

The invisible robots of global finance: Making visible machines, people, and places

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ABSTRACT

One of the barriers for doing ethics of technology in the domain of finance is that financial technologies usually remain invisible. These hidden and unseen devices, machines, and infrastructures have to be revealed. This paper shows how the “robots” of finance, which function as distance technologies, are not only themselves invisible, but also hide people and places, which is ethically and politically problematic. Furthermore, “the market” appears as a ghostly artificial agent, again rendering humans invisible and making it difficult to ascribe responsibility. Epistemic invisibilities thus become moral invisibilities. Finally, if we want to render finance more socially and ethically responsible, we also have to reveal the hidden efforts of many individuals and communities to re-invent finance by means of alternative financial practices and technologies. Research on responsible innovation should also consider less visible innovation that happens outside academia and industry.

Categories and Subject Descriptors

K.4.1 [Computers and Society]: Ethics

General Terms

Human Factors

Keywords

Ethics of finance; ethics of financial technologies; ethics of robotics; ethics of AI; social studies of finance; distance; invisibility; phenomenology of finance; philosophy of finance; high-frequency trading; algorithmic trading; electronic trading

1. INTRODUCTION

One of the barriers for doing ethics of technology in the domain of finance is that financial technologies usually remain invisible. Finance is generally not understood as a technological (and social) practice. It is supposed to be about people, for instance about the rights and duties of market participants [1]. Usually technologies are only attended to when they malfunction. To use Heidegger's

terminology: usually they are ready-to-hand; we just use them and do not focus on the tools we use. Only when they break down technologies become present-at-hand. [2] For instance, high-frequency trading by means of algorithms only becomes visible when something goes wrong, as was the case for instance in 2012 when a computer glitch caused a company to lose millions after it started using new software [3]. Thus, usually financial technologies remain out of sight.

In order to evaluate financial technologies, therefore, the unseen machines and devices of finance have to be revealed; otherwise we remain blind to the technological developments in finance and cannot evaluate their social and ethical consequences. For this purpose we need to re-write the history of finance as including a history of financial technologies and – with the help of social studies of finance, including ethnographical work – we need to reveal the artefacts, devices, machines, and infrastructures that make possible global finance.

Elaborating arguments drawn from my recent book *Money Machines* [4] this paper reveals the “robots” of finance and argues that they are not only themselves invisible, but also contribute to “distancing” processes which hide people and places affected. I will argue that this is a problem for the ascription and exercise of responsibility. I further discuss other ethically problematic invisibilities in finance: invisible humans under the spell of the ghostly artificial agent “the market” which therefore escape responsibility (ascription), and hidden efforts of individuals and communities to develop alternative financial practices and technologies – innovations which usually do not show up in research on ethics and responsible innovation in finance.

2. INVISIBLE FINANCIAL TECHNOLOGIES

Most discussions in ethics of finance focus on human behavior and character. This is understandable. “Ethics” is usually seen as concerned with what humans do and are. But this is misleading, since such an omission hides the many ways humans and technologies interact and entangle in practices, experience, (hi)stories, and knowledge production. For example, the history of finance is usually written in a way that conceals financial technologies: it is about the history of people and financial institutions. And financial technologies do not even appear on the radar of contemporary ethics of finance.

To start changing this I have written a very brief history and phenomenology of financial technologies [4] which highlights financial technologies in the history of finance and their role in

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shaping society and human subjectivity: it pays attention to such things as clay tablets, writing, money, and other financial technologies in ancient civilizations, but also to contemporary financial technologies such as electronic currencies (consider for instance Bitcoin) and trade algorithms used in so-called algorithmic trading. In addition, we can learn from social studies of finance and STS: they have been extremely helpful in revealing the social and material side of finance. For instance, Callon has studied the prostheses and assemblages of finance [5], Knorr Cetina has described the technologies on trading floors such as computer screens [6], and Beunza and Stark [7] have revealed networks of tools such as computer programs, screens, robots, cable connections behind algorithmic trade. It turns out that finance is not only about people and very abstract institutions, but also about very concrete materialities which shape finance as a social-material and technological-material practice.

Some of these technologies are relatively new, and have received comparatively little attention in recent thinking about technology. Like in other fields, contemporary electronic ICTs are used to automate trade. Let me say more about this automation in finance.

3. DISTANCING AND THE HIDING OF PEOPLE AND PLACES

Automation has significantly changed finance. Today algorithms take over many trade actions: so-called “algos” execute trading for investment banks, pension funds, and so on. In high-frequency trading algorithms are used to trade large volumes of securities at very high speed. These rather invisible “robots” contribute to what I call a process of “distancing” [4]. Since the transactions are conducted by algorithms the human has less control – there is a distance between human decision and the transaction – and in electronic environments, people, goods, and places influenced by these transactions are hidden. Today the trader works in a kind of “cockpit”, very similar in kind to an airline cockpit [7]: a highly technologically mediated environment in which contact with the “reality out there” is filtered through the electronic interface. There are numbers on a screen; people have disappeared from view.

This is problematic from an ethical point of view, since it becomes difficult to ascribe and exercise responsibility. Since Aristotle [8] knowledge and control are conditions for responsibility: in order for you to act responsibly, you have to know what you are doing and you have control over what you are doing. But meeting these conditions becomes increasingly difficult when trading is delegated to algorithms and when the electronic technologies used in finance are screening off the socially and ethically relevant consequences of trading acts and decisions. For instance, if because of particular electronic trade actions the price of a commodity changes dramatically, then this may have consequences for people, say farmers and consumers, in places that are very remote from trading centers such as London, New York, or Tokyo. This epistemic invisibility, which becomes a moral invisibility, renders it difficult for traders to exercise responsibility – and difficult for others to hold them responsible. But we, as citizens, also have difficulties to exercise responsibility, since we do not know much about these highly technological financial activities that happen in remote and lofty financial centers and are alienated – or so it seems – from our daily lives. We do not know “who” and we do not know “where” since the humans and places are hidden from our sight. We only see “the market”.

4. “THE MARKET” AS GHOST IN THE MACHINE

Indeed, the entire finance system can be seen as a large technological machine in which “markets” function as artificial agents. It is often said that “the market” “does” or “thinks” this and that. It is seen as an agent in its own right, as a ‘greater being’ as one of Knorr Cetina calls it [6]. Markets thus function as a kind of ghosts in the machine or gods from the machine (*deus ex machine*). They are transcendent gods since they become distant from the concrete, earthly human world. They are ghosts since they are forms reminiscent of humans, but are no longer human: in the global world of technofinance, electronic technologies contribute to the disappearance of the humans “behind” the markets as they abstract from concrete humans and social relations. Money (exchange) does this already to some extent, as Simmel has argued [9]; but electronic forms of money and trade increase the distance.

Again this ethically problematic, since “the market” cannot be a responsible agent. Ghosts or transcendent gods do not fulfil the criteria of moral agency and responsibility; only humans do. Transcendent gods are too distant too mingle with the world and ghosts are not supposed to act (in the world). Similarly, “the system” or “the computer” cannot be held responsible. The result is that the people who make trading decisions and exchange goods remain out of sight and can therefore escape responsibility ascription. Those who produce “the market” escape democratic control.

5. REVEALING ALTERNATIVE FINANCIAL-TECHNOLOGICAL PRACTICES

How can we change this? How can we decrease the distance? How can we increase visibility of humans and places? How can we render finance more socially and ethically responsible and what does this mean for responsible innovation? At first sight, it seems that there is not much we can do. But this view is mistaken. As the mentioned literature in social studies of finance and STS also shows, finance remains a human practice, and humans can change technologies. If we understand finance as a social and technological-human practice, this opens the way to changing society through finance. The world of finance may seem distant, but the ghosts, gods, and artificial agents are created by humans and their actions and thinking. Resistance is possible, and alternative practices are also possible. Yet often these alternative practices remain hidden, since they often emerge bottom-up, at grassroots level (communities, groups of individuals, small companies), rather than top-down (the world of governments and large financial institutions and corporations). Consider for instance so-called LETS (Local Exchange Trading Systems) and new “virtual” currencies: they have not been introduced by governments or national banks, but have been invented and experimented with by local communities or have emerged from internet-based, non-governmental initiatives and groups. But such financial technologies and financial practices are generally less well-known and are not so prominently present in the (mainstream) media as one may expect given their novelty and real-world impact. Thus, here we encounter another kind of morally problematic invisibility: the hidden efforts of many individuals and communities to re-invent finance, including the often unseen development of new, alternative social-financial practices and technologies. If people have the idea that change is not possible, it is difficult to bring about social-political change.

In response to this invisibility, then, we (as researchers) can help to reveal that there is already social-financial-technological change. Consider alternative trade systems such as fair trade, organic food systems and farmers markets, barter networks, LETS (again), time banks, and perhaps also “virtual” currencies in games or new electronic currencies such as Bitcoin which enable peer-to-peer exchange. There are microcredits and there is web-based peer-to-peer lending, for instance the platform Kiva. Gaming is also a way to explore different kinds of ways to deal with money and exchange. There are movements such as Slow Money and Positive Money. There is room for change: top-down but also bottom-up; there are many grassroots initiatives which do not only show new financial technologies but also *that* alternatives are possible, that change is possible – even and also in finance.

6. CONCLUSIONS FOR ETHICS OF FINANCE AND RESPONSIBLE INNOVATION

Ethics of finance – like most thinking categorized under this term – is usually concerned with principles that are to guide human action, or with human institutions and human character (e.g. virtue). But given rapid technological change in finance and elsewhere in our societies, and given research that reveals that these technologies have a significant impact on our lives and our world, such a limitation is highly problematic and undesirable. In order to repair this blink spot, ethics of finance needs to connect to thinking about technology – especially ICTs – and their ethical and social consequences. Thinking about technology (including computer ethics, information ethics, etc.) can in turn learn from social studies of finance that reveal the technologies of finance and how they shape human experience, action, and society. Attention to invisible financial technologies and fictions such as “the market” may help us to think about how to render financial practices more responsible and how we, as citizens, can exercise our democratic responsibilities towards global finance. It is also important to show that there are already a lot of efforts to develop alternative financial practices and technologies, and to explore how these efforts can be supported. We need to discuss how we can create a society in which this kind of innovation becomes *more* visible and can draw on more resources than it presently does. We need to think about how to create environments in which experiments with financial-social change can flourish.

This requires re-thinking innovation but also responsible innovation. First, we must take a pro-active approach and connect ethics with actual process of innovation. If it is true that financial technologies are not mere instruments but also have social and ethical consequences, as this paper has suggested, then making finance more responsible should include making technological innovation in the context of finance more responsible. Can we design better financial technologies that support rather than threaten the exercise and ascription of responsibility? Can we use information and communication technologies in ways that bring about social change? As said, there are already interesting initiatives in this area. And of course there is already work on responsible innovation in other areas of technological development, which may be applied to financial innovation. Second, however, for this purpose the scope of thinking about responsible innovation must be broadened: not only in terms of the kind of technology (financial technologies), but also in terms of the sites and places of innovation. Usually thinking about

responsible innovation has a rather narrow scope: it tends to focus on “the usual suspects”: innovation in academia and industry. This is not sufficient, since it hides what happens outside of these domains. I therefore recommend that the scope of thinking about responsible innovation be widened to include grassroots, small-scale, and non-governmental innovation.

Finally, the approach used in this paper, which develops and employs what we may call a phenomenology of (in)visibility and which is informed by work on technologies by social scientists (especially researchers using ethnographical methods to study financial practices), could be applied more widely in ethics of technology and thinking about so-called research and responsible innovation (RRI). (See for instance Von Schomberg’s definition [10].) Part of what ethics of technology and RRI is then supposed to do is making visible technologies and the hidden ways they shape our lives and society. By firmly connecting the normative to the descriptive, and ethical questions to epistemological questions, the proposed approach may thus contribute to a more engaged and socially responsive way of doing ethics of technology and RRI. Indeed, this paper suggests that to make visible these “robots”, machines, people, and places – with the help of social studies or indeed by doing these studies – is already an ethical, responsible act; it helps to bridge the distance.

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