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Money as an interface

"Money, it would seem, has always been a puzzle", Geoffrey Ingham

Nobody seems to know what money is. This is despite all of us using money every day ... or perhaps because of it. The question of "*what is money?*" has traditionally been a subject reserved for economists. Their standard answer is that money is what money does, and that money does three things: it is a medium of exchange, a unit of account, and a store of value. Perhaps dissatisfied with this function-centered answer, other disciplines have started to volunteer alternative definitions of money, bringing their own particular perspectives to the matter. We have the sociologists, for whom money is first and foremost a social relation: a universally accepted measure of value that was originally established through hegemonic power, and it is now constantly co-constructed, negotiated and maintained through the interplay between economic agents and monetary authorities (Ingham, 2004). Anthropologists have also chipped in, defining money as "an instrument of collective memory" (Hart, 2001), a way of remembering the relationships we establish with others. For media scholars, cash is "a mass media form", and money itself is becoming social media (Swartz, 2022). But what about human computer interaction? How would a definition of money look like from our disciplinary perspective? The answer should be obvious. For us money is, of course, an interface. What else could it be?

Like all interfaces, money ultimately mediates human interactions and relationships. Often, when money is involved, those relationships include payment in exchange for something else. But when we look at how people interact with and through money in more detail, we soon realise that money is involved not just in payments, but in many other kinds of human interactions. People give money to each other in exchange for nothing, donating funds to charitable, cultural and even technological endeavours. People agree to keep money safe for other people, a practice called "moneyguarding" (Collins et al., 2009). People split the cost of things, turning a single payment into a social affair. People put their money together to create a single pool of wealth, or to strengthen their negotiating position in commercial exchanges. People save money in groups. When banks close, like in Ireland in the 1970s; or money disappears overnight, like in India in 2016, people come up with alternative

ways to keep exchange going. And sometimes people help mind other people's money, a deeply humane act that goes by the dry name of "financial third party access".

2. The problem with financial third party access

Financial third party access is a form of financial collaboration through which we receive someone else's assistance with financial decision-making and the management of our money. This assistance mostly includes day-to-day tasks such as paying bills, banking or paperwork; but it can also involve long term management of assets to ensure financial security. Minding money is a common care-giving task, and many people rely on others for this type of help. For example, people living with physical and cognitive impairments, either temporary or permanent; and people diagnosed with certain mental health conditions. Legal and contractual mechanisms exist to formally give someone else access and decision-making powers over our money. In the UK, these mechanisms include lasting power of attorney and bank arrangements called "third party mandates". The problem is: they are woefully underused.

In 2017, a very concerned UK Financial Conduct Authority commissioned some research about how older adults who need help with minding money shun these formal mechanisms and resort instead to so called "informal workarounds" or "coping mechanisms". Things like:

- sharing bank cards and PINs with helpers in order to delegate payment authority and to get access to cash through others;
- disclosing telephone and Internet banking credentials, which allows helpers to set up direct debits and pay bills on someone's behalf;
- signing blank cheques or withdrawal forms to be used by carers;
- or opening joint accounts, through which third parties can control spending and take over financial responsibilities when needed.

The problem with these "informal workarounds" is that they are phenomenally risky. When you give your bank card to someone else, you are giving them access to all the money in your bank account. When you give your internet banking credentials to

someone else, you are giving them full access to all your accounts with a certain bank. These “informal workarounds” not only expose people to fraud and financial abuse: they are also a breach of banks’ terms and conditions, voiding all fraud protections from banks towards their customers. This is a double whammy: you increase the risk of fraud while at the same time losing all protections against it. Not a good place to be.

It turns out that it is not just older adults resorting to these dangerous workarounds: we all do these things. This is a fact that tends to remain hidden, because there is very little research about it. The evidence is scattered across studies on different subjects and from different disciplines. For instance, in a security paper from the year 2000, where the authors mention in passing how “*Almost all participants shared their bank PIN with family or friends*” (Dhamija & Perrig, 2000). Another security paper, this one from 2011, briefly comments on how spouses “*frequently shared bank account details and PIN codes*” (Kaye, 2011). These two studies were done in the USA, but couples in Australia happen to do the same. Card and PIN sharing is also prevalent within Saudi Arabian households; between friends in India; and within remote aboriginal communities in Australia. In Ghana, people use other people’s mobile money accounts; and in Chile, people lend their credit cards to friends and family. In the UK, the Money and Mental Health Policy Institute estimates that over 16 million people in the country know someone else’s PIN numbers; almost 8 million people know someone else’s online banking credentials; and almost 7 million people have used someone else’s contactless card (Murray, 2016). A few days ago I gave mine to my husband to pay for a couple of pints in a London pub. By the way, he used his mum’s online banking to take care of her finances when she could no longer cope by herself.

So lots of us continuously and knowingly breach our banks’ terms of service and engage in money practices that are considered dangerous, irresponsible and deviant. The question is: why? If this behaviour is truly irresponsible and risky: why do we do it? Policymakers, banks and security professionals tend to answer the ‘why’ question by blaming those pesky humans. They argue that people lack knowledge about the lawful ways of setting up financial third party access, and that they are oblivious to the dangers of their own behaviour. As HCI researchers and

design practitioners we have a different take. We know informal workarounds like these are flashing beacons: they signal some kind of fracture, a disconnection between products, services and infrastructures; and the circumstances, the needs and the wishes of those who use them. In short, we know the problem is that money services and technologies are designed with a chronic disregard for human behaviour. There are several issues with money services and technologies that contribute to triggering dangerous workarounds: 1) their binary nature; 2) their disregard for cultural meanings and values; and 3) their extreme individualisation of finance.

2. The binary nature of money services and technologies

Many of the mechanisms and technologies around access to money nowadays are binary. They either give full access to assets, or no access at all. Lasting power of attorney is a great example of this “binarism”. The moment it is activated, it grants full power over someone else’s financial assets: pensions, investments, savings, property ... everything. Security mechanisms like PIN numbers and digital access credentials are also binary. If you know the PIN to my card, you have full access to all the funds in my bank account. If you know my internet banking credentials, you have full access to all the accounts I have with that bank.

The problem is that our interactions with and through money are not binary: they come in all kinds of shades and variations. Capacity to manage money is not all or nothing. We are not either capable or incapable of handling our finances. Instead, people can do certain things, but not others. A person who is housebound due to a mobility impairment can be perfectly capable of managing her money, and may do so online and through the phone. But since she cannot get out of the house, she cannot withdraw cash by herself. For that, she must rely on someone else.

Sometimes what people can do changes from day to day. People living with mental illness can have long periods of time when they have full capacity to manage their money. But at moments of mental health crisis, they may lose that capacity. Once they recover, capacity returns. Given the variability of human behaviour, the

“binarism” of existing money access mechanisms is unable to match the fluidity of our day-to-day financial lives.

3. The disregard for cultural meanings and values

Money services and technologies treat money in the same way as classical economists: as if it were a neutral veil. Money is money: it is an instrument, a tool, a means to an end. It is indifferent to and detached from all cultural matters and value judgements. This is, of course, nonsense. Money mediates power relationships between people, and as such it is a loaded thing. Financial third party access is often part of complex filial relationships in which trust, past experiences, and future expectations of ownership all play a part. People in Saudi Arabia view the sharing of cards and PINs with family members as “a way of supporting each other” and “a kind of solidarity” (Alghamdi et al., 2015, p. 301). People in remote aboriginal communities in Australia share cards and PINs because cultural norms establish that “money is shared with kin” (Singh et al., 2007, p. 900). Our existing money services and technologies are completely out of touch with the cultural meanings and values we attach to money.

4. The extreme individualisation of finance

The bulk of money services and technologies today are designed under the overarching assumption that your money is strictly and exclusively yours. That assumption, as we have seen, is incorrect. “Informal mechanisms” for financial third party access clearly demonstrate that money is not a strictly individual affair. My money is not just mine: I share my money life with my those in my social circle. Our money services and technologies don’t only ignore our collaborative financial behaviours: they actively punish them. Logging into someone else’s digital banking, even if just to provide help, is considered a “fraudulent behaviour”.

Financial services and technologies seem intent on convincing us that our money is just ours, and work hard to prevent any form of financial collaboration. But we don’t pay them any attention. We just find ways around the barriers they create, and continue to be the social animals we have always been. By turning a blind eye to the collaborative reality of our day-to-day financial lives, money services and

technologies render themselves fundamentally incapable to support our money practices.

5. Money as an interface

It seems clear that people are not the problem: our money services and technologies are the problem. Financial collaborative practices should not be prevented or punished: they should be enabled and nurtured so that they can happen safely. This requires a reframing of financial services and technologies from strictly personal to essentially social and collaborative, and a rethinking of the individualising paradigms currently underpinning their design. In short: it requires that we design for money as an interface.

As HCI scholars, we are the right people for this job. HCI as a discipline has a long history of uncovering the hidden collaborative nature of supposedly individual affairs. We have done so with privacy, for instance. The study of interpersonal boundary management in the context of social media highlighted how privacy does not pertain exclusively to individuals. It is instead negotiated and enacted with others. We have also exposed the fallacy of assuming that every digital account belongs to, and it is always accessed by, a single person; and have proposed design models for multiple account ownership. In addition, we have identified secondary and intermediated digital use, describing how some people rely on others to gain access to digital devices, information and services.

These and other studies of collaborative practices with and through technology constitute a strong foundation we can build upon as we strive to redefine and redesign financial technologies from a social and collaborative standpoint. In our own work, we have suggested that enabling financial collaboration requires that we design technologies and services that are flexible; that encourage reflection; that can be appropriated and adapted by their users; that recognise that we often rely on others to stay safe and secure; and that enable delegated use and information sharing.

6. Designing for financial citizenship

Money as an interface, with its turn to the social and its emphasis on interaction, should also be firmly aligned to understandings of money as a public good, and to ideas of citizen participation in financial governance. As opposed to physical cash, which is issued and maintained by national institutions with a public service mandate, our digital money infrastructure is mostly developed and run by commercial companies. These companies are accountable only to their shareholders, rather than to society as a whole; and their main goal is the pursuit of profit, rather than promoting collective economic prosperity. As money becomes digitised and privatised, citizens lose leverage over a fundamental social technology. The notion of financial citizenship (Leyshon and Thrift, 1995) becomes crucial at this juncture. Conceived by Geography scholars in the mid-1990s, financial citizenship recognises the critical role that money services and technologies play in our ability to act as full members of society. Today, in many parts of the world, you cannot be legally employed without having a bank account where your wages can be deposited; and it is impossible to own a home without access to credit. As these simple examples illustrate, we can no longer live full lives without availing ourselves of a set of basic financial services. Financial citizenship recognises that this is so. It aims to move beyond the financial inclusion agenda, to advocate instead the democratic oversight of money-related policies and practices. It suggests that citizens should have a say in the stewardship of the economy, in questions of money governance, and in how the financial system functions, in order to bring about policies that strengthen our collective – and not just individual – economic wellbeing.

Designers and HCI scholars can contribute to this democratising agenda through the design of financial services and technologies that fully embrace money's sociality. This will require us to recognise the political nature of financial service provision, and to incorporate it into our work. For instance, we may need to acknowledge that certain financial services are by now fundamental utilities, akin to electricity and water provision; and access to them a basic right. We may have to stop designing financial technologies that focus solely on maximising convenience and optimising individual financial resources; and create instead technological artifacts that enable citizens' oversight over how financial institutions, both public and private, operate.

We may have to distance ourselves from notions of citizens as consumers and from limited financial inclusion initiatives; or to actively contribute to the development of alternative models for the provision of financial services where the pursuit of profit becomes a secondary concern.

As we fast approach a world of digital fiat currencies (digital euros, digital pounds, digital yuan, etc.) we cannot continue designing our money technologies under incorrect assumptions about human behaviour; or under the pretention that money governance is disconnected from the exercise of citizenship. We must design financial technologies that account for the social and collaborative nature of our interactions with and through money; and that uphold our right to democratically safeguard our collective economic wellbeing.

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