1
The Social Ontology of Money

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Many things have been used as money. Pieces of metal and paper have turned out to be rather convenient in this respect. More exotic examples are squirrel pelts (in medieval Finland) and large limestones with holes in them (on the isle of Yap until the late nineteenth century). For a long time, it has been natural to assume that money is a concrete object (or, more precisely, that it is always realized in the form of concrete objects). However, nowadays there is ample reason to doubt this. In particular, electronic money and cryptocurrencies are not plausibly regarded as concrete objects. For instance, they are not things that people can see or touch. But if money is not a concrete object, what is it?

Although electronic money has been around for some time now, philosophers have still not come to terms with it. In his otherwise penetrating reflections on the ontology of money, Uskali Mäki (2021) does not mention it. John Searle (1995) has struggled with the issue. Initially, he argued that money is an institutional status that is imposed on concrete objects. As a consequence, the relevant objects can be said to be money. However, Barry Smith (2003) pointed out that this idea makes little sense when it comes to electronic money. After all, in that case, there is nothing on which the status is imposed. In response, Searle (2003, 2010) has conceded that, in the case of electronic money, there is no concrete object that has this status. But this leaves open what exactly its ontological standing is.

To shed light on this, I consider the function of institutions, which is to generate cooperative benefits (Hindriks & Guala, 2021; Schotter, 1981; Tuomela, 2002). The institution of money generates such benefits by coordinating behaviors between people in a way that reduces transaction costs. This coordinating role of money plays a central role in two recent social ontologies of money, that of Francesco Guala (2016, 2021) and that of J. P. Smit, Filip Buekens, and Stan Du Plessis (2016). Guala's point of departure is the idea that concrete objects feature in coordination institutions as signaling devices, which facilitate their participants to converge on a mutually beneficial course of action (Guala & Hindriks, 2015; Hindriks & Guala, 2015). However, he claims that mere representations can also serve this purpose. In light of this, Guala (2021) proposes that money is a concrete object in some cases, and an abstract object in others. Smit, Buekens, and Du Plessis (2016) argue that money is always an abstract object. Concrete objects can

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be used to represent it, but they are not money. In this chapter, I critically assess these views.

The main problem with views that take money to be an abstract object in some or all cases is that abstract objects cannot enter into causal relations, whereas money can. In light of this, I consider a third possibility: instead of an object, money is a property, a property of an agent. In other words, no thing can be money; but agents can have money. Furthermore, having money is a matter of having social power, including purchasing power (Cohen, 2011). A fourth alternative is that money is a concrete object in some cases, and a property of an agent in others (Hindriks, 2012, 2013). To shed light on the plausibility of these different views, I start by briefly introducing the commodity and credit theories of money (section 1). I then go on to discuss Searle's social ontology of money (section 2), and the nature and function of institutions (section 3). In section 4, I bring all this to bear on the ontological standing of money. I argue specifically that it should never be regarded as an abstract object. And I conclude that, at least in some cases, money is not an object at all.

1. Money and Its Functions

Economists define money as a generally accepted means of exchange, a store of value and a unit of account. These three characteristics of money are its functions. The term "function" is used here in its ordinary sense, as the purpose for which something is used. According to the Commodity Theory of money, money is itself a commodity, just as the things you buy with it. It is a concrete object to which people attribute value independently of its use as a means of exchange. As a generic means of exchange, money solves the problem of the double coincidence of wants. In a barter economy, I can buy something from you only if you want what I have to offer. With money, people can buy things irrespective of what others want. Thus, money reduces transaction costs relative to a barter economy.

According to the Credit Theory, money was introduced by the state to facilitate paying taxes. The idea is that the state issues pieces of paper that people can use for paying taxes. Using such pieces of paper commits them to offering goods at a later point in time. Thus, money comes with an obligation to repay a debt. In this respect, it is similar to the credit someone might have in a store. The Credit Theory is particularly suitable for explaining the existence of fiat money. As repaying a debt takes time, store of value is the primary function of money from the perspective of the Credit Theory. Furthermore, the state plays a central role in stabilizing the value of money, as people will always be able to use it to pay taxes.[1]

[1] For more on the Commodity Theory and the Credit Theory, see Guala (2016). Marx is often regarded as a proponent of the Commodity Theory, and Keynes of the Credit Theory.

Money can be realized in the form of concrete objects, such as shells, furs, and stones. However, banks often have more money on their balance sheets than in their vaults. For centuries, they have been able to create money at the stroke of a pen. This reveals that concrete objects are not essential to money. The invention of electronic money has made this even more obvious. Instead, electronic money requires a device for electronically storing currency, such as a computer system or a chip card. Even so, it cannot plausibly be identified with bits. Electronic records merely represent money. This is why electronic money presents a puzzle for the ontology of money. In light of this, I ask whether money is ever a concrete object. Furthermore, if or when it is not, what is it?

2. Status Function and Deontic Powers

According to John Searle (1995, 2010, 2015, 2017), institutions are systems of constitutive rules that enable the creation and maintenance of status functions. To explain what he means by this, I first discuss the notion of a status function and then that of a constitutive rule. Status functions consist of deontic powers, or rights and obligations. Examples of status functions are police officer, property, and marriage. A police officer ought to prevent and solve crimes. If something is your property, then other people are not permitted to take it without your permission. And being married entitles you to certain tax reductions. Money is also a status function (Searle, 2017, p. 1460). It consists of the "deontic power to buy, pay and close debts" (Searle, 2017, p. 1463). And it provides people with "the ability to buy and sell and the ability to incur and pay debts" (Searle, 2017, p. 1466). This in turn implies that money is a store and measure of value. Thus, institutional entities have status functions that confer deontic powers on people.

Institutional statuses are sometimes attributed on an ad hoc basis, as when someone is made the leader of the group without there being a procedure for this. In other cases, they presuppose a constitutive rule, which is a rule that has the following structure: *X* counts as *Y* in *C*. For instance, Barack Obama counts as the 44th president of the United States. He has this status because he meets the conditions under which people count as presidents. And he had the deontic powers that come with the office. Similarly, money presupposes constitutive rules, one for each currency. Searle gives the following example: "Bills issued by the Bureau of Engraving and Printing (X) count as money (Y) in the United States (C)" (1995, p. 28).[2] For a constitutive rule to be in force, it has to be collectively accepted.

[2] Although the Bureau of Engraving and Printing prints it, US American money is issued by the Federal Reserve.

As Searle conceives of them, constitutive rules specify the conditions something has to meet in order to have a status function. But it does not mention deontic powers. To see how they are connected, I distinguish between two kinds of rules (Hindriks, 2012, 2013, 2021). The first, which I call "a base rule," concerns the context-specific features of money, such as the kind of paper it is made from and what is printed on it. The second, to which I refer as "a status rule," specifies its deontic powers, such as the power to fulfill debts. This "dual conception of constitutive rules," as I call it, solves another problem. Searle has been criticized for offering a theory of currencies rather than of money as such. The charge is that Searle is concerned with the contingent features of particular kinds of money, but has little to say about its necessary features (Mäki, 2021, pp. 251–5). As I see it, base rules pertain to particular currencies, while the status rule explicates what money is as such. In particular, the deontic powers that feature in it are the essential features of money.

Searle initially claimed: "money must come in some physical form or other" (1995, p. 35). In the case of electronic money, this status is imposed on "a blip on a computer disk" (Searle, 1995, p. 56). Smith (2003, p. 287) criticized Searle in this respect, arguing that what is stored on an electronic device is not money itself, but a representation or record thereof. Searle (2003, p. 307) has actually accepted this criticism. He now claims that, insofar as electronic money is concerned, the status function is not imposed on anything (Searle, 2006, 2010). But this is a somewhat mysterious claim in the context of an ontology of status imposition. It gives rise to more questions than it answers. In particular, if the status function is not imposed on anything, then how are its deontic powers realized? And how can money play a causal role in social interactions if it has no physical reality?

In this last respect, it is instructive to contrast Searle's theory to that of Mäki's. Searle explicates the functions of money in terms of deontic powers. In contrast, Mäki claims that "money is a bundle of causal powers" (2021, p. 247). He goes on to argue that those causal powers are "sustained by an institutional structure" (Mäki, 2021, p. 247). The underlying idea is that, for money to exist in a contemporary society, an extensive institutional structure has to be in place, including property rights and a state that enforces them along with markets and a banking system. So, the question remains what money is, if or when it is not a concrete object. The challenge is to provide an answer that accounts for the causal dimension of money.

3. Institutions and Their Function

To make progress regarding this issue, it is important to cast the net wider and consider other theories of institutions. The two most influential kinds of theories regard them as rules that guide or structure human interaction (rule theories) or

as stable regularities in behavior (equilibrium theories). Rule theories typically focus on how rules define the options people have and structure their interactions (Hodgson, 2006; North, 1990; Rawls, 1955; Searle, 1995). Rules about inheritance, property, and taxation have substantial consequences for what people do, as do legal rules that define what is criminal behavior and what is not. For rules to be in force, they have to be accepted within a certain population. Furthermore, they capture the normative dimension of institutions. They feature rights and obligations, in Searle's terms: deontic powers. Such rules are enforced by means of formal and informal sanctions. And they can be regarded as legitimate or taken to have authority within the relevant group of people (Bicchieri, 2006; Hart, 1961; Hindriks, 2019).

According to equilibrium theories, institutions are stable behavioral regularities that can be explained in terms of the preferences and expectations of their participants (Binmore, 2010; Schotter, 1981; Sugden, 1986). The preferences of the participants are interdependent: each prefers to behave in a certain way because others do so as well (Bicchieri, 2006; Lewis, 1969). Think, for instance, of traffic participants who drive on the same side of the road, or of farmers who help each other with the harvest. The former is an example of an institution that facilitates coordination, the latter of an institution that enables cooperation. In both cases, all participants benefit (at least relative to the worst possible outcome). In a broad sense, these are benefits from cooperation. In light of this, generating such benefits is often regarded as the etiological function of institutions (Schotter, 1981; Tuomela, 2002). This is the property that explains why they exist and persist (Hindriks & Guala, 2021; Wright, 1973).[3]

The main problem is that each of these two kinds of theories seems to be incomplete. Equilibrium theories capture the behavioral dimension of institutions. In contrast, rule theories address their normative and symbolic dimensions. But neither does justice to all three of the dimensions of institutions. To resolve this problem, a number of hybrid theories have been proposed (Aoki, 2001; Crawford & Ostrom, 1995; Greif & Kingston, 2011). According to one such theory, the Rules-in-Equilibrium Theory, institutions are rules that specify strategies that form an equilibrium (Guala & Hindriks, 2015; Hindriks & Guala, 2015). In this sense, coordination institutions are rules in equilibrium. The second core claim of this theory is that signaling devices play a central role in creating and maintaining equilibria. Think, for instance, of smoke signals and traffic lights, of police uniforms and wedding rings. These objects function as signaling devices in that they enable people to converge on similar responses to a certain situation such that they behave in a mutually beneficial manner.

[3] The claim that institutions have a function faces some well-known challenges (Brennan et al., 2013; Elster, 2015; Eriksson, 2019). Pettit (1996, 2000) and Hindriks and Guala (2021) defend the claim and address the challenges.

How do these ideas transpose to money? First, money solves a coordination problem, the double coincidence of wants. Second, the overarching function of money is to generate cooperative benefits. These consist of the reduction in transaction costs that it achieves relative to a barter economy. Things that are money fulfill this function by being used for particular purposes—as a means of exchange, a store of value, and a unit of account. Third, in order for something to be used for these purposes, it has to be sustained as money by interdependent preferences and mutually sustaining expectations. This means that people must prefer to use a particular object as a means of exchange on the condition that others do; they must actually expect each other to do so. As this will motivate them to do so, their expectations are self-reinforcing.

As mentioned in the introduction, the coordinating role of money is central to two recent social ontologies of money, that of Guala (2016, 2021) and that of Smit, Buekens, and Du Plessis (2011, 2014, 2016). Guala argues that people can solve the problem of the double coincidence of wants by converging on a particular commodity. Relying on the hybrid or unified social ontology that he and I have presented elsewhere (Guala & Hindriks, 2015; Hindriks & Guala, 2015), he proposes that commodity functions as a signaling device and thereby serves to reduce transaction costs (Guala, 2016, p. 172). To explain the stability of fiat money, Guala (2016, p. 40) invokes the state as a central authority and he proposes that it is itself a signaling device: it declares the rule and thereby the strategies due to which a particular currency is money. And its declaration makes it salient what is money in the context at issue. Furthermore, Guala (2021) argues that, although it can be, money need not be a concrete object. In particular, electronic money is an abstract object.

According to Guala (2016, p. 32), institutions are rules that people are motivated to follow. Thus, for something to be money, people must be motivated to use it as such. However, some of the things people would ordinarily think of as money do not meet this condition. Consider a currency that is subject to hyperinflation. Because of this, it has become worthless and people start using something else as money. As it is still the official currency, ordinary people will regard it as money. However, Guala (2016, p. 170) maintains that it ceases to be money because it malfunctions.[4] Thus, he believes that bills and coins are artifacts that can but need not be money. What ultimately matters for being money is not whether an entity is accepted as such, but whether it performs its functions. And, depending on circumstances, an abstract object can do so just as well as a concrete object.[5]

[4] Malfunctioning artifacts play a prominent role in critical discussions of Searle's theory more generally (Almäng, 2016; Hindriks, 2020; Miller, 2001; Rust, 2017; Smith, 2003).

[5] In line with this, and against Searle, Guala (2016, p. 169) argues that a declaration is neither necessary nor sufficient for something to be money.

Smit, Buekens, and Du Plessis (2011, 2014, 2016) offer a reductive account of institutional objects. To this end, they invoke the core insight of equilibrium theories, namely that stable patterns of behavior can be explained in terms of preferences and expectations. They propose that institutional objects can be reduced to ordinary objects toward which people are incentivized to act in certain ways.[6] Thus, money is an object that people are incentivized to acquire for exchange or transfer of ownership.[7] One might think that, when people are incentivized, there must be someone who incentivizes them. However, this does not follow on their use of the term: "When we say that someone is incentivized to perform an action we merely mean that there is, for that person, some reason for action, whatever this may be" (Smit et al., 2014, p. 1818).

Against this background, Smit et al. (2011, 2014, 2016) defend two striking claims. First, all money is backed up by preferences. It follows that there is no substantial difference between commodity money and fiat money. Second, concrete objects that appear to be money are merely records thereof (Smit et al., 2011, p. 17). Hence, money is an abstract object. They support this conclusion by means of their "elimination argument." If people had perfect memories, they could perform market transactions without concrete objects, in fact without any record-keeping devices at all. To illustrate how this would work, they draw an analogy with chess: "We can think of physical notes and coins as being like chess played on a board and think of electronic records as being like chess notation" (Smit et al., 2016, p. 11). This is meant to establish that the objects do not really matter in the end, except for practical or epistemic purposes. Thus, notes and coins are more like electronic records then they appear: "the states achieved by updating a financial ledger or exchanging notes and coins can both be interpreted as being records of some abstract fact" (Smit et al., 2016, p. 9). They conclude that money is a position "on an abstract mathematical object, namely a relative ratio scale" (Smit et al., 2016, p. 1).

In sum, Smit, Buekens, and Du Plessis take money to be an abstract object. If concrete objects play a role at all, they are merely records of money. In contrast, Guala argues that money can but need not be an abstract object. It can also be a concrete object. This entails that money can have one of two ontological standings. I refer to theories of this kind as "hybrid" or "dualist." In the next section, I discuss the plausibility of various theories of the ontology of money. I start with three pure or monist views, according to which money always has one and the same ontological standing.

[6] One might think that, when people are incentivized, there must be someone who incentivizes them. However, this does not follow on their use of the term: "When we say that someone is incentivized to perform an action, we merely mean that there is, for that person, some reason for action, whatever this may be" (Smit et al., 2014, p. 1818). For this and other reasons, I interpret them as offering an equilibrium theory.

[7] It follows that they reduce rights and obligations to what people are disposed to do. This interpretation is confirmed by the fact that Smit et al. (2014) also explicate property in terms of incentivization.

4. The Ontological Standing of Money

4.1 Monism

Before the invention of electronic money, it was rather intuitive to regard money as a concrete object. Money seemed to be a social artifact, a material object that is meant to serve a particular purpose. It was a thing that you could put in your wallet. Some of us still use wallets to carry money around. If wallets are for holding money, then it must be a concrete object, at least some of the time. However, electronic money is not a concrete object. You cannot carry it around in your pocket or even touch it. Electronic money exists due to electronic records. Yet, it is far from obvious that electronic records are money. Instead, they are most plausibly seen as representations of money (Searle, 2003; Smith, 2003). Furthermore, those records do not represent concrete objects (what would they be?). Thus, it is implausible to take all instances of money to be concrete objects. It follows that anyone who wants to defend a pure or monist conception of money has to reject the idea that money is a concrete object. The problem with this is that, intuitively, money seems to be a concrete object at least some of the time. The monist has to bite the bullet and reject this intuition.

The salient alternative is to regard money as an abstract object. On this view, electronic records represent abstract objects. In this respect, they resemble characters that represent numbers. For instance, "7" represents the number 7. According to the monist version of this view, money is always an abstract object. This implies that pieces of metal and pieces of paper are not money. Instead, they represent it, just as electronic records do. The main virtue of the abstract-object view is that it can account for electronic money. However, money has temporal, spatial, and causal properties. It comes in existence at a certain point in time in a particular region. And monetary transactions can, for instance, cause a recession, a bank run, or a war. The problem with this is that abstract objects do not seem to have such properties. It is particularly difficult to see how the abstract-object view can account for the fact that money can enter into causal relations.

A third alternative is to regard money as a property of an agent. For an agent to have money is for her to have a certain amount of purchasing power. During a market exchange, this property is transferred from the buying agent to the selling agent. When this happens, the first agent loses purchasing power, while the second acquires more of it. The property of having purchasing power is the agential equivalent of being a means of exchange. It can be represented by means of concrete objects or electronic records. Such representations also serve as a store of value. And the units that feature in those representations can be used as a measure of value. Thus, the property of having money captures all three functions of money. As I take the first to imply the other two, I refer to this third proposal as "the money-as-power view." It could be called "the money-as-property view," but

this would be confusing because of the intimate relation between money and the institution of property, which plays a central role in what follows.

Jerry Cohen (2011, p. 185) embraces this third view when he argues that money is social power. He points out that someone who owns something has the right to exclude or prevent others from using it. When someone actually does so, she interferes with someone else's action. Money is the power to remove this kind of constraint. As such, it functions as an entry ticket to goods and services (Cohen, 2011, p. 181). This is particularly clear in situations where you actually need to buy a ticket. If you board a train without one, you will be removed from it. But it also holds in other situations. If you take a sweater from a department store, you will be physically stopped by a security guard. But if you use money, you do not face this constraint. In light of this, Cohen proposes that "the whole point of money is to extinguish interference," to wit to remove the constraints the agent would otherwise face (2011, p. 178).[8] Now, as Cohen conceives of it, social power is a property of an agent. He emphatically argues that "money is *not*, in fact, a thing" and that "money is no object" (Cohen, 2011, pp. 174 and 177).[9]

Thus, the money-as-power view can account for the way in which money functions in practice and how it affects the ways in which agents interact. In this context, two things are particularly important. First, the money-as-power view can solve the puzzle of electronic money. Instead of being money, the electronic records represent money. More specifically, they represent the amount of purchasing power that a particular agent has expressed in terms of a particular currency. Second, this view is well placed to account for the causal dimension of money. Causes are property exemplifications. This implies that, if money is a property, its instantiations can be causes. A problem that this view faces is that causal relata are commonly taken to be exemplifications of intrinsic properties. And social properties are extrinsic. In response, one can deny that there are causal relations in the social domain (Wahlberg, 2020). The other option is to allow for the possibility that exemplifications of extrinsic properties can be causes (Baker, 2009).

It follows that, in these respects, the money-as-power view performs better than its two rivals. The concrete-object view cannot account for the existence of electronic money. The abstract-object view cannot account for the fact that money can enter into causal relations. In contrast, the money-as-power view can account for both. Thus, the idea that money is a property of an agent deserves to be taken seriously.

[8] Cohen qualifies this view in two respects. First, money provides access to goods and services only in certain circumstances, including for instance that the other is willing to sell (2011, p. 177). Second, when it does not yet exist, money can induce the creation of a good or the provision of a service. Even so, it still functions as an entry ticket in such cases (Cohen, 2011, pp. 197–9).

[9] Lawson (2016) argues that money is a social position, such as that of a referee. I take this to imply that he also regards money as a property of an agent.

4.2 Dualism

Intuitively, money seems to be a concrete object at least some of the time. As just discussed, the monist has to bite the bullet and reject this intuition. But there is an alternative: to give up monism. According to dualism, money can have one of two ontological standings. If it is to capture the intuition, one of them must be that of a concrete object. This means that there are two hybrid views to consider, to which I refer as "abstract–concrete dualism" and "object–property dualism." Abstract–concrete dualism assumes that money is always an object, but that it is either an abstract or a concrete object. Object–property dualism is the view that money is either a concrete object or a property of an agent. As discussed in section 3, Guala (2016) defends abstract–concrete dualism. Elsewhere, I have defended object–property dualism (Hindriks, 2012, 2013).

Below I ask which of these two kinds of dualism is most attractive. Here I ask the prior question whether dualism is to be preferred to monism. Philosophers tend to prefer unified accounts over disunified accounts. It is unclear, however, how much weight this consideration should carry. Perhaps it is nothing more than a tie-breaker. This would mean that: if two accounts are equally good at accommodating the phenomena, then monism wins. If this is the situation, a preference for monism does not justify rejecting the intuition. Instead, the intuition supports rejecting monism. However, it would be too quick to conclude that dualism has the upper hand. The thing to realize is that the elimination argument, which I presented in section 3, can be seen as an argument against dualism.

Smit et al. (2011, 2014, 2016) claim that, if people had perfect memories, they could do without record-keeping devices altogether. They take this to imply that concrete objects are not money, but merely representations thereof. And they conclude that money is always an abstract object. But how strong is this argument really? Beings with perfect memories do not need a checkerboard to play chess. Even so, this does not imply that, say, a wooden checkerboard is not a concrete object. And it does not follow either that, in spite of appearances, the wooden object is not a checkerboard. It is a social artifact and as such a concrete object with a function. Presumably, Smit et al. (2011, 2014, 2016) will not deny this. However, it sheds doubt on their argument. The fact that people could do without certain entities does not establish that the ones that are actually in use are not real. People can of course achieve certain purposes without objects. But this is perfectly consistent with the claim that, when they do use objects for those purposes, those objects are social artifacts.

To support the elimination argument, Smit et al. (2016) present a thought-experiment concerning exchange in a prison:

> Consider a prison with unusually honest inmates, all with prodigious memories, that have a cigarette economy. Suppose a guard wishes to punish some inmate by

> stealing five cigarettes from him. The prisoners are in uproar at such blatant injustice and decide to treat the inmate as if the cigarettes have never been stolen. (p. 16)

They maintain that the prisoner does not lose any money in this scenario. And they conclude from this that money must be an abstract object. However, things could easily have gone the other way, in particular with less honest and more forgetful prisoners. Then the prisoner would have lost money. So, this example does not unambiguously support the view that money is an abstract object. Thus, the elimination argument does not support monism.

Strikingly, Guala invokes similar considerations in support of the opposite conclusion. He considers a pure credit system in which people buy things by coming to owe the other something, for instance eggs in the future in exchange for fish now. But he also observes that, in practice, credit is often combined with money. Although credit can work in small communities, it is likely to fail in larger ones, in particular because not everybody can be expected to honor their debts. This "problem of imperfect commitment" can to some extent be solved, but doing so requires costly policing institutions, including legal codes and fine collectors. Because of the costs involved, a trusted currency is likely to work better than pure credit.

Guala points out that "as the number of people grows large, the points should better be recorded in a ledger supervised by a trusted authority" (2021, p. 271). But this ledger system is redundant when people use concrete objects as money, as the points are then simply attributed to whomever carries the objects. Thus, concrete objects can be money. In support of this point, Guala points out, "it would certainly be strange to say that the money that I have in my pocket is an abstract entity" (2021, p. 275). This counts in favor of regarding some instances of money as concrete objects. Even so, material money is just one device among others for keeping track of who has how many points. The balance on your bank account is another one. Hence, money can also be an abstract object. In effect, Guala turns the elimination argument on its head. He grants that we could do without concrete objects as money. However, he also explains why in some cases we do not. In this way, the fact that we have not eliminated the use of concrete objects supports dualism.

To account for the various manifestations of money, Guala distinguishes between money as an institution and money as an object. As an institution, money consists of rules that are in equilibrium. Those rules explain which objects are money, irrespective of whether they are abstract or concrete. Thus, rules are prior to objects. Guala claims that "institutions cognitively unburden our minds by providing easy and standardized solutions" (2021, p. 268). This claim should caution us against taking the elimination argument and the prison thought-experiment too seriously. Although there might be agents who can do without

concrete objects and even without ledgers, they are not us. And our limitations as human beings explain why we have institutions and why concrete objects often play a role in them.

Thus, we learn little about institutions if we abstract from our limitations. By way of analogy, Guala considers traffic lights. He points out that a middle-sized material object is not needed to avoid traffic accidents. An alternative is to rely on the following rule:

> Take the rule: on even days, cars coming from Rue Danton give way to cars coming from Boulevard Saint-Germain; on odd days, it's the other way around. (Guala, 2021, p. 275)

This rule presupposes a calendar that functions as a record, just like money in bank accounts. If it were in force, even and odd days would then play the same role as traffic lights. In this situation, there would be no such lights. But this does not mean that, as things are, there are no traffic lights or that they are not material objects. Similarly, money can but need not be realized by means of concrete objects. Thus, the elimination argument fails to establish that money is always an abstract object, and Guala uses this result to defend abstract–concrete dualism.

Strikingly, Cohen uses it to argue that money is always a property of an agent. He imagines that "people all had wonderful memories and were all law-abiding, and [that] information flowed rapidly from person to person" and he concludes that, under such circumstances, "money could take the form of nothing more than common knowledge of people's entitlements" (2011, p. 185).[10] Entitlements or rights are properties of agents. This suggests that the elimination argument supports the money-as-power view as a monist account of money.

However, this view faces a significant problem: it cannot account for unowned money. Suppose you decide to become a hermit. On the central square in the city where you lived until now, you throw all your money in the air while saying that it no longer belongs to you and that it will belong to whomever gets their hands on it first. It seems that the pieces of paper you give away remain money even after you throw them in the air and before someone catches them. But during this period, they or the power they provide do not belong to a particular agent. This suggests that purchasing power inheres in objects that are used as money. Electronic money is agent-specific. It has, so to speak, its bearer written into it. In contrast, money in the form of a concrete object provides purchasing power to whomever

[10] The term "entitlement" suggests that someone is obligated to satisfy it, as is the case with claim rights. But no one is obligated to trade with someone just because she has money. In light of this, money should be explicated in terms of normative power instead, to wit the power to change property rights conditional on the other agent's willingness to sell.

happens to possess it. This explains why, when it is a concrete object, money need not be owned. It follows that money can but need not be a concrete object. And this implies that monist views are inadequate.

4.3 Abstract–Concrete versus Object–Property Dualism

But how to choose between abstract–concrete dualism and object–property dualism? Recall Mäki's claim that "money is a bundle of causal powers sustained by an institutional structure" (2021, p. 247). Money presupposes other institutions such as banks, contracts, markets, property, and the state. Such institutions need to be in place in order for money to function properly. As such, they enable monetary exchanges. Mäki argues that being a means of exchange is a causal power of money. It follows that the institutions mentioned sustain the causal processes that are involved in market transactions. Now, just as objects, agents can bear the appropriate relations to institutions. Furthermore, they can also play a causal role in monetary exchanges. This suggests that the money-as-power view has no problems accommodating the causal dimension of money. And this counts in favor of object–property dualism.

What about abstract objects? Smit et al. (2016, p. 1) take money to be a position on a relative ratio scale. Such a scale is an abstract object. In light of this, they conclude that money is an abstract object too. However, a position on a scale is not as such an institutional object. Furthermore, it is not clear what, if any relations it bears to the institutions mentioned. Finally, it is difficult to see how, even if it bore some relation to them, an abstract object could acquire causal powers. Note that these problems are due to the strong claim that money *is* an abstract object. The weaker claim that money *involves* abstract objects is significantly more plausible. To support this claim, consider rosaries, which are concrete objects. How many beads there are on a rosary can be expressed in terms of a number, which is an abstract object. But this does not mean that rosaries are abstract objects. Similarly, the claim that money involves a relative ratio scale makes perfect sense. However, for the reasons discussed, it is problematic to equate the two. And the rosary example reveals that there is no need to do so. Thus, I propose that instances of money involve positions on relative ratio scales without being identical to them. The fact that their value is expressed in numbers in no way entails that they are abstract objects.

This line of argument extends to properties of agents. Consider the height of a human being or the amount of taxes she has to pay. Both are properties of an agent, and both can be quantified and expressed in numbers. As numbers are abstract objects, these properties involve such objects. However, they are not identical to them. Similarly, the position on the scale settles how much purchasing power an agent has without being identical to it. In light of this, I conclude that,

although money always involves abstract objects, it can never be equated with them. And this implies that abstract–concrete dualism is mistaken. The alternative that remains is that money is either a concrete object or a property of an agent (Hindriks, 2012, 2013). The upshot is that object–property dualism is more plausible than abstract–concrete dualism.

5. Conclusion

Money is a rather common and ordinary phenomenon. At the same time, it has been claimed to be a somewhat "mysterious entity" (Mäki, 2021, p. 246). This chapter provides ample support for this claim. It reveals that several very different views about its ontological standing have at least some initial plausibility. A rather intuitive view is that money is a concrete object. In part because of technological innovations, this can no longer be regarded as the whole truth about the ontological standing of money. Two salient monist alternatives are that it is an abstract object or a property of an agent.

Although they are somewhat unusual, I have argued that dualist positions deserve to be taken seriously as well. It is, after all, quite intuitive that people can carry around money in their wallets, which would mean that it is a concrete object some of the time. But what about money that is stored on a computer system? One option is to regard it as an abstract object. However, this view has great difficulty accounting for the causal properties of money. In light of this, I have argued that electronic money is best regarded as a property of an agent.

Thus, the alternative that remains is object–property dualism: Money is either a concrete object or a property of an agent.

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