



## Article

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# Money as an Institution and Money as an Object

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**Abstract:** The folk conception of money as an object is not a promising starting point to develop general, explanatory metaphysical accounts of the social world. A theory of institutions as rules in equilibrium is more consistent with scientific theories of money, is able to shed light on the folk view, and side-steps some unnecessary puzzles.

**Keywords:** money, social ontology, institutions, folk ontology

## 1 Introduction

The world of our ordinary experience is made of chairs, trees, dogs, hats, cars, and other middle-sized concrete entities. Human cognition seems to be programmed to pick up objects of this kind, and there are obvious pragmatic reasons for such a disposition: these are the sort of things that we can bump into, that can bite us, that we can use as tools. They are probably the sort of things that mattered most to our ancestors for basic survival – food, preys, predators, materials that could be used to build utensils such as sticks, stones, leaves. The primacy of nouns in the evolution of languages, as noticed by linguists, also reflects this intuitive ontology (Heine and Kuteva 2007). So it is not surprising that when we move outside of this realm – either by chance or purpose – we tend to preserve the ‘ordinary’ way of organizing our experience. It is natural for us to think of the microphysical world as made of larger objects constituted by smaller objects or parts (molecules, atoms, quarks), and of the social world as a complex assemblage of interacting middle-sized entities – people and material objects, perhaps, as in a university where teachers and students meet for classes, exchange papers, write books.

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Explanatory progress however has often required shifting to a different theoretical framework. The sciences in particular have regularly challenged our intuitive worldview by positing entities and phenomena that do not fit the ordinary picture neatly. Galileo and Newton argued that objects can move forever, if nothing stops them. Contemporary physics tells us that electrons are waves, that space is curved and that time is relative to motion. All this is difficult to understand, in some cases impossible to represent, if representation is intended in the ordinary, picture-like sense.<sup>1</sup>

It may seem that the social sciences do not stretch our imagination that far. Some philosophers have argued that even its most sophisticated theoretical constructs, such as the models of neoclassical economics, use commonsense ontological entities as fundamental building blocks.<sup>2</sup> This may be true, but even so, it does not prevent social scientists from issuing explanations that go against the grain of our intuitions. The reason, in part, is that honoring one intuition may create a conflict with another one. Take, for example, our tendency to conceptualize institutions as groups of people. This perspective clashes with the hunch that institutions are more stable and resilient than groups, or that they are located in space and time differently from the people who allegedly constitute them. How can the University of London be in Malet Street, Senate House, if its teachers and students come and go all the time? What would happen if all the teachers and students were replaced at once? Would the University of London become a different institution? Or what if Senate House was destroyed by a bomb – would the university also be destroyed, or would it continue to exist? And if so, *where* would it be?<sup>3</sup>

When intuitions clash, paradoxes loom, and philosophy thrives. The attraction of such puzzles is hardly surprising: philosophers have been lured by them for centuries, and recently the attraction seems to have become irresistible again for so-called ‘analytical metaphysicians’ (Chalmers, Manley, and Wasserman 2009; Simons 2013). One reason is that philosophers have developed a sophisticated set of tools (subtle distinctions, linguistic analysis, thought experiments) to deal with these paradoxes – and when you have developed a special expertise, the temptation is strong to put it to work. But the fact that folk ontology generates puzzles

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<sup>1</sup> See Ladyman and Ross (2007); Ross, Ladyman, and Kincaid (2013).

<sup>2</sup> E.g. Hausman (1998), Maki (1998). Baker (2007) is a well-known champion of the primacy and ineliminability of commonsense worldviews – as linked to what she calls the ‘first-person’ perspective.

<sup>3</sup> In spite of some valiant attempts at stopping the flow (e.g. Hindriks 2012; Thomasson 2019), there is a relentless industry of philosophical papers addressing these puzzles. See for example Ritchie (2015), Hawley (2017), Strohmaier (2019), Korman (2020), Wilhelm (2020).

similar to those of the philosophical tradition is not a good reason to invest our energies in it.

In this paper, I would like to issue a familiar warning about taking ordinary ontologies too seriously, both in philosophy and in everyday life. I will play with the idea that ordinary ontologies are often wrong – although it is not easy to specify what ‘wrong’ means, exactly. One tempting line of argument, broadly Quinean in spirit, moves from the consideration that our ordinary ways to conceptualize the social world do not lead to formulate explanatorily powerful theories or generalizations. Since this line of reasoning must be backed up by some example, *money* will be my central case.

The folk take coins and paper bills as prototypical examples of money. They are middle-sized material objects, and to take them seriously is to subscribe to what I will call the ‘money-as-an-object’ conception. The folk conception generates attractive puzzles for philosophers: what about ‘electronic’ money? Bank accounts? Loans? Credit cards? Bitcoins? These are not only philosophical puzzles, to be sure: they are also scientific problems for those – e.g. economists – who want to measure the quantity of money circulating in an economy, or want to predict the impact of monetary policy (what if the European Central Bank tries to increase the money stock by means of so-called quantitative easing?). The difference is that when economists approach these issues, they do not subscribe to the money-as-an-object ontology. In fact, they do not presuppose that the folk conception of money is a useful guide to understand the way in which money works in a modern economy. They are quite happy to concede that the money stock is *not* constituted by a finite set of middle-sized material objects. Coins and paper bills are possible instantiations of money, but they are neither the most common nor the most significant ones, for economic purposes. Although the folk may be aware of this, at various levels of awareness and sophistication, most of them would struggle to explain *what money is*, in general. So we need a satisfactory theory of money, and we should better look at the theories of those who have studied money systematically for several decades.

## 2 What Money Does

What is money according to contemporary social science? Economists subscribe to a *functional* conception: money is whatever works as medium of exchange, store of value, and unit of accounting in a given society. This definition, in itself, is not very illuminating: How are these functions fulfilled? What is the mechanics of money?

How does money work?<sup>4</sup> To answer these questions, it is useful to say something about institutions generally. To say that institutions have functions means that they tend to solve problems – they help us to do things that we would not be able to do (or that would be more difficult to do) if the institutions did not exist.<sup>5</sup> The problems that institutions solve are usually problems of coordination and cooperation. Such problems, as we shall see shortly, are exacerbated by our cognitive limitations: institutions cognitively unburden our minds by providing easy and standardized solutions, giving us more time to think about new and hitherto unsolved problems.<sup>6</sup>

In the case of money, the standard economic account goes like this: people face the problem of producing the goods and services they want, given constraints of time, skills, and material resources. By specializing – learning how to perform a given task more efficiently – they can become more productive. But specialization requires that goods and services are distributed, after they have been produced: a potato-farmer does not want to eat only potatoes, and a philosophy lecturer definitely does not want to eat her lectures. One of the fundamental principles of economics is that redistribution creates value, if commodities and services reach those who value them most. One way to do this is through trade: in a market each commodity or service travels from a seller who has too much, to a buyer who would like to have more.

Now, money makes trading more efficient. It does so by overcoming an impediment called the ‘problem of double coincidence of wants’. Take a mini-society constituted by three individuals, Jack, Jill and Judy, who produce respectively apples, fish, and eggs. Suppose that Jack has apples and wants fish; Jill has fish but does not want apples (she wants eggs); while Judy has eggs but does not want fish (she wants apples). They could in principle exchange their products initially for something that they do not want to consume, but which can be used later to get what they really want. This however creates risks – it presupposes for example that they know what the exchange rate of the intermediate commodities will be. What if Judy changes her mind and does not

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<sup>4</sup> Unlike philosophers, scientists are rarely interested in definitions or concepts per se, but see definitions and concepts as instruments for theorizing (e.g. Ereshefsky and Reydon 2015). For a discussion of the relationship between taxonomies and theories in the social sciences, see e.g. Hodgson (2019).

<sup>5</sup> This does not imply that institutions are perfect or optimal for the function they are supposed to fulfill; it just means that many people – not necessarily all of them – would be worse off without it. That some institutions are terrible for some people, like slavery, does not mean that they do not have a function.

<sup>6</sup> North (1990) and Denzau and North (1994) were among the first scholars to explore the connection between institutions and limited cognition.

want apples anymore? Jill, who has traded her fish for apples with Jack, may be unable to get what she originally wanted.

The alternative to such a complex barter system is to use a ‘medium of exchange’ – for example salt. Salt would be a plausible candidate because it’s something that everybody wants, is infinitely divisible, and easily portable. Notice that risk is not eliminated completely, and time remains important: the medium must facilitate planning, allow some flexibility (in case one’s future needs change), and preserve its value. In general, it is useful to have a single medium that can also work as a unit of account – a common measure for the value of all things, so that traders and producers can easily identify what other people want. This signaling function of prices is one of the great advantages of market systems compared to other methods of distribution. Another advantage of using a single, universal medium of exchange is that it relieves us from the work of evaluating the quality of each intermediate commodity that we would have to trade in a barter economy. Salt is relatively uniform and can be easily inspected. Jill does not have to become an expert in the quality of apples – something that she is not interested in – in order to protect herself from fraud.<sup>7</sup>

Money is not the only way to solve the problem of double coincidence of wants. We know this thanks to equilibrium theories of money, one of the most abstract fields of theoretical economics. One way to understand equilibrium models is in terms of thought experiments exploring the viability of market economies with and without money. One important result of this research is that a ‘pure credit’ system might work just as well as a monetary one. It might work as follows: Jack could take Jill’s fish and promise to give her some eggs in the future; he could then give Judy his apples in exchange for eggs, and use the latter to extinguish his debt with Jill. This mechanism in fact is more than a theoretical possibility: credit is frequently used alongside with money, as a way to overcome the problem of double coincidence of wants. It is used when monetary systems collapse, as in Weimar Germany or in Venezuela today. But it is also used in well-functioning monetary economies alongside ordinary currency: suppose that you want to buy a house, but you are young and you do not have enough savings. You could wait until you are older, when it would be, in a sense, too late. Alternatively, you may obtain credit from your bank, which in turn is going to ask for

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<sup>7</sup> Although these concerns may seem far removed from our everyday experience, they emerge forcefully whenever a monetary system crumbles. In Russia in the early 1990s firms started to pay their employees with material goods, which led to the paradoxical situation of, say, a cement firm acquiring a plant for the production of shoes which would be used to pay employees, who might then exchange them for something else (Seabright 2010). Such solutions go against the logic of increased specialization, which an efficient trading system is supposed to support.

some guarantee. Typically, it will look at your salary (your future work, effectively). But the bank will also probably want to use the house itself as collateral. All goods that can facilitate trade in this manner are said to have ‘liquidity value’ (Nosal and Rocheteau 2011).

A pure credit system like the one described above relies on norms of honesty and, in principle, does not require ‘money’. But such a system faces another hurdle, the problem of imperfect commitment: what if the debts are not honored? No trade would take place if the debtors could not be trusted. Reputation may work as an informal incentive for honesty, but only in relatively small communities whose members interact frequently and repeatedly. In larger communities, it is necessary to create policing institutions – legal codes, judiciary systems, fine collectors, jails, that solve the problem of imperfect commitment. Unfortunately institutions that monitor, arbitrate, and punish are costly<sup>8</sup> and should better be used only when the stakes are high. For the innumerable small transactions that take place on an everyday basis, such as buying bread or a newspaper, we should better use a cheaper system. A trusted currency – money – should work better than pure credit: provided that it is difficult to fake, we can accept money from strangers without worrying too much. This explains why useless objects like paper certificates are priced well above their pure exchange value (the value of the paper and the ink that was used to produce them) in a well-functioning monetary economy. Because they have acquired a more important use or function.

Notice how far we have moved from the commonsense conception of money already. The above account highlights that what really matters is *liquidity*, namely, the degree to which assets may be useful in facilitating transactions (Lagos, Rocheteau, and Wright 2017). As Frasser and Guzmán (2020) have noticed, it is not the case that – pace the ordinary view – something either is money or is not. Things can be *used* as money more or less frequently and effectively, that is, liquidity comes in degrees. And liquidity does not have to be a property of objects that people own and physically transfer – my future work is potentially a liquid asset, as we have seen. Liquidity is a property of anything that people may want to hold, even abstract ‘points’ that are attributed to and passed among economic agents. Jack, Jill and Judy could simply memorize the distribution of such points; perhaps they could recite them publicly every evening, just in case. The famous story of the Island of Yap, where people used huge stones as money, backs up this idea: even though the stones could not be physically transferred, everyone in the island knew

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<sup>8</sup> In 1990s Russia the State was notoriously unable to do the necessary policing, which led to the emergence of a parallel mobster system. The Sicilian mafia had similar origins, according to an influential account (Gambetta 1992).

which stones belonged to whom.<sup>9</sup> So as long as people trust each other, and the group is small, money may simply be kept in mind (Kocherlakota 1998; Smit, Buekens, and du Plessis 2016). But again, as the number of people grows large, the points should better be recorded in a ledger supervised by a trusted authority. Other requirements are that the overall amount of points should be more or less fixed, that the attribution of points can be ascertained, and that everyone is confident that the points will be needed by others in the future.<sup>10</sup>

How about material money then (coins, bills)? Money-as-an-object does away with the ledger system: the ‘points’ are attributed to those who carry the objects. Of course the system still relies on trust, since the emission and validation of the bills and coins must be regulated by a trusted authority. But material money is a marker in a points system, a signifier that we can use among many others (e.g. the balance of our bank account) to keep track of the distribution of points. To focus on money as a material object – and the puzzles it generates – then is to mistake a particular tree for the whole forest. Money-as-an-object is just an *institutional device* among many. We cannot understand it unless we understand what institutions are.

### 3 Institutions as Rules

Definitions in terms of functions (what X does) rather than structural properties (what X is made of) are typical of institutions. Examples can be multiplied easily: universities produce and disseminate knowledge; armies protect communities from external threats; marriages promote cooperation among adults, regulate procreation and siblings’ education, the transmission of property across generations, and more.<sup>11</sup> All of these institutions solve collective problems, that is, they facilitate people’s interactions. The next interesting question is *how*. We have seen how money does it, but it is not obvious that such an account can be generalized across different institutions. What do all these cases have in common, if anything?

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<sup>9</sup> See e.g. Goldberg (2005). Such a system, to be precise, only requires that each individual is associated with a position on a relative ratio scale, so talk of points (or stones) being ‘transferred’ is just metaphorical (see Smit, Buekens, and du Plessis 2016).

<sup>10</sup> The first two conditions apply to bitcoins, but the third does not: national states play a key role to ensure that everyone will need the national currency to pay taxes, i.e. that the currency is a liquid asset.

<sup>11</sup> I discuss marriage at length in Guala (2016, chapters 13–14). Notice that what is relevant here is the *current* function of an institution, rather than its historical function. I follow Pettit (1996) in taking current function as explanatory of an institution’s resilience, rather than of its genealogy.

The answer, according to an old and influential tradition, is *rules*.<sup>12</sup> A monetary system for example is made of rules that indicate how to execute transactions; a marriage is a contract that regulates sexual access, division of labor, inheritance, and more. Frank Hindriks and I have defended a particular version of this account, according to which institutions are *rules in equilibrium*, or rules that people are motivated to follow.<sup>13</sup> I will not describe or defend this account in detail here, but just sketch what it implies in the case of money.

Some of the rules of money-as-an-institution are out in the open, so to speak, for they are issued by the state and codified in its legislation. They are norms regulating the accounting of firms and public sector organizations, for example, or rules about the currency to be used by tax payers. In many countries, there are also rules that prohibit the destruction of bills and coins, and rules that prescribe the use of a given currency in everyday transactions. But such rules are hardly ever enforced, and must not be fetishized. Although they may help a liquid asset to work well, they are inessential to understand what money is. To realize why, imagine a situation of hyperinflation: due to the rapid loss of value of the local currency, shopkeepers ask to be paid in dollars. Although the state could in principle try to enforce the currency as a means of payment for everyday transactions, it would probably fail. People would use the local currency only for the necessary interactions with the public administration – to pay fines and taxes for example, although a weak state is unlikely to be able to collect even those.

So the main reason why people follow rules such as ‘use sterling in the UK’ or ‘use euros in France’ is not that they fear punishment by a central authority. An analogy with traffic may help to see this point clearly: the rule about driving on the right in France would be unenforceable if everyone decided to switch to the left overnight, for whatever reason. The main reason why French people drive on the right is not that they don’t want to be fined, but that they want to avoid car accidents. Similarly, monetary rules are introduced by the state to induce people to carry on their transactions and to do their accounting using a single currency (cf. Smit, Buekens, and du Plessis 2011, 2014). But such incentives are mainly indirect and partial incentives – although the state may *pretend* to say ‘if you don’t use this currency I will punish you all’, such a threat

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<sup>12</sup> The tradition can be traced back to Max Weber, but see also Parsons (1935), North (1990), Knight (1992), Mantzavinos (2001), Hodgson (2006).

<sup>13</sup> Hindriks and Guala (2015), Guala and Hindriks (2015), Guala (2016). Similar accounts have been proposed by Aoki (2007, 2011), and Greif and Kingston (2011).



cannot be credible.<sup>14</sup> What the state actually says is: ‘given that everybody uses this currency, you should better do it as well, because this is the currency that everybody will want to use tomorrow’. The state really is just regulating traffic by giving advice and by making sure that the demand for money will not decline. The rules create assurance among traders and savers, to sustain the belief that the currency will not lose its liquidity value.<sup>15</sup>

So the key rule is very basic and sounds like this: ‘When you are in C, use X to do Y’. It is a pragmatic, conventional rule that in principle could be transgressed all the time. But no one has an incentive to do it, as long as the others follow it. If the system of expectations is coherent, the institution is self-sustaining and our lives are a lot simpler if we follow the rule.

This simple theory of money-as-an-institution must not be confused with a theory of money-as-an-object: it is only a contingent fact that we use the same word for both (institution and object). But it is a philosophical triviality that linguistic practices are often imperfect, and we must not be misled by them. When we say ‘Judy gave Jill a kiss’, we are not implying that there was an object (a kiss) traveling from Judy to Jill. A minimum of translation (‘Judy kissed Jill’) suffices to unveil a reasonable ontology underlying our ordinary way of speaking.

Still, it is surprising how an entire field of study can be misdirected by simple acts of equivocation. Take John Searle’s famous theory of institutions as systems of constitutive rules (Searle 1995, 2010). Maki (2020) has pointed out that Searle’s theory is not a theory of institutions at all: it is a theory of institutional objects or (as Searle himself prefers to say) institutional facts. The theory explains how physical things (e.g. a piece of paper) can acquire functions by means of acts of collective acceptance or recognition, through iterative application of constitutive rules. It is not a useless theory: it is possible (even plausible) that institutional objects are often identified and assigned functions via constitutive rules. The point is that this is just one interesting mechanism among many that we use to facilitate our social interactions. Hindriks and I have shown how borders and territories can come into being without any attribution of status function, or indeed without

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<sup>14</sup> I am referring here to the injunction to pay taxes *in a given currency*, not to the rules that prescribe to pay them. Although in principle the State could allow me to pay taxes in euros or dollars or rubles, it could not ignore my incentive to free ride. Collection and punishment of tax evasion thus has another function, besides that of sustaining the currency, namely to change people’s incentives regarding tax compliance. Again there is a practical problem of credibility here – the State can only punish a minority of people, so the majority must comply spontaneously – but discussing this issue would take us too far away from the topic of this paper.

<sup>15</sup> I am not suggesting that the role of the state is limited to this coordination role, to be clear. The state has other interests in the regulation of currency, since money is an important lever to control the business cycle, international trade (through exchange rates), and more.

constitutive rules. Smit, Buekens, and du Plessis (2011) have done the same with money. In general, the point is that the process described by Searle is not necessary for the existence of institutions.<sup>16</sup> But we can see the point more clearly if we realize that Searle's theory is not a theory of institutions. If we do not recognize this, we end up dealing with needless puzzles, such as the conundrum of abstract money (Smith and Searle 2003), that are artificially created by a misleading ontological perspective.

## 4 How to Study Folk Ontologies

One thing is to say that money-as-an-institution must not be confused with money-as-an-object, quite another is to say that the former is ontologically primary or more fundamental. In order to say this, one must get into the realm of meta-ontology: What is more important – money-as-an-institution or money-as-an-object? Aren't they *both* legitimate targets for our ontological inquiries? Readers must have already sensed what my inclination is: I would like to say that money-as-an-institution is primary, and the characteristics of money-as-an-object are derivative. But am I entitled to say this, and why?

In the case of money, the evidence points toward the historical primacy of institutions over objects. The classic story of a medium of exchange emerging spontaneously from uncoordinated barter, upheld by Smith and Menger, is generally disavowed by contemporary scholars. The earliest recorded monetary systems date back to the emergence of ancient sovereign states, and they were mainly created for the regulation of debt. The rule-based account, thus, seems to be vindicated from a genealogical perspective.<sup>17</sup>

But my concern here is with current function rather historical origin. I would like to say that money-as-an-institution is more fundamental, in part, because the primacy of rules over institutional objects holds in general. Consider traffic regulation devices: surely they are often middle-sized institutional objects, such as signs and traffic lights, and surely their social properties (or functions) are derivative from the existence of the rules of traffic. Three lights on a pole cannot help us avoid accidents unless a system of rules is in place. But is a traffic regulation device

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<sup>16</sup> This is the gist of the critique outlined in Guala and Hindriks (2015), Hindriks and Guala (2015), Guala (2016). One difference between our account and that of Smit, Buekens and du Plessis (2011, 2014) is that we recognize that status terms in constitutive rules do refer to genuine objects. We also emphasize the importance of rules, while they take incentives (equilibria, in our terminology) to be primary.

<sup>17</sup> See e.g. Aydinonat (2012) and Peacock (2013) for overview and philosophical discussion.

*necessarily* a middle-sized object? Or can ‘abstract’ devices, just like ‘abstract money’ (the ‘points’ of a bank account), exist? Of course they can. 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. This rule of precedence is based on an abstract distinction between days of the month. Such a distinction may be recorded in our calendars, just like our money is recorded in bank accounts. Days of the month would then discharge the same function as traffic lights, without being institutional *objects* of the ordinary, material kind.<sup>18</sup>

Traffic lights are, of course, material objects. And analogously, money can take the form of a material object – a paper bill or coin for example. It would certainly be strange to say that the money that I have in my pocket is an abstract entity. But we can distinguish between an entity being immaterial and an entity being individuated in terms of something that is immaterial. Robert Stalnaker (1989), in a different philosophical context, has used the example of a footprint: a material object that is individuated by a non-intrinsic property (the history of having been made by a foot). Something similar may hold in the case of institutional entities: although they may be material or abstract, depending on the circumstances, they are in any case individuated by an external system of rules.<sup>19</sup>

If rules are primary for all institutional objects, as I have suggested, then a rule-based theory of money should be more general and explanatory than a theory that is tailored on material money. I have argued that a rule-based theory can explain what institutional objects are, how they acquire their social properties or functions, and what they share with other devices that are institutional but not object-like. The rules-in-equilibrium theory also explains the practice of naming institutional objects, in terms of effective communication and cognition. To say ‘X is money’ is a shorthand for a complex list of possible actions for the proper use of object X, which is regulated by money-as-an-institution. (Actions such as purchasing, borrowing, saving, betting, inheriting, and so forth.) Similarly, to say ‘Y is my property’ conveys a large amount of information about ownership rules by means of just a single word. Although I could in principle provide a list of things that I can and cannot do with Y, as we do when we legislate or draw a contract, in ordinary circumstances it is much simpler to use an umbrella-term like ‘private property’ to refer to them all.<sup>20</sup>

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**18** Do not be misled by the ‘paper calendar’ hanging on your kitchen wall. It is only a *record* of the abstract calendar.

**19** I’m grateful to an anonymous referee for highlighting the analogy with Stalnaker’s distinction.

**20** This pragmatic and cognitive function of theoretical terms was recognized a long time ago by philosophers influenced by logical positivism. The legal scholar Alf Ross (1957) wrote one of the best – and entertaining – polemics against inflationary social ontology.

Notice that explanatory relations are asymmetric: if X explains Y, usually Y does not explain X. In our case, institutions explain institutional objects but not the other way around. The reason is that folk ontologies have primarily a pragmatic purpose, and therefore they do not satisfy the desiderata of wide scope, explanatory depth, or consistency that we normally apply to serious scientific and metaphysical theories. Which of course does not mean that it is pointless to study the folk ontology of institutional objects. Folk social ontology is a topic of major *psychological* interest, about which we know rather little. So a comprehensive philosophical inquiry should be able to shed light on folk worldviews as well. But then our goal should not be to systematize people's naïve views. It should be to understand why people entertain certain views about institutions, and how such views help them to smoothly navigate the social world. Another way to put it is that naïve conceptions must be taken seriously from a cognitive and pragmatic perspective, but not so seriously from a metaphysical perspective. In particular, we should not presume that our ordinary worldviews provide reliable access to the way the world is.<sup>21</sup>

How wide the gap between folk and scientific ontologies is, is of course an empirical matter. Functional or teleological thinking has been found by psychologists and philosophers to exert a systematic and pervasive effect on intuitive processes of identification of ordinary objects, for example.<sup>22</sup> But function is probably just one among several criteria that people use for taxonomic purposes. Noyes and Keil (2019) for example have found that different criteria – collective acceptance and function – are ordinarily used to identify institutional groups. It would be interesting to extend this research to institutional objects such as money. Suppose that people privileged different criteria depending on the circumstances. This would lead naturally to ask how different concepts of money are related; when and why one of them is triggered instead of another; and what people do when there is a conflict or contradiction. We do not know the answers to such questions, a priori, and it is unlikely that our intuitions will offer reliable guidance on matters of this kind.

These are causal, scientific as well as, arguably, philosophical issues. Their serious pursuit requires specific tools like experimental design, empirical testing, and statistical inference that are still rarely used in social ontology. The progress of so-called experimental philosophy in epistemology, ethics, and more recently in

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<sup>21</sup> Dennett (2013) calls this project 'sophisticated naïve-anthropology', in analogy with naïve physics. 'Sophisticated' is meant to signal that we should not take naïve views as truthful or truth-conducive.

<sup>22</sup> Kelemen and Rosset (2009), Kelemen, Rottman, and Seston (2013), Rose and Schaffer (2017), Rose, Schaffer, and Tobia (2018).

metaphysics suggests that it may just be a matter of time. So I will finish with a prediction: we will soon know a lot more about folk social ontology – but the best discoveries will come from the systematic study of people’s untutored judgments and inferences, not from armchair speculation, battles of intuitions, and thought experiments.

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