Failures of Methodological Individualism: The Materiality of Social Systems

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1. Introduction

Methodological individualism (MI) has been a major topic in the philosophy of social science over the past several decades. Originally, the idea was that the social world is made up of individuals, and so explanation of social phenomena should be in terms of the behavior and attitudes of individuals.[1] This idea can be divided into two claims[2]:

> *Ontological individualism* (OI) is the view that the social world is exhaustively *constituted* by individuals (persons) and their relations and interactions. The slogan is: there is nothing in the social world over and above individuals and their interactions.

> *Explanatory individualism* (EI) is the view that social phenomena should be *explained* in terms of individuals and their interactions.

How are these two claims related?

Explanatory individualism has some plausibility if you accept ontological individualism. Suppose that the social domain consists entirely of individuals, their attitudes, the actions driven by these attitudes, and their consequences. So, the fact that crime increases in the summer (Lauritsen 2014) is just a fact about the actions of individuals in the summer, and these actions are the result of a pattern of attitudes that people have when the weather is warmer. But then the target should be to explain attitudes. As Jackson and Pettit put it:

> If a social fact obtains in virtue of a certain distribution of attitudes or actions, perhaps in a certain context, then the factors which would be invoked in our folk psychology as the sources of those attitudes and actions are also at the causal origin of the social fact. We might conceivably look to the detailed psychological antecedents of such facts in attempting to explain them.
>
> (Jackson and Pettit 1992, 132)

So, given one form of ontological individualism, we must look for an explanation of the *pattern of attitudes* that gives rise to the *pattern of actions* which, in turn, *constitutes* the social fact.

A familiar way to provide such explanations is to illuminate what would make the attitudes in question *rational*. This has motivated commitment to rational choice and game-theoretic explanations of social phenomena which are, at least implicitly, individualistic (Lewis 1969—and his followers; Elster 1982; Bicchieri 2005). However, one need not focus on rationality, if one builds into the picture that there are certain robust patters of irrationality. Thus, some explanations relying on implicit bias, or social imaginaries, as a systematic irrational influence on individual behavior may count as individualistic in the relevant sense (cf. Gatens 1996; Medina 2013; Brownstein and Saul 2016).

Ontological individualism also has some plausibility if you are an explanatory individualist. The search for "microfoundations" of the social assumes that macro factors can have a causal impact only through the disaggregated process at the micro level. But we must then account for how the micro-level is responsible for the macro-explanadum. This idea is typically represented by "Coleman's Boat" (Coleman 1990, 8—see Coleman's Figure 1). Weber argued (roughly) that "The religious ethic which characterized those societies that became Protestant in the Reformation (and particularly those that were Calvinistic) contained values that facilitated the growth of capitalist economic organization" (Coleman 1990, 6). Coleman points out that this claim requires evidence about the influence of Protestantism on the beliefs and actions of individuals (line 1), and moreover, evidence of the beliefs in question on capitalism (line 3). Coleman argues that although Weber gives the required evidence for line 1, and possibly line 2, he fails to address line 3. However, the problem of line 3 disappears if one is an ontological individualist: if capitalism is constituted by the economic behavior of individuals, then line 3 is established once we have evidence of the relevant economic behavior. This gives explanatory individualists a reason for accepting ontological individualism.

I think there are compelling reasons to reject both ontological and explanatory individualism as stated (See also Epstein 2009, 2014, 2015). Here is an example that illuminates a problem with each:
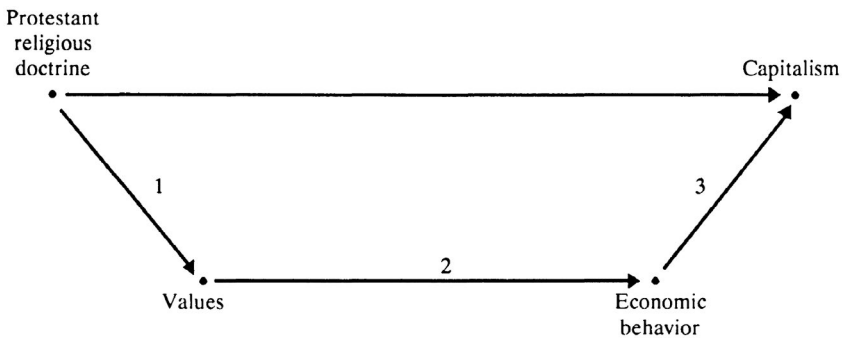

Figure 1. Macro- and micro-level propositions: effects of religious doctrine on economic organization

> Question: Why did the Native Americans in what is now the northeastern United States rely on a diet of root vegetables in the winter months, rather than leafy vegetables and fruits?

> Answer: Because the climate and storage techniques available wouldn't support the preservation of leafy vegetables and fruits through the winter.

Note that the explanation of the Native American diet is in terms of the climate, technology, and properties of leafy vegetables and fruits, not in terms of individuals and their interactions. But surely the diet of Native Americans is a social phenomenon to be explained. So explanatory individualism is unwarranted. This example challenges ontological individualism as well: diet or cuisine is part of the social world, but is not constituted by individuals and their interactions—thankfully, we don't eat each other! It is constituted, instead, by edible things such as roots, vegetables, and fruits.

Once we take a step beyond persons and groups of persons, however, then the materiality of the social world expands extensively.[3] Artifacts, in general, would seem to be part of the social world: cars, washing machines, telephones, and artworks. And shouldn't we include social systems such as transportation systems, medical systems, military systems, and educational systems; after all, these are the subject matter of the social sciences. Neither a car, nor a transportation system, is constituted simply by individuals and their relations, and surely explaining their behavior will have to refer to their material parts.

The aim of this paper is to argue that MI is inadequate because at least some social phenomena are best understood as systems, or parts of systems, that involve more than individuals and their attitudes. In particular, I will argue that there is an interdependence between the material, the cultural, and the psychological in social systems, and this interdependence is crucial for many forms of social explanation. Moreover, recognizing the interdependence between different parts of social systems is important for understanding social critique and the potential of social activism. An individualist social ontology places tremendous emphasis on the power of "collective intentionality" to constitute the social world. But our powers are limited by material conditions, the complexity and fragmentation of societies, our embodiment, our ignorance, and the accidental bad effects of good intentions (not to mention the bad intentions). To understand societies, we must take all this into account. Understanding the multiple factors—material, cultural, historical, psychological—affecting our terms of coordination is necessary for critique, and for our efforts to promote social justice. My hope is to provide a framework within which we can better understand and critique the social world.

In the next section, I further elaborate MI in relation to two main strands in the social ontology literature. Both strands take collective intentionality to be central, but in different ways. I then consider whether and to what extent collective intentionality—or mind-dependence more generally—is a hallmark of the social, and argue that material things can be social, not simply by virtue of being the targets of our acts of assigning status functions (or the like), but by virtue of how

they function in our efforts to coordinate. The relevant sense of function, I argue, should not be understood as a matter of design or purpose, or etiological "proper functions." On a system's conception of function (also known as "Cummins functions"), how something functions is a matter of its contribution to the capacities of the system. In many systems, how a part actually functions may be unexpected or, and the case of artifacts, even contrary to what was intended. This allows us to recognize the weaknesses and failures of our efforts to live together—considering not only the dysfunction of systems, but also the parts that contribute to the dysfunction. In the final sections, I sketch an account of how we might distinguish social systems from other (non-social) systems, and argue that prioritizing the level of systems in social ontology has advantages for social critique.

2. Circumscribing the Social

One might argue that the initial motivating example just described—the phenomenon of diet or cuisine—is not a social phenomenon, so a discussion that begins with that example begs the question.[4] Of course, the distinction between what's *natural* and what's *social*—and whether there is a meaningful distinction—is contested; and those who adopt a broad naturalism about the world as a whole include the social within the natural. But one bit of evidence that human diet is a social part of the (natural) world is that eating is, for humans at least, a social practice governed by cultural norms. Many things are edible that we don't allow each other to eat (our pets and children, for example), and what counts as food in one social milieu may not count as food in another, for example, meat, insects, various kinds of fungus, synthetic flavors, colors, stabilizers, and preservatives. To claim that diet is social is not to claim that *being a root*, or *being an insect* is a social property, but rather, to claim that *being food* (or not) is social, and that roots and insects constitute food.[5]

But wait, perhaps this isn't helpful. What does it mean to say that roots constitute food? A more familiar case of constitution is the relation between something and its matter. Think of a gravestone and the stone it is made of: gravestones are social entities constituted by, for example, granite. Granite is not a social kind, but a chunk of granite becomes part of the social world when it constitutes a gravestone.[6] Similarly, we might say that boiled roots and vegetables become part of the social world when they constitute soup, or lunch, that is, when they come to play a particular role in our lives. Ontologically speaking, there are two options for describing the phenomenon. In the case of the chunk of granite and the gravestone, some find it tempting to say that there are two distinct things that temporarily co-occupy the spatiotemporal region: the hunk of granite, and the gravestone. Others, however, find it tempting to say that there is one thing, which has the property of *being granite,* and sometimes also has the property of *being a gravestone*. In either case, we can say that the gravestone, or the property of *being a gravestone* is social, even if the granite, or *being granite*, is not.[7]

However, to engage the objection adequately, we should reflect further on how theorists have understood ontological individualism. The idea that the social world is constituted by individuals and their relations can be refined in many ways (Epstein 2015). One branch of the social ontology literature focuses on *groups of individuals* and collective intentionality; the question is whether a group is somehow "more than" the individuals who constitute it (Gilbert 1989; Bratman 1992; Tuomela 2002, 2013; Ludwig 2016, 2017). The paradigm examples involve committees or institutions acting as a group in cooperating, making decisions, or legislating. In the most extreme version, the social world is understood psychologistically: "we" constitute the social world by joining our agency. If we go this far, it hardly even matters to sociality that we are embodied, or live in a material world.

A second branch of the literature focuses on the power of collective intentionality to transform material things (events, etc.) into social things (events, etc.) (Searle, 1995; Ásta 2018). The paradigm example is money. We (understood as a group) transform a material thing, such as a piece of metal, paper, or shell, into a social entity by assigning it a status or function. The collective intentionality of agents does not cause metal, paper, or shell to exist, but it does cause *money* to exist (or causes the metal, paper, or shell *to be money*). Other examples involve games: an assignment of status makes the trajectory of a ball a "strike" in baseball. On this second approach, the social world does not *consist* entirely of individuals and their relations. Money is material stuff—bits of paper, metal, or shell—infused with meaning.[8] The source of meaning is the collective intentionality of agents, so our attitudes constitute the social world in the sense that our attitudes make it the case that the relevant material things are money.[9] But the claim that money is a material part of the social world due to our collective agency is incompatible with a strong version of ontological individualism according to which there is nothing in the social world over and above individuals and their relations.

The two branches of social ontology seem to correspond to two understandings of "constitutes" in the statement of ontological individualism, one mereological, and the other causal. On a mereological reading, OI says that individuals and their relations make up (mereologically constitute) the social domain.

Mereological constitution: As (wholly/partly) *constitute B* by being (all of/some of) *B*'s parts.

On a causal reading, OI says that individuals and their relations cause natural things such as shells to be social things such as money, roots to be food, small wooden or plastic objects to be chess pieces, humans to be Supreme Court Justices.

Causal constitution: As cause B to exist, or *As cause Xs to be Bs*.

We bring things into the social world by assigning them a status. Money, food, and Supreme Court Justices are "mind-dependent" in the sense that their *status*, as such, causally depends on us—our decisions, understandings, or actions. But they are also world-dependent because they require material things upon which we confer social status: they have material parts. If we allow the

causal interpretation of constitution, we have to reject or revise the slogan that there is nothing in the social world over and above individuals and their interactions. But we can still preserve the disjunction: the social world is *causally or mereologically constituted* by individuals.

Note that the example of diet or cuisine can be easily understood as falling within this second approach to the social world. Just as our collective agreement to treat a cowrie shell or popsicle stick (Krugman 1997) as a medium of exchange and store of value can transform that shell into money, our collective agreement to treat potatoes as edible and insects as not can transform potatoes into food and exclude insects; so even if *being a potato* is not a social property, *being food* is.[10] What is food, for a group, might depend on what they assign the status of food, constrained by facts about what is available, what they can digest, what they find tasty, and what falls within the scope of their cultural traditions. Although this is a start, I will return below to question whether "assigning the status of food" is actually a helpful way to understand the phenomenon, and will propose instead an analysis that situates potatoes within a nutritional production, distribution, and consumption system. In other words, I will propose an account of sociality that is at odds with both the constitutive and causal versions of ontological individualism just sketched.

But even before we consider a new conception of the social, the challenge to our starting example still needs an answer: How should we understand the objection that diet or cuisine is not social? It might arise from a very strict commitment to a group agency conception of the social world, so that only group agents capable of joining their intentionality into a "we" are social. This is unnecessarily limited even within the current social ontology literature that includes money, boundaries, signs and symbols, and other socially meaningful parts of the material world. Alternatively, it might arise from a view that diet and cuisine are purely natural phenomena that are not bearers of meaning or shaped by culture. This too is a mistaken, given the cultural constraints that distinguish what is (human) food from what is edible. However, with the example in good standing, now we should ask: Should we endorse a MI according to which the social domain is dependent on the mind either by being constituted by or caused by us? I think not.

3. Ontological Dependence and Mind Dependence

Even if we reject a narrow conception of ontological individualism and include material things such as food and money in the social domain, there is a background assumption in the social ontology literature that the social domain is "mind-dependent"—and not just dependent on an individual mind (my thoughts, on this view, are not part of the social domain), but on some form of collective human activity or mentality. It is (collective) mind-dependence that is assumed to be the source of sociality. It is notoriously difficult, however, to explicate the relevant sense of mind-dependence (Rosen 1994). Mereological constitution and causal constitution are two potential forms of mind-dependence: groups depend on minds because things with minds are their parts, and money depends on minds

because minds cause objects to have the status of money. If we are looking for a unified form of mind-dependence at issue in the social domain, then it is important to note that these two ideas pull against each other: parts do not cause the whole they constitute, and causes are not parts of what they bring about.

In the heyday of supervenience studies, some suggested that supervenience could provide a unified form of dependence for MI: facts about the social domain (whether about groups or meaningful objects) supervene on facts about individuals. Brian Epstein (2015, 46–49) has convincingly argued, however, that even a weak form of supervenience of the social on the individual does not hold, or reduces to a broad global supervenience of all facts on the physical facts. Epstein's example is of a large corporation (Starbucks, in particular). It is possible to fix all the facts about individual employees, stockholders, and such, and yet not fix all the economic facts about the corporation, because the economic facts depend also on the state of the corporation's holdings, that is, material facts such as its stores, the equipment in the stores, etc. Starbucks can go from solvent to insolvent (its liabilities swamp its assets) without anyone being aware of anything or acting differently, if, for example, power spike in the middle of the night (when, by hypothesis, no one is conscious) destroys the material infrastructure of the corporation. I am convinced by this example, but some suggest that the example depends on economic facts about value that only obtain by virtue of attitudes, including conditional ones.

There are plenty of other examples, however, once one recognizes the strategy of argument. Consider again the example of food. Fix all the subvening facts about individuals that allegedly fix the food-facts, for example, suppose the attitudes and behavior of individuals toward a particular species of mushroom M are the same in w_1 and w_2. It is surely possible for M to be food in w_1 and not in w_2, keeping the subvening facts about human attitudes fixed, depending on the toxicity of M in the worlds in question. Individuals can view and treat something as food, but it not be food because it is poison.[11] Or consider a medical diagnosis as a basis for an insurance claim. The fact that an individual is (rightfully) eligible for insurance benefits is a social fact that depends both on a doctor's diagnosis and the individual's actual condition. Fixing the attitudes and behavior of individuals does not fix the social fact of eligibility: w_1 and w_2 might be just the same with respect to the attitudes and behaviors of individuals concerning a patient's condition, the paperwork filed, the benefits received, etc. but in w_1 the doctor's diagnosis is accurate and in w_2 it is not. In w_2, the patient received benefits, but was not, strictly speaking, eligible (there was an unknown or unrecognized mistake). Being eligible and being not eligible (though wrongly believed to be) are importantly different social facts, but these facts are not fixed by the attitudes and behaviors of the individuals in the situation. The material facts—the patient's actual bodily condition—matters.

To respond by insisting that the subvening facts must also include all the relevant physical facts about humans, their physiology, the chemical composition of the mushrooms, etc. is to sacrifice the kind of (mind-) dependence of the social on

the individual that we were supposedly trying to capture. As Epstein argues, MI is not supposed to be a global supervenience claim. The point of these examples is to illustrate that constituent material parts of entities also matter in determining their social features, so the social features do not depend wholly on the attitudes and actions of individuals, either constitutively or causally. As a result, social facts can vary independently of the alleged subvening individualistic facts. In short, whether something is food or not, or is economically solvent or not, or is covered by insurance or not, depends not just on what we think or how we act, but also on its material properties (such as being toxic or being reduced to ashes, or having Lyme disease). (See also Wilson 2007.)

Epstein goes on to explore the issue of mind-dependence within the framework of the grounding literature and suggests that social ontology rests on two relations: *anchoring* and *grounding*. I am sympathetic with his view, but I believe that at least some of the impulse behind MI is not a confusion about the difference between grounds and anchors. Instead, I think it sometimes lies in a background confusion or disagreement over the nature of social systems and the causal role of humans in them.

4. The Materiality of Social Systems

Consider Interstate 95. Interstate 95 is a highway that runs along the East Coast of the United States. It is part of the Interstate Highway System, which is part of the United States transportation system. It is made of concrete, asphalt, and natural aggregates, with steel and aluminum for drainage pipes, reinforcement, guard rails, etc. It also functions as a legal right of way for cars and trucks and is constructed to adhere to strict guidelines. It is an Interstate by virtue of meeting the guidelines set by the Federal Highway Administration (FHWA) and being recognized to do so. In what sense does I-95 depend on us?

Consider the following things occupying the space of I-95[12]:

(i) A network of concrete extending from Florida to Maine that is at least 86 feet wide, with a divider down the middle, a slope no more than 6%, with at least 16 feet clearance above and with limited paved access to local streets (etc.). Call this the *concrete network*.

(ii) A network of concrete (as described in (i)) that functions as a route for passage. Call this the *thoroughfare*.[13]

(iii) A network of concrete (as described in (i) and (ii)) that has been designated as part of the Interstate System (I-95), and that is administered by State and Federal agencies. Call this *I-95*.

In order, for the concrete network to exist, certainly people had to build and design it. But it is a concrete network by virtue of its physical properties. Under post-apocalyptic conditions, perhaps after a pandemic in which most humans

are killed, it might not be used for anything (consider life in Atwood's (2003) *Oryx and Crake*). Plausibly, the concrete network is only causally dependent on us—we surely don't compose it! And we cause the concrete network to exist by building it, not by assigning it a status. It is an artifact, so to that extent a social entity, but it is not essentially social. So let's focus on the thoroughfare and the Interstate.

The concrete network is (or composes) a thoroughfare insofar as it functions as regular route for passage, and presumably will function as such only if individuals (successfully) use it as such. But there need be no institution that designates it as a thoroughfare. Paths that preceded the paving of the concrete network functioned as thoroughfares long before there was a United States Highway system or even a road.[14] In the past, it likely functioned as a thoroughfare without being thought of *as a thoroughfare* or *as a right of way*. Nonhuman animals use paths in the woods and rivers as thoroughfares without thinking of them as such, and presumably humans can do the same when they find an easy way to move between points of interest. Moreover, the thoroughfare that became I-95 was not always covered in concrete, and there may be a time in the future when we will use a different substrate for our highways (hovercraft over grass?). So the functional kind, *thoroughfare*, depends on its uses, but not necessarily on how the users think of or represent those activities; it is also can have different material realizers.

The concrete network is (or composes) I-95 only by virtue of there being an institution—the Federal Highway Administration—that has a designated status "Interstate Highway" that roads meeting certain conditions can obtain, that I-95 has satisfied, and which brings with it a set of responsibilities administered by State and Federal agencies.

Neither the thoroughfare nor I-95 is mereologically constituted of humans and their interactions, but they do seem to be in *some* sense social entities. How should we think of their dependence on humans? According to the causal story of social ontology, they are social by virtue of the assignment or conferral of status. I agree that this is a plausible story for I-95: the FHWA confers on it or assigns it the status of being Interstate 95. However, I would like to suggest an alternative story for the thoroughfare. A path or concrete network (or whatever) *is a thoroughfare* by virtue of its function: it is a public route of passage. It is *social entity* by virtue of its embeddedness in a system of social practices—specifically, transportation practices—that organize human interaction without relying simply on instinct, but depend on cross-generational learning. Thus, it is part of the social world without either being mereologically constituted by or causally constituted as such by us.

MI requires that we view the social world as built up from individuals and explain its working by causal relations between individuals (or, between individuals and the material stuff they assign status to). A different approach is to start at a higher level—at the level of social systems—and to include in the social world what contributes to the system, that is, its structural and functional parts. The parts of social systems are social, but are not constituted by or caused by

individuals in the senses articulated above. Beginning with systems also allows us to expand the kinds of explanation that are apt for social phenomena to include structural and functional explanation. Although historically, structural and functional explanation have been looked on with suspicion, this has changed over time. Currently forms of structural and functional explanation are broadly employed in the social and life sciences, and the philosophical qualms that motivated MI are unwarranted. (See, e.g., Garfinkel 1981; Bechtel 1994; Tilly 2001, 2002; Haslanger 2016).

5. Social Systems and Social Functions

There are several ways of understanding the notion of a function and functional role. Function, in the sense intended, is not a matter of being designed for a purpose. Rather, it is about the role something plays in a broader system.[15]

An *etiological* conception of function links an entity (or feature), for example, an organ, to its evolution and survival. For example, in the context of biology, one might discern the function of gills by determining the specific contribution gills made (extracting oxygen from water) to the survival of organisms that have them, "The ancestors with gills had greater fitness in their environments than those without them. To say that they had greater fitness is to say that more organisms survived to adulthood and reproduced than their competitors." (Risjord 1998, S304–5). Etiological functions are self-sustaining: X *has the function F*, just in case X's ancestors functioning in that sort of way explains X's existence (or the reproduction of X-type things). Ruth Millikan has developed a sustained line of thought that employs the idea of etiological function to explain the development of language, thought, and related biological, psychological, and social phenomena (Millikan 1984, 1989). Traditional functionalists in social science, for example, Spencer (1882–1898), Parsons (1951), Radcliffe-Brown (1952), Malinowski (1944), viewed society on the model of an integrated organism whose parts functioned to meet basic human needs and maintain the society's survival and stability.

During the 1960s, such etiological functionalism in the social sciences was broadly criticized. There are three basic complaints. First, society is not fully integrated and not all of its parts function to support and sustain the whole; in fact, societies are typically ridden with conflict. Second, societies are not stable, but are constantly evolving, mixing, and mutating; there is as much a need to explain change as stability. Third, functionalism's focus on structural phenomena fails to adequately capture the complex relationship between individuals and the structures they embody, for example, if structures explain our behavior, how do we capture our autonomy in the enactment of institutions, norms, and identities. That being said, however, these criticisms are consistent with there being some parts of society that have an etiological function, for example, one might argue that primary education has the function of producing literate and numerate individuals because the fact that there were prior institutions that produced literate and numerate individuals (and gave rise to values and institutions that draw on such

capacities) is causally relevant to our ongoing commitment to and the existence of primary education.[16]

Another conception of function does not seek *the* function of something, but *how* things function, that is, the functioning of something within a system. Mark Risjord characterizes this *system* conception of function, drawing on Cummins' (1975) classic article.

> … [such] function statements arise out of the attempt to analyze and explain the capacities of a system. Suppose we are trying to understand the operation of a given system. A natural way to proceed is to analyze the system into component parts and demonstrate how its capacities are nothing more than the operation of its components. On the "system" conception of a function, the function of an item is simply the contribution it makes to the capacities of the whole system.
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> (Risjord 1998, S306)

Millikan (1989) offers a helpful example:

> … according to Cummins' definition it is, arguably, the function of clouds to make rain with which to fill the streams and rivers, this in the context of the water-cycle system, the end result to be explained being, say, how moisture is maintained in the soil so that vegetation can grow. Now it is quite true that, in the context of the water cycle, clouds function to produce rain, function as rain producers; that is their function in that cycle. But in another sense of "function", the clouds have no function at all-because they have no purpose.
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> (1989, 294)

On this "systems" conception of function, things may have different functions relative to different systems and the attribution of a function to a part of a system is relative to a capacity of a system that we are seeking to explain. For example, a particular primary school may have one function in a family's life, another in the neighborhood community, a different function in the school district, and other functions in the state and federal education systems. If we are seeking to understand the cohesion of the neighborhood community, the primary school may function to connect adults with each other and promote solidarity. If we are seeking to understand discord in the school district, the primary school may function to promote class conflict around educational decisions because the (class-) solidarity between families at the school may result in resistance to policies that promote class integration.

Social systems are, necessarily, world-involving and embodied. As a result, many of the meanings we attach to the world are not arbitrary and unconstrained. We have to cooperate with the world as we coordinate with each other. For example, in the climate water cycle, rain functions to fill rivers and streams, even if this is not *the* function of rain. In a social system, rain can have many other functions:

> … it can make it time to harvest the grapes; it can officially signal the end of a baseball game; it can make it time to move the fire into the cave, and so forth…[T]he material features of rain constrain what sorts of world-involving normative practices can be developed in relation to it, and once these are developed, rain has concrete normative significance from inside these practices. … We are the ones who institute, maintain, and practice the norms of vinification, baseball, fashion, and so forth. But we cannot do this except as

> embodied beings who engage with rain and its absence; within such engagements, rain has specific normative meanings and consequences.   (Kukla and Lance 2014, 26)

A social ontology suited to understanding social systems, then, must include the worldly components upon which our attitudes and activities depend; and social explanations will typically be incomplete without including the worldly constraints on the systems we are part of.

To be clear, systems functions (often called "Cummins functions") are not etiological functions (sometimes called "Millikan Functions"); an etiological function of *X* is supposed to be the (single) "proper function" of X, etc. by virtue of its self-replicating features (Millikan 2002). A systems approach makes no commitment to there being proper functions. Properly speaking, Cummins functions just capture how X functions relative to a system, not *the function* of X.[17]

It is important to note that the function of something, in this sense, does not depend on intentions or purposes, and even if designed for a purpose, *it may function in ways that are at odds with the intention*. For example, a local school district has the policy that if you are late to a class nine times during a term, you fail the class (this is true in the Cambridge Public School District). The policy was designed to motivate all students to arrive on time so that every student would gain the full benefit of instruction. The effect, however, is that low income students who rely on public transportation to get to high school are often late to their first class due to delayed buses and trains, and so have a higher than average rate of failure. (The neighborhood within walking distance of the school is relatively affluent, the higher income students who live further away either have a car, or have friends who have a car, or rely on parents to drive them to school.) In the context of the broader educational system, the policy holds back lower income students, results in frustration and alienation, reinforces class stereotypes, and creates systematic advantages for the more affluent students not only in the high school, but in pursuing future job opportunities. Within the broader system, the policy functions to prevent students from gaining the benefits of instruction, which is directly contrary to its intent. (See also Haslanger 2012, Ch. 13; 2014).

A dynamic (and multiple) systems approach to the social domain is especially valuable because it enables us to recognize that the social world is not transparent to us and is not entirely under our control. I've suggested above that there are material constraints on our coordination—the fact that a species of mushroom is toxic, or that power spikes render our holdings vulnerable to devaluation—but even beyond this, the complexity of human coordination has the result that unintended consequences of our actions and practices ripple through the social fabric. Laws and policies that are designed for good, produce harm—this is how they actually function in the broader system. Our assignments of status may backfire and function quite differently from what we intended or imagined. We can discover this by investigating the Cummins functions of the policies and such within the system in question, that is, investigating how the system actually works and what parts of the system are responsible for the negative effects, in spite of our

intentions or purposes in creating them, and without identifying the "proper function" of the parts. The bad effects of well-intentioned policies are not random or inexplicable; they can often be explained. But they can only be explained (and critiqued) by situating them within a system that is not defined by the intentions or purposes of the collectivity.

6. Sociality

Let's return to the thoroughfare that is Interstate 95. Recall that, as I suggested above, to be a thoroughfare is to function as a (public?) route of passage. This particular one happens currently to be made of concrete and to be designated as I-95, but that's a contingent matter. Is the thoroughfare a social entity?

This raises the difficult question of what it means to say that something is social. I am not convinced that it is possible to "define" the social without circularity, and am not attempting to do so here. However, a common theme in contemporary social ontology is that what distinguishes the social world is its grounding in collective intentionality, for example, in forming joint intentions to take a walk (Gilbert 1989), paint a house (Bratman 1992), or assign a status function (Searle 1995).[18] I've argued elsewhere that such collective attitudes depend on more basic forms of sociality that enable us—including other non-human social animals—to coordinate and communicate with each other. (Haslanger 2018; 2019; also Zawidzki 2013).

On my view, attention to social practices is essential for understanding the social domain. Sets of social practices constitute structures and systems. Roughly, I take social practices to be patterns of behavior that depends on learned skills and locally transmitted information, in response to things viewed as having or lacking value, and whose performances are "mutually accountable" by reference to some shared schemas/social meanings.[19] The slogan is that practices are constituted by interdependent cultural schemas (aka *social meanings*)[20] and *sources*[21], that is, where "sources" can be material (water, medicine, thoroughfares, and toxic waste) or immaterial (time, knowledge, pain, and boredom) and whose value or disvalue is read through culture (Sewell 1992; Haslanger 2012). To engage in a practice is to act in relation to others and to relevant parts of the world, in ways that are (interpretable as) part of a pattern or system of behavior, and in doing so, to be subject to norms. Although some practices depend on rules (such as games), most do not. And practices are not necessarily transparent to the performer. One may not be aware that one is engaged in a practice or be aware of its point or how it functions.

Social practices, as I understand them, are part of and a result of *culture,* and a distinguishing feature of culture is that it is not "hard-wired" but learned from and transmitted to others. Most animals rely on instinct to determine what to eat, with whom to mate, how to build shelter. Humans evolved to be social foragers in a broad variety of ecological contexts. This required social learning, reliable cross-generational transmission, and the material and technological resources for

building on what came before (Sterelny 2012, esp. Chs. 2–3; Zawidzki 2013). Other nonhuman animals, for example, crows, also have a capacity to develop rudimentary "culture" in the sense that they develop skills and tools that are passed from one generation to the next by learning rather than by becoming innate. That is to say, there are genuinely social animals other than humans. But the flexibility, fascination, and joy that humans have in creating culture has played a huge role in our ability to coordinate and successfully occupy a wide range of environments.

In considering whether a thoroughfare should be considered a social entity, we should look to the ways in which its function as a route of passage is realized. If the geography of an area is hard to traverse and only one route is feasible to a desirable destination, such as a food source, a pattern may emerge such that animals regularly use that route. Individual bears, say, happen to use the route because they instinctively follow the edges of streams, but not due to any form of coordination or social learning; and the precedent of others using it doesn't matter (beyond having a causal impact on the terrain, perhaps keeping it clear of vegetation). Let's call this a "*route*." A route of this kind can constitute, that is, it become the material base for, a social entity—a *thoroughfare*—if its use is part of a social practice. For example, if a group is camping in the woods and one of the party finds the easiest route to the nearest stream and points it out to others, and a pattern of use develops, then the thoroughfare is part of their social world. Relative to the system of coordination and precedent they develop on the trip, it functions as a thoroughfare. In this case, the route's function is quite explicit, but as mentioned before, not all functions are intended or transparent. It is possible for a pattern of human behavior to develop—perhaps as we imagined it happening with the bears—but the pattern to be modified, reinforced, or resisted, through interaction; this is a kind of proto-normativity. Such responsiveness to others—accountability, correction, improvement, transmission—is a hallmark of the social.

How does such social learning happen? Ruth Millikan's (2005) discussion of convention is helpful in distinguishing some of the different forms and degrees of social learning that result in different practices.[22] On her view, "being perpetuated by reproduction" is crucial to "natural conventions." She explains:

> A pattern has been reproduced if its form is derived from a previous item or items having, in certain respects the same form, such that had the model(s) been different in these respects the copy would have differed accordingly. A reproduction is never determined by its model in all respects. (3)

Millikan suggests three modes of reproduction that are relevant when considering the development of social practices (no doubt there are others):

Direct copying: "One person [tells] another how the pattern goes." (4).

Counterpart reproduction: A needs to "fit" (coordinate?) with *B,* and each party modifies their behavior to serve as a counterpart to the other, for example, nuts and bolts, Phillips-head screws and Phillips-head screwdrivers, ballroom dancing.

Handshake reproduction: A needs to "fit" (coordinate?) with *B*, and each does so by doing what the other does, for example, handshake, driving on the right.

Social practices that emerge through copying and reproduction are often tacit and hard to identify. Millikan gives the example of social distances: "If you are standing at the wrong social distance, the person to whom you are talking will move; so to prevent slow circling about the room as you talk, you unconsciously reproduce the conventional social distance by handshake reproduction" (2005, 5). Similarly, on the camping trip, the water-seeker may not actually tell the other campers where to find water, but simply return with a filled pail. They, in turn, may just follow the direction she took when she set off, thus learning the route without direct instruction. This is a kind of apprenticeship that is common to social learning: (i) take a cue from the more knowledgeable around you, (ii) figure it out as best you can how to accomplish the task based on their lead, and (iii) await correction (either from the circumstances or from those more knowledgeable), when you go wrong (Sterelny 2012; on social reproduction, see also McGeer 2007; Zawidzki 2013).

7. Systems, Functions, and Critique

Two examples I've discussed above are food and thoroughfares. Both, I've argued, are social kinds. They aren't groups, so an interpretation of ontological individualism in terms of mereological constitution is implausible. Are they causally constituted by acts of conferral or assignment of status? Are they mind-dependent in the sense that we—our collective attitudes, speech acts, or other forms of collective intentionality—bring them into existence? A systems approach to sociality suggests not.

On the view I've sketched, food is not just edible stuff, and thoroughfares are not just routes. Routes and edible stuff are not social kinds or entities. These can come to materially constitute social entities (edible stuff can come to constitute food, a route can come to constitute a thoroughfare), but they aren't caused to do so by being the target of our collective actions or attitudes; food and thoroughfares are not mind-dependent in the sense that we "make" the social world by assigning things a status (though it is compatible with my view that some things are mind-dependent in that sense—such as I-95).

Instead, food and thoroughfares (and such) are social by virtue of their functioning in a social system that "regulates" our efforts to coordinate.[23] By "regulates," I don't mean that the system is, strictly speaking, rule or law governed. In addition to the material and other environmental constraints, a social system involves a kind of interactive responsiveness (as suggested above) that allows learned skills and norms—and eventually cultures and forms of life—to emerge.

This account fits well with literature in the social and life sciences on the evolution of sociality and structural and functional explanations of social phenomena. It is also helpful in the context of social critique. Beginning by considering the

desirable or undesirable features of a social system, we can then investigate the structures and mechanisms by which those features are produced and maintained. In a social system, we should be interested not only in humans and their attitudes, but also the ways in which humans have modified parts of the physical world to maintain the system, the ways in which human attitudes fail to adequately represent how the system works, the ways in which we can improve the functioning of the system. The fact that the concrete network is a thoroughfare—that it functions as a route of passage for millions every day—positions it in a transportation system that has had both positive and deeply problematic effects. The Interstate System prioritizes the use of private cars as opposed to public transportation, has destroyed poor and Black communities, supported segregation through White flight to the suburbs, hollowed out urban commercial districts, insulates the affluent from bearing witness to poverty, disrupts nonhuman animal migration patterns, increases carbon emissions leading to climate change, etc. These effects are the result of interacting systems. Many of the effects of the Interstate system have nothing at all to do with how people think about it, and everything to do with the unintended and unforeseen effects of a built environment. All this may be obvious, but it is hard to locate within the standard models of individualist social ontology.

As the discussion of function demonstrates, social theory often pursues a system level of analysis. Why does the system as a whole have certain properties, for example, why (and how) does the system create and/or sustain gross disparities of wealth, or certain patterns of domestic violence? The explanatory project is to identify relevant parts of the system and show how their interactions function to have the result in question.[24] However, how the parts function may not be how people intended them to function; knowing the status "we" assigned to them may be utterly useless in understanding their contribution to the features of the system we are interested in. In fact, this is often how ideology works: we participate willingly in systems whose effects we abhor because we don't see how the practices contribute to the pernicious features of the system.

Effective intervention into systems requires an appreciation of the interdependence of its parts. Many social systems are dynamically homeostatic, that is, they are, in some ways or along some dimension, self-reproducing, allowing for changes and evolution over time. For example, a transportation system that relies on an interstate network will pour money into roads and traffic management and leave less for public transportation, which will pressure people travel by car which places more demand on the roads and less on other forms of transportation, thus motivating support for the interstate network. The options for intervention in such a system depends not just on attitudes, but material facts, for example, about the landscape (is it too hilly for a train to manage?), economics and technology (what are the energy and space demands of different vehicles?), and history (can the existing infrastructure be adapted to a new mode of transport? And is there a historical and cultural openness to more direct human contact?). The materiality of the social world provides both limitations and opportunities: people's behavior

is not just a response to others, but to the material world as well. If a bridge collapses, people have to find other ways to get where they need to go.

8. Conclusion: The Materiality of Resistance

If the social world just consists in individuals and their interactions, then it is also difficult to understand what is at stake in many social movements, how the stakes become sites of contention, and what tools we have for shifting power relations. For example, the meaning, distribution, production, modification of *resources,* or somewhat technically, *sources (see fn. 20)*, are typically the basis for claims and contention. But it is unclear where they appear on the individualist model. We don't only fight for rights, but for food and water, medical care, land, and jobs. And we do so "both through words and through a wide variety of nonverbal interchanges—not only gestures, body language, and deployment of physical objects, but also displays of symbols, spatial shifts, altered relations to physical settings, and interventions of third parties" (Tilly 1998, 507–8).

Moreover, space is a crucial factor in contentious politics. As William Sewell argues,

> Spatial structures, like other sorts of structures, are durable and constraining, but they also are subject to transformation as a consequence of the very social action that they shape. Such spatial structures as the built environment, transportation and communications infrastructures, the distribution of pilgrimage sites, or the conformation of mountain ranges, coastlines, and river valleys pose very real constraints on social actions of all kinds. But even the seemingly most solid and durable of these constraints are also enabling.
>
> (Sewell 2001, 55)

In contestation, the dominant often have control over space, and changing the meaning of and access to space is a disruptive strategy that insurgents can deploy. The very possibility of co-presence is crucial to contestation: to bring the disenfranchised together *en masse* is a sign of power. To communicate across distance is essential to strategic organization. The appropriation of meaningful space for alternative purposes can be deeply challenging. Space is not simply part of the natural world, but is social resource to be managed, and whose ideological management should be contested. Such social resources for disruption are notably absent from the individualist model.

Although MI is a dominant theme in contemporary social ontology and in some areas of social science, it does not provide the tools we need to make sense of or to effectively intervene in social life. Its explanatory restrictions are unwarranted, and its ontology is inadequate to make sense of the extent of the materiality of the social domain and its role in constituting individuals through engagement in social practices. More importantly, a critical theory engaged in resistant social movements must attend to the many ways in which systems, and the material conditions that compose them, shape the possibilities of resistance.

Notes

[1] For a helpful background survey of literature on MI see Heath (2015). Critics of MI have been many and varied, including those in the Marxist, feminist, and critical race theory traditions. See, for example, Cohen (1978), Young (1990, Ch. 2), Garfinkel (1981), Delphy (1984), Omi and Winant (1994) and many others. List and Spiekerman (2013) give an excellent overview of MI and defend a form of ontological but not explanatory individualism.

[2] Brian Epstein (2009, 2011, 2014, 2015) has made important contributions to our understanding of ontological individualism and the different ways in which social phenomena might depend on individuals. It is also possible to find interpretations of MI as "normative individualism" (Ross 2013): "A normative individualist is someone who maintains that the justification of all values ultimately lies in the normative judgements of individual people, and in assessments about the effects of change on the welfare of individuals." (p. 2 of chapter).

[3] By "materiality" here, I mean (roughly) physical stuff. I use the term "materiality," however, because I endorse a hylomorphic (matter/form) analysis of substances, and what counts as the matter of a composite substance is relative to the level of analysis. Note that in broadly Marxian approaches, "materiality" is used differently to emphasize the economic base of the social domain. I am not using "materiality" in that sense in this paper.

[4] This is an objection raised by an anonymous reviewer for JSP.

[5] I intend my discussion of food to be restricted to human food, or human diet. Many species are hard-wired to eat certain kinds of things (and only those things) and do not rely on social learning to shape their diet. This makes their ecological niche much narrower. I follow a tradition in which cross-generational learning, rather than collective intentionality, is distinctive of the social. (See, e.g., Sterelny 2012.)

[6] I have argued elsewhere that the *concept* of GRANITE may be social, but it doesn't follow that granite—the stone—is social (Haslanger 2003, 2016). This is obscured by the use of the term "kind," which sometimes refers to a classification, and sometimes to what is classified. See also Hacking (1999).

[7] I don't think it matters for my argument which ontology one prefers. The multiple occupancy option (in which one thing constitutes another thing) has some advantages in cases where the things at both levels each have their own identity conditions, as in the Ship of Theseus. This potato may *be lunch*, but there are different conditions on what it is to be the potato and to be the lunch. As one might expect, there is no consensus in the social ontology literature about which ontology to adopt. Thanks to Brad Skow for urging that I clarify this.

[8] Money is the paradigm example, but it might be noted that even language must be understood as social in this sense: language consists in sounds, symbols, gestures that are imbued with meaning. It is hard to imagine, then, how one could think that the only social phenomena are group agents. Isn't language social?

[9] Epstein (2015, 106) suggests, similarly, that "determines" and "depends on" are used sometimes for grounding relations and sometimes for causation. He also undertakes to analyze constitution in terms of grounding or "metaphysical explanation" (148), so the two crucial relations for him are grounding and causing. I don't accept his suggestion that constitution is a form of grounding.

[10] Rebecca Mason (2016) argues further that what money is - something serving as a medium of exchange and store of value - is not up to us, even if what counts as money is up to us. See also Graeber (2011).

[11] My view is that there are some objective constraints on what is properly considered food. Being a vegetarian, I believe that dead animal flesh is not food, but many people wrongly think it is. Pollan (2009) has argued that much of what is offered in grocery stores is not food, in spite of the fact that people eat it. A review summarizes his sixty-four rules: "By 'food' Pollan means *real* food, not creations of the food-industrial complex. Real food doesn't have a long ingredient list, isn't advertised on TV, and it doesn't contain stuff like maltodextrin or sodium tripolyphosphate." https://michaelpollan.com/reviews/how-to-eat/

[12] For the purposes of exposition, I'm assuming a multiple occupancy view of composition, so I refer to overlapping "things," rather than properties of the concrete network (being a thoroughfare, being I-95) or facts (the fact that the concrete network is a thoroughfare, that it is I-95). See also fn. 7.

[13] I think we should distinguish a thoroughfare from a *road:* (ii*) A network of concrete (as described in (i) and (ii)) that was designed and built as such for transportation. Roads won't be relevant for our current purposes.

[14] For example, parts of it were once Native American trading paths. http://www.ncpedia.org/indian-trading-paths

[15] There is an extensive and valuable literature on both functions and functional explanation, and systems and systems analysis, in the philosophy of biology. All of this deserves more careful attention than I can provide in this paper. See, for example, Simon 1991; Bechtel 2011; Woodward 2013; Levy & Bechtel 2013; Bechtel 2016; Green et al 2018; Lamb and Chemero 2018. Thanks to Sahar Heydari Fard for pointing me to these important resources.

[16] I am not arguing that this *is* the function of primary education—it may be that this is only a manifest function of primary education and it has a quite different latent function, or it may not be possible to isolate a proper function at all. This is just an example to show that one may attribute functions to some parts of society without embracing a full-blown functionalism. On manifest and latent functions, see Merton (1957, 60–69); I have used the terms manifest and operative for similar phenomena (Haslanger 2012, Ch. 2).

[17] This is how Cummins' states his account: x functions as a Ø in s (or: the function of x in s is to Ø) relative to an analytical account A of s's capacity to Ø just in case x is capable of Ø-ing in s and A appropriately and adequately accounts for s's capacity to ø by, in part, appealing to the capacity of x to Ø in s (762).

[18] Although in some respects Ásta (2018) can be grouped with Searle in providing an account of (what I have called) causal constitution, she does not propose that conferring is the only source of sociality or the ground of the social world. Bratman is also much more cautious and aims to capture only a "modest sociality," however, others have attempted to extend his view to an account of sociality more generally.

[19] I develop this account more fully in Haslanger (2018). Social *relations* are defined by roles in practices, and networks of such relations make up social *structures*. For example, the teacher-student relation is defined by a set of educational practices and is part of a broader education system. Practices are a key mechanism for social coordination.

[20] In the past I have used the term "schemas" both for public *cultural* schemas and internalization of them as *psychological* schemas. (This is how Sewell (1992), I believe, uses the term; see also Howard (1994). This has caused confusion, so I will aim to use the term "social meaning," and for webs of meanings, "cultural technē," in place of "cultural schema" going forward; though as I will indicate below, "social meanings" include narratives, patterns of inference, and other cultural memes that one might not normally consider "meanings" in a narrow sense. See also Balkin (1998).

[21] Following Giddens and Sewell, I have employed the term "resources" in this context. The term "resource" however has a positive connotation and I've been urged to find another way of speaking of resources that more easily includes things taken to have negative value. (Thanks for this nudge to Jeffrey Stout.) Until I find something better, I will use "sources" with the understanding that sources come in many different forms. Note that because we are not assuming that what we "take to be" of value or disvalue is correctly valued, we should not assume that a "source" *actually has* the value or disvalue attributed to it.

22   Millikan (2005) is critical of Lewis's account of convention. She says, "Lewis's analysis of con-
     ventions was very complex, involving solutions to "coordination problems" defined in a complex
     way, regular conformity to convention within a group, mutual knowledge of this conformity
     supporting its continuation on rational grounds, and so forth." In contrast, on her account con-
     ventions may be simple, and require neither "coordinations, regular conformity, nor rational un-
     derpinnings." (2) I agree with Millikan, though I prefer to use a different term for the phenomena
     she describes. My interest is in a broader category of social practices that also, contrary to Lewis,
     need not be arbitrary, need not be in the interests of all participants, and are often a source of
     preferences, not just a way to manage them.
23   Roughly, systems can be characterized by structure (pathways and mechanisms), dynamics (dis-
     positions in response to conditions and inputs), control (feedback loops to maintain stability),
     and domain (what capacities of the system are of interest, for example, circulation, temperature
     regulation, transportation, food production). See, for example, (Kitano 2002, 1662)
24   I find it plausible to think of such explanations as pointing to mechanisms that give rise to the
     features of the broader system. Tilly (2001), however, seems to contrast "mechanistic" explana-
     tions and systems explanations. (See also Tilly and Tarrow 2015, Ch 2.) My reading of Tilly's
     resistance to systems explanations is that he assumes that such explanations involve an etiolog-
     ical approach to function: "… systemic explanations, strictly speaking, consist of specifying a
     place for some event, structure, or process *within a larger self-maintaining set of interdependent
     elements* and showing how the event, structure, or process in question serves and/or results from
     interactions among the larger set of elements" (2001, 23, my emphasis). He suggests, however,
     that mechanistic explanations can avoid problematic functionalism. On his view, mechanistic
     explanations need not refer to broader systems: "Compared with covering law, propensity, and
     system approaches, mechanism- and process-based explanations aim at modest ends—selective
     explanation of salient features by means of partial causal analogies" (2001, 24); but we might
     allow that some systems explanations are mechanistic and some mechanistic explanations situate
     the mechanisms within systems. Thanks to David Hills for reminding me that not all social prac-
     tices, or social structures, are self-maintaining. Some, such as resistance movements, are even
     designed to be self-destructive: success will make the movement obsolete.

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