Journal for General Philosophy of Science (2019) 50:263–282
https://doi.org/10.1007/s10838-019-09446-w

ARTICLE

Do Mechanism-Based Social Explanations Make a Case for Methodological Individualism?

Jeroen Van Bouwel[1]

Published online: 21 February 2019

Abstract
Recently, we notice an increasing support for mechanism-based social explanations. Earlier pleas for social mechanisms were often closely linked to defenses of methodological individualism. However, more recent contributions by, e.g., Daniel Little and Petri Ylikoski, seem to be loosening that link and develop a more sophisticated account. In this paper, we review the impact of the social mechanisms approach on methodological individualism and draw conclusions regarding the individualism/holism debate, severing the link between the social mechanisms approach and individualism. Four steps will be taken: (a) there are more than two levels of social explanation; (b) levels of explanation are perspectival, neither absolute, nor unique; (c) seeking microfoundations has value, but so has seeking macrofoundations; (d) there are no general preference rules with respect to the level of social explanations. In conclusion, the answer to the title question is that the social mechanisms approach does not strengthen the case for methodological individualism.

Keywords Methodological individualism · Social mechanisms · Scientific explanation · Social explanations

1 Introduction

Given the increasing support for mechanism-based social explanations in recent sociological theory and philosophy of social science as well as the fact that earlier pleas for social mechanisms were often closely linked to defenses of methodological individualism, I want to address the following question: *Do mechanism-based social explanations make a case for methodological individualism?* To answer the question right away: *No, they don't.* In what follows, I elaborate this answer by analyzing recent contributions to the literature on

The author would like to thank Petri Ylikoski and Daniel Little for discussing their ideas on social mechanisms with him. He is also grateful to Julie Zahle as well as the audience at the *Fifth Biennial Conference of the European Philosophy of Science Association* (EPSA 2015) for questions and comments on an earlier version of this paper.

✉ Jeroen Van Bouwel
Jeroen.VanBouwel@UGent.be

[1] Centre for Logic and Philosophy of Science, Ghent University, Blandijnberg 2, 9000 Ghent, Belgium

social mechanisms and scrutinizing to what extent they are still making a convincing case for methodological individualism. Arguing that they do not, I spell out to what extent they are still linked to individualism and what kind of alternatives are being developed.

2 Methodological Individualism, Social Mechanisms, and (Satisfactory) Explanations

It is well-known that there exist many different understandings and variations of methodological individualism. I will not spell them all out here—it is not necessary for what follows. Let me just recapitulate the main idea, starting with a characterisation of *methodological individualism*, being "the claim that social phenomena must be explained by showing how they result from individual actions" (*Stanford Encyclopaedia of Philosophy*). Methodological individualism is often contrasted with *methodological holism*, where the former claims that individualist explanations are indispensable while holist explanations are not, and the latter, methodological holism, considers holist explanations to be indispensable—holist explanations understood as social explanations that invoke social structure, culture, or social functions without references to individual actions. Weaker versions of methodological individualism might recognize that there are indispensable holist explanations, but that they do not stand on their own, they should be supplemented with individual-level microfoundations. Epistemologically speaking, individualism prescribes that to gain knowledge of the social world, we have to look at individuals as the fundamental level of explanation. One of the main worries of advocates of methodological individualism historically was that social scientific explanations too often uncritically relied on collective concepts and/or historical laws.

When analyzing the link between methodological individualism and the idea of mechanisms in the social sciences, the most obvious place to look is in the literature on *social mechanisms*. In this literature, there are frequently explicit links being made between the social mechanisms approach and methodological individualism, for instance, by an early defender of social mechanisms like Jon Elster (see, e.g., Elster 1989), and, in recent years, both by philosophers and social scientists, often related to the project of *analytical sociology* (see, e.g., Demeulenaere 2011). According to Kaidesoja (2013), analytical sociology is "a methodological movement […] which has become the leading proponent of the idea of mechanism-based explanation in the social sciences" (Kaidesoja 2013, 302).

To illustrate how *social mechanisms* should be understood and what *mechanism-based social explanations* should look like, one often draws upon the so-called Coleman boat (Fig. 1).

This is a diagram (inspired by the work of James Coleman, cf. below) that clarifies how social mechanisms bring about social macro phenomena or social outcomes. You have a macro level that involves large social entities and forces, and a micro level involving individual actions (and interactions with other individuals). If we look at the diagram, we have arrow 1, macro-to-micro, representing the *situational mechanisms*, that describe how social situations and cultural environments influence and constrain individuals' actions, desires, and beliefs. Next, arrow 2 represents the *action-formation mechanisms* describing how individuals with their beliefs, desires, and action opportunities choose their preferred action among the feasible alternatives. Finally, arrow 3 represents the *transformational mechanisms* that describe how individual actions are transformed into various intended and unintended social outcomes, the way actions combine and generate a collective outcome,

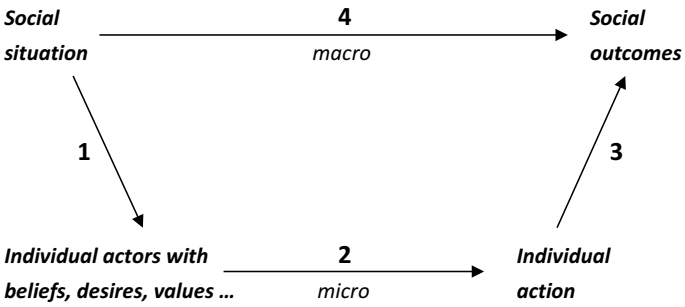

Fig. 1 The Coleman boat

thus producing a new social situation (cf. Hedström and Swedberg 1998, 21–23; Ylikoski 2012, 38). Sometimes there is an arrow 4, macro-to-macro, included, but its exact status is subject of discussion.

Let us now have a look at what the social mechanisms approach entails for social explanations. In the literature on social mechanisms and analytical sociology, an important contributor is Peter Hedström. He wrote a paper and edited a book in the late 1990s together with Richard Swedberg, called *Social Mechanisms*. How do they understand social mechanisms and their relation to social explanations? Let us look at the following two quotes:

> In the social sciences, [...] the elementary "causal agents" are always individual actors, and intelligible social science explanations should always include explicit references to the causes and consequences of their actions. (Hedström and Swedberg 1998, 11–12, where it is also made clear that intelligible mechanism-based explanations should explicitly refer to these "causal agents".)

> [T]here exist no macro-level mechanisms; macro-level entities or events are linked to one another via combinations of situational, individual action, and transformational mechanisms (Hedström and Swedberg 1996, 299).

Reading these quotes we understand what according to Hedström and Swedberg a satisfactory explanation should look like. Whether one labels this as a form of methodological individualism or not, can be open for discussion. Some emphasize that in comparison with earlier defences of methodological individualism, the defenders of the social mechanisms approach do not want to exclude *all* references to entities on the macro level from social explanations (cf. the second quote of Hedström and Swedberg). Hedström and other analytical sociologists often label their approach as *structural individualism*: "a methodological doctrine according to which all social facts, their structure and change, are in principle explicable in terms of individuals, their properties, actions, and relations to one another" (Hedström and Bearman 2009, 8). It qualifies traditional methodological individualism in that it emphasizes "the explanatory importance of relations and relational structures" (ibid.). The approach acknowledges the social level and explores the relation between the individual and the social level, how explanations at the social level and the individual level relate, thus it is not as reductionistic as older versions of methodological individualism, but it still promotes a form of individualism in that it considers reference to (individual actions

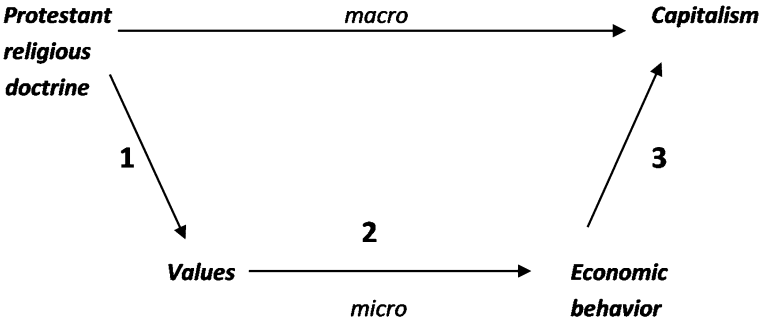

Fig. 2 The Coleman boat applied to Max Weber's *Protestant Ethic and the Spirit of Capitalism*

on) the individual micro level as a condition *sine qua non* of a satisfactory explanation.[1] Structural individualism is just one version of how a microfoundations requirement can be understood, there are more as I am about to clarify in the following section.

3 The Idea of Microfoundations

3.1 Max Weber, James Coleman, and Microfoundations

The diagram we used above is often discussed in relation to James Coleman. In his work, Coleman expresses a need to substantiate the macro-to-macro relation between the Protestant ethic and the formation of modern capitalism in Max Weber's classic *Die protestantische Ethik und der Geist des Kapitalismus* (The Protestant Ethic and the Spirit of Capitalism, Weber 1905). According to Coleman, the relationship between the macro factors, i.e. between the protestant religious doctrine (as social situation and cultural environment) and capitalism (as social outcome), needs microfoundations, zooming in on the underlying micro factors (values, economic behavior). He writes that "some sort of combined or joint or aggregate effect of the economic behavior of many individuals in bringing about capitalist development is being proposed. It is here, however, that Weber's analysis is almost totally silent" (Coleman 1990, 9). Coleman proposes a specification of what goes on at the individual micro level (*values* resulting in *specific economic behavior*)—the action-formation mechanisms—as well as how the changes at the micro level bring about the macro-level outcome (*specific economic behavior* resulting in *capitalism*)—the transformational mechanisms. This diagram illustrates Coleman's point (Fig. 2; cf. Coleman 1990, 8).

Thus, Coleman wants to substantiate Weber's causal claim by requiring microfoundations. The methodological requirement of microfoundations can be formulated as follows: "*An explanation of a macro-social phenomenon must be accompanied by a sketch of plausible microfoundations for the causal linkages it postulates*" (Little 2013, 605).[2] According

[1] Also in the latest programmatic paper by analytical sociologists Keuschnigg et al. (2018), this conviction is being reiterated: "Only by considering the individuals that are part of the collectivity, the relations between them, and their activities, can we explain the collective outcomes we observe" (ibid., 2).

[2] An alternative characterization of the microfoundations requirement stipulates "that all social facts, social structures, and social causal properties depend ultimately on facts about individuals within socially defined

to scholars that support this requirement, the validity of social explanations depends on whether a credible sketch of the microfoundations underlying a macro-to-macro relation can be given.

Reading this requirement, a lot depends on how one understands "sketch", how fully specified do we want the microfoundations to be, and what does the microfoundations requirement exactly imply for a social explanation to be satisfactory? Will the satisfactory explanation only contain the lower part of the boat (cf. Hedström and Swedberg above) excluding the macro-to-macro relation, or is the satisfactory explanation a combination of the macro and the micro level, or is it the macro-to-macro relation as an explanation with the condition that a plausible account of the micro level can be provided (without the latter having to be part of the explanation)? Advocates of the microfoundations requirement have been formulating different answers to these questions.

In short, the microfoundations are often (a) understood as necessary, a *sine qua non* for a satisfactory explanation, but they might also (b) be considered useful (not necessary) to connect to individuals or (c) to have a confirming, legitimizing or justifying role. (So, there are different possible epistemic goals or interests to be distinguished and this list is not exhaustive.) One could understand Coleman's project as an intent to *justify* Weber's causal claim concerning the Protestant ethic and the rise of modern capitalism by providing micro mechanisms; knowing the causal mechanisms by which individual actions are formed (i.e. action-formation mechanisms) and influence social outcomes (i.e. the transformational mechanisms) might play an important role in justifying historical causal claims. This does not imply that Coleman sees the micro mechanisms as a *sine qua non* of every historical explanation (that it has to be *part of* the explanation), or that Coleman would aim for reductionistic accounts, reducing the macro to the individual micro level. Quite the contrary, Coleman's boat requires us to pay attention to the mechanisms by which social macro facts condition the decision-making processes of individual agents (i.e. the situational mechanisms), as such highlighting and attributing causal importance to the social macro level. However, questions remain: Why requiring *micro*foundations and not *macro*foundations? Or, why not requiring microfoundations of microfoundations (in this case that would be the sub-individual level), for instance?

3.2 Daniel Little on Microfoundations

Having sketched a general picture of the social mechanisms approach, I will now introduce some recent contributions and modifications of the understanding of social mechanisms as well as of the need for microfoundations. Let me start with Daniel Little. He is an important contributor to the debates on social mechanisms and microfoundations and I want to highlight two of his recent contributions. First, Little recently started defending the *relative explanatory autonomy* of meso-level explanations—at the level of groups and organizations (see, e.g., Little 2012). This adds an explanatory level in between the individualist micro level and the macro level. As such, it supersedes the dichotomous thinking in the micro/macro debate in which there would always be an individual micro level—which would always be the same—that is contrasted with a macro level. This implies, according

Footnote 2 (continued)
circumstances. Social ascriptions require microfoundations at the level of individuals in concrete social relationships" (Little 2012, 138).

to Little: "In short, we are not obliged to trace out the struts of Coleman's boat in order to provide a satisfactory macro- or meso-level explanation or mechanism" (ibid., 143).

Second, Little is actually modifying his earlier thoughts and going beyond the interpretation of Hedström and others, in how he understands the idea of the *microfoundations requirement*. In his earlier work, the microfoundations requirement was a *conditio sine qua non* for a satisfactory explanation: "social explanation must be explicitly grounded on an account of the microfoundations that produce them. […] A putative explanation couched at the level of high-level social factors whose underlying individual-level mechanisms are entirely unknown is no explanation at all" (Little 1994, 484; also see Little 1991). In Little's later work, it is less so: "The requirement of microfoundations is not a requirement on explanation; it does not require that our explanations proceed through the microfoundational level. Rather, it is a condition that must be satisfied on *prima facie* grounds, prior to offering the explanation" (Little 2012, 143). Thus, "it isn't necessary to provide a detailed account [of microfoundations] to have a satisfactory explanation" (ibid., 145), but "we need always to be able to plausibly connect the social constructs we hypothesize to the actions and mentalities of situated agents" (ibid., 146).

Little emphasizes himself the difference between his ideas and those of others working in the social mechanisms and methodological individualism literature. He writes that: "The various versions of methodological individualism—microeconomics, analytical sociology, Elster's theories of explanation, and the model of Coleman's boat—presume that explanation needs to invoke the story of the micro level events as part of the explanation. The perspective offered here requires something quite different. This position requires that we be confident that these micro-level events exist and work to compose the meso level; but it does not require that the causal argument incorporates a reconstruction of the pathway through the individual level in order to have a satisfactory explanation" (ibid., 147). Further, Little states that: "The thrust of my arguments here, then, is intended to make room for a limited but significant amendment to the agenda of analytic sociology and to argue for the legitimacy of meso-meso causal claims" (ibid., 139).

Recapitulating, this means that Little's ideas can be contrasted with, e.g., analytic sociologists, because he denies (a) that a satisfactory explanation is one that derives the meso-level fact from a collection of micro-level facts, and, (b) that the best social science explanations are *generative* or *reductive* explanations, i.e. explanations that proceed upwards or downwards on the Coleman boat diagram.[3] Instead Little defends type 4 explanations (meso to meso) as a legitimate type of explanation that does not need to be replaced by a generative or reductive explanation. These amendments to the agenda of analytical sociology are made on the basis of an analysis of actual social scientific practice: "one argument for the relative autonomy of meso-level causal claims is precisely the fact that good sociologists do in fact make credible use of such claims" (ibid., 145). I return to Little and a scrutiny of his views in Sect. 4.

[3] An anonymous reviewer questioned whether point (a) would not be included in point (b). Let me emphasize that point (a) deals with the question of what the minimal conditions are to speak of a *satisfactory* explanation. Point (b) deals with situations in which you might have several *satisfactory* explanations and decide which one is the *better/best* one.

3.3 Petri Ylikoski on Microfoundations

Another contributor to the social mechanisms literature is Petri Ylikoski (sometimes co-authoring with Hedström). Ylikoski is modifying the mainstream view of levels. He sees the macro and micro levels being understood in a too absolute way, especially the micro level. According to Ylikoski (2012, 26), the micro level is understood as (1) *unique*, in all social explanations the micro level would always be the same level; (2) *comprehensive*, there is a consistent and well-defined individual level that is sufficient to cover all social phenomena and nonindividual social notions; and (3) *privileged,* explanations in terms of this micro level have some special explanatory qualities that set them apart from explanations at other levels.

Ylikoski argues against this mainstream view of levels and defends that levels should be understood perspectivally, in the sense that the levels are dependent on the explanatory target (ibid., 25).[4] The contrast between micro and macro depends on one's explanatory interests, not on a priori considerations; there is no predetermined macro and/or micro level. This is in line with much of the mechanisms literature in philosophy of science, where one finds that hierarchies of mechanism levels are local (see, e.g., Machamer et al. 2000). Dan Little's idea of the meso level discussed above, can also be accommodated perspectivally following Ylikoski's view; mechanism-based accounts track causal influences transmitted between processes at different levels, these levels do not have to be understood as fixed, so there is no need for a fixed meso level, there is a continuum of levels, that is being fixed locally and perspectivally according to one's explanatory interests, not set by a priori ontological considerations.

Thus, the *micro* in *micro*foundations should be understood as perspectival too, it does not always have to be understood as the level on which the intentional actions of individual agents take place; it could also just be understood as looking for foundations on any lower level, e.g., a sub-individual level focussing on cognitive capacities and processes that might be important in explaining certain social phenomena. Kaidesoja (2013) gives us the example of contextual priming in social cognition: "For example, the phenomenon of contextual priming in social cognition (i.e. a cognitive process in which the presence of certain events and people automatically activates our internal knowledge of and affects towards them that are relevant in responding to the situation) as well as unconscious imitation of behavior of strangers may well be important factors in explaining some social phenomena. I think that it would be misleading to say that cognitive processes of this kind belong to the individual-level due to the fact they take place at the subconscious level of cognitive processing."

Ylikoski's perspectivalism goes hand in hand with his arguing against intentional fundamentalism; we should not presuppose there being one comprehensive, unique, and privileged individual level, the level of intentional action of individual agents. In a mechanism-based account of explanation there is no reason to stop opening the black box at the intentional level. The intentional fundamentalist assumes one can stop opening the black box at the level of individual, since he considers that level as being the privileged, ultimate one, where contrary to explanations invoking supra-individual social structures or mechanisms, no microfoundations have to be provided; since intentional explanations of individual actions are considered being rock-bottom explanations.

[4] Ylikoski (2012) also argues for replacing the idea of *levels* by *scales*, an interesting idea I will not discuss here.

Ylikoski's understanding of levels is in line with actual social scientific practice—as he emphasizes himself (Ylikoski 2012, 28)—in which we notice that the specification and amount of levels of explanation is perspectival (depending on the phenomena, research approaches and explanatory interests involved). For example, international relations theory and labor economics construct the micro–macro contrast quite differently. In the former, nation-states and other organizations are often treated as individuals, while the same nation-state as being an organization will be treated as a macro reality to be part of explanations in labor economics.

Besides his critique on understanding levels in a too absolute way, Ylikoski also refines the social mechanisms debate by introducing the distinction between *constitutive* and *causal explanations* in discussing social mechanisms. For Ylikoski, "a constitutive explanation describes how *the properties of the components* and *their organization* give rise to the system's properties" (ibid., 34). It answers constitutive questions like 'How do macro things have their causal capacities?' Constitution is a synchronic relation; it does not take time. Causality, on the other hand, is diachronic, and causal explanations answer questions like:'How do macro-level changes influence micro-level processes?' 'How do micro-level changes influence macro-level processes?' For both of these questions we are interested in the mechanisms by which these influences are transmitted. It is a process between two events that takes time. Thus, "a causal explanation tells us how the *antecedent events* and *their organization* (timing and location) bring about the event to be explained" (ibid., 34).

It is clear that causal and constitutive explanations are answers to different explanation-seeking questions and it is important to understand the difference qua explanatory information they provide. Where the causal explanation might explain us why a country became sovereign, the constitutive explains us what makes it sovereign. Social scientists might be interested in both questions, but should make sure that they do not confuse them, it is important to make the explanation-seeking question as explicit as possible (something we will return to below).

One surprising characteristic—to which I will also return below—Ylikoski adds to constitutive explanations, is that the "*explanantia* in constitutive explanations are always at the micro level" (ibid., 35); they describe how macro properties are constituted by (micro) entities, processes, and relations, often with an interest in understanding how a macro fact would have been different if (some of) the micro facts had been different. Let us now critically scrutinize the modifications and refinements of the social mechanisms literature offered by Little and Ylikoski.

4 Why Insist on Microfoundations? Is It a Relic of Methodological Individualism?

It is clear that the contributions of both Little and Ylikoski to the social mechanisms literature imply a move away from methodological individualism and traditional understandings of microfoundations. Lessons are being drawn from both the actual social scientific practice and the mechanistic account of explanation. Lessons from the latter are, for instance, the non-reductionism, i.e. taking into account social factors; there being more than the two traditional (individual/holist) levels of social explanation; and, these levels of explanation being local and perspectival, thus neither absolute, nor unique. Progress has been made thanks to their work. However, in Little's and Ylikoski's contributions, I still perceive some

relics of methodological individualism that need further questioning. Let us start with analyzing Little's contribution.

4.1 Daniel Little and the Relics of Methodological Individualism: Introduction

For Daniel Little, microfoundations still play a role, but why microfoundations are required and what their exact role is, remains vague. Questions still stand: When are microfoundations sufficiently stipulated—considering Little's requirement of a *prima facie* plausible connection between the social and the individual agents—to accept a macro explanation? How to operationalize the microfoundations requirement? It has to be understood as constraining explanatory practice—why would we otherwise talk of a requirement—but how would that exactly work, how would it interfere with our explanatory practice? Importantly, do we at all need microfoundations to formulate social explanations? One might ask, for instance, whether we are not providing all of the time all kinds of explanations and causal claims, without knowing the underlying mechanisms or foundations (cf. Kincaid 1997)? Why would we have this requirement specifically for *social* explanations? Is it just a relic of methodological individualism?

In the literature, requiring microfoundations has been associated with epistemic benefits like *increasing intelligibility*, *effective interventions* and *heuristic value*. However, Little sees the value of microfoundations as "ontological rather than epistemic: we want to be satisfied that our social hypotheses are ontologically possible" (Daniel Little, personal communication). Second, Little does maintain that "providing a sketch of the satisfactory microfoundations account is a valuable addition to a meso–meso explanation" (Daniel Little, personal communication).

I would want to address two questions here. First, does considering ontological compatibility, i.e. the (higher-level) properties of the social account not being incompatible with (lower-level) properties of individuals, really ask for an explicit microfoundations requirement? Second, is the microfoundations account always a valuable addition to an explanation?

4.2 Daniel Little and the Relics of Methodological Individualism: Assuring Ontological Compatibility

Let us start with the first question about whether we really need a microfoundations requirement to consider ontological compatibility. One might suggest that compatibility, consistency and non-contradiction seem to be criteria that are necessary conditions for science (see, e.g., Douglas 2009, 94), so the ontological incompatibilities Little is worried about might not go unnoticed anyway? Why should we add a microfoundations requirement for that? Also, in worrying about compatibility, if Little would insist that a special ontological compatibility requirement has to be added with respect to microfoundations, then why should we not also check compatibility with well-confirmed higher-level claims?

Little's position is that "we must be confident that microfoundations exist when we offer causal explanations at the meso or macro level; but we do not have to specifically identify and document the microfoundations that are underlying except in unusual circumstances where it appears that the meso-level properties might be incompatible with what we know about the micro level" (Daniel Little, personal communication). This might be a sensible position, but, again, why not also take into consideration macrofoundations? Is this a relic of methodological individualism?

Identifying microfoundations can help to "integrate the piece of causal information contained in the macro-level generalization to other pieces of explanatory knowledge" (Yliko-ski 2012, 37), and it might lead to developing new interesting explanation-seeking questions. Dan Little exemplifies this when he writes that while the lower part of the Coleman boat should not necessarily be incorporated into or be part of a satisfactory explanation (Little 2012, 148), it does generate a new, different explanation-seeking question: How does the meso-level story work at the level of the actor?

However, it raises the question of why we should not extend it to identifying macrofoundations, aiming to integrate or to check the compatibility of the information contained in the social explanation with pieces of explanatory knowledge at a higher level, (also a different question) how the macro makes the micro work?[5] That *both* higher levels and lower levels might help to integrate causal information is a point that has been made more than once in the mechanisms literature too, for instance in relation to biology: "Higher-level entities and activities are thus essential to the intelligibility of those at lower levels, just as much as those at lower levels are essential for understanding those at higher levels. It is the integration of different levels into productive relations that renders the phenomena intelligible and thereby explains it" (Machamer et al. 2000, 23). Thus, if ontological compatibility is Little's main worry, why not also include requirement vis-à-vis higher levels, a macrofoundations requirement?

Next, if Little wants to maintain an explicit *microfoundations requirement*—even though compatibility seems to be a criterion already present as a necessary condition for science—then it has to be understood as constraining explanatory practice. Any suspicion of ontological incompatibility would oblige us to question the macro account or to add the generative or reductive relationships connecting micro to macro. Besides the question how this requirement is de facto to be implemented, there is also a risk in putting too much emphasis on plausibly connecting the macro to the micro as a way to assure ontological compatibility or on having to be confident that microfoundations exist.

The risk is that a dominant or mainstream micro account might limit what we accept on the macro level, i.e., accept only when we are confident that there are plausible microfoundations. Such a risk is not just imagined; Simon Wren-Lewis (2007) warns us, based on his analysis of macroeconomics, that the microfoundations requirement in mainstream economics narrows the range of acceptable macro explanations, i.e. the range of phenomena macro accounts can address. He argues that the microfoundations requirement changed the way macroeconomics is done, with there being a much greater emphasis on the internal consistency of models nowadays and a greater tolerance of external inconsistency (cf. inconsistency with the data): "Features of real economies may not be incorporated into models because their rationale in terms of microeconomic theory has yet to be established. Taken literally, the microfoundations methodology implies that the pace of development of macromodels is governed by the speed of theoretical innovation, rather than empirical discovery" (ibid., 58). Thus, we learn from Wren-Lewis's analysis that requiring macro explanations and macro accounts to be plausibly microfounded could have as a consequence that explanations with empirical backing but lacking a microfoundations rationale would not be allowed/published. In those cases, a microfoundations requirement goes beyond being a guarantee against incompatibility and ends up hampering explanatory progress.

[5] Economist Paul Krugman (2013) advocates seeking macrofoundations and writes: "Macro is what makes micro work, to the extent that it does."

We are scrutinizing the risks of having a microfoundations requirement going beyond standard criteria like compatibility, consistency and non-contradiction, viz. criteria that are necessary conditions for science. In economics—the discipline Wren-Lewis is discussing—the orthodoxy or mainstream theory about the actor is more hegemonic than in other social sciences. Also, other social sciences (notwithstanding pockets of so-called economics imperialism) are less attracted to a version of rational choice theory than economics is. However, the risk I am pointing at is not uniquely linked to economics's rational choice theory, but to the idea of having one theory of the actor and using it as a constraint on higher-level explanations. Little (2014) is himself actually critical of rational choice theory as a theory of the actor. He wants to replace it by an alternative theory of the actor based on American pragmatism (exemplified by the works of Neil Gross, Andrew Abbott, Mark Granovetter, and Hans Joas)—an actor-centered social theory that provides the microfoundations of social entities and processes. I do agree with Little that there are "heuristic reasons for thinking that a better conception of the actor will be productive for the social sciences" (Little 2014, 60). However, returning to the idea of having a microfoundations requirement deciding whether higher-level explanations are satisfactory, the criteria should be about to what extent the explanantia provide an answer to our explanation-seeking questions and fit with the data, not their compatibility with one particular theory of the actor *en vogue* (be it American pragmatism or rational choice theory). Moreover, heuristics can be maximized by not restricting ourselves to one theory of the actor, by carefully analysing how different theories of the actor might fare, what their respective strengths and weaknesses are in explanatory practice, etc. Requiring compatibility with one particular theory—as a microfoundations requirement—risks holding back modelling and explaining at the level of the meso and macro. Concluding, we should be aware that a requirement of being *prima facie* not incompatible with one particular theory of the actor risks having a negative impact on explanatory practice.

4.3 Daniel Little and the Relics of Methodological Individualism: Increasing Explanatory Power

Let me now turn to the second benefit of microfoundations highlighted by Little. Besides the microfoundations requirement as a way to calm worries about ontological incompatibility, Little also maintains that including microfoundations always adds value to an explanation. So, imagine a satisfactory microfoundations account is readily available when we are providing a social explanation that focuses on the meso or macro level. Should we include that micro account in our social explanation? Does it always have an added value, even if we do not consider it necessary to have a satisfactory explanation? Little maintains that a sketch of the satisfactory microfoundations account is always "a valuable addition to a meso–meso explanation. I would also say that it adds to the *explanatory power* of the meso–meso explanation" (Daniel Little, personal communication, my italics).

Explanatory power is a notion that expresses how good and powerful explanations are, and it can be used to compare the explanatory qualities of explanations and evaluate whether one explanation is better and more powerful than another—assuming both explanations are true. For Ylikoski and Kuorikoski (2010), five dimensions of explanatory power can be identified, namely *non-sensitivity, precision, factual accuracy, degree of integration* and *cognitive salience*. They add that some of these dimensions are systematically in conflict, thus, there are important trade-offs between these different dimensions. The assessment of these dimensions is very much bound to our epistemic aims/interests and to

the pragmatic context of inquiry, in such a way that it makes, for instance, the idea of *overall* sensitivity or factual accuracy more or less irrelevant (cf. ibid., 209, 212).

So, does adding microfoundational detail to social explanations always increase explanatory power like Little maintains? First, let us have a look at the dimension of non-sensitivity: "The basic idea is that the more sensitive an explanation is to changes in background factors, the less powerful it is. An increase in sensitivity makes the explanatory relationship more fragile, whereas a decrease in sensitivity makes it more robust" (ibid., 208). We could think that in general, when we have more information about the microfoundations, we have a better view on how causal influence is being transmitted and what kind of changes in background factors could disrupt the causal link. Thus, adding microfoundations makes the explanandum less contingent and in that sense less sensitive. (Let me also add here that more detail obviously might be of *evidential* import, but that is different from *explanatory* relevance.)

Second, the microfoundational details might increase precision. For Ylikoski and Kuorikoski, "precision, is an attribute of the *explanandum*. The question is how precisely the explanation characterizes the *explanandum* phenomenon" (ibid., 210). Adding microfoundational detail might help to make the explanandum sharper. The details about the causal process will help to generate and answer more specific explanation-seeking questions (how- and what-if questions) about how the meso or macro level brought about the effect it did. Thus, knowing more about how the macro level brought about its effect might broaden the explanatory landscape engendering new explanation-seeking questions and sharpen the explananda in the process.

For both dimensions, i.e. non-sensitivity and precision, adding microfoundations can *in general* be understood as a positive contribution to explanatory power. However, we should also wonder where to stop with adding detail to our explanations. Let us therefore have a look at the dimension cognitive salience: "Cognitive salience refers to the ease with which the reasoning behind the explanation can be followed, how easily the implications of the explanation can be seen and how easy it is to evaluate the scope of the explanation and identify possible defeaters or caveats" (ibid., 214). Why would it be a problem to have a bit more explanatory information by providing microfoundations (even if it is not strictly necessary to have a satisfactory explanation)? It is not obvious that microfoundations always add useful explanatory information, just having the macro might sometimes be epistemically more advantageous or, given our limited cognitive systems, just the optimal level of explanatory information we can deal with. Too much details might distract and compromise the cognitive salience of the explanation (cf. ibid., 215). More microfoundational details might make the explanatory story more difficult to comprehend or process—we have cognitive limits and burdening the cognitive too much lowers our inferential performance.

A similar idea was put forward by Jones (2003). In criticizing that adding microfoundations would always imply an improvement, he highlights the epistemic advantage of not recording certain information, as it enhances our capacity for possessing other information. Given a finite amount of information storage in cognitive agents, it means that tradeoffs must always be made about which information an agent will acquire:

> Different agents might consider each choice the more important one, on the basis of different nonepistemic goals. But it is not clear that on the basis of *epistemic* goals alone (whatever this might mean) that more detailed information is more important. Having *more information about fewer things* is not necessarily epistemically better than having *less information about more things*. Nothing in our concept of "epis-

> temic advantage" or "understanding" tells us which is more epistemically advantageous. […] Those skeptical of the importance of fine-grained knowledge can point to the enormous realms of engineering marvels that humans have been able to create, all the while knowing very little about the lower-level physical or chemical-level microcomponents involved (Jones 2003, 134).

The epistemic advantages of leaving out the information about microfoundations "should be considered when contemplating whether it would be beneficial for a science to try to develop higher-level concepts or to strive to be as reductive as possible" (Jones 2003, 134–135). Thus, adding microfoundations comes at an epistemic cost, and, in general, might affect the dimension of cognitive salience of explanations negatively.[6]

So, what conclusions do we draw about microfoundations and explanatory power? I have used the qualification "*in general"* in reflecting on how adding microfoundations would fare along the dimensions of explanatory power, because when we look at particular explanations, it might work in a different way depending on the context and our epistemic aims. Assessing to which degree giving more details matter, shifts us into considering context and the different explanatory desiderata we might have (which might imply different trade-offs of the five dimensions of explanatory power; different explanatory desiderata might pull in different directions). These explanatory desiderata, interests or aims can be highlighted by making our explanation-seeking questions as explicit as possible. Whether we want microfoundations, i.e. more mechanistic detail, as part of our explanation depends on the explanation-seeking question we try to answer. For some questions, the mechanistic detail might be explanatory relevant, part of the best answer to the explanation-seeking question. Yet for other explanation-seeking questions our explanations might be better without microfoundations added, the microfoundations might not be explanatory relevant, i.e., we can do without this information from an explanatory point of view (however, they can be evidentially relevant).[7] Thus, we might conclude that detailing causal mechanisms by providing microfoundations might sometimes be very valuable and increase the explanatory power of an explanation, but Little's position that adding microfoundations to an explanation always increases the explanatory power of that explanation is unwarranted.

4.4 Daniel Little and the Relics of Methodological Individualism: Conclusion

The questions raised in the sections above about Little's microfoundations requirement do not imply that taking microfoundations into account is completely useless; it might help us to avoid curious ontological constructs, positing higher-level entities or properties that are wholly distinct from the lower level, or emerge in mysterious ways as well as help us to integrate our knowledge about the different levels. However, it seems questionable to have an explicit microfoundations requirement and difficult to defend that a general preference

[6] We developed a similar idea about *efficiency* in relation to explanatory information in Weber and Van Bouwel (2002) and Van Bouwel and Weber (2008).

[7] This is in line with our earlier paper on explanatory power, where we write in the conclusion: "The explanatory power of a causal explanation has to be judged by taking the type of question […] and the context into account, what implies that there is not one criterion or desideratum on the basis of which the assessment of explanatory power of all explanations can be done" (Weber and Van Bouwel 2007, 118). As the reader might notice, I only discuss three out of the five dimensions of explanatory power analysed by Ylikoski and Kuorikoski (2010), the reason being that adding a discussion of the two other dimensions will not change the conclusion here.

rule for adding microfoundations to social explanations is warranted. Moreover, what counts for microfoundations might just as well count for macrofoundations. To conclude, we would suggest that Little takes the next step—taking into account his earlier shift mentioned in Sect. 3.2—and considers dropping the microfoundations requirement all together. Or otherwise, he should develop it further with respect to what it exactly means for social explanations, how it should be operationalised, how it would constrain our explanatory practice, what the benefits are, how the risks I pointed at would be dealt with, and why we should not have a similar requirement for macrofoundations, in order to show us that it is more than a relic of methodological individualism.

4.5 Petri Ylikoski's and the Relics of Methodological Individualism

Having questioned the uneven attention paid to microfoundations by Little, let us now look at the methodological individualism relics in Ylikoski's work. With his advocacy of perpectivalism and critique of there being a unique, absolute individual level, Ylikoski is clearly taking distance from classic methodological individualism. His way of thinking perspectivally about levels is in accordance with the way social scientists think, taking into account one's explanatory interests. However, avoiding a priori's and being guided by one's explanatory interests seems to be left behind when Ylikoski develops his views about constitutive explanations. As discussed above, in relation to constitutive explanations, Ylikoski writes that "[t]he *explanantia* in *constitutive* explanations are always at the micro level" (Ylikoski 2012, 35).[8] Is a constitutive explanation always going micro-to-macro or do we have another methodological individualism relic here? Why would we exclude the possibility of macro-to-micro constitutive explanations?

Let us have a look at two explanation-seeking questions, a causal one and a constitutive one, following Ylikoski's distinction discussed above:

- How is it possible for Luxembourg to exist in an anarchic world surrounded by states with thousands of times its military power? (a constitutive question)
- How did Luxembourg become sovereign? (a causal question)

These questions are inspired by Alexander Wendt's discussion of constitutive explanations where he is using Luxembourg's sovereignty as an example (Wendt 1998).[9] According to Wendt, the answer to the constitutive question is that all of the other states recognize Luxembourg's sovereignty as a right. In order to acquire sovereignty an entity must have the kind of internal structure, but not only a certain internal constitution, there is also an *institution* at the macro level, the global level, level of all of the states, that constitutes Luxembourg with capacities—rights—that it would not otherwise enjoy (ibid., 114). The sovereignty makes it possible for even very weak states like Luxembourg, to survive in an anarchic world, in that sense it is existential.[10] Or, as Wendt (1999) summarizes:

[8] As we have already mentioned above, for Ylikoski, the micro is not some predetermined level like intentional actions of individuals, it might just as well be a nation-state (as micro) vis-à-vis the global interstate system (as macro).

[9] Ylikoski does refer to Wendt, but does not discuss Wendt's examples, he only mentions in a footnote that Wendt's "discussion is very confused".

[10] While elaborating this example, I came across a Financial Times article (Klein 2015) elaborating how Luxembourg "has been commercializing its own sovereignty". It is suggested in the article that the sov-

"recognition of juridical sovereignty may confer capacities or interests on a state that it would not have on its own. Luxemburg may be a self-organizing entity that resists denials of its existence, but it is clear that other states' recognition of its sovereignty enables it to survive" (ibid., 74). Thus, in answering the constitutive question Wendt explicates a relation that is not going from micro-to-macro but rather from macro-to-micro, from the set of all other states, the interstate system, to Luxembourg.

Ylikoski could defend himself by stating that by definition states—as being part of a constitutive explanation of Luxembourg's sovereignty—belong to the micro level. He could, but I suppose he would also agree that we then end up in a constellation in which the totality of individual states, which represents a far bigger scale—Ylikoski speaks of scales, not levels, cf. footnote 4—explains Luxembourg's sovereignty, on a much smaller scale. Luxembourg obtains its causal capacity by being a member of a system (interstate, intergovernmental, worldwide) that is larger than itself. As we have mentioned in Sect. 3.2, Ylikoski advocates that the choice of level of explanation is dependent on one's explanatory target. Thus, providing explanations includes considering what is targeted, selecting the most relevant information, what makes the difference between having the causal capacity related to sovereignty or not having it. Enumerating all of the micro levels of the respective countries, including all of the information which is the same whether or not Luxembourg has sovereignty (which would then be a micro-level constitutive explanation) does not seem to be in line with Ylikoski's idea of what a good explanation is—he emphasises selecting the relevant and interesting class of dependencies (also see Ylikoski 2013).

The constitutive question is different from the causal question in that the latter seeks an answer that explains why a thing came about, while the former wants an answer explaining how its elements are composed and organized or how it is part of an organization so that it exists and has certain causal capacities. Both the internal as well as the social structure can be constitutive and it is surprising that Ylikoski—given his general sensitivity for pragmatic aspects of explanation and aiming for the the most relevant explanatory information—does stick to micro-to-macro exclusivity in the case of constitutive explanations; paying close attention to different explanation-seeking questions would suggest that macro-to-micro answers are sometimes to be preferred. Why not consider macrofoundations? Why exclusively search for microfoundations when it comes to constitution?[11] Ylikoski has to provide us with better arguments in order to convince us of that exclusivity—an exclusivity that is not followed by social scientific practice as our '*causal capacity of Luxembourg to thrive*' example shows.

Let me give a second example of constitutive explanations that would go macro-to-micro. A university professor has certain capacities due to her being a member of a university (university as an organization). So, one might say that the university organization 'explains' why the individual has these capacities. One might claim that the more important question to address here is to explain how an organization can confer those capacities on an individual professor. Such an explanation would explain the whole's capacities by referring to things it is made of (a micro-to-macro constitutive explanation). However, we

Footnote 10 (continued)
ereignty of Luxembourg could easily be taken away or compromised by neighboring countries, thus by actions of other countries as actors of change, not Luxembourg's bottom-up mechanisms.

[11] I am again using the term "microfoundations" here. Even though it might not have the same meaning here as it has in my discussion of Little's work, I do see symmetries in that the foundations for certain explanations are being looked for on the micro level.

could also zoom in on the capacities of the individual professor and explain how she has novel capacities due to being embedded in the larger system of the university—as such providing a constitutive explanation that wants to give us relevant information also include references to the macro level. We can look at the university professor fulfilling a role. Making abstraction of particular individuals, we can distinguish the occupier of a certain role or position from the position itself; one can explain how the individual that is actually occupying the position is constituted (and add other micro components), but one can also explain the space of possibilities for any occupier of that position—a space that, for the occupier of the position as occupier, is capacitating, but also constraining due to relations internal to the network or structure (a macro element). The arrangement of the different parts of a university whose interactions give rise to the causal capacities of individuals working there (both enabling and limiting due to the 'rules of the game') explain what is constituting the professor's agency as a professor, in that sense, a constitutive explanation could mention the institution, i.e. the university, the professor is a part of.

Thus, depending on your explanation-seeking question you could add micro-to-macro and/or macro-to-micro elements in explaining the space of possibilities of any occupier, but it seems very unlikely that all possible explanation-seeking questions could be best answered by a constitutive explanation only referring to micro-to-macro elements. In analyzing the social behavior of individuals (cf. the university professor in our example) it seems imperative to also seek constitutive explanations involving the macro-to-micro constitution of causal capacities of the individual. This is a different explanatory target from explaining why the university as a whole can confer those capacities on an individual professor. So, there is a class of explanation-seeking questions—stipulating explanatory targets—that is better served by constitutive explanations going from macro-to-micro.

One might object that what constitutes in the macro-to-micro constitution is itself constituted micro-to-macro. For instance, the international institutions and states sustaining Luxembourg's sovereignty have microfoundations themselves. The capacity to confer sovereign status on Luxembourg is dependent on and realized by a common belief in what sovereignty means (the rights and powers it entails) held by most or all states in the world system, and the associated belief that Luxembourg indeed meets the believed conditions for qualifying as sovereign. However, in looking for an answer to the constitutive explanation-seeking question we formulated above, it is clear that one's explanatory interests are better satisfied by a macro-to-micro explanation of Luxembourg's sovereignty, not by enlisting Luxembourg's intrinsic properties (geographic territory, population, etc.) and the intrinsic properties of all other states and institutions conferring sovereign status on Luxembourg. The main point is to show that the micro-to-macro does not always provide us with the best explanation, or the kind of explanatory information we are after; macro-to-micro constitutive explanations might sometimes be desirable and/or micro-to-macro constitutive explanation might have undesirable features (instability, superfluous information, taking too much cognitive space, etc.). In conclusion, given that Ylikoski clearly pays attention to different possible explanatory interests at play in social scientific practice in his discussion of causal explanations, we suggest he does not restrict his constitutive explanations to micro-to-macro ones either. As I have emphasized throughout, it is very important to make the explanation-seeking question (and with it the *explanandum*) that one wants to answer as explicit as possible and then to understand how different explanatory information is being selected by different explanatory formats (be it micro-to-macro or macro-to-micro constitutive explanations, be it different formats of causal explanation). Answering the explanation-seeking questions in the best way possible requires having different explanatory formats available (these are characteristics of scientific explanation that do apply to

the sciences in general, not only to the social sciences). This leads us beyond methodological individualism and obliges us to let go of its relics.

5 Evaluating the Recent Contributions on Mechanism-Based Social Explanations

In short, the more recent accounts of social mechanisms seem to be more sophisticated than earlier accounts, because:

- they take into account more than two levels, emphasizing the non-unique, perspectival character of levels (in line with social scientific practice);
- they weaken the microfoundations requirement (although it is still present);[12]
- they avoid some classic ontological fallacies, like arguments from ontological composition to general preferences about explanation;[13]
- they pay attention to the different explanatory interests, explanation-seeking questions and answers present in actual scientific practice.

However, these recent accounts still ascribe a special role to microfoundations, something which does not seem to be warranted or should at least be argued for more convincingly. A fruitful role one could see for a microfoundations, is as a heuristic. The idea of opening the black box gives rise to different explanation-seeking questions (as was mentioned by Little), it generates new explananda and spurs explanatory reasoning in social science. The mechanisms approach often "requires an understanding of the working of a mechanism at multiple levels" (Machamer et al. 2000, 23), and this requires the integration of different levels, or at least increasing interaction between levels and approaches—not necessarily to complete explanations, it could also be a way to articulate disagreement. The plea for increased interaction might result in an engagement to compare one's own explanatory practice and research approach with other practices and approaches at other levels, lead to more interaction between different approaches through which approaches articulate themselves and their relations to others more explicitly and through which the strengths and weaknesses of the respective approaches are being clarified. In this respect, we could not only encourage seeking *microfoundations* as a heuristic, but, on the same basis, propose searching for *macrofoundations* as a fruitful heuristic.

Having discussed Little's and Ylikoski's respective versions of the social mechanisms approach, it is clear they have moved away from classic methodological individualism. They moved away from the individualist idea—still present in Hedström and Swedberg (1998, cf. quote above)—of there being a general rule for social explanations, i.e., all explanation should include the mechanisms of the lower part of Coleman's boat. Little and

[12] "Requirement" might not be the best label for what goes on in Ylikoski's account of constitutive explanation. However, as I wrote above, I do see symmetries with Little's account in the urge of having to look for foundations at the micro level, therefore I use the same label for both here.

[13] However, the individualism remains prominent. Note also that, e.g., Demeulenaere in his introduction to *Analytical Sociology and Social Mechanisms* writes that methodological individualism "can be expressed very simply: Social life exists only by virtue of actors who live it; Consequently a social fact of any kind must be explained by direct reference to the actions of its constituents" (Demeulenaere 2011, 3–4). It is striking that Demeulenaere still advocates this position; an ontological fact about composition does not entail explanatory reducibility (also see Van Bouwel 2004).

Ylikoski do not expect all answers to our explanation-seeking questions to come from one and the same level of explanation. But, if there is no general preference rule for social explanations, then how to single out the best explanation?

I have been looking into how making explanation-seeking questions as explicit as possible could help us to understand how to select among different forms of explanation in social science—closely linked to what social scientists actually do, looking for their best practices (see, e.g., Van Bouwel 2014). I will not discuss the results at length, let me just highlight some important points, that conjointly might also help to give you a sketchy idea of how we can deal with the plurality of explanatory forms and levels without ending in an all too liberal *anything goes*—now that I have argued against including microfoundations as a general preference rule for social explanations.

(a) One can explicate different kinds of explanation-seeking questions (see, e.g., the distinction between constitutive and causal questions above), and it is clear that one form or one level of social scientific explanation will not give us the best answer to all possible questions; different forms and different levels of explanation are required to answer the different kinds of explanation-seeking questions optimally (cf. Van Bouwel and Weber 2011; Weber et al. 2013).

(b) A careful analysis of the different kinds of questions we encounter in social science also helps us to learn about the relative strengths and weaknesses of the variety of forms and levels of explanation with respect to answering different kinds of explanation-seeking questions (cf. Van Bouwel and Weber 2002).

(c) In order to identify strengths and weaknesses as well as to be more explicit about what a 'satisfactory explanation' is, one could evaluate the trade-offs being made between the *accuracy*, *adequacy*, and *efficiency* of the explanatory information provided by competing answers to explanation-seeking questions (cf. Van Bouwel 2014).

(d) Finally, putting explanation-seeking questions central might be part of a framework that instigates 'dialogue' or 'integration' on a reflective level. Rather than seeking integration of particular explanations or explanatory models, we would seek integration on a meta level as agreeing about how—within which framework—to negotiate between competing explanations and competing forms of explanations. It implies explicating how different forms of explanations do different things, serve different explanatory interests or desiderata, and learning what form to choose when dealing with a particular explanation-seeking question.

6 Conclusion

The social mechanisms approach has a lot to offer to help clarifying the explanatory reasoning going on in social science, but it cannot be used to make a case for methodological individualism. The special role ascribed to microfoundations by defenders of mechanism-based social explanation cannot be upheld. We have highlighted positive evolutions in the literature using recent work of Daniel Little and Petri Ylikoski. Their contributions actually help to conclude that there are neither general preference rules with respect to the level of social explanations, nor good reasons for a general microfoundations requirement. We might sometimes prefer searching for macrofoundations; the macro and micro might sometimes be joined by the meso level; levels are understood perspectivally, thus there is not one unique, fundamental individual level. In short, we are far from the idea of advocating the

ultimate individualistic approach and methodological individualism as imperative. Instead we are increasing our understanding of explanatory reasoning in social science and exploring possibilities to optimize the ways in which different explanatory approaches interact, co-exist, can be integrated and/or develop some division of labor among each other, while making the best out of the strengths and limitations of the respective explanatory strategies.

I think philosophers of social science could fruitfully contribute doing exactly that: analyze and optimize the interaction among the different explanatory approaches, do more justice to perspectival levels and different possible angles in social scientific practice, develop comparative analyses of explanatory approaches in the social sciences, articulating the strengths and weaknesses of the respective approaches as well as the dynamics/interaction among them. In a nutshell, aiming to understand plurality in social science as well as the limits of integration.

References

Coleman, J. (1990). *Foundations of social theory*. Cambridge, MA: Belknap Press.

Demeulenaere, P. (Ed.). (2011). *Analytical sociology and social mechanisms*. Cambridge: Cambridge University Press.

Douglas, H. (2009). *Science, policy, and the value-free ideal*. Pittsburgh, PA: University of Pittsburgh Press.

Elster, J. (1989). *Nuts and bolts for the social sciences*. Cambridge: Cambridge University Press.

Hedström, P., & Bearman, P. (Eds.). (2009). *The oxford handbook of analytical sociology*. Oxford: Oxford University Press.

Hedström, P., & Swedberg, R. (1996). Social mechanisms. *Acta Sociologica, 39*(3), 281–308.

Hedström, P., & Swedberg, R. (Eds.). (1998). *Social mechanisms. An analytical approach to social theory*. Cambridge: Cambridge University Press.

Jones, T. (2003). The virtues of nonreduction, even when reduction is a virtue. *The Philosophical Forum, 34*(2), 121–140.

Kaidesoja, T. (2013). Response to Little by Tuukka Kaidesoja. *Understanding Society*, 19 September 2013. https://undsoc.org/2013/09/19/response-to-little-by-tuukka-kaidesoja/. Accessed 12 Feb 2019.

Keuschnigg, M., Lovsjö, N., & Hedström, P. (2018). Analytical sociology and computational social science. *Journal of Computational Social Science*, *1*(1), 3–14.

Kincaid, H. (1997). *Individualism and the unity of science*. Lanham: Rowman & Littlefield Publishers.

Klein, M. (2015). The case against Luxembourg. *Financial Times*, 21 October 2015. https://ftalphaville.ft.com/2015/10/21/2142483/the-case-against-luxembourg/. Accessed 12 Feb 2019.

Krugman, P. (2013). Macrofoundations (wonkish). *The New York Times*, 26 October 2013. https://krugman.blogs.nytimes.com/2013/10/26/macrofoundations-wonkish/. Accessed 8 Feb 2019.

Little, D. (1991). *Varieties of social explanation. An introduction to the philosophy of social science*. Boulder: Westview Press.

Little, D. (1994). Microfoundations of marxism. In M. Martin, & L. McIntyre (Eds.), *Readings in the philosophy of social science* (pp. 479–496). Cambridge, MA: MIT Press.

Little, D. (2012). Explanatory autonomy and Coleman's boat. *THEORIA. An International Journal for Theory, History and Foundations of Science, 27*(2), 137–151.

Little, D. (2013). Microfoundationalism. In B. Kaldis (Ed.), *Encyclopedia of philosophy and the social sciences* (pp. 605–606). Thousand Oaks: Sage.

Little, D. (2014). Actor-centered sociology and the new pragmatism. In J. Zahle, & F. Collin (Eds.), *Rethinking the individualism-holism debate* (pp. 55–75). Dordrecht: Springer.

Machamer, P., Darden, L., & Craver, C. (2000). Thinking about mechanisms. *Philosophy of Science, 67*(1), 1–25.

Van Bouwel, J. (2004). Individualism and holism, reduction and pluralism. *Philosophy of the Social Sciences*, *34*(4), 527–535.

Van Bouwel, J. (2014). Explanatory strategies beyond the individualism/holism debate. In J. Zahle, & F. Collin (Eds.), *Rethinking the individualism-holism debate* (pp. 153–175). Dordrecht: Springer.

Van Bouwel, J., & Weber, E. (2002). Remote causes, bad explanations? *Journal for the Theory of Social Behaviour*, *32*(4), 437–449.

Van Bouwel, J., & Weber, E. (2008). A pragmatic defence of non-relativistic explanatory pluralism in history and social science. *History and Theory*, *47*(2), 168–182.
Van Bouwel, J., & Weber, E. (2011). Explanation in the social sciences. In I. Jarvie, & J. Zamora Bonilla (Eds.), *The sage handbook of the philosophy of social sciences* (pp. 633–646). Thousand Oaks, CA: Sage Publications.
Weber, M. (1905). *Die protestantische Ethik und der Geist des Kapitalismus*. Tübingen: Mohr (1934 edition).
Weber, E., & Van Bouwel, J. (2002). Can we dispense with structural explanations of social facts? *Economics and Philosophy*, *18*(2), 259–275.
Weber, E., & Van Bouwel, J. (2007). Assessing the explanatory power of causal explanations. In J. Persson, & P. Ylikoski (Eds.), *Rethinking explanation. Boston studies in the philosophy of science* (Vol. 252, pp. 109–118). Dordrecht: Springer.
Weber, E., Van Bouwel, J., & De Vreese, L. (2013). *Scientific explanation*. Dordrecht: Springer.
Wendt, A. (1998). On constitution and causation in international relations. *Review of International Studies, 24*(5), 101–117.
Wendt, A. (1999). *Social theory of international politics*. Cambridge: Cambridge University Press.
Wren-Lewis, S. (2007). Are there dangers in the microfoundations consensus? In P. Arestis (Ed.), *Is there a new consensus in macroeconomics?* (pp. 43–60). Basingstoke: Palgrave Macmillan.
Ylikoski, P. (2012). Micro, macro, and mechanism. In H. Kincaid (Ed.), *The Oxford handbook of philosophy of social science* (pp. 21–45). Oxford: Oxford University Press.
Ylikoski, P. (2013). Causal and constitutive explanation compared. *Erkenntnis*, *78*(2), 277–297.
Ylikoski, P., & Kuorikoski, J. (2010). Dissecting explanatory power. *Philosophical Studies, 148*(2), 201–219.