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ORIGINAL RESEARCH

Two approaches to naturalistic social ontology

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Abstract

Social ontological inquiry has been pursued in analytic philosophy as well as in the social scientific tradition of critical realism. These traditions have remained largely separate despite partly overlapping concerns and similar underlying strategies of argumentation. They have also both been the subject of similar criticisms based on naturalistic approaches to the philosophy of science, which have addressed their apparent reliance on a transcendental mode of reasoning, their seeming distance from social scientific practice, and their (erroneous?) tendency to advocate global solutions to local and pragmatic problems. Two approaches aiming to naturalize these two traditions of social ontology have been proposed in recent years: one drawing on a Gierean, model-based approach to scientific practice, the other drawing on inference to the best explanation. In our paper, we compare and contrast these naturalistic approaches to social ontology in terms of their capacity to respond to the aforementioned challenges. We also defend a form of methodological pluralism, according to which there are multiple different naturalistically acceptable approaches to social ontology, which emphasize contrasting procedural continuities between social scientific research and philosophical practice.

Keywords Social ontology · Philosophy of the social sciences · Methodological naturalism · Collective intentionality · Critical realism

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1 Introduction

Social ontological inquiry has been pursued in analytic philosophy (e.g. Baker 2019; Epstein 2015; Gilbert 1990; 2013; Searle 1995; 2010; Tuomela 2007; 2013) as well as in the social scientific tradition of critical realism (e.g. Archer 1995; 2017; Bhaskar, 1979; Elder-Vass 2010; 2012; Lawson 1997; 2019). These traditions have remained largely separate despite partly overlapping concerns and similar underlying strategies of argumentation. They have also both been the subject of similar criticisms based on methodologically naturalistic approaches to the philosophy of science. These criticisms have addressed—among other things—their apparent reliance on a transcendental mode of reasoning (Guala, 2016; Kaidesoja, 2013a), their seeming distance from social scientific practice (Kaidesoja, 2013a; Kincaid, 2021; Little, 2021; Ross, 2022; Wettersten, 2009, 2010), and their (erroneous?) tendency to advocate global solutions to local and pragmatic problems (Kincaid, 2021; Little, 2021). Two approaches aiming to naturalize these two traditions of social ontological inquiry have been proposed during recent years: one drawing on a Gierean, model-based approach to scientific practice (Sarkia, 2022), the other drawing on inference to the best explanation (Kaidesoja, 2013a). In this paper, we compare and contrast these two naturalistic approaches in terms of their capacity to respond to the types of challenges that have been directed at traditional approaches to social ontology from a methodologically naturalistic viewpoint.

Before we begin, let us justify why we have decided to focus on these two specific approaches to social ontology, while also other approaches have been described as naturalistic (in a broad sense). One reason for our choice is that both approaches are *methodologically naturalistic* in a specific sense of the term that highlights some important (albeit different) methodological continuities between social ontology (a branch of chiefly philosophical investigation) and the social sciences. By our lights, methodological naturalism is more interesting than the relatively non-controversial thesis of *ontological naturalism*, which can be characterized as the idea that social phenomena are among the class of natural phenomena, or that society is part of nature (however that idea is fleshed out in more detail—see e.g. Papineau (1993)). Given that they both provide detailed procedural guidelines for how philosophical work on social ontology can or should proceed, Sarkia's and Kaidesoja's approaches are also more rich and informative than simply saying that philosophical theorizing is constrained by our scientific understanding of the world, or that philosophical inquiry lies at the more abstract end of scientific theorizing, which are common assertions among would-be naturalists. Finally, both are compatible with *methodological pluralism*, according to which multiple different methodological approaches can be used across the natural and social sciences (as well as in social ontology) to analyze interrelated aspects of the same phenomena. Thus the two approaches can be viewed at least potentially as mutually complementary.

Our secondary goal in this paper is to pursue the perception of complementarity and defend a type of methodological pluralism in the naturalistic study of social ontology. Our pluralistic outlook contrasts with traditional *methodologically monistic* views, which hold that all of social reality has a common form that can be analyzed in terms of some single philosophical approach, such as speech act theory (Searle,

2010) or transcendental reasoning (Bhaskar, 1979). Our view finds resonance with contemporary approaches to the philosophy of science, which have emphasized (against traditional views, which often presupposed that there is one correct description of the scientific method) that many different methods are used across the natural and social sciences (e.g. Godfrey-Smith, 2006; Weisberg 2013; Wimsatt 2007). Given that methodological naturalism emphasizes continuities between philosophical practice and scientific theorizing, it follows that many different methods can (at least in principle) also be used in philosophy. However, although our two approaches emphasize contrasting procedural continuities between scientific investigation and social ontology, we do not think that they exhaust all possible naturalistic approaches to social ontology. In particular, both focus on descriptive goals that have to do with explaining, predicting, and understanding social phenomena, rather than with evaluating their normative justification or practical usefulness (e.g. for the purposes of institutional design or policy making). Thus we think that there may be room for further naturalistic approaches that focus especially on these normative and practical aspects of social phenomena (cf. Asta 2018; Haslanger 2000; 2012; List&Pettit 2011).

The manner in which we will proceed is the following. In the next section, we will provide a brief overview of traditional research on social ontology in analytic philosophy and critical realism, which our two naturalistic approaches critically engage with and reappraise. In the third section, we will disentangle three challenges that have been directed at such traditional approaches to social ontology from a methodologically naturalistic perspective—we call them the relevance challenge, the epistemic challenge, and the scope challenge—and justify why we think that these challenges deserve to be taken seriously. In the fourth section, we will present Sarkia's (2022) revisionary approach to analytical social ontology, which understands social ontology as a form of theoretical modeling that is in some (although not necessarily all) respects comparable to theoretical modeling that takes place in other disciplines that deal with complex phenomena, such as economics, evolutionary biology, and climate science. In the fifth section, we will present Kaidesoja's (2013a) alternative inferential approach to critical realist social ontology, which seeks to supplant the controversial method of transcendental reasoning by the empirically grounded method of inference to the best explanation. In the sixth section, we will argue that these two methodologically naturalistic approaches to social ontology may in some circumstances be regarded as mutually complementary, although they have partly different domains of application, epistemic virtues, and limitations. At the end, we provide brief concluding remarks.

2 Analytic social ontology and critical realism

In general, social ontology can be understood as a sub-field of philosophical investigation that is concerned with the study of the basic nature and constituents of the social world, encompassing topics, such as social action, social institutions, and social norms. For example, social ontology addresses questions about individualism and holism (Zahle & Collin, 2014; Zahle&Kincaid, 2019), the structure of social groups

(Epstein, 2017; Ritchie, 2013), the constitution of social kinds like gender, ethnicity, and social class (Epstein, 2017; Godman, 2021; Hacking, 1995; Haslanger, 2000; Little, 2016), and the mode of existence of social institutions, such as money, marriage, and private property (Guala, 2016; Mäki, 2021; Searle, 1995, 2010). Although it is nominally part of metaphysics (Epstein, 2018), in practice, social ontology has close connections to other fields of philosophy, including action theory, (social) epistemology, and philosophy of science. In this extended sense, social ontology overlaps with epistemic, explanatory, and normative questions—for example, whether some social groups (e.g. research teams) can be understood as subjects of knowledge over and above individuals (Lackey, 2016; List & Pettit, 2011; Quinton, 1976), whether organizations can be held morally responsible for actions that none of their members are individually responsible for (Bazargan-Forward & Tollefsen, 2020; Hess et al., 2018), and what is the best explanation of harmful social practices, such as female circumcision (Bicchieri, 2016). In the analytic tradition, social ontology has been informed by a close connection with action theory, with philosophers like John Searle (1995; 2010) and Raimo Tuomela (2007; 2013) endorsing the *collective acceptance* -view of social institutions, according to which many social institutions are dependent on the interdependent, performative, and reflexive attitudes and action dispositions of a collection of individuals (see Guala 2007). In the tradition of critical realism, social ontology has had a close relationship with the history of philosophy, especially neo-Aristotelianism and neo-Kantianism, some branches of social science, notably critical theory, and heterodox approaches to economics, including Marxist political economy (Bhaskar, 1979; Groff 2012; Lawson 1997; Sayer 1992).

In the analytic tradition, the best known work in social ontology is by John Searle (1995; 2010), whose views have been the subject of much praise, refinement, and (to an ever greater extent during recent years) criticism. Searle's (1995; 2010) account focuses on institutional facts, which he understands as particular types of social facts carrying deontic powers. He argues that institutional facts ontologically depend on constitutive rules, which have the form "X counts as Y in C", as contrasted with regulative rules, which have the form "Do X in C" (see also Austin 1962; Rawls 1971; cf. Hindriks 2009). In paradigmatic cases, X stands for a physical item or event, Y stands for a normative system of rights and responsibilities, and C stands for a particular social context. In Searle's much-discussed example, a piece of paper engraved by the Bureau of Engraving and Printing counts as a dollar bill that gives its owner the right to use it as legal tender in the United States. Extensions and (rather critical)[1] refinements of Searle's view have been presented in recent years by Brian Epstein (2015) as well as Francesco Guala and Frank Hindriks (Guala & Hindriks, 2015; Guala, 2016; Hindriks&Guala 2015). Given that our goals in this paper are primarily methodological and we do not aim to defend any particular substantive account

[1] The view offered by Guala&Hindriks (2015) is a case in point regarding this *critical* outlook—drawing on Hindriks's (2009) earlier work, they argue that constitutive rules can be accounted for in terms of regulative rules together with theoretical terms, and that the deontic powers of social institutions can be largely explained by internally and externally sanctioned social norms without appeal to collective acceptance. This leaves intact very little of the conceptual machinery on which Searle's (1995; 2010) approach depends.

of social ontology, we will not concern ourselves with the differences between these views in great detail.

In the tradition of critical realism, social ontology is often viewed as forging a middle path between empiricism (or positivism) and methodologically dualist versions of hermeneutic interpretivism (e.g. Winch 1959) and anti-realist versions of social constructionism (e.g. Burr 1995), described by critical realists as providing inadequate epistemological and ontological foundations for conducting social scientific research. According to critical realists, empiricists are guilty of the *epistemic fallacy* of interpreting questions concerning existence as questions about our knowledge of existence, and their philosophy of natural science includes an implicit commitment to the ontology of empirical realism in which reality consists of observable events and regularities (e.g. Bhaskar, 1975). These assumptions are shared by methodologically dualist versions of hermeneutics, which contrast an empiricist understanding of the natural sciences with their take on the social sciences as being concerned with the interpretation of the subjective and cultural meanings of social action (e.g. Bhaskar, 1979). Thus methodologically dualist hermeneutics (as well as anti-realist versions of social constructionism) seem to preclude the possibility of explaining social phenomena by reference to the causal powers of social structures, which are regarded as central by critical realists (e.g. Elder-Vass 2010; 2012; Kaidesoja 2013a; Sayer 2000). By rediscovering ontology, critical realists hope to provide a more robust ontological foundation for the social sciences.[2] However, in their revitalization of ontological issues in philosophy of the social sciences, many critical realists have relied on methodologically anti-naturalistic forms of transcendental reasoning, which seek to move from our lay experience of intentional social action to its allegedly necessary conditions of possibility, which are taken to provide an ontological foundation for explanatory social research (see e.g. Bhaskar, 1979, 34; 50–51; Lawson 1997, 30–32).[3] These foundationalist aspects of critical realism have been criticized from different viewpoints (e.g. Cruikshank 2007; 2010; Kaidesoja 2013a).

Although there are important conceptual, discursive, historical, and theoretical differences between them, social ontology in the analytic and critical realist traditions

[2] It should be noted Bhaskar (1979) and other critical realists mostly use the term "naturalism" to refer to the position of methodological monism according to which "there is (or can be) an essential unity of method between the natural and social sciences" (p. 2). In contrast to methodological dualism (or "anti-naturalism" in his terms), Bhaskar (1979, 3) defends "critical naturalism" according to which "it is possible to give an account of science under which the proper and more or less specific methods of both natural and social sciences fall", while also emphasizing ontological differences between the objects of investigation of the natural and social sciences. Concerning these ontological differences, Bhaskar (1979, 38), claims that social structures "do not exist independently of the activities they govern", "do not exist independently of the agents' conceptions of what they are doing" and "may be only relatively enduring". Bhaskar and his followers (e.g. Lawson 1997; Sayer 1992) suggest that these "limits of naturalism" (Bhaskar, 1979, 44) combined with their view that social phenomena always "manifest themselves in open systems" (p. 45) where "invariant empirical regularities do not obtain" (p. 45) have methodological implications for social scientific research. For example, critical realists tend to favor qualitative methods over quantitative methods, emphasize explanatory power over predictive power in the evaluation of social scientific theories, and reject the possibility of experimentation in the social sciences (for a critical discussion, see Kaidesoja 2013a, 4–8, Chap. 3).

[3] Although transcendental arguments have been common in critical realism, not all critical realists use transcendental argumentation (e.g. Elder-Vass 2010; 2012).

share a number of methodological and meta-theoretical commitments. Most importantly, they are both engaged in a foundationalist enterprise in the sense that they view social ontology as providing conceptual foundations for the social sciences, instead of developing in close interaction with them. Second, they are both based on conceptual analysis or some other form of seemingly *a priori* knowledge that is taken to be based primarily on sources of justification that are largely independent of empirical evidence produced in the social and cognitive sciences. Third, their consequences for social scientific research programs dealing with more specific phenomena—such as income inequality, the challenges of managing common pool resources, or the evolution and change of organizational forms—are controversial or ambiguous at best. This is despite the fact that many social ontologists claim indispensability of their accounts for social scientific theorizing, bringing about a large gap between theory and social scientific research practices. We view this gap between theory and practice as deeply lamentable and as incompatible with a methodologically naturalist approach to philosophy of the social sciences. In the next section, we will discuss naturalistic criticisms of established research programs in social ontology in some more detail.

3 Naturalistic criticisms of social ontology

Our approach in this paper is grounded in a naturalistic approach to the philosophy of the social sciences, which denies that philosophers have any special *a priori* sources of evidence concerning the social world that are independent of evidence produced in the social sciences and related fields, such as cognitive science (see Kaidesoja 2013a; Kincaid 1996; 2012a; 2012b; Little 1991; 2016). Methodological naturalists accordingly emphasize that philosophy of the social sciences should be intimately connected with real social scientific research (Kincaid, 2012a, b). This involves commitment to the idea that the methods of philosophy of social science are continuous with the methods of the social sciences, and that the objects of investigation of the social sciences are not fundamentally different in kind from the objects of investigation of the natural sciences in a manner that would make them unamenable to scientific investigation (Ross, 2011). While naturalism in the philosophy of the social sciences is sometimes interpreted (especially by its detractors) to imply that the social sciences ought to imitate the natural sciences in their methods, we think that no single methodology cuts across the entirety of the natural and social sciences. Thus many different forms of investigation may be used in both groups of disciplines—e.g. computer simulations, laboratory and field experiments, mathematical models, process tracing, and statistical analysis—although there are differences in their relative prominence.

While many contemporary researchers in the field of social ontology describe themselves as naturalists (e.g. Bhaskar, 1979; Searle 2010; Tuomela 2013), Harold Kincaid (2012a, 391) has pointed out that naturalism can be interpreted weakly or strongly, and that many self-described naturalists have presented arguments that seem anti-naturalist from the viewpoint of contemporary philosophy of the social sciences. For example, John Searle (2009, 9) writes that "where the social sciences are concerned, social ontology is prior to methodology and theory… in the sense that

unless you have a clear conception of the nature of the phenomena you are investigating, you are unlikely to develop the right methodology and the right theoretical apparatus for conducting the investigation". In a similar spirit, Bhaskar (1979, 7) writes that "philosophy is distinguished by the kinds of considerations and arguments that it employs… it considers… that world [studied by the sciences] from the standpoint of what can be established about it by a priori argument". We view these anti-naturalist tendencies as detrimental to serious interaction between social ontology and the social sciences, because they seem to put philosophical investigation on a pedestal and tend to insulate it from scientific research practices.

We agree with Kincaid and others who have expressed similar concerns (e.g. Guala 2016; Kaidesoja 2013a; Sarkia 2021) that the work of many philosophers in the field of social ontology is best understood as methodologically anti-naturalistic, although generic references to being engaged in a naturalistic enterprise have become more frequent during recent years (e.g. Searle 1995; 2010; Tuomela 2007; 2013). However, for many philosophers adherence to naturalism seems to boil down to simply acknowledging the empirically robust and well-confirmed results of natural science—for example, Searle (2010, 4) mentions the atomic theory of matter and the theory of natural selection as non-negotiable principles that his approach should be consistent with. However, Searle does not elaborate in detail how these scientific theories constrain philosophical theorizing about social ontology (if at all). His rather minimal form of ontological naturalism (which we of course concur with) can be contrasted with the idea of methodological naturalism, which we have above described in terms of (in principle) open-ended procedural continuities between scientific investigation and philosophical practice. We understand this thesis to encompass both the natural *and* the social sciences, allowing for relevant contrasts and continuities between the relatively heterogeneous methods that they use—for example, experimentation has a smaller role in the social sciences, while theoretical models are used in both groups of disciplines.[4] To understand why the naturalistic credentials of many social ontologists leave something to be desired, we think that it is useful to disentangle several different strands of criticism that have been directed at traditional approaches to social ontology from the viewpoint of methodological naturalism. We have identified three such strands of criticism:

(Relevance challenge)
Social ontology is too detached from social scientific research practice to give social scientists any practically relevant guidance in articulating their conceptual, methodological, and theoretical commitments.
(Epistemic challenge)

[4] The lesser role of experimentation in the social sciences was already recognized by John Stuart Mill (1836, 124); "There is a property common to all the moral sciences, and by which they are distinguished from many of the physical; that is, that it is seldom in our power to make experiments in them. In chemistry and natural philosophy [i.e. physics], we can not only observe what happens under all combinations of circumstances which nature brings together, but we may also try an indefinite number of new combinations. This we can seldom do in ethical, and scarcely ever in political science. We cannot try forms of government and systems of national policy on a diminutive scale in our laboratories, shaping our experiments as we think they may most conduce to the advancement of knowledge."

Social ontology relies on an unacceptably a priori mode of reasoning, which is not compatible with the a posteriori nature of scientific investigation.
(Scope challenge)
Social ontology erroneously advocates global solutions to local and pragmatic problems, whereas most (social) scientific explanations, models, and theories have restricted scope and require weighing different epistemic virtues against one another.

The relevance challenge is one that has been put forth by several philosophers and social scientists especially in connection with John Searle's (1995; 2010) views about social reality. These views have struck many naturalistic philosophers and social scientists as reflecting a poor understanding of social scientific research methods, in addition to overlooking decades of research in social theory concerning topics such as the interplay between agency and social structure (e.g. Turner 1999). However, the relevance challenge is best understood as not only involving the idea that social ontology is inadequately informed by social scientific practice, but also that theories in social ontology have limited applications to the types of questions that social scientists are interested in addressing. For example, while macroeconomists try to understand what causes brings about inflation or deflation (e.g. an increase in the monetary supply), a Searlean account of the ontology of money as a status function, which gives its owner the right to purchase certain goods, does not seem to help social scientists in explaining or predicting relevant macroeconomic phenomena (cf. Hoover 2006). This may not be a problem for foundationalist philosophers, who think that social ontology addresses questions that are conceptually or logically prior to the questions that social science addresses (e.g. Searle 2010). However, for those who take methodological naturalism seriously, the seemingly inconsequential nature of social ontology for social scientific practice is a lamentable fact.

The epistemic challenge concerns the common practice of justifying philosophical views about social ontology by appeal to conceptual intuitions (e.g. Epstein 2015; Searle 1995; 2010) or by a transcendental method of reasoning (e.g. Bhaskar, 1979), which is thought to provide access to some more foundational source of evidence about the structure of the social world than anything that can be accessed by the empirical methods of the social sciences. Understandably, claims of access to a special source of philosophical knowledge sound preposterous to methodological naturalists, who deny "that there is something special about the social world that makes it unamenable to scientific investigation, and also denies that there is something special about philosophy that makes it independent or prior to the sciences in general and the social sciences in particular" (Kincaid, 2012b, 3). Moreover, given that many philosophical accounts of social ontology seem to involve numerous abstractions and idealizations about social agents and the social world (Sarkia, 2022), and that all social scientific knowledge is partial and fallible, it seems hard to sustain the idea that they could possibly provide a priori access to the metaphysically *necessary* conditions of social reality as a whole.

The scope challenge concerns the feasibility of the entire project of formulating general ontological views about social facts or social reality as distinct from what are sometimes described as "brute facts" (Searle, 1995, 2010) or simply as

"nature" (Bhaskar, 1979, 45). This challenge deserves to be taken seriously, given that the trend in many social sciences has been towards more local and contextual explanations, which stand in contrast to the grand unifying theories of the past (Hedström & Ylikoski, 2010; Kaidesoja, 2019; Merton, 1968; Little, 2016). Moreover, even within a particular domain of social phenomena, there can be important trade-offs between the epistemic virtues of different models and theories, such as accuracy, cognitive salience, and degree of integration (Ylikoski & Kuorikoski, 2010; cf. Matthewson&Weisberg 2009). This is why we think that neither the distinction between global and regional ontologies (e.g. Elder-Vass 2012) nor the distinction between social facts and institutional facts (e.g. Ludwig 2017; Searle 2010) go far enough in accommodating more context-dependency and pragmatic considerations within social ontology. Rather, we think that addressing the scope challenge requires evaluating the domains of application of theories in social ontology on a case-by-case basis, regardless of whether they turn out, on the basis of numerous such piecemeal applications, to have relatively wide scope or quite restricted scope indeed.

Overall, we agree with the naturalistic criticisms of traditional approaches to social ontology that we have summarized above. However, we also agree with what Richard Lauer (2019, 173) has described as the "Ontology Matters (OM!)" -thesis, or the idea that "social ontology matters to the achievement of prediction and explanation in social science… because a better ontology can aid in the generation of predictive and/or explanatory improvements for the social sciences" (as well as—potentially at least—in the pursuit of some further goals, including normative ones (cf. Haslanger 2000)).[5] Thus we should not abandon the enterprise of social ontological theorizing altogether. What needs to be done is to improve research practices in social ontology so as to make them answerable to the three challenges that we have outlined above. With this goal in mind, we intend to demonstrate how two recent naturalistic approaches to social ontology—the model-based approach of Sarkia (2022; 2021) and the inferential approach of Kaidesoja (2013a)—fare in overcoming these three challenges. While these two approaches draw on analytic philosophy and critical realism, respectively, we should emphasize that we view ourselves as critically positioned in relation to each of these traditions, and do not aim to defend establishment views in either of them. Rather, the two approaches that we will discuss should be evaluated on their own merits.

4 Naturalism as indirect theoretical modeling of the social world

The context for the first naturalist approach that we will discuss sits within the tradition of analytic philosophy and the work of philosophers like Michael Bratman, Margaret Gilbert, John Searle, and Raimo Tuomela dating back to the end of the 1980s

[5] Lauer (2019) defends a pragmatic approach to social ontology, according to which "social ontology can aid in empirical success by introducing statements into our social scientific theories/models that make them empirically adequate… [but] do not entail a commitment to what there is". He distinguishes his approach from a realist approach, according to which "social scientific theories and models become empirically adequate by determining what there is". For commentaries on Lauer's interesting paper, see Kincaid (2021), Little (2021), Lohse (2021)—as well as Lauer (2021; 2022).

and the early 1990s. As we noted in the introduction, social ontology in the analytic tradition is closely connected with the philosophy of action, especially debates related to collective intentionality, and it is characteristic of this tradition that a sharp distinction between metaphysics or ontology and (action) explanation is not viewed as particularly central. For example, Margaret Gilbert (2003) describes the notion of *joint commitment*—her proxy for collective intentionality—as revealing the "structure of the social atom". This suggests that she views it as not only a central concept in understanding joint action, but as a foundational principle of social life that is nearly comparable to the atomic theory of matter in terms of its unifying power. Some more recent contributors to analytic social ontology, such as Brian Epstein (2015) and Francesco Guala (2016), have distanced themselves from an overemphasis on collective intentionality as the primary type of "glue" that holds the social world together, but even for them, a close connection between social ontology and (intentional) agency retains central status. For example, Guala (2016) analyzes social institutions, such as marriage and money, as *rules-in-equilibrium*, i.e. rule-governed social practices that no participant has an incentive to deviate from provided that others continue following the associated norms (e.g. accepting certain pieces of government-backed paper as payment for goods). And even for Epstein (2015) collective intentionality is one of the "anchoring schemas" that provide the metaphysical grounding conditions for social kinds. Of course, both Epstein (2015) and Guala (2016) reject the claim that *all* institutional facts depend on collective intentionality or collective recognition—against Gilbert (2013), Searle (1995; 2010), and Tuomela (2007; 2013). We are inclined to agree with them on this point.

The naturalist approach that we will expound in this chapter was first presented as a response to what Sarkia (2022) describes as the *naturalist's conundrum*, or the challenge of squaring the relevance and relative autonomy of philosophical research on social ontology relative to the broader range of disciplines studying social reality. As Sarkia (2022) notes, many contemporary researchers in social ontology claim to make some type of concrete, tangible contribution to our understanding of the social world, and at least notionally reject the possibility of special forms of *a priori* philosophical knowledge (e.g. Tuomela 2007, vii-viii). Still, their accounts are almost entirely based on conceptual analysis or some other form of philosophical analysis that seems distant from the day-to-day research practices that many social scientists occupy themselves with, consisting largely (although not exclusively) of gathering, interpreting, and processing empirical data about social phenomena. This raises the question how social ontology can be practically relevant for empirical social scientists, while also retaining the type of partial independence that seems desirable to safeguard, unless philosophers are willing to trade their metaphorical armchairs for labcoats, fieldwork, and serious training in social scientific research methods (a prospect that even many naturalists seem reticent to endorse).

In response to the naturalist's conundrum, Sarkia (2022) notes that there are also certain well-established forms of scientific practice, which are carried out at a certain remove from empirical investigation. The particular forms of scientific practice that he is interested in are *theoretical modeling* and *model-construction* (see Downes 2011; Giere 1988; 2004; Hausman 1992; Mäki 2009; Suarez 2004; Weisberg, 2007; 2013). They are often initially based on the construction and study of hypothetical

(e.g. the solar system model of the atom) or concrete (e.g. an aeroplane wing in a wind tunnel) surrogate systems. These surrogate systems can then (in the second stage of model-based science) be used to draw inferences about some target systems that are presumed to be similar (to some degree or in certain respects) to the surrogate system in question (Giere, 1988, 2004; Godfrey-Smith, 2006). Importantly, the target system may remain relatively vaguely unspecified at the time of constructing and studying the model, and theoretical models can also be studied in their own right, independently of the formulation of detailed hypotheses about how the model fits its target. Sarkia (2022) takes this to indicate that model-construction enjoys a certain degree of independence from direct empirical study of the (social) world, even if models eventually need to be calibrated to their targets. Given that scientists use theoretical models to make claims about the world only indirectly, by the mediation of *theoretical hypotheses* (Giere, 1988) or *ontological construals* (Godfrey-Smith, 2005; 2006) that connect those models to the world, Sarkia (2022) also argues that theoretical models can accommodate many unrealistic abstractions and idealizations, which serve to make the models simpler and more tractable (Thomson-Jones, 2005), or that isolate hypothetical causes for social phenomena (Mäki, 2020). This type of flexibility can be accommodated by Ronald Giere's (2004) pragmatic account of the representational relation between a model and the world (see also Mäki 2009):

> *S* uses *X* to represent *W* for purposes *P* (Giere, 2004, 743)

The *S* term in the formula refers to the scientist or other user of the model, *X* refers to a concrete or non-concrete model (e.g. a scale model, a system of equations, or a computer simulation), W refers to the presumptive target of the model (which may be only incompletely specified), and P refers to the purposes to which the model is put (e.g. control, explanation, prediction, etc.). To take up an example from the social sciences, the X-term in the formula might refer to a game-theoretic matrix with a structure of payoffs that is characteristic of the Prisoner's dilemma, W might refer to the challenges of managing common pool resources, such as clean air or water, and P might refer to the goal of designing institutions that are resilient to the emergence of such challenges that are commonly described in terms of the Tragedy of the Commons (Hardin, 1968; Ostrom, 1990). Parenthesizing the variables in the formula, we thus get "(Ostrom) uses (PD) to represent (challenges of managing common pool resources) for purposes (of institutional design)". The same model might also be used for other purposes—for example, for drawing pessimistic predictions about how two nation-states that share a body of water will behave, for explaining the mysterious accumulation of waste and pollutants in that body of water after a foreign vessel has passed by, or for educating citizens in the hope that such educational interventions might lead them to act in a less self-regarding manner. Moreover, although a game-theoretic representation of the Tragedy of the Commons might be useful for capturing some features of the situation, there are further aspects that might be better represented by other models (e.g. if one believes that greater networks and interdependence reduce the incentive to overexploit shared resources).

To extend Giere's approach to the Searlean approach to social ontology, in this case the model would be represented by the linguistic formula "X counts as Y in

C", rather than a game-theoretic matrix, but the basic idea remains the same. Thus we might reconstruct his approach in terms of the formula "(Searle) uses (X counts as Y in C) to represent (ontology of money) for purposes (of metaphysical explanation)". Here, it seems that many of the difficulties that social ontologists have had in communicating their accounts to social scientists comes from strategic ambiguity about what the P-term in the formula stands for—many philosophers have written *as if* their accounts were capable of explaining contingent social facts (e.g. "Why did a particular revolution occur?"), while still framing their accounts in abstract terms that seem to make them better suited for explaining only general or stylized social facts (e.g. "What constitutes a revolution?" Or "Why do revolutions occur?"). However, even if some philosophers think that social ontology is engaged in a special form of metaphysical explanation that differs from the explanatory goals of social science (e.g. Epstein 2015; Schaffer 2016), we see no objection to the idea that social ontology could in principle also answer the *same* kinds of questions as ordinary social scientists, who are engaged in theoretical modelling and model-construction with the aim of answering highly general *how-possibly* (as contrasted with *how-actually*) questions about how certain general types of social phenomena come about (Ylikoski & Aydinonat, 2014). Thus, in our view at least, the type of knowledge that social ontology delivers need not be separated from the explanatory goals of social science, although we are aware that some philosophers wish to maintain a stricter separation between the two.

To provide another example of the application of a model-based approach to the domain of social ontology, Sarkia (2022) provides a detailed reconstruction of Raimo Tuomela's (2007; 2013) philosophical account of the "I-mode" and the "we-mode" as a deliberately stylized theoretical model of the social cognition and behavior of actual agents in the social world. Sarkia (2022) supports his revisionary interpretation of Tuomela's account by the numerous abstractions and idealizations that it involves, as well as the indirectness and partiality of its ontological commitments. He also draws parallels between these features of Tuomela's account and the types of unrealistic assumptions that are involved in standard models of rational choice in microeconomics, which presuppose that agents have complete, consistent, and transitive preferences, and that they always choose the options that they most prefer (see Hausman 1992; 2012; Varian 2009). While these assumptions are surely unrealistic, the standard microeconomic model of rational choice is typically *not* justified by its psychological realism, but by its mathematical tractability and its capacity to even out representational infidelities when applied in appropriate circumstances or on an appropriate scale—for example, because people are rational on average, or because irrational individuals tend to be weeded out in the contest for scarce resources.

The rationale for engaging in theoretical modeling in social ontology is arguably not radically different from the rationale for engaging in theoretical modeling in any other branch of science—given that society is a complex phenomenon, with multiple layers of feedback between our conceptualization of ourselves as occupiers of various social roles and our behavior as social agents, it may sometimes be more feasible to tackle the multifaceted relationships that social life engenders by constructing deliberately simplified theoretical models, rather than by attempting to directly observe and describe empirical regularities in social phenomena, or by estimating statistical

models concerning dependencies between macro-level variables.[6] For example, in Tuomela's (2013) we-mode account group agents, a group agent is first "collectively constructed" as an intentional agent that is the subject of attitudes and actions attributable to its members as a group, and then, through their identification with that collective agent, the members take its attitudes as premises in their "we-mode" reasoning, while setting aside their private "I-mode" attitudes in the group context (see also Hakli et al. 2011). This type of categorical, two-stage process can be regarded as an idealization, because we are in fact born to a social world with multiple pre-existing group identities to adopt, and most of these identities are neither explicitly constructed nor chosen (Little, 2009). Rather, some group identities continue to be tacitly adopted while others are simply forgotten as a result of diminishing uptake, and yet others undergo gradual changes over time as a result of individuals adapting their group identities to how they desire to be perceived by others. The types of abstract and idealized theoretical models that Tuomela's approach exemplifies can of course be made more realistic by applying them to particular cases, but at the same time they will tend to become less general.[7] Thus there seems to be a trade-off between generality and realism, which the scope challenge framed in the third section of this paper draws our attention to.

Social ontology in the analytic tradition has arguably been surprisingly successful in terms of its uptake among behavioral and social scientists, despite its relatively abstract character. For example, the evolutionary anthropologist Michael Tomasello has drawn on multiple philosophical models of shared intentionality in his work on the evolutionary and cultural origins of human cognition (Tomasello et al. 2005; Tomasello 2019). Similarly, the cognitive scientist and philosopher John Michael (2022) has designed empirical protocols for studying the features that affect the persistence of co-actors in shared activity, as well as their perceived sense of commitment, partly on the basis of Margaret Gilbert's (1990; 2013) philosophical account of joint commitment. The cognitive scientist Natalie Sebanz's idea of *shared task representations* or 'co-representations', where the actions of one's collaborative partner are represented under a common representational format with one's own actions (see e.g. Sebanz et al. 2006; cf. Gallotti&Frith 2013), may in turn be viewed as a partial operationalization of the idea of 'we-intentionality' that was originally proposed by Raimo Tuomela and Kaarlo Miller (Tuomela&Miller 1988; see also Searle 1990). Of course, these empirical and theoretical research programs do not necessarily seek

[6] Mitchell (2009b) connects the complexity of social phenomena to their historical contingency as well as the scarcity of social scientific laws. In these respects, Mitchell (2009b) compares the social sciences to biology, where she has argued for ontological pluralism according to which "there are multiple correct and useful ways to describe the world… [although] not every possible description will be either correct or useful… [and must be justified by] a combination of measures of predictive use, consistency, robustness, and relevance." (Mitchell, 2009a, 14).

[7] For example, Wendt (2004) applies philosophical theories of collective intentionality to the idea of the state as a person in international relations theory. However, as Wendt (2004, 294) points out, states may possess different degrees of external and internal sovereignty: some have internal sovereignty, but are not externally recognized as states (e.g. Taiwan), while others have external sovereignty, but very limited internal sovereignty (e.g. Somalia). Consequently, general models of social ontology that seem to presuppose both external and internal sovereignty in standard cases, such as Tuomela's (2013) we-mode account, cannot be uniformly applied across these cases.

to operationalize all of the conceptually most elaborate aspects of the philosophical accounts of social ontology that they are related to. For example, the experimental paradigms that have been used to study shared task representations in the laboratory do not seem to be sensitive to the distinction between the form and content of intentional states, which has been a major theme in philosophy (Sarkia, 2022). To us, the most plausible way to interpret such partial and selective uptake is in terms of the idea that behavioral and social scientists have interpreted philosophical accounts of social ontology in the manner that Sarkia (2022) recommends—as theoretical models, which idealize and abstract some aspects of social phenomena in order to bring others into sharper relief.

Drawing on the preceding discussion, we may conclude that Sarkia's (2022) conception of social ontology as indirect theoretical modeling of the social world is able to answer to the three naturalistic challenges that were framed in the third section of this paper. With respect to the relevance challenge, Sarkia (2022) emphasizes relevant continuities between philosophical models of social ontology and theoretical models used by social scientists, such as agent-based, game-theoretic, and network models. Even if philosophers make wider use of folk psychological concepts related to intentional action and agency in their accounts of the social world, this is not an obstacle, given that Sarkia (2021) has argued that the representational relation between these concepts and the world can itself be understood as a form of theoretical modeling (see also Godfrey-Smith 2005;). With respect to the epistemic challenge, Sarkia (2022) argues that theoretical modeling proceeds through ordinary methods of constructing hypothetical systems that are presumed to bear some degree of resemblance to relevant social systems. Given their hypothetical character, they cannot plausibly be taken to deliver knowledge that is more certain or necessary than knowledge delivered by empirical methods. In this respect, his account is at odds with foundationalist views that have emphasized the a priori nature and universal scope of social ontology. With respect to the scope challenge, Sarkia (2022) does not believe that there is any single correct or authoritative model of the ontology of the social world (cf. Teller 2001), nor does he think theoretical modeling is the only useful approach for studying social reality. Rather, theoretical modeling is one approach (among many) for studying the social world, and we may need multiple mutually complementary models that shed light on different aspects of social phenomena.

5 Naturalism as inference to the best ontological explanation of successful research practices

The second naturalist approach to social ontology that we will discuss in this paper critically engages with Roy Bhaskar's (e.g. 1975; 1979) critical realism and its descendants in the social sciences. Bhaskar and other critical realists, most notably Tony Lawson (e.g. 1997), have used neo-Kantian transcendental arguments to formulate general social ontologies and to inform criticisms of existing social scientific theories and research practices, such as rational choice theory (understood as a gen-

eral theory of action), some forms of methodological individualism,[8] and the practice of mathematical modeling in economics. Although critical realists commonly claim that their transcendental arguments are fallible (e.g. Bhaskar, 1979, 170), they place much weight on a priori reasoning based on our experience of intentional social action. Tuukka Kaidesoja (2005; 2013a; 2015a; 2015b; 2017) has criticized Bhaskar's and his followers' coupling of transcendental reasoning and scientific realism as foundationalist and theoretically incoherent, controversial in its presuppositions, and ambiguous in some of its conclusions (cf. Cruickshank 2007; 2010). Moreover, he has proposed an alternative naturalistic approach to social ontology in the critical realist tradition, which is inspired by the work of Mario Bunge, William Wimsatt, and Andy Clark[9]. Adapting these sources to analyze some research programs in the social and cognitive sciences, Kaidesoja (2013a; 2015) provides analyses of the concepts of social action, social system, social structure, social mechanism, social class, role set, and organization. Here we will focus on his methodology, which is based on empirical analysis of research practices in the social sciences and inference to the best explanation (Lipton, 1991). Kaidesoja (2013a, 98) proposes a general template for developing and justifying naturalist ontological theories that can be applied to social ontology as follows:

1) X is an epistemically successful social scientific practice described on the basis of empirical analysis of the practice.
2) If a specific aspect of the ontological structure of the social world were as described in propositions P1,…,Pn, then the epistemic successfulness of social scientific practice X would become more understandable.[10]
3) Propositions P1,…,Pn are compatible with the ontological commitments of current scientific theories, which are relevant for the social scientific practice X, and which have stood the test of critical evaluation by the relevant scientific community.
4) The explicit ontological propositions or implicit ontological presuppositions of competing philosophical positions, say Q1,…,Qn, are incompatible with propositions P1,…,Pn and the epistemic successfulness of X remains unintelligible from the point of view of Q1,…,Qn.

[8] As Udehn (2001) has shown, the idea of methodological individualism has been understood in rather different ways by social scientists over the decades. For an interesting contribution that connects historical work on methodological individualism to contemporary debates about micro-macro-relations, see Bouvier (2011).

[9] Kaidesoja (2013a, 2) understands naturalist social ontology as the study of "the ontological assumptions and presuppositions of the epistemically successful practices of empirical social research (including well-confirmed theories produced in them); and […] the [relevant] well-established ontological assumptions advanced in other sciences". He emphasizes that naturalist theories in social ontology are fallible, have no a priori justification, and cannot be based solely on everyday experiences.

[10] Kaidesoja's (2005; 2013a) earlier descriptions included the term "explanatory necessity" in premise 2. Since it is difficult to give a precise meaning to this term and since it is easily associated with the neo-Kantian notion of "transcendental necessity" (e.g. McWherter, 2015; 2017; cf. Kaidesoja 2017), we decided to eliminate this term from the second premise by reformulating it. We also slightly elaborated Kaidesoja's original descriptions.

5) The best explanation of the epistemic successfulness of practice X currently is that a certain aspect of the social world is as described in propositions P1,…,Pn.[11]

To elaborate, ontological theorizing for Kaidesoja (2013a) begins with identification of an epistemically successful research practice and empirical analysis of the practice (premise 1). Once the research practice has been identified and described in an empirically adequate manner, Kaidesoja (2013a) proceeds by comparing different ontological theories of the successfulness practice on the basis of two criteria. First, the criterion of explanatory relevance concerns whether the theory describes ontological conditions that (if true) would render it understandable why the practice has been epistemically successful (premise 2). Second, the criterion of external consistency concerns whether the proposed theory is compatible with the ontological commitments of other scientific theories that are relevant to the practice and have been accepted by relevant scientific communities (premise 3). Such theories may include social scientific, cognitive scientific, and biological theories, and the conclusions of the argument may be either highly general or restricted to some local aspects of social reality.

Since Kaidesoja's approach focuses on explaining the epistemic success of social scientific research practices, a natural question is how to determine and compare the epistemic success of these practices. Kaidesoja (2013a, 99) suggests that the epistemic success of a research practice can be understood in terms of its capacity to produce true (or approximately true) knowledge about reality, while acknowledging that scientists' criteria for evaluating degree of truthfulness are always indirect and fallible. Kaidesoja (2013a, 99–101) also emphasizes that the criteria of epistemic evaluation tend to be context-dependent, indirect, and relative to different research goals, while maintaining that that they are more general and stable than the particular research practices, theories, and models to which scientists apply them, thereby providing grounds for rational epistemic evaluation. In his later work, Kaidesoja (2017, 218) proposes that the epistemic success of a research practice can be empirically evaluated by relying on Ronald Giere's (2008) conditional account of operative epistemic norms in science in which these norms are expressed as conditional propositions of the form "if the goal is G, use method M" (p. 219). Kaidesoja (2017, 218) contends that this account allows us to empirically assess "how reliable a certain method M (or the scientific practice that is built upon the uses of the method M) actually is (or has been) in obtaining the goal G". Hence, this approach to social ontology does not presuppose any criterion of epistemic success whose validity is justified by an *a priori* argument.[12]

[11] Petri Ylikoski (2015, 336–337) asks whether Kaidesoja's template for naturalist ontological arguments can be practically applied given the alleged underdetermination of all scientific practices with respect to their ontological interpretation. In his response, Kaidesoja (2015b, 363–364) regards this type of underdetermination as a more restricted phenomenon than Ylikoski, and argues that the criterion of external consistency helps in addressing this problem.

[12] This view also contrasts with the idea that predictive success is the primary criterion for evaluating social scientific research practices—in contrast to what seems to be assumed, for example, by Hawley (2018) and Saunders (2020).

We think that Kaidesoja's naturalist approach to social ontology provides satisfactory responses to the three naturalist challenges that have been described above. The approach emphasizes that naturalist ontological theorizing provides practically relevant guidance to social scientists in deepening their understanding of the implicit ontological commitments of epistemically successful research practices, thereby allowing them to specify their conceptual, methodological, and theoretical views. The approach relies on inference to the best explanation, which is a fallible mode of reasoning that is commonly used in empirical science, and that is clearly distinct from *a priori* forms of argument. The approach can be applied to local research practices, and does justice to the context dependent nature of epistemic evaluation in social science. When comparing competing ontological theories that aim to account for the epistemic success of the same research practices, the approach highlights the criteria of explanatory relevance and external consistency in grounding comparative judgements about their relative epistemic virtues.

Kaidesoja's (2013a, 146–151, 157–159; 2013b) work on the ontological underpinnings of the practice of mechanistic explanation in the social sciences can be understood as an application of the proposed method. This argument starts with the observation that the practice of providing mechanism-based explanations for macro-social phenomena can in many circumstances be regarded as epistemically successful. However, some social scientists have defended a controversial ontological interpretation of this practice that Kaidesoja (2013a, 307) describes as "individual-level microfoundationalism". This view requires that all social mechanisms consist of interrelated individuals and their interactions and denies the existence of supra-individual social entities with causal powers.[13] By contrast, Kaidesoja (2013b, 312–314) argues that some successful mechanism-based explanations of phenomena, such as "state formation, rise of nationalism, democratization, revolutions, wars, globalization, or emergence of social policies" refer to collective agents (e.g. state agencies, nation-states, political parties, trade unions, and business firms) as parts of the macro-social mechanisms of competition, social conflict, environmental selection, coalition formation, compromise, and legislation. Moreover, Kaidesoja (2013b, 316–319, see also Kaidesoja 2012; 2013a, 169–172; Sarkia et al. 2020) argues that the (weakly) emergent cognitive capacities of such collective agents can be mechanistically accounted for in terms of distributed cognition (Hutchins, 1995). His argument conceptualizes agency in degrees, which allows understanding collectives as cognitive agents, but does not require them to be purposeful intentional agents comparable to human individuals in all respects.

[13] Kaidesoja (2013a) ascribes this doctrine to some prominent analytical sociologists on the basis of programmatic papers (e.g. Hedström 2005; Hedström & Bearman 2009; Hedström & Swedberg 1996), but he does not claim that all analytical sociologists are committed to it. As an anonymous referee correctly pointed out, some social scientists associated with analytical sociology, such as James Coleman (1990) and Raymond Boudon (1998), have accepted more nuanced views about the relation between individual-level micro-foundations and corporate agency. For example, Coleman (1990, 5) writes that "there is no implication that for a given purpose an explanation must be taken all the way to the individual level to be satisfactory. The criterion is instead pragmatic: The explanation is.satisfactory if it is useful for the particular kinds of intervention for which it is intended".

To provide another example, we will consider the organizational ecology approach that emerged in the 1970's. We take it that organizational ecology has been an epistemically successful research program, which has opened new research questions in organization studies, provided tools for understanding the diversity and change of organizations, and produced empirically supported explanations of the population dynamics of organizations (for a balanced overview and evaluation of this research program, see Scott and Davis 2003, Chap. 10). We focus here on the ontological underpinnings of organizational ecology, which understands organizations as historical entities that emerge at some point in time, grow or decline over time, undergo changes, and disappear at some point in time (for a comprehensive account of organizational ecology, see Hannan and Freeman 1989; for its later developments, see Carrol & Hannan 2000; Hannan et al. 2007).[14] Although organizations are to some extent capable of adapting to environmental changes through structural transformation, organizational ecologists argue that an organization's ability to adapt is often constrained by internal or external inertia (Hannan & Freeman, 1977, 931–933; 1989, 11–13; 66–90). For example, internal inertia may arise from sunk costs, limited information, internal politics, or binding agreements while external inertia may stem from legal regulation, the availability of information, legitimacy, and collective rationality problems (Hannan & Freeman, 1977, 931–933). Organizational ecology treats organizations with the same general form as organizational populations, whose members depend in similar ways on their social and material environments (e.g. Hannan & Freeman 1977, 935–936;1989, 45–46). For example, public universities, breweries, and labor unions in the United States can be described as organizational populations that have distinctive forms pertaining to their control structures, social networks, technological factors, patterns of collective action, and degrees of institutionalization (Hannan & Freeman, 1989, 53–57; Chap. 6).

Empirical research in organizational ecology has focused on describing and explaining "the rates at which new organizations and new organizational forms arise, the rates at which organizations change forms, and the rates at which organizations and forms die out" (Hannan & Freeman, 1989, 7). One of the most important generic processes (or mechanisms) that organizational ecologists invoke in their explanations of observed historical changes in organizational populations is environmental selection. They have modeled such environmental selection in terms of the twin processes of (i) competition between organizational populations for scarce resources, such as members, capital, and legitimacy, and (ii) their component organizations' differential adaptations to environmental changes, such as regulatory changes and changes in other organizational populations (Hannan & Freeman, 1977, 1989). Although the analogy between biological species and organizational populations is restricted (e.g. Hannan & Freeman 1989, 143–144), this has not prevented organizational ecologists from applying theoretical models from population ecology to the population dynam-

[14] Organizational ecologists are aware of the limits of the analogy between living organisms and organizations—for example, organizations emerge and dissolve in heterogenous ways, may be immortal, lack clear parent organizations, do not rely on genetic transmission of information, have multi-layered and partially decomposable structures, form highly heterogenous populations, may change populations through radical transformations, and may significantly shape their own environments (Carrol & Hannan, 2000 40).

ics of organizations over long periods of time and testing these models against different types of data sets.[15]

Assuming that the above description of the basic ideas of organizational ecology and its epistemic successfulness are sound, we can apply Kaidesoja's argumentation template to organization ecology as follows:

1. Research in organizational ecology has been an epistemically successful social scientific practice.
2. If organizations were adaptive agents (constrained by internal and external inertia) that function as components of selection mechanisms, then the epistemic successfulness of organizational ecological research would become more understandable.
3. The idea that organizations are adaptive agents (constrained by internal and external inertia) is compatible with an account of organizations in terms of distributed cognition, and the idea that supra-individual entities may function as parts of environmental selection mechanism is compatible with group selection models in evolutionary biology.
4. The epistemic successfulness of organizational ecological research would not be understandable, if all the components of social mechanism were restricted to human individuals, or if all organizations were unitary rational actors capable of flexible adapting to environmental changes in an optimal way.
5. The best explanation of the epistemic successfulness of organizational ecology is that some organizations are adaptive agents (constrained by internal and external inertia) that function as components of selection mechanisms operating between organizational populations.

To provide some inevitable caveats, we would like to emphasize that this argument applies only to those organizations that have been successfully studied by organizational ecologists, and should not be overextended to all social formations that we call organizations (in this sense, the argument is local).[16] Moreover, we would like to point out that given their internal and external inertia, organizational ecologists contrast their position with naïve adaptationist arguments that presuppose that environmental selection always produces organizations that are highly adapted to their environments (Hannan & Freeman, 1989, 21–22; 35–36). With these caveats in

[15] Reydon and Scholz (2009) argue that organizational ecology is not a genuinely Darwinian research program, because of limitations in the analogy between biological evolution and organizational evolution (see also Lohse 2017, 16–17). They may be right in claiming that organizational ecologists have exaggerated the Darwinian nature of their research program especially in the early phases of this program (e.g. Hannan & Freeman 1977). However, whether or not it is a Darwinian research program, we think that organizational ecology can be regarded as an epistemically successful *social* scientific research program. Partial disanalogies between biological evolution and organizational evolution arguably imply that the concepts borrowed from evolutionary biology should be re-interpreted when applied in the context of organizational ecology. However, this does not imply that organizational ecology provides bad explanations compared to other social scientific explanations (cf. Reydon & Scholz 2009, 433–435).

[16] We restrict this ontological argument to organizations since determining the ontological status of organizational populations raises additional challenges due to the disanalogies between biological and organizational populations (see Reydon & Scholz 2009; cf. Hannan & Freeman 1989, Chap. 3).

mind, perhaps the most controversial part of the argument is premise 3, since distributed cognition and group selection remain somewhat controversial ideas in cognitive science and evolutionary biology (for discussion, see Milkowski et al. 2018; Okasha 2006). However, given that the methodological views defended in this paper do not depend on this particular case, we think that the preceding application is sufficient for illustrating the application of Kaidesoja's inferential template to particular social scientific research programs.

To consider another brief example, Daniel Saunders (2020) recent article on the ontological underpinnings of social epidemiological research on the contextual effects of income inequality can also be reconstructed from the viewpoint of Kaidesoja's approach. Contextual effects refer here to a situation in which high income inequality in a society increases the probability of health problems in the whole population, rather than only in the groups with low-income (e.g. Wilkinson & Pickett 2006). Saunders (2020) applies inference to the best explanation to this body of research in order to provide evidence for the existence of "psychological entities, like social trust and self-esteem, and social entities, like the social status structure and populations" (Saunders, 2020, 148) as well as "psychosocial processes, such as status competition, anxiety, stress, and distrust" (Saunders, 2020, 153), which are referred to in the empirical descriptions and theoretical explanations provided in this research practice. Saunders (2020, 153) observes that social scientific theories do not directly address ontological questions regarding the nature of these entities, such as whether they can be plausibly interpreted from the viewpoint of ontological individualism. However, Saunders' (2020) analysis of the research program of income inequality can be understood as a promising starting point for conducting more detailed inquiries concerning its ontological commitments.

6 In defence of methodological pluralism in social ontology

This section will compare Sarkia's and Kaidesoja's naturalistic approaches to social ontology to one another, and to certain other research programs that have gained prominence in social ontology during recent decades. Before proceeding, we should remind the reader that we are primarily concerned with *methodological* questions related to social ontology, not with defending any particular ontological account of specific social phenomena—e.g. advancing substantive views about the constitution of gender and race (Asta, 2018; Godman, 2021; Haslanger, 2000; Mallon, 2016; Spencer, 2015), or social institutions, such as marriage or money (see Epstein 2015; Guala 2016; Searle 2010). We think that Sarkia's and Kaidesoja's approaches are compatible with many different substantive ontological positions, even if some can of course be regarded as better justified than others. We would also like to suggest that Sarkia's and Kaidesoja's approaches may sometimes lead us to similar ontological conclusions from different methodological viewpoints, allowing us to lay claim to something akin to the phenomenon of methodological triangulation in the domain of social ontology (cf. Eronen, 2015; Weisberg, 2006; Wimsatt 2007; Woodward, 2006). This being said, we think that that such triangulation is always likely to be a local and pragmatic affair, which requires attention to the details of the social phenomena

in question, making an entirely domain-general and non-contextual ontology of the social world an unlikely prospect.

To illustrate the possibility of triangulating different methodological perspectives on the same set of social phenomena, let us return to the idea of organizations as collective agents, which has been a common thread in many discussions of social ontology. In their well-known work on the *discursive dilemma*, Christian List and Philip Pettit (2011) have argued that it is possible to identify certain profiles of individual attitudes, which can be aggregated into multiple different internally coherent and consistent profiles of collective attitudes by using different aggregation functions, which take these profiles of individual attitudes as inputs (e.g. the premise-driven or conclusion-driven procedures). They take such divergence between multiple different rationally permissible collective perspectives in a group to support the reality of group agents, or the view that certain types of organized social groups can be treated as autonomous entities that are (almost) on a par with individual agents with respect to their intentional properties, even if they depend in various ways on individuals acting as their proxies. Their decision-theoretic analysis of group agency can be contrasted with our preceding analysis of the ontological underpinnings of the research program of organizational ecology in terms of organizations as adaptive agents (constrained by internal and external inertia), which are subject to environmental selection mechanisms.[17] While both approaches support treating some organizations as agents, they differ with respect the methodological procedures and criteria that lead them to this conclusion. While List's&Pettit's (2011) decision-theoretic approach can be accommodated as a special case of Sarkia's (2022) model-based perspective, our earlier argument concerning organizational ecology draws on inference to the best explanation and case studies of empirical research programs in the social sciences.

The two approaches of course differ to some extent with respect to their theoretical goals, and therefore should not always be expected to lead to the same conclusions (even when these conclusions are compatible). In particular, Sarkia's approach often leads to the formulation of *how-possibly* -models, where the existence of the entities that are represented in a theoretical model is hypothesized rather than conclusively affirmed. By contrast, Kaidesoja's inferential approach has the aim of providing abstract ontological descriptions of the real entities and processes that underlie epistemically successful social scientific research practices. This entails that Sarkia's approach is much more liberal in the sense that it can accommodate multiple contrasting models of the same phenomena, where the degree of realism that these models incorporate is ultimately left for behavioral and social scientists to explore.[18] For example, in economics, preferences have been modeled as behavioral phenomena, as cognitive phenomena, and as neural phenomena (for recent discussions, see e.g. Beck 2022; Guala 2019). Sarkia (2022) does not seem to regard it as the task of philosophi-

[17] Daniel Little's (2020, 260) provides a similar account of organizations as agents manifesting "bounded localistic organizational rationality" and suffering from dysfunctions that limit the coherence, unity, and consistency of their beliefs and actions over time.

[18] Parker (2006) has shown by reference to climate science that it may sometimes be epistemically useful to have multiple (and even mutually incompatible) models of the same phenomenon. In a different context, Rodrik (2015) defends the use of multiple models in economics, while Veit (2020) distinguishes between weak and strong forms of model pluralism.

cal investigation to determine which of these models is the correct one, although he thinks that philosophers can aid in constructing, elaborating, and refining relevant theoretical models. By contrast, Kaidesoja (2013a) believes that philosophical study can play a more substantive role in adjudicating the ontological commitments of epistemically successful research practices in the social sciences.

The perception of complementarity can be enhanced by noting that the two approaches also differ to some extent with respect to their domains of application. As already noted above, Kaidesoja's inferential approach is applicable only to relatively mature social scientific practices and research programs that have proven their successfulness (see steps 1 and 3 of his inferential template). On the other hand, Sarkia's model-based approach is applicable even when our knowledge of the target phenomenon is poor or incomplete. In such circumstances, model-construction can play a valuable role in generating initial ontological hypotheses about the types of entities and processes that could give rise to the phenomenon, although these models need to be later calibrated and tested against empirical data. While neither claims to provide access to anything as controversial as the "conditions of possibility" of social activities (Bhaskar, 1979, 50) or the "logical structure of institutional reality" (Searle, 2010, 120), the inferential approach does seem to provide access to more reliable knowledge, when it is applicable. Importantly, this is not so in the case of research programs that are at an early stage—the controversial case of neuroeconomics might be proposed as an example where the best ontological interpretation of certain types of choice-theoretic data is still very much in the open (Fumagalli, 2016, 2017). The trade-off between more reliable knowledge and a more restricted domain of application in Kaidesoja's inferential approach is accordingly mirrored in Sarkia's model-based approach as the inverse trade-off between less reliable knowledge and a wider domain of application. In this sense, the two approaches have different, but complementary epistemic virtues.

To our minds, the central question for contemporary social ontology is not whether social ontology should be more intimately connected with the social sciences, as we agree with the numerous philosophers who have already argued for this point (Kincaid, 2021; Little, 2021; Ross, 2022). Rather, we take methodological naturalism as a starting point, and ask in what ways such a connection ought to be established. Given that a multitude of different methods are used in the social sciences as well as in the natural sciences (see e.g. Guala 2005; Weisberg 2013; Wimsatt 2007), simply insisting on a closer connection between social ontology and scientific practice goes only halfway in establishing what types of connections and continuities should be regarded as relevant. We think that an understanding of relevant continuities should be sensitive to how data about social phenomena is gathered, evaluated, and interpreted in different scientific fields, and grounded in an analysis of how philosophy can contribute to these tasks. For example, policy-related evidence in the medical and natural sciences is sometimes assessed in terms of an evidence hierarchy, where randomized controlled trials (RCTs) are thought to provide the most reliable grounds for causal generalizations (for a critical take, see Deaton&Cartwright 2018). By contrast, experimentation has historically had a much lesser role in many social sciences, and although new experimental programs have risen in fields such as behavioral economics and social psychology during the latter half of the 20th century, important

methodological challenges remain in interpreting their internal and external validity (Guala, 2005).

We think that a balanced approach to social ontology should be sensitive to such field-specific differences in research practices and epistemological standards, and evaluate ontological claims in terms that are sensitive to the quality of evidence that is offered. For example, the claims of certain analytic philosophers to the effect that collective acceptance or recognition is a necessary feature of all social institutions (e.g. Searle 2010; Tuomela 2013) strike us as hyperbole, given an interpretation of these accounts as theoretical models (Sarkia, 2022). Similarly, we firmly reject the a priori methodology of transcendental reasoning endorsed by many critical realists (e.g. Bhaskar, 1979; Lawson 1997), although we think that their goal of analyzing the ontological structure of social reality can be partially rehabilitated as a form of inference to the best explanation (Kaidesoja, 2013a). Accordingly, while taking methodological naturalism seriously may require giving up the universal scope and infallibilist epistemology presupposed by many traditional approaches to social ontology, we think that this will come with the benefit of greater relevance to social science. Although addressing the three naturalistic challenges that we have identified may not leave social ontology unchanged, it is likely to leave it with a broader interdisciplinary audience and to make it stronger as a research field.

7 Conclusions and summary

This paper has discussed two methodologically naturalistic approaches to social ontology, which critically engage with the traditions of collective intentionality theory and critical realism, respectively. Matti Sarkia's (2022; 2021) approach relies on a Gierean, model-based approach to scientific theorizing, which draws on methodological continuities between philosophical research on collective intentionality and practices of theoretical modeling across the natural and social sciences (see Godfrey-Smith, 2006; Hausman 1992; 2012; Mitchell 2009a; Mäki 2009; Parker 2006; Weisberg 2007). Tuukka Kaidesoja's (2013a) approach uses inference to the best explanation to analyze the ontological presuppositions of successful social scientific research practices, drawing on empirical research in organization studies, political science, and sociology (among others) to make his case. We have argued that Sarkia's and Kaidesoja's approaches both provide satisfactory answers to three criticisms that have been directed at traditional approaches to social ontology from a methodologically naturalistic viewpoint: the relevance challenge, the epistemic challenge, and the scope challenge. Through our comparison of these two approaches, we have supported a form of methodological pluralism in social ontology, which we understand as the idea that there are many naturalistically acceptable ways of pursuing social ontological inquiry, just as there are many different methods of scientific research. The two approaches that we have analyzed are not mutually exclusive, and they need not be exhaustive of all possible naturalistic approaches to social ontology (given the open-ended nature of scientific inquiry). Rather, we have argued that they can sometimes play complementary roles, and there is room for exploring yet further continuities between social ontology and social scientific research practices.

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Conflict of Interest there are no conflicts of interest to report.

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