# Money Talks: The Enclosure of Mobile Payments

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*Much still depends on who owns and controls the networks, who sets the terms of entry, and who gathers and sorts […] information and for what ends.*[[1]](#footnote-1)

In parts of the Global South 2.5 billion people are excluded from financial services, but many of this number have access to mobile phones.[[2]](#footnote-2) Where transacting at a distance was often difficult, involving long journeys and daisy-chain permutations of friends and acquaintances to move money from A to B, informal practices emerged involving the circulation of airtime as a kind of currency. Instead of using pay-as-you-go phone credit in talk, the top-up code is circulated as a text message to a recipient as a remittance, payment or gift, or even retained as a form of savings. Airtime, traditionally a unique commodity that represents the capacity to communicate and cooperate with others, now also fulfills many of the functions of money. Mobile phones are used to enable not only wireless communications, but also the manipulation, transfer, and store of value.

For anthropologist Bill Maurer, airtime trading reveals the creative instability of money in a digitized context. Airtime performs as a commodity in one instance, as a communications channel in another, and as a system of payment, means of exchange, and store of value when it is used as an alternative currency.[[3]](#footnote-3) It continually moves between states of communication and transaction in ways that are plural and mutable.

Airtime is a bottom-up phenomenon; before established mobile SMS payment systems such as M-Pesa, informal practices around airtime sharing and exchange were documented in different countries. In an anthropological study of money in Afghanistan, Chipchase and Lee describe the role of airtime in the development of love marriages, where ‘common dating etiquette […] has the male suitor sending airtime credit to the woman he likes, and if necessary, purchasing a basic phone for her’.[[4]](#footnote-4) While this suggests a gift economy of sorts, airtime also operates as a de facto currency. Pre-paid minutes can be exchanged for cash or spent in shops in places such as Cote d’Ivoire, Egypt, Ghana, Uganda, and Nigeria. In Zimbabwe, where American banknotes have replaced the hyperinflation-ravaged Zimbabwean dollar, airtime transfers sometimes take the place of small transactions in the absence of readily available coinage.[[5]](#footnote-5) Shopkeepers frequently give airtime instead of change in transactions.[[6]](#footnote-6) As the system has scaled up, agents on the ground have come to act as cash-in/cash-out points for the network, transforming paper money into airtime and back again. Alongside these practices, the use of airtime as a form of international remittance is also significant, with companies such as Ezetop and Transfertoconducting airtime transfers for more than 350 operators in over 100 countries via the web. The value of these international remittances via mobile phones surpassed $10 billion in 2013.[[7]](#footnote-7)

Practices like airtime trading are significant because they imagine new kinds of money outside of state-backed currencies as well as new ways of transacting outside of (or in the absence of) publicly mandated systems. Like other sociotechnical experiments in money such as cryptocurrency and cryptoequity, they also point to creative evolutions in the substantiation of value going forward. Money is socially produced, these practices suggest, and could be produced differently. And where access to mobile communications is in the hands of many, such alternatives may be easier to mobilize. We might take money and the means of creating money into our own hands. In this early stage, however, it’s also important that we think about how the politics of the platforms and systems that we now transact on and possibly use to create or circulate a ‘different kind of money’ will also shape those ambitions going forward.

## The Infrastructural Base of Mobile Communication

The practice of airtime trading is now so ubiquitous that it has led to anxieties about the use of phone credit as an unregulated form of money. Network operators in such a scenario are not only provisioning communications services, some argue, but also ‘issuing their own currency’ and defining its exchange rate.[[8]](#footnote-8) Instead of a state-backed currency, airtime trading transfers the control of money from banks to network incumbents. The money in question – airtime circulated as a currency – is guaranteed and produced by the infrastructure of mobile communications.

When we talk of airtime, therefore, we are speaking about a commodity and a currency that is brought into being alongside the economic enclosure of the wireless spectrum. ‘Spectrum’ describes the electromagnetic frequencies used for all forms of mobile and wireless communication, from radio and television networks to cellular networks, nearfield communications, and the mobile internet. Electromagnetic spectrum was initially recognized as a ‘commons’: nobody was thought to own the airwaves anymore than anybody might be thought to own the air itself and anyone with the necessary equipment could use radio waves to transmit messages. In the early decades of the 20th century, however, the first radio acts declared spectrum to be a scarce resource in need of licensing. Subsequent decades saw the deregulation of wireless and the introduction of spectrum auctions, where frequency bands are sold at exorbitant prices to the highest bidder. These auctions are higher-level transactions in airtime. And while mobile operators don’t exactly trade spectrum like cash, a spectrum license represents ‘the true currency of wireless operators’[[9]](#footnote-9) counting for as much as 80 percent of a company’s total net worth.[[10]](#footnote-10)

As digital computation migrates to mobile and pervasive environments, becoming reliant on spectrum-based networks, this resource is increasingly significant. Spectrum is currently amortized over a period of 10 to 40 years and in accordance with a calculation known as megahertz-pop (MHz-pop), representing the population in a license area multiplied by bandwidth.[[11]](#footnote-11) At the heart of this value, in other words, are the communicative, cognitive, and cooperative capacities of a network of users, our everyday acts of attention, transaction and sociality. It is this enclosure of the spectrum commons that facilitates the operation of airtime as a de facto currency. This is what lends spectrum its intrinsic value and underpins airtime as money. Airtime trading might be a bottom-up phenomenon that re-imagines money in situations where trust in banks and public authorities is at an all-time low, but it also builds and transacts within other control systems and forms of enclosure in communication networks.

The practice of airtime trading refers to the enclosure of radio space, but also to new forms of enclosure where the political economy of payment systems and network communications intersect. The infrastructures for payments, traditionally a public resource or commons[[12]](#footnote-12) are being enclosed in new and troubling ways in the mobile space. These new systems for value-transfer inherit constraints and affordances from the protocols and standards of the communications ‘rails’ they ride on.[[13]](#footnote-13) They encode geographies of access as well as particular relations of production and property. How will the political economy of mobile network infrastructure – from handsets through to core and radio access infrastructure – shape the geography of access in the mobile payments space and, in turn, the future of money? [[14]](#footnote-14)

## Enclosure in Digital Networks

Enclosure in digital networks amounts to rights to control access, to exclude, and to extract benefits from communications. Network operators, service providers, equipment manufacturers, developers, and media conglomerates currently hold these privileges. Users do not. The term ‘enclosure’ has a double valence in this context. On one hand it refers to the alienation of users from the means or conditions of some element of production. As already discussed, the enclosure of spectrum makes it illegal to set up an unlicensed radio station or GSM network and users are forced instead through proprietary channels. On the other hand, ‘enclosure’ alludes to the active construction of a productive space in which these tools and capacities may be redistributed to users, now bounded in such a way as to control value and mediate production. Andrejevic embraces this model of enclosure when he describes: ‘the construction of privately owned and operated interactive enclosures that serve to separate users from the means of interaction, transaction, communication and expression’.[[15]](#footnote-15) Rights to the production and circulation of information are appropriated and filtered through administrative channels, at which point they are once more distributed as part of the services corporations must deliver to users in order to ensure their productivity. In other words, we are given access once more to communications but this access is mediated by commercial interests who have established themselves as ‘rentiers’ of the network.

Rent arises because social actors can realize an enhanced income stream, over an extended period of time, by virtue of their exclusive control over some directly or indirectly tradable item.[[16]](#footnote-16) Simply through controlling the pipe a corporation can extract a rent from the user.[[17]](#footnote-17) New forms of rent are increasingly generated in this digital space, such as the rent over the attention economy performed by web advertising, or the rent of internet service providers (ISPs) over bandwidth, and mobile network operators over electromagnetic spectrum. Direct forms of rent trade expressly on access to an element of production; such as when an operator establishes a monopoly on infrastructure, bandwidth, software or platforms. Indirect rents, in contrast, result when actors trade, not on the resource itself, but on the commodities and services that may be expropriated through its use, such as from advertising revenues or through speculating on future uses. In the case of indirect rents, the value is ‘socially produced’; it is the sum total of users and their communicative and cooperative acts.[[18]](#footnote-18) An example of this is revenue earned by ISPs, and platform providers when they establish a monopoly over users, content, data, and social networks. The rent extracted in this context is a payment in attention, information, or affiliation, which in turn can be sold to advertising companies and market researchers who require access to users, their content, and their networks. Rent in this context has become less about charging for access to a resource and more often about leveraging the value produced when this access is (re)distributed to users in some mediated form. Income from user-generated data and content turns out to be a lot more profitable than a straightforward rent on the bit-pipe alone. Why accept a straightforward fee for a resource when you can access far greater streams of value by making everything free and accessible?[[19]](#footnote-19)

To achieve this, enclosure in mobile networks oscillates between access and control. Access to information services become mobile, ubiquitous, or ‘everyware’; but this access is mediated, monitored, and controlled by a commercial entity. Today, we participate in these enclosures in a variety of ways: when using software applications supplied by third parties; through cloud storage facilities; through managed device platforms such as mobile phones, smart phones, e-readers, tablets, and music players; through social media networks; and through online databases and search engine queries.[[20]](#footnote-20) We are also participating in them when we trade and transact over our mobile devices. All these enclosures rely on proprietary resources such as storage and processing facilities, core infrastructure, base station controllers, satellites, radio access infrastructure, and crucially, the ‘privileged protocol’ through which transmissions are performed: electrical and optical cables, and the electromagnetic frequencies used for wireless transmissions.[[21]](#footnote-21)

## Money is Both a Token and a Rail

It should be clear that we need to think about the ways in which existing systems of enclosure and value capture in networks will shape the future of payment as money migrates to mobile. What kinds of systems are emerging as banks and telecommunications intersect?

Speaking on ‘Closed Loops and Private Gateways: Money, Technology and the Public Interest in Payment’ at the MoneyLab conference in Amsterdam, Bill Maurer made an invaluable distinction between money as a ‘token’ and money as a ‘rail’, or between money as *information* and *infrastructure*.[[22]](#footnote-22) The monetary token represents the network of social relations that makes it possible for money to represent the value of all other commodities. Through pricing information, the token materializes a collective consensus about value and the social construction of equivalence between things and their relations to other things in exchange. In order to acquire a commodity, I hand over a token, where price describes the units that I must present in exchange for goods or services. This might be an official bit of paper with instructions on it, or a coin, data in a ledger, or the public keys used to undersign cryptographic transactions.

But money is not just untethered information; it also includes the rails or infrastructures that support these flows. Infrastructure is what circulates or moves money, but it is also what holds it together, in that infrastructures also produce and guarantee money as a means of exchange, as a unit of account, and as a store of value. These infrastructures are multiple. Where historically this refers to the introduction of institutions such as the Federal Reserve and the Central Bank to guarantee currency, today we encounter conditions where our telecommunications and network service providers are emerging as veritable financial institutions with control over the informational content of money but also over where and to whom that information flows.[[23]](#footnote-23) We might say that while the ‘token’ is socially produced, the ‘rail’ is consolidated in material, infrastructural, and juridical limitations that continue to constrain our ability to control money or to produce it differently.

Today network infrastructure is at the apex of monetary circulation in both wired and wireless networks. Internet protocols are integral to wired payments. Channels such as Short message Services (SMS), Unstructured Supplementary Service Data (USSD) messages, Near Field Communications (NFC), Quick Response (QR) codes, and third party gateway applications all play a role in mobile money transfer and form the rails on which our money now rides. The role of telecommunications in money transfer becomes even more significant when we consider that new forms of electronic payment and currency obfuscate easy distinctions between the informational token transferred, the data produced by the transfer, and the architectures and infrastructures that support it. Airtime, as previously discussed, produces a self-referential token guaranteed by the intrinsic value of the spectrum-based ‘rails’ on which the currency travels. So too, cryptocurrencies such as Bitcoin collapse the distinction between the token as a verification process in the blockchain and the peer-to-peer infrastructure that supports, produces, and circulates money. On the flipside, the data artifacts of our online activities are now not only monetizable, but are coming to act as currencies of a sort, as the previously latent traces of our movements, interests, and social interactions may be used to pay for services.[[24]](#footnote-24)

And yet, while roads, airports, ports, highways, spectrum, copper or fiber-optic cables are significant to money and where it travels, it is worth noting that there is also a strong sociality to the infrastructures of payment. The most significant form of infrastructure that money relies on is still social. Money rides networks of trust, reputation, and relationality. Remittance networks often involve moving money in an episodic fashion through a network of human peers. Informal value transfer systems that operate in unbanked spaces, such as Hawala networks in the Middle East and North Africa also transact through already existing social channels that can transmit meaning and communication, but also economic value.[[25]](#footnote-25) Formalized banking structures continue to leverage a degree of social capital.[[26]](#footnote-26) Telematic networks often build onto these already existing social channels. This is explicit in examples such as airtime trading and mobile money, where agents on the ground are theorized as ‘bridges to cash’ or ‘human ATMs’.[[27]](#footnote-27) It is also obvious in new forms of cryptocurrency such as Ripple and Document Coin that transact on individual reputation and network affiliations.[[28]](#footnote-28) These rails are never purely instrumental; they are always sociotechnical.

## Enclosure of the Payments Space

Instead of information and communication technologies supplementing financial operations, telecommunications operators, and particularly those supporting wireless communications, are emerging as veritable financial actors in their own right.[[29]](#footnote-29) This trend is particularly obvious in the Global South, where wireless services are more easily provisioned than both financial services and wired communications. Telecommunications companies are now acquiring banking licenses and traditional banks are partnering with operators or in some cases acquiring their own radio licenses to roll out financial services over mobile networks.

While airtime-trading initially existed as a common good (albeit one implemented on proprietary network infrastructures), major industry consortia such as the Global System for Mobile Communications Association (GSMA), and the World Bank’s International Finance Corporation (IFC) are now looking to harness these practices as a means of financial access to the worlds ‘unbanked’ or ‘underbanked’ communities.[[30]](#footnote-30) According to the GSMA MMU Deployment Tracker, there are currently 246 ‘mobile money’ deployments, with a further 113 planned.[[31]](#footnote-31) Among the most notable of these are Kenya’s M-Pesa, GCash in the Philippines, and Digicel’s Tchotcho in Haiti, large scale mobile money transfer systems that scale airtime trading, using SMS to transfer money with agents on the ground acting as cash-in and cash-out points in the network. M-Pesa now also offers domestic peer-to-peer transfer, bill payment services, and other forms of bulk payment, merchant payment, international remittances, loan disbursement, and repayment links to other banking products. Econet Wireless in Zimbabwe is now offering ‘EcoCash loans’ to their mobile customers, microloans that are deposited to the user’s phone. Today, with mobile money services, telcos such as Digicel, Econet Wireless, and Safaricom are de facto banks in their respective jurisdictions. On the other side of the equation, Equity Bank, Kenya’s largest financial Institution, has recently applied for a license to become a Mobile Virtual Network Operator (MVNO).[[32]](#footnote-32)

Opinion moves between a recognition of formal mobile money services as a necessary social good that gives security, safety, independence, and mobility to users, and a perspective that recognizes these services as expanding financial enclosure to the world’s poorest communities and extracting additional rents in the process.[[33]](#footnote-33) A significant market exists for new communications infrastructures for global and domestic remittances.[[34]](#footnote-34) Additional revenue can be made by financial institutions and mobile network operators who insert themselves as commercial intermediaries in the monetary exchange, mediating access to communications and charging transaction fees. Transaction charges may not individually represent a lot of money, but cumulatively they produce a significant and fairly constant fee-based revenue source when they reach scale.[[35]](#footnote-35) For an indication, Safaricom, the mobile operator that offers M-Pesa, reported mobile money revenues of Kshs 26.56 billion for 2013-2014.[[36]](#footnote-36)

Extracting these rents requires a further enclosure of the channels that support transactivity – in this case, radio access infrastructure and the electromagnetic spectrum that allow for communications. It’s true that mobile money justifies greater investment in universal service provision, a development that may have positive social and economic consequences for developing countries because it supports investment in communications infrastructure and wide area network coverage. However, the growing demand for mobile bandwidth that mobile money represents also invites arguments for the privatization and deregulation of infrastructural development.[[37]](#footnote-37) There is not a lot of potential to build or scale an alternative nonproprietary infrastructure; instead, the powerful network effects of commercial services such as those offered by Safaricom displace alternatives and make commercial enclosure almost impossible to resist.[[38]](#footnote-38)

Scaling a commercial remittance network also necessitates the enclosure of the interpersonal forms of trust and sociality that support the culture of mobile payment systems at a local level. Mobile money *encloses* human sociality because it leverages the networks of trust already existing between the money agents and their customers, and workers and their families. For money to flow, users on the ground must trust in their agents and agents in each other. This human network forms a necessary part of the infrastructure of money transfer, and yet some links in the system may be unrewarded or even degraded by the technical transfer systems they help to support. When social agents become economic agents, this is also thought to flatten and displace discrete and localized transactivity, undermining the social capital that existed prior to mobile remittances such as face-to-face microfinance institutions and informal and episodic remittance networks between friends and families.[[39]](#footnote-39) In this way, while mobile money requires social infrastructures, it also potentially undermines the social institutions necessary for the functioning of exchange.

Mobile money practices are also emerging in the Global North, albeit with a different customer base and revenue model. While services in the Global South largely depend on SMS and USSD channels for executing transactions, smartphones provide more possibilities for payment, with mobile network operators and third parties producing mobile wallets and NFC or QR code based applications for e-payments on the go. Alongside network operators, ISPs such as Google and Facebook are also entering this space.[[40]](#footnote-40) Device manufacturers also have a hand in, with payment solutions forming an integral part of the iPhone 6 and anticipated to replace the magnetic strip interface of the credit card in the near future.[[41]](#footnote-41)

Telecommunications companies in the Global North are under a lot of pressure to justify their investment in next generation networks and spectrum. Expanding to additional financial services such as mobile money transfer and mobile wallets represents another possible value chain and the opportunity for a broader customer base for the incumbent, particularly when some of their other sources of income are now shared with highly competitive service and content providers. Here the value chain extends beyond transaction fees for payment infrastructure to the value of payment information. Just as in other kinds of digital enclosure, we can identify a shift from direct forms of rent that trade on the infrastructure itself towards indirect forms of rent that trade on forms of voluntary or unconscious production in online spaces.

A direct rent occurs when an operator extracts a monetary fee in return for processing a financial transaction. As we saw with mobile money in the Global South, rent takes the form of a transaction fee as a percentage of the overall remittance. In the Global North, however, much of the rent now accumulates at a different degree of exploitation. This is not so much a toll on the pipe itself, but on the data produced by users at the point of transaction. Such an approach responds to diminishing returns in dumb infrastructure,[[42]](#footnote-42) but also, as Maurer points out, to recent legislation to limit and regulate transaction fees.[[43]](#footnote-43) Companies now propose the ‘data of payments’ as the root of a more valuable and defensible business model independent of monetary fees.[[44]](#footnote-44) As society goes cashless, ‘payment companies will have a larger business, and a more valuable one, in closing the loop for offline transactions and helping deliver customers’ to advertisers.[[45]](#footnote-45) Through the point of purchase by way of any non-cash medium we contribute transactional data. From a user’s perspective, it’s not that the question of the toll or rent disappears from the equation, but that the cost of transacting is exacted in the currency of personal data and privacy itself, which in turn can be aggregated, exchanged, and readily (re)monetized by commercial actors.

The effects of this enclosure are far-reaching. The most obvious is the introduction of targeted advertising and location-based services informed by transaction histories. Here mobile payments are doubly commodified, first when consumers are constructed as hyper-segmented markets and sold to advertising clients, and second when the user-generated data of payments are extracted in order to refine and precision future commercial messages. In virtualizing money, non-cash payments materialize previously latent informational traces of who transferred money to whom and in exchange for what. The managers of the bit-pipe can monetize these traces, but there are other far-reaching effects to the wealth of data from consumer transactions. Speaking on the emergent effects of consumer metadata in 2014’s Transmediale Festival, big data theorist Kate Crawford identified implications beyond being pushed unwanted recommendations or location-based services. Instead Crawford illustrated how monitoring purchasing information underpins new forms of governmentality in both online and offline spaces. The effects of such scrutiny will be unevenly distributed; for example, individual purchase tracking of low-income families or of individuals who have claimed bankruptcy or insolvency.[[46]](#footnote-46)

**Conclusion**

The forces governing information are coming to govern value, and vice versa. Networks are no longer a subset of political economy; the politics and governance of networks are now central to financial capital. Existing enclosures in mobile networks are leading to new forms of value capture when payments migrate to digital media. At the same time, the emergence of digital payments provides justification for an even greater enclosure of information and communication technologies, under the guise of necessary private investments for ‘social good’ or requisite security and regulation for new payment channels. If we want to produce a different kind of money we need to think not only about the informational content of money and who produces it and how, but also about the various gateways and chokepoints that constrain the possibility of a money that might be held, produced and circulated in a way that socially and economically benefits people who normally don’t have a lot of financial security or control. Because what we have instead are monetary forms that enclose users at every turn, first through debt and second through the necessity of waged work and unwaged digital work.

In the face of these widespread enclosures we need to maintain the possibility of our communications and our exchanges with each other as a commons, as something we all work to produce, and over which we should have some degree of autonomy, ownership, and control. One point of focus is that if digital and monetary enclosures are coalescing, the spaces and sites of resistance and struggle within networks might also be fruitful sites for radicalizing or open sourcing money in the near future.

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