M-PESA credit instead of transferring it, for example – airtime remains a reference point.

This article is based on over five years as a participant observer in the development of the mobile money industry. I draw on ongoing industry and philanthropic collaborations; 23 formal interviews with mobile money professionals in industry, academia, government and philanthropy; and first-hand participant observation at the user and developer/designer level. Like many mobile money professionals, I have experienced the past five years as a crash course in human/computer interaction, mobile technologies, retail electronic payments systems, and poor people's money practices. My interests have shifted over time along with those of other mobile money professionals, turning originally from issues like personal identity verification for mobile banking services, to innovative design, to bank/mobile network operator collaborations, to the place of mobiles in payment systems 'ecologies,' to the role of the state and the regulatory community, and the 'demise of cash' through mobiles.

Mobile money grabbed me very much by accident. In 2006, I began a series of research collaborations with Scott Mainwaring at Intel Labs, who was working on 'digital money'. Having written on local currencies and non-standard financial arrangements, I was in a position to situate industrial conversations about the future of money in light of such alternatives (see Maurer, 2005). Around the same time, mobile communications researchers in industry and personnel from philanthropic organisations began contacting me because of a review essay I had written on the anthropology of money (Maurer, 2006) The Bill and Melinda Gates Foundation was just beginning to pay attention to mobile-phone enabled financial services, instigated by the success of M-PESA. At the time, 'we' – the nascent community of inquiry and practice coming into being around 'mobile money' – still did not know whether M-PESA would achieve the kind of critical scale that many were predicting. M-PESA went from zero to a million subscribers within six months of its launch in March 2007. We were just beginning to appreciate the wider 'ecology' of payments systems and technologies within which M-PESA was situated. And we

were struggling for a language for the phenomenon. Indeed, the research on which I base this article pre-dates the wide currency of the term ‘mobile money’ itself.

In 2008, with the support of the Bill and Melinda Gates Foundation, I founded the Institute for Money, Technology and Financial Inclusion (IMTFI). IMTFI provides small grants to researchers around the world who are documenting existing practices for money transfer and storage, and the impact of the mobile phone and mobile money on those practices. This article also draws on this research.

The first section discusses how mobile money complicates consumption research because the commodity consumed slips between being a service and becoming money. It argues that mobile money has to be understood in light of an emergent sociality not limited to would-be consumers but the host of players devoted to creating such services. The next sections situate those players and their making of markets for mobile money. I discuss the convergence between market and philanthropic actors in the development of mobile money. I relate four narratives and two quantitative techniques through which the prototypical consumer of mobile money gets formatted (after Callon, 2007). Finally, I turn to how the mundane discovery of things you can do with mobiles feeds into mobile money design. I return to airtime trading, and what airtime might reveal about the problem of money more broadly. The emergent assemblage of actors, organisations and technologies involved in creating mobile money and formatting its markets includes poor people’s informal airtime trading, a kind of user-driven innovation. That innovation, together with that emergent assemblage, produces an instability in and reversibility to the equation of airtime with state-issued currency. This, in turn, opens the door to the remaking of money – either, for some in this space, the end of the state’s monopolisation of the means of exchange, or, for many more, a democratisation of the form and process of money as an open-ended, ongoing, socio-technical experiment, an experiment that goes under the name ‘financial inclusion.’

### **Consumption and Emergent Socialities**

Scholars of consumption demonstrate that poverty may ‘incite ... participation in consumer culture’, not merely restrict it (Lury, 1996). It is not surprising that East Africa is the central locus of mobile money product development and philanthropic interest. Historian Jeremy Prestholdt has documented the long history of East African people’s active employment and repurposing of Western consumer goods. The ubiquitous photographs accompanying development and mobile industry publications alike of people in ‘tribal’ garb using mobile phones are ‘juxtapositions of difference’ that ‘fail to appreciate the ways in which people relentlessly incorporate seemingly conflicting ideas and forces’ (Prestholdt, 2008: 2). Such juxtapositions replicate modernity’s own purification, which denies centuries of interdependence and cultural fusion, of consumers as active producers of their own worlds (Slater, 1999). But this, too, is a problematic image to rest alongside that of the tribal cell-phone user. The poor or indigenous as resisting subjects, appropriating Western products to forge their own insurgent identities, is a trope that has been ably criticised by anthropologists and development scholars for nearly two decades (see, for example, Ferguson, 1999).

Mobile money complicates such accounts of consumption. Van Kempen’s observation that ‘consumption is a communicative act’ (van Kempen, 2003: 159, following Douglas and Isherwood, 1979), takes on added meaning in the appropriation of new media of communication, especially when such media are repurposed to serve as money. This is even more interesting in light of the reversibility of this repurposing: when airtime minutes become a commodity used to purchase another commodity in one moment, but then in another moment become a commodity used to facilitate communication itself, the act of consumption introduces a creative instability into both the consumable commodity and the means of exchange and store of value – now, airtime; then, money. Anthropologist Mei Zhan argues that consumption produces ‘emergent socialities’ (Zhan, 2005): here the emergent sociality may be less East Africans’

communicative networks – which, of course, predate mobile services – but the philanthropic, development, regulatory and business communities drawn into their orbit, the strange bedfellows now muddling through toward the convergence of a new paradigm and a set of ‘hypotheses’ (like ‘paradigm,’ a native term): ‘mobile money for financial inclusion.’

Although industry analysts had used the name ‘mobile money’ in the past, it was not until the first ‘Mobile Money Summit’ in 2008 that the term was widely applied to a variety of technological systems. By the time of the second Mobile Money Summit in 2009, the phrase ‘mobile money’ had entered into common use among those involved in creating new electronic payment systems based on mobile phones. The second Summit was hosted by the GSMA and, like the first, included support from DFID, CGAP, and IFC. It also attracted new sponsors. These ranged from Western Union and Visa, which made major announcements at the Summit about their own ventures into mobile money, to smaller players like Telepin, a software company.<sup>3</sup> The Summit brought together businesses developing money transfer systems using handheld devices like mobile phones, branchless banking via networks of agents in retail stores, and various silicon chip-enabled systems for transferring funds.

The excitement around mobile money draws on the potential for mobile phones to enhance social and economic development. That buzz is itself a product of the rapid worldwide spread of mobile telecommunications. Beginning with DFID’s funding of several large-scale research projects (see Horst and Miller, 2006),<sup>4</sup> and continuing through the work of researchers at various industry laboratories in the developing world, most notably, perhaps, Microsoft Research India (see, for example, Donner and Tellez, 2008; Donner, 2008), the idea that mobile telecommunications could be harnessed for development spread almost as fast as mobile phones themselves.<sup>5</sup> It also spread through professional networks, as researchers in one venue, say, Microsoft, took up employment in others, say, CGAP.

Industry and academic researchers usually attribute the rapid dissemination of the mobile phone to infrastructural leapfrogging: there is no need to lay cables, no large-scale infrastructure projects required to set up cellular service (Bar and Galperin, 2007: 1). The ease of deployment is particularly significant in remote, mountainous, or environmentally sensitive contexts. Not coincidentally, this is part of the pitch of mobile network operators to the Ministers of Communications or other state functionaries. That pitch also includes, *de facto*, an argument for the privatisation of infrastructure development, as well as ‘regulatory flexibility,’ and often, a retreat of the regulatory state (see, for example, Pyramid Research, 2009; see also Likosky, 2005).

### **Toward Mobile Money**

It can be difficult to appreciate the historical novelty of retail electronic payments systems. Most of the industrialised world has been living with plastic credit cards and other payment instruments for half a century. Yet in 1900 most people made payments with cash, cheques, bank drafts or store credit recorded in a paper ledger or a merchant’s memory. Mobile money derives from the past 50 years of conjuring a value chain in the act of payment: creating new payment systems to foster ‘efficiencies’ but also to generate revenue through transaction fees. The contemporary payments industry is based on the conceptualisation of payments as a ‘space’ within which one can develop value propositions. Mobile money proponents seek to do more than generate profits: they seek to create a new infrastructure, new ‘rails’ in the words of Bill and Melinda Gates Foundation staff, on which to roll out new products for financial inclusion (Mas and Radcliffe, 2010).

People working in the ‘payments space’ use that phrase to refer to a new world of retail electronic payment systems – everything from credit cards based on magnetic stripe technology, to radio-frequency ID chips used to store value and/or access a remote account, to mobile phones used in various ways as carriers of money, or airtime minutes, text messages and other things that can be transferred from mobile-to-mobile as a form of currency, to mobile point-of-sale terminals reverse-engineered to serve as a channel for banking and financial services (see Benson and Loftesness, 2010).

Many of the inhabitants of the payments space are at sea as they navigate actual and possible moneyscapes. Some are trained economists. Some have very little grasp of any existing theories of money or any knowledge of where money comes from, how the money supply works, the distinction between bank money and public credit, what inflation and deflation are. In other words, with no orthodox knowledge or experience of money other than their mundane transactions and eureka moments, some actors in the payments space are trying to grasp it, understand it, harness it, profit from it, all the while potentially remaking it. They are all ‘economists in the wild,’ in Michel Callon’s (2007: 336) phrase: not the ‘confined economists’ of the academy but actors with a range of different kinds and levels of expertise whose actions format economic things.

Advances in mobile technology and the worldwide spread of the mobile phone have encouraged industry participants to add functionality to devices to increase ‘average revenue per unit’ (ARPU). New functionalities place higher bandwidth demands on networks and thus the potential for enhanced revenue – hence the interest of the GSMA in mobile money. Mobile funds transfer is attractive to mobile providers in developing world markets where many people – even non-subscribers – have access to a mobile phone but limited access to banking and financial services, and where the premiums for entry into the latter are relatively high.<sup>6</sup> Industry actors calculate that extremely high volume, low value transactions – propelled by the billions of ‘unbanked’ people in the world – can become a significant revenue stream. Mobile phones could be turned into a cheaper, more efficient and profitable replacement for wire transfer services. The addition of money transfer service to the mobile phone, it is thought, could encourage people to use their phones more heavily and to have more loyalty to their network provider. The phenomenal success stories of two or three early entrants into the mobile funds transfer market – particularly M-PESA and GCASH, but also earlier experiments like Wizzit in South Africa – attracted industry interest. It also caught the attention of non-governmental organizations (NGOs) and philanthropic organisations concerned with access to financial services for poor people around the world (see Duncombe and Boateng, 2009).

Informal money transfer mechanisms of ‘the poor’ also sparked the interest of industry, from tiny start-ups to hoary behemoths. Spurred on by reports (coming from the ‘wilds,’ from ‘the middle of nowhere,’ as a few people put it to me) of sharing air-time minutes in Uganda and elsewhere, and using them as a form of alternative currency with an exotic-sounding name (*sente*), people across a range of industries began to explore what poor people were doing with new technologies (Chipchase, 2009). With the remarkable media success of M-PESA, hundreds of companies and thousands of individuals began to pour time and money into the quest to develop the next big thing in money itself. Some even posited the mobile phone as the last stage in an ‘evolution’ in money, from shells, to coins, to paper, to plastic, to dematerialised data in computers and now in mobile phones –and, as an anthropologist, I have often been called on to warrant such a tale (and I demur).

### **Making New Services: Stories, Metrics, Formats**

The excitement around mobile in the payments space can be explained by the convergence of three factors, each of which contributes to the emerging mobile money actor-network:

- (1) increasing interest among financial and communications service providers in enhancing fee-based revenue;
- (2) awareness that information and communications technology can reach deeper into the global South than many other institutions and industries because of the relatively low infrastructural requirements and light footprint compared to laying cable or building bank branches; and
- (3) increased attention given to microfinance, particularly since the awarding of 2006 Nobel Peace Prize to Grameen Bank founder, Mohammed Yunus, which has in turn drawn

increased attention to problems of access to financial services in general. Such attention culminated in 2009–2010, with the adoption of an explicit ‘financial inclusion’ agenda by major multilateral bodies, including the G20 and World Economic Forum, which built on earlier efforts of the UK and World Bank to promote such an agenda (see Manji, 2010).

With mobile money, a range of actors – development experts, industry analysts, entrepreneurs, potential or actual clients – are beginning to construct the repeated interactions, financial transfers, and movements of people and money across and within borders as a regularised and ‘real’ geography. Once they do so, that payments space can then function as ‘infrastructure’ for various other projects – here, for providing access to banking and financial services to the world’s poor. And that imagined infrastructure can be commoditised, or made into a free good; it can be privatised, or made into a global commons (Elyachar, 2010).

The set of actors, technical systems and forms of expertise that are creating mobile money includes stories, as well. As director of a mobile money research centre, I have often been asked to provide narratives to educate newcomers to the field, to assist in advocacy, or to brainstorm about regulatory or policy issues. This led me to start paying attention to narratives that professionals were telling each other all along. What follows are brief renditions of these tales. These narratives frame the discussions of those seeking to understand, shape, and profit from the payments space. As such, they are part of the networked assemblage calling mobile money into being. I call these narratives the Empowerment Story, the Market Share Story, the Commoditised Payment Space Story, and the Tulip Story. My account of these stories is meant to be heuristic rather than descriptive of a ‘real’ story being told by any particular individual, although many people concerned with the payments space – researchers, industry practitioners, and clients alike – will narrate their experiences with electronic payments in these terms.

The Empowerment Story is best encapsulated in Vodafone’s policy paper ‘The Transformational Potential of M-Transactions’ (Vodafone, 2007). The Vodafone report contrasts the extensive mobile telephone penetration in the developing world with the extremely low level of access to banking and financial institutions. If only mobile phones could be harnessed to supply financial services, then the world’s poor could access money and capital. They could connect to microfinance institutions even if located in rural areas, and could benefit from remittance flows from friends and relatives living abroad without having to depend on middlemen or wire services that only reach the major cities and charge high fees. At the centre of the Empowerment Story is the relative success of Safaricom and Vodafone’s M-PESA service in Kenya. M-PESA was piloted in 2005 as a public/private initiative (with funding from the UK’s Department for International Development) and was launched commercially in 2007. M-PESA does not require users to have bank accounts; they can purchase digital funds using cash at an authorised agent and then send it to any other mobile phone user, who can redeem the cash at another agent. The story-line is that such mobile payments are ‘transformational’ in that they allow greater access to money and finance to the rural and poor without access to banks; they foster greater social connection among kin and countrymen widely dispersed in geographic space; and they do so safely, securely, and easily. The Empowerment Story is obviously a seductive narrative about empowering the poor through mobile technologies. It is also good copy for businesses seeking to enhance their reputation for corporate social responsibility, and might even be true.

The Market Share Story is also seductive and utopian, but it is organised differently and told through a different cast of characters. Here, the story is about international migration and the enormous flows of money going from north to south in the form of remittances, which are on a scale on par with flows of foreign direct investment. This story centres on Western Union and other wire services. With 320,000 locations worldwide and a network of agents who are often established community members or local business owners, Western Union works hard to promote itself as a trusted brand that enables migrants abroad not just to send money, but also to express love: “‘Sending so much more than money’ is a common tag line’ (DeParle, 2007).



Western Union fees range from 4–22 per cent of the transaction, depending on the source and destination countries. New payments systems enter the story as alternatives that will allow people to send money without having to pay large fees. The narrative is thus utopian in terms of social justice and financial access. It is also utopian according to market logic: creating alternatives to existing services demonstrates the market working at its best, with new entrepreneurs providing a competitive service. At its core, the Market Share Story is about both using electronic payments systems to shave market share from existing money transfer services and expanding the pie for all by creating new markets.

The Commoditised Payment Space Story is about the increasing importance of fee-based income for financial, network and communications service companies. Banks have long been interested in charging for the added value of different services. Citibank's John Reed has touted fee income over other more traditional forms of bank revenue since at least the 1980s (Budnitz, 1997). This model differs from the traditional industrial emphasis on producing things. Here, corporations charge for intangibles and services deemed to add value to the experience of the transaction (Vandermerwe, 1997). The Federal Reserve Bank of Philadelphia's Payment Cards Center has discussed the possibility for electronically-mediated micropayments (of \$5 or less) as a new revenue stream for service providers; MasterCard and Visa both exploit fee income from small transactions (Mcgrath, 2006). A large number of small transactions can generate a significant fee-based revenue stream that is not subject to the same risk profile as activities like lending. In this story, charging lots of small fees is a hedge against the risk of a major market meltdown in other sectors – such as the recent global financial crisis (and, in fact, the major card networks have witnessed increases in fee revenue during the financial crisis, primarily from consumers' increasing use of debit cards for everyday purchases). The world's billions of poor people conduct numerous small transactions which can add up to a relatively constant source of income and flow of wealth from South to North, less affected by financial market turbulence than the world's wealthy.

The promise of remittances for development hinges not just on the money remitted but the transfer fees. As others have argued (Datta et al., 2007; Hernandez and Coutin, 2006), development policies focused on remittances also depend on people remaining categorised as 'migrants' rather than 'citizens,' and on states shirking responsibility to provide for the social welfare needs of their workers. Central banks are concerned about the possibility that the provision of private electronic payments systems will impact their monetary policy and seignorage revenues – the revenue that central banks earn from the issuing of currency (Committee on Payment and Settlement Systems, 2004). While this is perhaps a more cynical story than either the Empowerment Story or the Market Share Story, it nonetheless captures some of the motivation behind building electronic payments systems for the developing world.

Finally, the Tulip Story takes its name from an offhand comment by a professional during a conversation I had while preparing an earlier version of this article. This industry specialist worried that the excitement around mobile payments for microfinance might be a 'Dutch tulip or dot com' affair. This statement references the quasi-mythical 'tulip mania' of 1636–1637, in which Dutch traders' speculative frenzy around tulip bulbs – even ones not yet planted, in so-called empty 'windgardens' – raised the price of bulbs to impossible heights. It also references the 'dot com' bubble of the 1990s that brought speculators to invest in all things having to do with the Internet. The Tulip Story is the one that comes up after a long day of conferencing or working on a design proposal, over drinks, as the evening wears on, signalling the fear that mobile money is so much hype, 'vapour,' a way to get some contract work now but possibly not sustainable either for long-term profit or for poverty alleviation.

Each narrative captures important elements in the development, uptake and transformation of mobile money. Each relies on a different set of assumptions and cast of characters, yet they are not mutually exclusive.

Consider the place of the presumed consumer of mobile money services in each of these stories. Who and where is the consumer in the Empowerment Story? She is an unbanked rural inhabitant

of a developing country who has access to a mobile phone or some other electronic communications network, but no access to financial services. She has relatives in the city or abroad who earn money and send it to her, or she has goods to trade but no means of banking her profits and no security for her hidden stash of cash. She may depend on informal middlemen to transfer funds; they can be unreliable, charge unreasonable fees, or be connected to shady characters. She has no way to leverage her existing capital to raise herself out of poverty. Electronic payments represent an onramp to economic empowerment.

In the Market Share story, the consumer is a migrant to an industrialised economy or a Third World city who wants to send money back 'home.' Regardless of whether he imagines his current situation as permanent or temporary, he seeks a safe and secure way to transmit money and at the same time express his devotion. Yet a significant fraction of his remittances is gobbled up by the fees levied by money transfer agencies. The beneficiaries of his remittances must travel long distances to find an agent where they can receive the funds he has sent. Electronic payments systems here represent an escape from predatory middlemen or corporations that seek to profit from migrants' vulnerability, and easier access to funds for the beneficiaries of migrant remittances.

In the Commoditised Payment Space Story, consumers are virtually absent: their characteristics do not matter so much as their ability to pay microfees, many times over, on a constant trickle of repeated, small transactions that ultimately generate profit for payment services companies. This client is simply a person anywhere in the world who uses small amounts of money on a daily basis to get any number of things done – to purchase small convenience items like bottled drinks, to ride transit, or to purchase tickets for entertainment.

Finally: is there a consumer in the Tulip Story? That is, do migrants or the unbanked poor who rely on their own social infrastructure to transfer funds to one another actually want a new service for same? Or are the presumed consumers, like the windgardens of the seventeenth century Dutch, merely figments of speculators' imaginations? If the latter, what would it take to turn people into consumers, and what would be the implications of this transformation? In using the term speculators, I refer not only to financial speculators or venture capitalists, but also those who pin development hopes on some of these new electronic payments systems. Whether or not there are consumers or clients out there for these systems, and whether it is best to think of them as consumers, clients or both, of course, is an important empirical, economic and political question.

### *Formatting 'the Poor'*

Each story depends on a specific formatting of a market – the creation of individual people, in aggregate, in to a population and then a market segment. In the Empowerment Story, people have to first be made into 'the poor' or 'the unbanked,' among whose chief problems in life is their lack of access to financial services. The 'transaction costs' of everyday monetary activities figure importantly here. When asking about, say, the new risk of fraud or loss of a mobile device or theft posed by mobile money, promoters in the payments space reply, 'Compared to what?' They point out that cash and coin are highly risky; are easily and permanently separated from their owners; are untraceable; and can rot, be damaged or eaten by animals. While there may be new costs associated with mobile money in the form of initial service fees and fees for transfers, promoters parry by calculating the costs associated with walking a mile to the house of a courier who will carry your money across the countryside for you; walking back; paying the courier's commission; worrying about the risk of theft en route or after the money has arrived. Mobile money can be 'transformative' if it helps people reduce the 'transaction costs' associated with cash and coin.

The concept of transaction costs is not a self-evident economic truth. It is a market device that formats the client and the payments space into which the client is being inserted. By 'market device,' drawn from actor-network theory inspired social studies of finance, I refer to the

coordination of various heterogeneous qualitative, technical, mathematical, informational and other elements that, albeit not seamlessly, turn a set of phenomena and practices into something ‘economic’ (Muniesa et al., 2007). By calculating the transaction costs associated with cash, mobile money promoters are able to make a more compelling case. At the same time, they construct the imagined user of their service as at the mercy of expensive and risky cash transactions, and in need of a cheaper and more secure alternative.

Factor analysis and other statistical techniques permit industry researchers to create rankings of countries in order to determine where opportunities might reside for new services – for example, Nokia’s Connectivity Scorecard (Nokia, 2009). The Scorecard ranks countries based on their potential for an expansion of mobile services and is meant to spur regulators to support the expansion of mobile telecommunications lest they fall ‘below’ some presumed competitor country (‘we don’t want to fall behind Malawi!’) and to encourage industry investment in the ‘next big market.’

Industry professionals also rank countries and market segments based on total cost of ownership (TCO) for mobile devices. For them, TCO refers to the cost of purchasing a mobile device, signing up for a mobile service, using that service, and purchasing and using additional add-on features like SMS text messaging, ringtones, or mobile money. They believe that looking at a country’s or market niche’s TCO can help identify new markets or market segments for mobile services. In doing so, they have taken a tool used in financial management to assess the lifetime cost of capital equipment for a firm, and applied it to a hypothetical individual person. At its most basic, TCO is an amalgam of the cost of purchasing, maintaining, and operating a piece of capital equipment less its contribution to profit over time (Miller and Upton, 1976). In using TCO to think about an imaginary consumer’s ability to purchase and use a mobile phone, industry analysts treat the client as a firm, a profit-seeking and profit-making enterprise, who is weighing the costs and benefits of adding a new piece of machinery to its operation. This formats ‘the poor’ from the Empowerment Story as millions of tiny capitalist firms. It underscores the entrepreneurial capacity supposedly unleashed by mobile money.

The flipside of TCO is ARPU. This is the ‘bottom line’ goal in developing mobile money – at least, for those at the top of the chain of command. In the payments space, a recognition that many people in the developing world share mobile phones, thereby breaking the association between one unit and one user, has led to the realisation that the focus should be on the revenue-generating potential of the device rather than the person. It is almost as if the mobile *device*, not the person, is the firm making decisions. While formatting people as ‘the poor’, these market devices foreground mobile technologies, and ‘the poor’ and their mobile devices turn into a networked subject-object.

Of course, industry professionals are not always invoking these rankings, TCO or ARPU. They are just as frequently talking about financial access, financial inclusion, transformative mobile banking, and, yes, bettering people’s lives. Financial inclusion and other such concepts equally help to constitute the potential consumer base for mobile money, ‘the poor,’ in a particular way. They are poor. They are ‘end-users’. They receive the technologies and services industry actors provide, use them, and in the process make their lives better.

### **Making New Expertise: Business Models and Poor People’s Practice**

However, people do not just ‘use’ mobile phones and mobile money services. They innovate. They subvert. And they change: they change themselves, those trying to ‘help’ them, and the systems that bind them all together. People who ‘receive’ mobile money services themselves are everyday designers and innovators in mobile money. There is nothing particularly novel in the fact of the creative repurposings that take place when people meet mobiles (see Katz, 2006). What is novel is that as they coalesce into a particular kind of actor-network, they do so together with the assemblage of CGAP, donor organisations, the GSMA, other industry and trade

groups, the payments industry, new start-ups, and so on. In consuming mobile and money, ‘the poor’ transform not only themselves but this broader assemblage as well.

Indeed, it is difficult to maintain the distinction between the people working in the various companies and agencies in the payments space, and ‘the poor’ or the ‘unbanked’. It has become even more difficult as former ‘clients’ of services like M-PESA get involved in the act of creating new third-party applications that run on the service, that ‘ride the rails’ (much as Facebook users have created their own new services that run on that platform; see Kendall et al., 2011). In addition, the artificial divide between designers and consumers is even more evident when it is the supposed ‘end’-users whose experimentation has actually originated some of the innovations. There is a tangled hierarchy, a set of lines and networks that wrap around on themselves in space and time. Experiments ‘in the wild’ are being used to think with and to design new systems which almost immediately afford other, often unintended and even unrelated actions and consequences. The whole process is analogous to crowd-sourcing in computer programming, massively multiple, and happening in real-time.

Business strategies for getting into the payments space often rely on poor people’s existing mobile phone and monetary practices. These strategies can be divided into the following four overlapping types:

- (1) Take what is already there and scale it up. Use people’s own experimentation and everyday, routine innovation as prototype (Merrill, 1958). Much of this activity formalises what had been informal, and is posed as increasing ARPU. For example, mi-Pay is a British company designated ‘the most innovative company in money transfers’ in 2009 by the International Association of Money Transfers. It has based its service on people’s existing practice of topping-up phones with airtime and transferring airtime to others.
- (2) Create something new based on what is already there, but make your own proprietary system, add new features and functions, establish a brand. Experiments in the wild here serve as inspirations. M-PESA, in Kenya, is a good example and is based on proprietary programming on a SIM. It has a unique interface and is specifically branded and marketed as a unique service.
- (3) Layer something new on top of something that already exists – point of sale terminals, postal banking, ATMs. Use what people are already doing as a prototype – using POS terminals to make purchases – and layer something else on top of it – using POS to make deposits. There are numerous examples of services like this, especially in Latin America. As of late 2010, numerous third-party application developers in Kenya have been using M-PESA itself as a platform on which to build new services, like microinsurance or bill payment.
- (4) Aim for interoperability; become the main player. This last type is not a specific strategy but more of a mindset. Whether they will admit it or not, this is the dream of a lot of people involved in the payments space.

Each of these strategies could easily serve as an example of Prahalad’s Bottom of the Pyramid approach: leveraging poor people’s networks to generate new revenue streams while at the same time alleviating poverty by expanding access to financial services (Elyachar, 2010; Roy, 2010). However, mobile money complicates this perspective, since here the poor are neither producers nor consumers. They are innovators in the sets of relations holding together production and consumption: they are innovators in money.

People have been finding ways of doing things with mobile technologies and electronic currencies ever since their inception (Chipchase, 2009). Some of the things they have been doing are unauthorised modifications, mash-ups, hacks, or appropriations (Bar and Riis, 2000). There are unintended affordances within mobiles and money. People and mobiles remake money and remake the socialities attendant to and formed by money, again, from the village to the halls of large corporations, small start-ups, regulatory authorities and philanthropic actors, all articulated together in an emergent, complex network.

In addition, these new channels for money and new moneys – for there is an argument to be made that new forms of currency are coming into being (Merritt, 2010), and new forms of capital – are additive, not supplantive. That is, they enter into an existing, complex ecology of moneys and relationships, and a world of plural and diverse economies of different, sometimes incommensurable, or only temporarily commensurate, systems of value. This fact is important for understanding how mobile communications and other technologies interface with what we commonly refer to as ‘money’ and ‘economies’. There is a tinkering with the means of exchange, method of payment, store of wealth, and measure of value themselves, rather than simply a leveraging of pre-existing exchange, payment, wealth or value.

What happens when a person ‘sends airtime’ to another person who in turn accepts the airtime as repayment for a loan, or who receives it as a gift? The person sending the minutes probably purchases them using cash at a kiosk, receiving a paper card with a code printed on it. The sender enters the code into his phone. Normally, the sender would enter the code into the phone in order to load the minutes just purchased. In this case, however, the sender enters the code as a text message, and sends the code to the phone of the recipient. The recipient can then either do nothing – saving the code for a later date – or enter the code into the phone to begin using the airtime that the sender paid for. Or, the recipient can sell the code back to a vendor for cash, the vendor taking a small commission.

This is the simplest kind of airtime minute transaction. But consider the status of the airtime and the money involved at each stage of the process. If the airtime is loaded up into the recipient’s phone, then the money initially used to purchase it remains a means of exchange: the money was converted into airtime and the recipient consumed the airtime in talk. If the code was sent as a text message and sold back to an airtime vendor for cash, then a money transfer has taken place. Money and airtime in this transaction retain their essential qualities as means of exchange and commodity.

But what happens if the recipient saves the code for a later date? What happens if the recipient asks a third party for a loan of money, to be repaid at a later date once the recipient cashes in the airtime? What happens if a third party loans the recipient some money before the recipient has received the airtime code, based on the recipient’s prior history of having received such transfers of airtime from the sender in the past? Is money being created in these scenarios? Is airtime ‘savings’ being leveraged, or is airtime ‘potential’ or airtime ‘creditworthiness’ being established?

It is this latter set of scenarios, separate from straightforward transfers of airtime for money, that raise the possibility of poor people innovating in the very form of money and mobiles, changing what they were designed to be and how they were intended to be used. They have created a new system, one that industry can try to copy, and that regulators might start to get nervous about. Indeed, in Kenya, as M-PESA users started ‘saving’ money using M-PESA rather than transferring it soon after loading funds into their accounts, the Kenyan Central Bank started expressing concerns about whether this money transfer service was functioning as a ‘bank.’ The result has been a series of discussions about new regulations for mobile money, as well as the creation of a new partnership: Between M-PESA and Equity Bank, now offering a savings product using the M-PESA platform.

## **Conclusions**

Mobile money is changing mobiles, money, the people who use and transform both, the people and institutions that set out to foster financial inclusion and, possibly, the paradigm of financial inclusion itself. Already new issues are coming to the fore: electronic money regulations for non-banks; tiered Know Your Customer guidelines for registering clients without conventional forms of proof of identity; technological interoperability for new services, devices and platforms. It was only in November 2010 that the Bill and Melinda Gates Foundation’s Financial Services for the Poor unit announced its new paradigm for promoting global savings – a paradigm, this article has suggested, that is itself the iterative response to developments ‘on the ground’ and in the

globally dispersed network that now makes up the mobile money space. New revenue streams will undoubtedly flow from mobile payment systems. But focusing solely on this fact misses all of the other important things that are going on as mobile money systems and services are created and deployed.

Meanwhile, systems created in or for the developing world are serving as models for reimagining money, finance and payment in the developed world (Tescher, 2009). In the wake of the financial crisis, people in the global North are decidedly becoming less banked. And, quite possibly, less relevant, as some of the projects being fostered around mobile money involve Indian, Chinese, Malaysian and Gulf capital. Experimentations ‘out there’ are on the verge of being re-imported ‘back’ to the North right at a time when money and finance themselves are, because of the financial crisis, newly open for discussion.

Poor people have always been innovators, have always repurposed consumer goods like cell phones from the developed North, and have already been engaged in dialogical relationships with global markets. In the domain of money and payments, I am suggesting, things get more interesting. What is coming into being are not models for the delivery of a product to an underserved market, or models of small-scale entrepreneurship in the manner of microfinance, or even models of cooperative or sustainable production of new goods or services for trade. With mobile money, people are potentially setting in motion new media of exchange, methods of payment and stores of wealth and possibly measures of value. Just imagine what could happen as individual mobile money service providers try to lock in their consumers, and those consumers start taking advantage of – for example – the foreign exchange spread afforded by different network operators in trans-boundary contexts, swapping out SIM cards and going back and forth into multiple currencies of mobile money, airtime, national currencies, social obligations, cattle and whatever else they have at their disposal.

Again, airtime is archetypal. With airtime, there is no friction in the ostensible juxtaposition between the good and the people consuming it. Returning to Appadurai’s ‘social life of things,’ airtime – like time itself – *is* social life. And money, not just consumption, is a communicative act. The indeterminacy between airtime and money holds promise for new enactments of each and new socialities through which people and things together channel them both. For the ‘producer’ of airtime as currency – the person who purchases airtime minutes from a vendor, with the intention of transmitting them to another as money – airtime can function as both exchange and use: it is potential currency, and it is potential time. It is also potentially a specific kind of time: the time of talk, of relationality, obligation or duty. This may represent a potential democratisation of money: ‘financial inclusion’ in the best sense of the term.

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## Notes

1. M-PESA and G-CASH rely on mobile phones with SIM chips and SMS capability. A user can charge up value onto their mobile phone and then text-message funds to the user of another mobile phone. This beneficiary can redeem the funds by visiting an agent. Senders must use agents to charge up their mobile phone (although regulatory changes in the Philippines now permit users to load up their mobiles using their Bank of the Philippine Islands (BPI) account). Some mobile money services are used as a means of protecting one's own money from thieves while travelling, by loading funds into one's account but leaving one's phone at home or sending funds to an agent at one's destination. On the social uses of M-PESA, see Morawczynski (2007). In Latin America, branchless banking systems rely on third-party agents like merchants and employers using POS terminals. Some allow the purchase of mobile airtime, and with bank partners the submission of paperwork for loans and credit (though the decision to extend credit remains with the bank partner, not the agent). See Mas and Kumar (2008).
2. The paradigm, in brief: mobile network operators (MNOs) forge partnerships with banks and with a network of retail agents who serve as cash in/cash out points. At least three models follow: in which the bank or MNO is the primary partner, or the two share the client and the revenues. Even MNO-led arrangements rely on a bank to hold the pooled deposits and/or money loaded into the service by customers. For background on the paradigm, see the GSMA's Mobile Money for the Unbanked blog (<http://mmublog.org/>) and the CGAP Technology Blog (<http://technology.cgap.org>).
3. The Institute for Money, Technology and Financial Inclusion was also a sponsor: we contributed a token amount in exchange for having our logo displayed on monitors in the exhibit hall during a lunch break. The aim was to get some 'brand recognition' for the Institute and to drum up research collaborators.
4. DFID originated in the foreign and colonial offices of the British government, and, through trade and technical assistance programmes, became allied with the business community. The 2002 International Development Act made poverty alleviation central to DFID's goals.
5. Development studies scholars recognise the value of mobile connectivity and the extreme vulnerability that can result from its absence (Gardner and Ahmed, 2009: 131; Béné, 2009: 914). Galperin and Bar (2007) question whether wireless is, in fact, reaching remote regions.
6. On phone sharing, see Burrell (2010), Chipchase (2009), Donner (2008), Rangaswamy and Singh (2009).

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