How to Philosophically Tackle Kinds without Talking About 'Natural Kinds'

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Abstract

Recent rival attempts in the philosophy of science to put forward a general theory of the properties that all (and only) natural kinds across the sciences possess may have proven to be futile. Instead, I develop a general methodological framework for how to philosophically study kinds. Any kind has to be investigated and articulated together with the human aims that motivate referring to this kind, where different kinds in the same scientific domain can answer to different concrete aims. My core contention is that non-epistemic aims, including environmental, ethical, and political aims, matter as well. This is defended and illustrated based on several examples of kinds, with particular attention to the role of social-political aims: species, race, gender, as well as personality disorders and oppositional defiant disorder as psychiatric kinds. Such non-epistemic aims and values need not always be those personally favoured by scientists, but may have to reflect values that matter to relevant societal stakeholders. Despite the general agenda to study 'kinds,' I argue that philosophers should stop using the term 'natural kinds,' as this label obscures the relevance of humans interests and the way in which many kinds are based on contingent social processes subject to human responsibility.

Keywords: natural kinds; science and values; non-epistemic aims; non-epistemic values; race; gender; psychiatric kinds

1. Introduction

Naturalistic approaches have recognized the existence of natural kinds in different scientific domains and the diversity of kinds across disciplines. Recent years, however, have seen efforts by philosophers of science to put forward quite specific theories of what properties a kind must have to qualify as natural (e.g., Franklin-Hall 2015; Khalidi 2018; Slater 2015). As it turns out, each such theory captures some, but not all kinds found across the natural and social sciences, or it may fail to address scientifically important aspects of some kinds (Section 2). Consequently, rather than offering a general metaphysical theory of the features that natural kinds (and only natural kinds) have, I use this is a motivation to advance a general *methodological* framework for how to philosophically study kinds. Section 3 will lay out this guiding framework, which asserts that any kind is to be philosophically investigated together with the human aims and purposes that motivate referring to this kind in scientific theorizing and practice. Among other reasons, this is important because the particular aims underlying a kind determine which account of the putative nature and boundaries of the kind is the most appropriate one. Because of this, I emphasize that we need to be sensitive to different kinds in the same scientific domain serving different specific aims.

A core tenet of my framework is that the aims to which scientific kinds answer do not only include epistemic aims, but also *non-epistemic aims*—such as practical, environmental, political, and ethical aims. Because of this controversial claim, the bulk of my discussion will consist in several examples that illustrate the role and relevance of non-epistemic aims, especially social-political aims. In addition to the more well-known cases of species, race, and gender as biological or social kinds (Section 4), I will discuss psychiatric kinds, which have received little attention in the natural kinds literature, including personality disorders and oppositional defiant disorder (Section 5). One complexity we will encounter is that different aims underlying the same kind may pull in different directions, e.g., regarding favouring a wider or narrower boundary of the kind.

After having shed philosophical light on concrete cases, the concluding section will return to general issues, including the importance of articulating the specific aims underlying a kind and negotiating disagreements on which aims are relevant, and how to defend the legitimacy of the particular non-epistemic aims involved. Such non-epistemic aims and values need not always be those personally favoured by scientists, but may well have to include or reflect the values of relevant societal stakeholders, for instance, persons affected by diagnostic classifications in terms of psychiatric kinds. Although endorsing a general framework for how to philosophically investigate and discuss 'kinds,' I finally argue that philosophers should not use and instead abandon the term 'natural kind,' on the grounds that this traditional label obscures that kinds (including scientific kinds) are not just part of some order of nature but contingent on human aims and interests, and because the term 'natural kind' masks the involvement of social and other contingent processes in many kinds, so as to problematically convey that kinds are rather immutable than subject to human responsibility.

2. Rival theories of the nature of a natural kind

A brief and limited review of the recent natural kinds literature will suffice. For the primary function of this section is to reveal that it may be less fruitful to adjudicate the rival metaphysical theories of what a natural kind is that philosophers of science have proposed in the last decade, than to lay out a methodological agenda of how to philosophically articulate kinds (to which I turn in Section 3). Traditional philosophical visions have assumed that to be a natural kind is something distinctive. Thereby natural kinds are considered to be rare, only to be found in the natural sciences—a vision which is also fostered by the classical tenet that natural kinds are grounded in the mind-independent structure of the world. Examples of physico-chemical kinds have promoted the idea that a kind's identity rests in an essence, which has often (at least tacitly) been taken to be a single, microstructural property, such as the molecular structure of water as a chemical kind (Chang 2016). To a significant extent, this traditional vision of natural kinds still

persists in contemporary analytic metaphysics. Here the philosophical agenda commonly is to articulate the *fundamental* structure of the world. In line with this, natural kinds may be taken to exist only at the most fundamental level of science (i.e., physics), to form a fundamental category not reducible to any other ontological category, or to be analyzable in terms of a fundamental ontological category such as universals (Ellis 2001; Hawley and Bird 2011; Lowe 2006).[1] Scrutinizing such essentialist approaches to kinds (including the characterization of natural kinds in terms of modal necessity), Muhammed Ali Khalidi (2013, Ch.1) has made the case that one reason why such approaches are not informative from a philosophy of science perspective is that they fail to offer an account of what distinguishes natural from non-natural kinds (and Khalidi does not share the underlying 'fundamentality' agenda either).

In contrast to analytic metaphysics, in most areas of philosophy of science a *naturalistic agenda* prevails, which attempts to capture natural kinds as they are studied in the sciences (Kendig 2016a; Magnus 2012; Reydon 2010). This also includes the special sciences. In his intriguing book-length discussion, Khalidi (2013) discusses kinds from chemistry (polymer), biology (cancer cell), and cognitive science and psychiatry (attention deficit hyperactivity disorder), when assessing whether they qualify as genuine kinds (arguing that even polymer undermines stereotypical philosophical visions of the nature of chemical kinds). He makes the useful observation that Mill's expression 'real kind' may be better than 'natural kind,' but sticks to the latter given that this is the term philosophers have been using (see also Millikan 1998, 1999). 'Natural kind' may suggest that such kinds exist only in the natural sciences, but for Khalidi and many other philosophers of science it is a substantial question in which scientific fields real kinds can be found. Indeed, when introducing the concept to students, I always

[1] Social ontology is another prominent concern for current analytic metaphysics. These discussions address social kinds and other kinds outside the natural sciences (including artifacts), also acknowledging that social kinds are not mind-independent in some sense. At the same time, the kinds addressed in the social ontology literature usually are not taken to be (or are even contrasted with) natural kinds.

emphasize that the 'natural' in natural kind pertains to the basic idea that such a kind conforms to the structure of 'nature' in the sense of reality (and is not about the kind members being natural objects as opposed to artifacts). Some social kinds may very well correspond to actual structures and causal processes of social reality, so as to count as real kinds that support explanations in the social sciences.

While still endorsing some sort of realism about kinds—although often a modest realism with some pragmatic elements (Boyd 1999b; Macleod 2010; Magnus 2012; Reydon 2010; Slater 2015)—one implication of the naturalistic agenda in contemporary philosophy of science has been to discard the assumption that a natural kind is defined by an essence, often tacitly taken to be a single, intrinsic property. Instead, even classical examples such as biological species show that a natural kind can be internally heterogeneous. As a result, current accounts typically construe a natural kind in terms of a whole cluster of properties—properties that are correlated (so that the delineation of the kind is non-arbitrary and it serves scientific induction), but only imperfectly correlated (so that the kind can be internally diverse and have vague boundaries). In contrast to the traditional stereotypical assumption that natural kinds are defined by microstructural features, it is nowadays often acknowledged that the properties within the cluster need not be intrinsic properties, but can be relational properties, so as to capture causal interactions among kind members and other objects, or relations of copying and ancestry in the case of historical kinds (Griffiths 1999; Millikan 1999).

As is well-known, Richard Boyd (1989, 1991) propelled the naturalistic approach to natural kinds, attempting to capture biological kinds and even social kinds by introducing the property cluster framework. Articulated in more detail in Boyd (1999a, 1999b), his particular theory is that natural kinds are *homeostatic property clusters*. It maintains that in addition to the properties being clustered, this clustering must be due to some underlying mechanism, so that the clustering is not due to arbitrary linguistic convention, but rooted in reality (see also Craver 2009). Boyd dubs such a mechanism maintaining the correlation of properties a 'homeostatic mechanism.' Boyd's account has been immensely influential (Griffiths 1999; Wilson et al. 2007), and even

been adopted outside of philosophy by some biologists (Franz 2005; Rieppel 2005; Wagner 2014). More recently, however, not only has Boyd's notion of homeostatic mechanisms become subject of criticism, but alternative theories of natural kinds have been put forward by philosophers of science. The objections stem from the tenet that many natural kinds cannot be construed as being governed by homeostatic mechanisms (Chakravartty 2007; Ereshefsky and Reydon 2015; cf. Lipski 2020), where some have even wondered about Boyd's major example of biological species how any species' ability to undergo evolutionary change meshes with a species being governed by mechanisms ensuring homeostasis (e.g., Khalidi 2013, 77-78).

Khalidi (2013) puts forward a rival general theory of the nature of kinds, which maintains that natural kinds are *nodes in causal networks* (see also Khalidi 2018). On this account, a natural kind is a cluster of properties, where the property instances are related by causal connections. Causal relations are crucial for Khalidi, but they can form all sorts of networks with different hierarchical structures, which need not consist in one mechanism causing a correlation of all properties involved. Among several other examples of kinds that Khalidi investigates to show that they conform to his framework, he articulates the biological kind 'virus' in terms of the live-cycle of a virus, in this case resulting in a linear causal chain of properties—which is clearly not an underlying mechanism. Likewise, Matthew Slater's (2015) explicit starting point is that Boyd's insistence on homeostatic mechanisms is too restrictive, and he offers arguments that such mechanisms are neither necessary nor sufficient. Slater's alternative theory is that natural kinds are *stable property clusters*. In a nutshell, it maintains that the core feature of a natural kind is the stable clustering of properties, where Slater articulates this notion of stability in detail, among other things by the idea that these properties form a so-called clique. This entails that neither Boyd's mechanisms that underlie clusters nor Khalidi's causal relations within the cluster are necessary. According to Slater, stable clustering—being present for whatever empirical reasons—suffices to yield a genuine natural kind (for other accounts that do not insist on causal-mechanistic features, see Ereshefsky and Reydon 2015 and Magnus 2012). This picture is to my mind plausible for some instances of psychiatric kinds, where the causal etiology is unknown or

where there is scientific disagreement about it, while psychiatric researchers are still convinced that the set of symptoms pick out a genuine mental disorder (Godman 2013).

Thus, the situation is that even within the philosophy of science, there are different rival theories about what a natural kind is and how to draw the line between natural and non-natural kinds. Which is the correct one? One possible answer is: all, or rather none of them. Kinds across the sciences are so diverse that some kinds may be captured by one, but not by other substantial philosophical accounts (Ereshefsky and Reydon 2015; Spencer 2016). It may be generally plausible that even when considering only kinds from biology, some may be property clusters maintained by underlying mechanisms, without any defining causal relations within the cluster (on which Khalidi insists). Other biological kinds may form causal networks, without any underlying mechanisms (which are important to Boyd). Some may wonder why we cannot simply opt for Slater's account as the broadest one, given that the homeostatic property clusters recognized by Boyd and the causal networks recognized by Khalidi would also be stable property clusters. My response is that *some* scientific kinds have to underwrite causal explanations, in which case the causal relations that are relevant for this have to be included in the ontological construal of such a kind—a characterization of this specific kind that Slater's stable property cluster leaves out, so as to not capture scientifically important aspects of some kinds.

There are two reasons why it is not important for me to provide a defense of the suggestion that no single theory may suffice to capture kinds across all scientific domains (and for me to articulate the existing theories in more detail, although in the following sections I will say more about the above accounts where it matters to my main discussion). First, recently this case has already been made by David Ludwig (2018). He discusses in detail several philosophical theories, including some that I have not introduced above. Ludwig grants that some kinds are homeostatic property clusters, some are nodes in causal networks, others are stable property clusters, etc., but once "we understand all of this, however, there is no interesting epistemic or metaphysical work left for a general notion of natural kind" (2018, 47). It is indeed important to

know that a given kind is a node in a causal network but not a homeostatic property cluster, but then "there is nothing left to learn by asking whether it is a natural kind" (2018, 50). So a lesson that one could draw from this is that philosophers, including philosophers of science, better abandon the attempt to articulate the unique general theory of kinds in the sciences:

> there is nothing to lose by letting go of "natural kind." Instead, there are good reasons to assume that the aim of a general account of natural kind has become an obstacle that stands in the way of further progress in philosophy of classification. (Ludwig 2018, 47)

One could use this as a motivation for taking a further step. In addition to abandoning the search for the uniquely correct theory of the nature of a natural kind (that holds for all and only natural kinds), one could issue the verdict that philosophers of science should only investigate kinds on a case-by-case basis, so as to detail in each case the distinctive empirical features constituting this particular kind.[2] Such a 'deflationary' attitude would certainly eschew any general philosophical approach to kinds.

The other and more central reason for not assessing the different philosophical theories in detail is that my positive account is of a different type. As opposed to a *metaphysical* theory of what a natural kind is (and what properties distinguish natural from non-natural kinds), I am after a *methodological* agenda for how philosophers should go about when investigating kinds and articulating their features. Such a move to a methodological approach is motivated by the above problems facing any current theory of the nature of a natural kind, but we are about to see that

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[2] It does not matter whether Ludwig himself adopts this position. While rejecting an overarching theory of natural kinds, there is also a sense in which Ludwig still works closely with the existing philosophical theories, insofar as he also frames his approach as one that "integrates different proposals from the natural kind literature in a multidimensional framework" (2018, 32). But simply combining existing philosophical theories (e.g., by means of logical disjunction) may lose specificity and philosophical substance. For a particular kind, we want to know what the distinctive empirical features are that make it important in its scientific domain—a multidimensional framework that tells us that this kind (like any kind) conforms to one out of several accounts may not be sufficiently informative. That said, in Brigandt (2011) I came quite close to endorsing a deflationary, mere case-by-case approach.

there are independent reasons for why my methodological agenda is fruitful in any case.

3. A general methodological framework: Articulate any kind together with human aims

We have seen that despite naturalistic approaches in philosophy of science that attempt to do justice to kinds as they are found across the sciences, including special sciences, some philosophers (e.g., Khalidi 2013; Slater 2015) have recently endorsed quite specific theories of what ontologically counts as a natural kind. The potentially resulting stalemate among theories of the nature of a natural kind might suggest what I called a 'deflationary' attitude, i.e., nothing more than a study of kinds on a case-by-case basis. However, one drawback of philosophers of science stopping to talk about scientific kinds in general terms (and instead doing empirical case studies only) is that this cedes the game to the analytic metaphysicians, who may keep portraying natural kinds as being defined by essences or to be found in the natural sciences only. And there are merits to continuing with philosophical reflections on kinds (Conix and Chi 2020). Consequently, I do offer a more general framework for how to characterize and especially to investigate kinds. But this framework of mine is not so much concerned with putting forward a metaphysical theory that draws a line between natural and non-natural kinds; rather, it is primarily a general *methodological agenda* for how philosophers or anyone else should investigate and can fruitfully articulate kinds.

The *first component* of my framework is that natural kinds should always be articulated together with the *human aims* (often scientists' aims) that motivate referring to these kinds and employing them in theorizing and practice. Such aims have to be taken into account for two reasons. First, human aims entail whether a kind is a relevant kind. There are so many divisions in nature that one could consider a variety of kinds as real (Dupré 1993), even though they are of no importance to anyone. The substantive issue (for a naturalistic agenda) is whether a kind matters for some scientific context. The aims of scientists and others thereby justify in the first

place whether a putative kind is a relevant kind and thus a genuine kind—in the respective theoretical and practical context. Second, aims set the target for what the best account of the nature and boundaries of the kind actually are. As the below cases will illustrate, there are many situations where there can be disagreement on what the precise boundaries of the kind are, what the proper construal of the kind should be (e.g., an account of race as a biological or rather as a social kind), and even on whether it in fact exists. In scientific practice, there are also various standards operative (which like aims are a feature of human epistemic practices rather than mind-independent aspects of the world), some of which determine which scientific model is more suitable for a given scientific aim. On my account, the actual kind is that category whose boundary and empirical properties best serve the aims at stake (relative to background standards of what it means to successfully meet an aim).

Laura Franklin-Hall (2015) has put forward an account of natural kinds that in a sense puts epistemic aims and also practical aims center stage, but in a fashion unacceptable to me.[3] Her starting point is that a realist account that denies the relevance of human interests and aims is unviable. At the same time, she takes seriously the realist worry that making the naturalness of a kind contingent on certain aims makes kinds too stance-dependent as opposed to being objective. Her solution is the natural kinds as categorical bottlenecks account, according to which only those kinds are natural that "both ourselves and a large array of scientific inquirers with epistemic aims and cognitive capacities differing from our own would sanction in common" (2015, 940). On this vision, it is not enough that a kind serves our current interests, instead, the kind would have to be useful in all "scenarios in which, while all else remained the same, our practical interests were different than they actually are" (2015, 937). One immediate worry about her account is that it strongly restricts the totality of kinds that count as natural—in contrast to

[3] Franklin-Hall's account can be added to the recent philosophy of science theories about the nature of a natural kind covered in Section 2, and as we will see her theory makes very specific claims about which kinds are natural and which are not.

the trend within philosophy of science to make room for real kinds outside of physics and chemistry, such as social kinds. One may even wonder whether there are any such categorical bottleneck kinds at all (in her abstract discussion Franklin-Hall does not discuss any concrete example), given that she quantifies across all *possible* epistemic and practical interests, and when doing so appears to include non-human epistemic agents within the modal scope.

While starting out with human aims, Franklin-Hall (2015) actually factors them out. Since a categorical bottleneck kind is one that supports any possible aim, a specific aim (e.g., as pursued by some scientists) has no role in her approach to kinds. However, from a *naturalistic* perspective like mine, what philosophically matters are the *actual* aims that motivate a scientific community's reference to a particular kind, and not an unqualified range of counterfactual aims. To be sure, a consideration of some aims not currently pursued is fair game for contemporary philosophy of science, for instance when normatively assessing whether some current aims pursued by scientists are in fact legitimate aims, or whether they should be replaced by different, more socially responsible aims (Kourany 2010, Ch. 5). But such a relevance for alternative aims points to another lacuna in Franklin-Hall's perspective: instead of lumping together all currently pursued aims as "our idiosyncratic aims" (2015, 925) and contrasting them with the totality of possible aims, the philosophical agenda should be to distinguish those current aims that are in fact legitimate and scientifically important and those current aims that are dubious or insignificant (Goldenberg 2015; Intemann 2015). In the former case, a kind successfully addressing these aims counts as a genuine scientific kind, even if it could not serve any other aim and thus is very far from being a categorical bottleneck kind (sensu Franklin-Hall). Many kinds may well be able to serve several aims at the same time, possibly different human communities with different aims (Ludwig 2017). Or a kind that was primarily used for one aim may turn out to also be conducive to a scientific aim that only at a later point becomes relevant. Still, it is concrete aims, not a range of possible aims, that decide on the relevance and merits of a given scientific kind.

As such, my first step of giving scientific aims a positive role is not novel (Brigandt 2009;

Ereshefsky and Reydon 2015).[4] Indeed, already Boyd indicated that there is "an important sense in which natural kinds and their naturalness are not independent of human purposes, interests, aims and practices" (1999b, 57). When situating his theory of natural kinds in between a simplistic realism and a social constructivism, he invokes the notion of a disciplinary matrix, which in addition to conceptual resources and inferential practices includes "a family of inductive and explanatory aims" (1999b, 57). Kinds recognized by such a disciplinary matrix qualify as natural to the extent to which there is an accommodation of the matrix's inferential practices to relevant causal structures. This naturalness is not only contingent on the mind-independent structure of the world, but also depends on what the disciplinary matrix's inductive and explanatory aims happens to be (Boyd calls this his 'bicameralism thesis'). Because of the influence of human aims, Slater has in a similar vein concluded that "natural kinds (on [his] SPC view) are not an ontological category" (2015, 406). He views kinds as domain-relative, i.e., a kind may be natural for one, but not another scientific domain (see also Boyd 1999b, 57). Although for Slater there are no natural kinds *simpliciter*, we can legitimately ask "what kinds various domains of inquiry in fact recognize (or would recognize) given their present aims, interests, and norms" (2015, 404). However, more is needed than acknowledging that because of human aims a strongly realist construal of the naturalness of kinds (as independent from what the current scientific domains happen to be) cannot be obtained.[5] My framework also appeals to human aims as part of a *positive agenda* for actively investigating kinds: kinds need to be articulated together with the aims that motivate referring to these kinds. Thereby human aims become a central component of philosophical methodology (see also Bolker 2013; Ereshefsky

[4] And other naturalistic philosophers of science would likewise disagree with Franklin-Hall's account (see in particular Ereshefsky and Reydon forthcoming).

[5] "Allowing the interests and norms of a domain—even a particular research project—to influence whether a certain category counts as a natural kind might seem like a hefty dose of pragmatism to swallow. While some may applaud this, many with a sympathy for the realist presumption will worry. … I appreciate the worry, but ultimately think it is overstated." (Slater 2015, 405)

and Reydon forthcoming).

The *second and novel component* of my general methodological agenda is to give aims a *fine-grained* role. Previous discussions have used whole *domains* as the unit of analysis—not only Slater, but also Magnus (2012, 48) and Khalidi (2013, 188)—or the similar notion of a discipline or disciplinary matrix, as in the case of Boyd (see also Ereshefsky 2001, Ch. 5). Each such domain has certain "norms and aims" (Slater) or "a family of inductive and explanatory aims" (Boyd). But I do not treat a domain's various aims as a package deal, which would hold for all kinds used in this domain. My crucial move is to use *individual aims* (or sets of aims) as a more fine-grained unit of analysis, on the grounds that one kind may be employed for the purpose of some scientific aim, whereas another kind (in the same domain) may answer to a *different* set of aims.

Going beyond other philosophical accounts, this philosophical framework is much more fine-grained because it permits using different considerations not only for different domains, but for *different kinds* (even for different kinds within the same domain). Above I justified the need to take scientific aims into account because the specific aims (1) justify why a kind is a relevant and thus a genuine kind in the first place, and (2) are crucial for adjudicating what the best account of the kind's nature and boundaries is. Now it should have become clear that both of these reasons—especially the second one—pertain to an individual kind. To be sure, often some scientific aims may be common to the employment of several kinds in a domain, and the considerations for what should be considered as one genuine kind may bear on other kinds as well. But to the extent to which two kinds differ in some of the individual aims for which they are being used, this difference offers some important granularity for philosophically articulating each of these kinds. My methodological approach is to be open to drawing on the specific considerations pertaining to an individual kind wherever they obtain.

The aims I have in mind are often not generic or even universal scientific aims (e.g., putting forward explanations), but typically quite specific aims that are relevant to only some scientists

or only pursued in a certain context (e.g., explaining cell-cell signaling). This reveals that, apart from distinguishing kinds in terms of their underlying aims, my framework is also fine-grained by distinguishing different kinds of scientific aims. Both Boyd and Slater commonly talk about induction and explanation in one breath, as if these two aims were always pursued together.[6] In contrast, it is important for my approach to distinguish different aims and different kinds of aims, so that one can point out that one natural kind is used for certain inductive aims only (and not for the purpose of explanation), while another kind is meant to undergird specific explanations (Brigandt 2009). Khalidi also fails to appreciate the diversity of scientific aims. On the one hand, aims do not play a role in his very articulation of what makes something a kind as a node in a causal network; and his view that a kind is natural only in a certain domain is defended by him not in epistemic but in ontological terms, based on the level where causal properties reside (Khalidi 2013, Section 3.6). On the other hand, Khalidi does address epistemic purposes. Indeed, his approach of "grounding the epistemic efficacy of natural kinds in causal relations" (2013, xii) achieves plausibility and philosophical import given that natural kinds as construed by him can serve explanatory aims. However, when insisting that a property cluster is a natural kind only when causal relations among the properties are present, Khalidi tacitly reduces epistemic aims to the aim of causal explanation. Not only are not all scientific explanations causal explanations (Huneman 2018; Lange 2013), there are many other kinds of epistemic aims apart from explanation, to wit, classification, prediction, generalization, and even experimental discovery. A stable property cluster à la Slater may very well serve the important epistemic aim of classification or generalization—and thus be a genuine scientific kind—even when there are no causal relations (see also Brigandt 2009; Ereshefsky and Reydon 2015). On my framework, we have to distinguish different aims and different kinds of aims because a group of scientists may

[6] "the kinds in question are employed for induction and explanation" (Boyd 1991, 140), "successful inductive and explanatory inferences" (Boyd 1999a, 152), "a kind's inductive and explanatory utility" (Slater 2015, 396), "our inductive and explanatory efforts" (Slater 2015, 405)

pursue only one (kind of) aim, and because—regardless of how many aims one would like to be met—a kind may be able to serve some but not other (kinds of) aims.

The *third component* of my methodological approach and possibly the most controversial step is to bring in *non-epistemic aims* as an equal player (see also Ereshefsky and Reydon forthcoming; Ludwig 2016). This offers a broader perspective than prior accounts who have solely talked in terms of "epistemic purposes" or in terms of such scientific aims as induction, inference, and explanation (e.g., Boyd, Magnus, and Slater). And it is in direct opposition to those approaches that deliberately want to exclude non-epistemic purposes altogether. Most explicitly among naturalistic philosophers, Khalidi has denounced non-epistemic aims as bearing on the nature and articulation of scientific kinds:

> I distinguished epistemic purposes from other purposes, arguing that epistemic purposes are privileged since they aim to secure knowledge of real features of the universe … Nonepistemic interests have the potential to sidetrack investigators from uncovering real causal patterns … The mind-dependence of categories is not the problem, but rather the pursuit of nonepistemic purposes instead of epistemic ones. (Khalidi 2013, 216 and 22)

In stark contrast, I deem non-epistemic aims, including ethical and political aims, to have legitimate functions in science, and to be relevant for many genuine kinds—by means of bearing on the proper construal of the nature and boundaries of such kinds.

Overall, my general agenda maintains that a genuine kind can answer to a *combination* of epistemic aims and non-epistemic aims, including environmental, social-political, and practical aims. Non-epistemic aims may not be relevant for every scientific kind, but given that being mindful of the impact of non-epistemic aims would amount to the most crucial reorientation for the active study of any scientific kind in philosophy, I now turn to several examples to illustrate the legitimate and important role of non-epistemic aims, where I will devote particular attention to political aims. Given that one kind can answer to a combinations of several aims, it may also happen that different relevant aims pull in different directions, for instance one scientific aim favouring a larger extension of the kind while another calls for a more restrictive construal of the

boundaries of the kind. Even different epistemic aims may pull in opposite directions, but several of the below case studies will illustrate this issue in the context of non-epistemic aims, and I will later discuss what to make of such difficulties.

4. The relevance of non-epistemic aims and values

Species taxa are classic examples of biological kinds. As is well-known, there are many different species concepts, where biologists may prefer to use one such species concept in a certain context (Wilkins 2018). Different species concepts often result in different accounts of what the precise boundaries of a species taxon are and whether a group of organisms forms one or rather two species, so that the use of different species concepts results in the recognition of different biological kinds. Various considerations can bear on the choice of a species concept for a particular situation. Even when discussing this in terms of taxonomic classification rather than species as kinds, philosophers have noticed that non-epistemic purposes, especially ensuring the conservation of species, can play a role for biologists—see in particular Stijn Conix (2018, 2019) on the plurality of aims and low-level norms within taxonomy, including references to biologists who uphold the scientific significance of practical aims. For example, Ludwig (2016) points out how in the past the choice of the so-called biological species concept permitted the discerning of different species within the *Anopheles* genus of mosquitos and their geographical distributions. As these mosquitos transmit malaria to humans, this also resulted in a better understanding of the epidemiology of malaria, so as to serve the non-epistemic aim of reducing risks to human health. More recently, however, biologists have made the case that the practical aim of combatting malaria calls for the use of the phylogenetic species concept, as it is able to make more fine-grained taxonomic distinctions than the biological species concept (Attenborough 2015, as discussed in Conix 2019).

Another case that Ludwig (2016) discusses is the Alabama sturgeon, whose recognition as a distinct species (as opposed to a mere population within a larger species that as a whole would

not be endangered) resulted in its being listed as a critically endangered species. This was preceded by scientific, political, and legal debates, where the concerns of conservation biologists clearly played a role—many would argue a legitimate role. The aim of conserving such a popular species favours using a species concept that recognizes smaller taxonomic groups as distinct species. But I also need to point out that generally splitting populations into very small species leads to too many as well as small and thus vulnerable populations that are practically impossible to conserve; and concerns about reducing habitat fragmentation may instead favour the counting of several larger populations as encompassing one species (Frankham et al. 2012). This is an instance where different scientific aims (in this case different conservation aims) *can pull in opposite directions*, favouring a narrower or more encompassing boundary of a kind.

Given how much ink has been spilled on the plurality of species concepts, I will not belabour this prominent case any further, and instead simply highlight the basic lesson. My fine-grained methodological framework to scientific kinds is sensitive to situations where different kinds in the same basic domain answer to different aims, e.g., conservation aims being relevant for delineating some species taxa, but not for other taxa, where instead protecting human health or understanding speciation is an issue. Moreover, while my following examples of kinds involve social factors—so that it may be more plausible that such kinds also answer to social-political aims—the methodological framework also guides philosophers to reveal and articulate how non-epistemic aims matter for such purely biological kinds (and classic examples of natural kinds) as species.

A good example of a social kind answering to political aims is *gender*.[7] There is a substantial literature on gender, and different accounts of gender have been proposed, some focusing more on psychological features of one's gender identity, others more on societal gender

[7] More precisely, different gender categories such as man and woman are the kinds. And the philosophical discussions referenced below matter in the present context even if they were simply conducted in terms of gender and race, but not in terms of social or other *kinds*.

expectations. In fact, some feminist philosophers have even questioned whether any (unique) account of gender is possible or even desirable (Alcoff 1988; Heyes 2000). Obviously the persons belonging to one gender category, for instance different women, can have quite different social experiences, occupy different social positions, and possibly face different societal expectations. As a result, any account of 'woman'—even if it clearly construes it as a social kind that is culturally contingent—runs the danger of privileging some forms of femininity while excluding others (and failing to conform to considerations about intersectionality). Despite these complexities and the large literature on gender, it suffices for my purposes to cover the account by Sally Haslanger (2000). She obviously views gender categories as social (rather than biological) kinds, but Haslanger's construal still differs from prior accounts of gender in feminist scholarship:

> S *is a woman* iff_{df} S is systematically subordinated along some dimension (economic, political, legal, social, etc.), and S is "marked" as a target for this treatment by observed or imagined bodily features presumed to be evidence of a female's biological role in reproduction.
>
> S *is a man* iff_{df} S is systematically privileged along some dimension (economic, political, legal, social, etc.), and S is "marked" as a target for this treatment by observed or imagined bodily features presumed to be evidence of a male's biological role in reproduction. (Haslanger 2000, 39, see also 42)

This account does not have the empirically problematic implication that all persons belonging to one gender category have the same psychological identity or the same social experiences. Instead, it zeros in on one fact about social reality: that gender differences are one reason for generating and maintaining systemic discrimination in a society.

Yet Haslanger's approach is not just to capture some empirical facts or to pick out some real kind. Indeed, fully aware that her definition of 'woman' departs not only from ordinary use but also from prior accounts by feminist philosophers, she dubs her account an 'ameliorative' one (Haslanger 2005, 2006). This means that Haslanger advocates her account of gender as one that legitimately diverges from previous ones because hers is particularly conducive with respect to

"certain theoretical and political purposes" (2000, 46). Her feminist agenda is to provide an "effective tool in the fight against injustice," more precisely a construal of gender that answers to the "need to identify and explain persistent patterns of inequalities between females and males" (2000, 36). To be sure, there have been objections to Haslanger's account of gender. First, some have argued that even when granting Haslanger's political goals, her particular "analysis of *woman* may not best serve feminists' legitimate goal of fighting sexism" (Mikkola 2009, 568) or may even have the opposite effect than intended (Saul 2006, 139). This scrutiny underscores my point that it is a substantial empirical question which construal of the kind best serves the given aims, i.e., which among the various kinds capturing some aspect of social reality fits the aims at stake, which in this case are political aims.

Second, others have pointed out that in addition to the legitimate political aims that Haslanger recognized, there are additional or even more important aims, such as ensuring a concept of gender that is trans-inclusive (see also Dembroff 2020). This likely requires more than one account or definition of gender, which from my 'kinds' perspective means that there are actually several specific social kinds, each of which answers to a different set of aims (Brigandt and Rosario 2020; Jenkins 2016).[8] This exhibits complexity within the domain of feminist philosophy, but my fine-grained methodological framework is deliberately sensitive to the possibility that the important aim of explaining persistent patterns of inequalities between women and men and the crucial aim of recognizing the gender identity of trans persons have to be dealt with separately, if no single construal of gender can satisfy both political aims.

Gender is a social kind, so the involvement of non-epistemic purposes may be less controversial (although some, like Khalidi 2013, will want to keep non-epistemic aims out

[8] One should acknowledge, though, that Haslanger has stated from the outset that she does not view her account of gender as the only acceptable one: "the epistemological framework I employ is explicitly designed to allow for different definitions responding to different concerns." (Haslanger 2000, 36, see also 52)

altogether). But even in the case of sex as an ostensibly biological kind, one could make the case that the proper construal of what kind 'sex' is and how many different sexes there are in humans likewise answers to social-political concerns. In humans the different sex-related biological traits do not generally align and biological sex is non-binary, with research moving to view it as a spectrum (Ainsworth 2015). Among other things the question of how conceptualize the various intersex conditions seen in many persons implicate normative and political considerations. Children with intersex conditions may be medically treated, traditionally by surgery and more recently by hormone therapy (Kessler 1990; Warne et al. 2005), and often so as to ensure some binary sex/gender assignment. Because of this an answer to the question of how biological sex in humans is to be construed also has to be mindful of the fact that persons classified as being of one sex are perceived and treated in certain ways. I will not make this case for sex as a kind answering to non-epistemic aims in this paper (but see Butler 1993; Hyde et al. 2019; Sveinsdóttir 2011; van Anders et al. 2017), and instead focus on *race* as a kind that has a biological component while answering to political aims.

In the metaphysics of race, there are three basic camps. Anti-realism about race (or racial skepticism) denies that there are races, on the grounds that common conceptions of race are massively flawed (e.g., when assuming that there are clear biological differences between races and that races differ in terms of their behavioural and cognitive features), so that there are no kinds in reality that would correspond to folk conceptions of race. While maintaining that there are no races, anti-realists acknowledge that there are racial identities (Appiah 1996; Zack 1993). The arguably dominant but also quite diverse camp is social 'constructivism' about race, which views races as socially constituted in one way of another, basically defining races in terms of how racial identification works in a given societal context. The motivations for viewing race as socially real are to recognize the potent role that race plays in the social world or to promote (socially constructed) race as a positive resource for social communities. Finally, racial population naturalism construes races as biological populations, for instance those human populations that to a significant degree happen to be reproductively isolated or form different

phylogenetic lineages (Andreasen 1998; Kitcher 1999). Thereby race is viewed as a purely biological kind, without any connections to problematic folk conceptions about race. Indeed, while arguing that such reproductively isolated populations existed in the remote human past, racial population naturalists may acknowledge that such races are not present in modern societies (and certainly do not correspond to commonly identified races). However, then one may also wonder about the relevance of this construal of race. And despite its sober biological definition, it is not necessarily a use of 'race' imported from scientific discourse, given that population geneticists can go about their business without using the category 'race' and even physical anthropologists often avoid the term 'race' except for contexts where it is plainly about cultural identification of racial identity, so as to eschew promoting the idea that social conceptions about races have a biological basis (Pigliucci 2013; Templeton 2013; Yudell et al. 2016).

An appropriate construal of race better operate without a dichotomy between the biological and the social (Gannett 2010), as made vivid by Jonathan Kaplan's (2010) critical discussion of race-based medicine. A prominent example is the drug BiDil, which was approved as a treatment to prevent heart failure in African Americans. Given that differential drug efficacy presupposes different physiological features in different individuals, to the extent that some race-based drugs are effective, this suggests that there are physiological-medical and in this sense biological differences across some races. Yet Kaplan's point is that such differences need not be rooted in genetic differences. Instead, the physiological and health differences may very well be due to social discrimination, because such social differences (especially in a context like the US) affect diet, exposure to pollutants and toxins, and levels of stress experienced (a risk factor for hypertension and heart disease). Beyond the point that we should not interpret race-based medicine as getting at genetic differences, Kaplan's account—indicating how social differences may create biological differences—highlights the mutual influence of social and biological factors in the case of race (see also Lorusso and Bacchini 2015). This of course does not support the biological notion of racial population naturalism, but (more in line with a social 'constructivism' about race) suggests that an appropriate notion of race include various social

factors (societal practices of racial identification, racial discrimination, etc.) while also detailing how they interact with biological traits so as to form salient aspects of race in a society.

But my agenda is not to put forward one particular construal of race as a kind. Indeed, some accounts in the philosophy of race recognize different concepts of race (Hardimon 2017; Spencer 2018), which are used in different contexts and likely for different purposes. Such a diversity of aims is something that my fine-grained methodological framework can capture. But my main point is that whatever an appropriate construal of race may be, it also has to answer to non-epistemic aims (Hochman 2017). This case has explicitly been made by Ron Mallon (2006). Rather than arguing for a particular position in the philosophy of race, he points out that the three rival camps—skepticism, social constructivism, and population naturalism—actually agree on various empirical facts. Even the antirealist racial skeptics agree with the realist alternatives (which include social 'constructivism' recognizing races as a social phenomenon) about many biological and sociological claims. Mallon's central point is that the discussion about how to construe race should be *normative*. The debate is already implicitly normative, yet Mallon feels that the standard framing in terms of different positions in the 'metaphysics' of race (and associated semantic considerations in terms of reference) portrays the disagreement as largely factual (realism vs. antirealism, race as a social or as a biological phenomenon) and clearly obscures the priority of normative considerations. Mallon lists various normative considerations that are relevant for theorizing about race:

> the epistemic value of 'race' talk in various domains, the benefits and costs of racial identification and of the social enforcement of such identification, the value of racialized identities and communities fostered by 'race' talk, the role of 'race' talk in promoting or undermining racism, the benefits or costs of 'race' talk in a process of rectification for past injustice, the cognitive or aesthetic value of 'race' talk, and the degree of entrenchment of 'race' talk in everyday discourse. (Mallon 2006, 550)

It should be obvious that nearly all of these constraints are non-epistemic, and many are explicitly *political*, for instance, the aim of not promoting and preferably undermining racism.

The need to include non-epistemic, typically social-political desiderata has also been recognized in other recent discussions in the metaphysic of race (Haslanger 2000; Hochman 2017; Ludwig 2014). Note that some of Mallon's political desiderata pull in opposite directions. The aim of fostering communities, where in the present context such communities are shaped by racialized identities that provide a social resource, suggests that we construe race (at least for the time being) in the way that racial identification has been working in a given society. The aim of rectifying past injustice presupposes that we articulate the nature and origin of this racial injustice, which likewise appears to entail that we should operate with recent understandings of how to differentiate races. At the same time, these historical understandings of racial categories have generated racism and racial injustice in the first place, so that the important political aim of undermining racism (and doing away with racial injustice in the future) would need a different construal of what race actually is and how to think about the differences between races. But the fact that it is extremely difficult to meet several such aims (to the same extent) does not mean that we should declare some (or even all) of these political aims as irrelevant to a proper construal of race. I will say more on such complexities in the final section, but in a nutshell, they underscore the fruitfulness of my methodological framework, which calls for getting clear about and articulating the various aims underlying a specific kind.

5. Psychiatric kinds

A domain that has received quite limited attention in general philosophy of science discussions is psychiatric kinds, although many psychiatric kinds have some biomedical basis and implicate biological processes. A mental disorder such as schizophrenia is a kind in the sense that it groups all persons that have this psychiatric condition. The classifications in the Diagnostic and Statistical Manual of Mental Disorders, with the DSM-5 being the latest version, have seen major revisions over the last decades. Considerations about sets of symptoms having clinical validity have led to changes in the diagnostic criteria used to characterize mental disorders. Not

only does this mean a revision in what the exact boundary and nature of an individual mental disorder are deemed to be, but some psychiatric categories have been split into different mental disorders, once distinct conditions have been merged, and several psychiatric categories have been discarded altogether. This alone makes psychiatric categorization philosophically interesting, but occasionally the philosophy of psychiatry literature has even used the term 'kinds' and distinguished different types of kinds. For instance, it has been discussed whether some or all mental disorders should not so much be seen as 'natural kinds' (construed as showing clear boundaries that are given in nature and having a genetic or otherwise simple biological basis), but are better construed as '*practical kinds,*' where human practical considerations play a role, e.g., whether some trait calls for psychiatric treatment (Cooper 2004; Haslam 2003; Zachar 2002, 2014).

In the case of psychiatric kinds—as of any type of kind—one certainly has to acknowledge that not every non-epistemic aim that one could pursue is a legitimate one. Not even every aim that currently shapes the way in which the boundary and characterization of a psychiatric kind is construed need be legitimate. A case in point is major depression. Allen Horwitz (2014) points out that the boundaries of this kind have been loosened. Until the 1970s standard definitions stipulated that major depression requires prolonged periods of sadness, and that this sadness has to be 'without cause' in the sense of being disproportionate to the problems that the person has experienced on individual occasions. Thereby a loss of a job or an interpersonal relationship or a problem with one's physical health could be seen to be a cause accounting for short-term sadness without entailing a clinical diagnosis. Ever since, diagnostic criteria have become less strict, so that it has become possible to be diagnosed with 'major depression' upon exhibiting more transient responses to stressful social situations. Horwitz discusses several motivations for this development, including the social-professional interests of psychiatrists to establish their practice as a genuine medical specialty, where a medical model of mental disorders as brain-based conditions made it suitable to remove considerations about a person's social context from the diagnostic criteria (e.g., psychological responses to social loss). As another driver he identifies

the interests of pharmaceutical companies. In the 1980s, selective serotonin reuptake inhibitors came on the market, with the potential to replace benzodiazepines, which because of their serious side-effects had come into disrepute. Yet selective serotonin reuptake inhibitors were used to treat a variety of conditions, including anxiety. Approval by the Food and Drug Administration required demonstrating the clinical effectiveness for a specific mental disorder listed in the DSM. More so than the stigma-ridden condition of anxiety, the new and loosened diagnostic category of 'major depression' provided a suitable target for obtaining regulatory approval and for marketing selective serotonin reuptake inhibitors. Apart from illustrating the problematic impact that illicit non-epistemic interest can have, this also shows that one should not assume that research—including biomedical research showing pharmacological effectiveness—always leads us closer to genuine kinds.

Personality disorders are relevant for my purposes because Louis Charland (2004) has argued that some personality disorders are not medical kinds, but *moral kinds*. More precisely, he focuses on the cluster B personality disorders of the DSM-IV, which included antisocial personality disorder, histrionic personality disorder, narcissistic personality disorder, and borderline personality disorder.[9] Although many mental disorders involve some psychological or behavioural impairment, a reduced functioning relative to the demands of specific social and

[9] Traditional categorical models attempt to capture mental disorders as to a significant extent qualitatively discrete kinds. In contrast, dimensional models measure each of several psychological and behavioural characteristics along a continuum, where normal and disordered are just the extremes of what is actually a spectrum. While dimensional models of personality have been used in psychological research for some while, the DSM-5 as a diagnostic tool for psychiatric practice for the first time combines a categorical model (as in all previous DSM editions) with a dimensional model in the context of personality disorders—although in a controversial and otherwise rarely used appendix. If many psychiatric conditions were actually best construed along the lines of a dimensional model, this concomitantly would raise questions about whether these should be discussed in terms of psychiatric 'kinds.' Be it as it may, the main topic of my discussion is the significance of non-epistemic aims, and these are relevant for psychiatric categories and classifications in any case.

professional contexts, or even the risk of physical harm to the person (e.g., suicide attempts), personality disorders remind us that not all mental illnesses mean a decline in social functioning. In fact, narcissistic personality disorder is one case where it is actually other persons that are affected by harm. Among several other characteristic traits, this personality disorder includes an inflated sense of entitlement, the person being prone to rage if their inflated self-opinion is challenged, a lack of empathy, and interpersonal manipulativeness and exploitativeness. Because of the exploitation of others and abusive behaviour towards them, spouses, other relatives, and coworkers of someone with narcissistic personality disorder are subject to harm. To return to Charland (2004), his point is that the characterization of cluster B personality disorders crucially involves aspects of a person's moral character. This is shown by the fact that treatment of such personality disorders necessarily involves a change or conversion in moral character, such as restricting rage and abusive behaviour, behaving with more empathy when engaging with others, or respecting the rights of others. Since Charland does not consider such treatment (by change of character) to be properly construed as medical treatment and because the very formulation of these personality disorders is about moral character, he argues that they are not medical kinds, but moral kinds.

Zachar and Potter (2010) build on this by bringing in virtue ethics, which provides a good way of conceptualizing how the character traits seen in personality disorders are not only subject to normative evaluation (and in some cases obviously harmful to others), but are genuinely moral character traits. Virtue ethics also makes plain that when and the extent to which a character trait is exhibited matters to its moral status—anger is a legitimate response in some circumstances, but a flaw of moral character is anger that is rage exhibited toward innocent persons. Zachar and Potter explicitly point out that they do not assume a dichotomy between medical kinds and moral kinds, so that personality disorders may be both. In any case, what matters for my discussion is that moral-normative aspects are involved. To be sure, it does not suffice for my central thesis that the *characterization* of a psychiatric kind happens to include normative components. Rather, my agenda is about whether non-epistemic *aims* influence the proper characterization of some

kinds. But this is the case for the personality disorders addressed. If the behaviour resulting from the characters traits was not deemed to be morally or socially problematic, or if reducing such behaviour was not a relevant social aim, there would be no reason to consider such a condition as a mental disorder or the psychiatric kind it is.

The last but quite important case I want to discuss is oppositional defiant disorder. Primarily youth fall under this diagnosis, especially boys that repeatedly act out school and are reported by teachers to be in need of psychiatric consultation. Writing from the perspective of the United States, Nancy Potter (2014) has offered a critical discussion of oppositional defiant disorder, arguing that this category is set up against African American boys (see also Potter 2016). Not only do social inequities and a history of systemic and institutional racism lead to many black youth exhibiting problematic behaviour at school, but their behaviour is also evaluated by teachers and psychiatrists who are in many cases white or operate with the interpretative standards of the dominant social group. Potter argues that some instances of black boys exhibiting defiant behaviour are actually a *rational* response in a racialized social context. Using a psycho-social defence mechanism, these children may be rationally defiant, although their behaviour is seen as indicative of a clinical behavioural disorder. If black boys submit and always behave as their teachers (being white or using such institutionalized standards) expect, they may lose face in front of their (mostly black) peers. If in contrast, they defy their teachers' behavioural norms—which may problematically reflect racialized social contexts and fail to consider that behaviour can be contextually rational—these black boys are likely to be diagnosed with oppositional defiant disorder.

Potter's (2014) point is not that the category of oppositional defiant disorder as such is fine, while practicing psychiatrists occasionally misapply this category to some (the wrong) persons, resulting among other things in African American boys being overdiagnosed with oppositional defiant disorder. Instead, Potter is worried that the way in which this very psychiatric category has been designed and is formulated is problematic. She is actually open to the possibility that the category 'oppositional defiant disorder' may have to be discarded altogether. In any case, her

position is clearly that the very category most likely needs to be reconfigured (which would consist in a revised, more appropriate characterization of this psychiatric kind that would also change our construal of its boundary). A proper construal of oppositional defiant disorder would have to pay attention to the social causes of behaviour and social contexts in which behaviour is interpreted—which does not fully mesh with the medical model in psychiatry that attempts to construe mental disorders as endogenously driven, brain-based conditions. To my mind, Potter has made a convincing case that one needs to ensure that the formulation of a psychiatric category is not tacitly based on white racial ideology as an evaluative standard. Even if Potter's skepticism about oppositional defiant disorder turned out to be unfounded, this case still demonstrates that a psychiatric kind may very well answer to the political aim of *social justice*, in the sense that an assessment of the appropriateness of this kind's characterization needs to be mindful of considerations about justice (racial justice in this case) that would be undermined by primarily using a dominant social group's ideology in the formulation and evaluation of a psychiatric category.

In all cases, epistemic aims and various empirical considerations are crucial for determining the proper characterization of psychiatric kinds and especially the boundaries between them. These include how well certain symptoms are correlated across different individuals (whether diagnostic criteria have clinical validity or whether the diagnostic category is too heterogeneous), whether there is a common etiological basis for all instances falling under one diagnostic category, whether the likely causal basis is of a psychiatric nature (that justifies medicalizing the condition), and the degree of comorbidity between different diagnostic conditions (which may suggest that criteria conflate different psychiatric kinds). But my discussion has made plain that also *non-epistemic* aims are at stake—where the empirical considerations just mentioned also matter for some non-epistemic aims. One obvious non-epistemic aim is to ensure the *right to effective treatment* for persons in need of such treatment. One the one hand, only those that fall within a diagnostic category are entitled to the respective psychiatric treatment. On the other hand, as the case of 'major depression' as a broadened and possibly problematically inflated

category illustrates, a condition should be medicalized and someone should fall within a diagnostic category only when this person is actually in need of treatment and the psychiatric treatment is effective for this condition. These reflections also show that even if in nature there are no clear boundaries (and psychological traits are distributed across persons in a largely gradual fashion), practical considerations related to treatment may justify us drawing boundaries and delineating kinds (if crossing the boundary more clearly suggests a condition to be treated).

The right to treatment focusses on the person with a mental illness and the problems the condition create for her. But narcissistic personality disorder and antisocial personality show that some mental disorders also or primarily generate harm to other persons. As a result, the social aim of *protecting others from antisocial and harmful behaviour* can also play a role in the proper delineation and construal of some psychiatric kinds.[10] Furthermore, while the right to treatment motivates a category that is more inclusive, I have mentioned that there is a significant stigma attached to being diagnosed with any mental disorder, and particularly with certain mental disorders. Consequently, the social aim of *avoiding stigmatization* of persons diagnosed also impacts how the boundaries of psychiatric kinds should be drawn and how the characteristics of such a kinds are to be formulated. This also means that the aims of ensuring treatment and of avoiding stigmatization pull in different directions, the former potentially favouring a wider extension and the latter a narrower extension of a given psychiatric kind. Finally, there is the important social-political aim of *eliminating racial, gender, and other social inequities*. Focussing on racial inequity (but a similar case could also be made for gender, based on other diagnostic categories; Potter 2015), the discussion of oppositional defiant disorder indicated that

[10] This is not an unambiguous issue, in light of past abuses of psychiatry and current worries about such diagnostic categories as oppositional defiant disorder. The question is when the aim of protecting others from antisocial behaviour legitimately obtains for a particular psychiatric kind (among other things based on valid medical-behavioural facts) and how this aim is to be balanced with other (patient-centered) psychiatric aims.

the very characterization of psychiatric kinds should attempt to avoid reinforcing existing social inequities. Such a non-epistemic aim calls for being mindful of intersectionalities and considering the social context in which behaviour is exhibited and interpreted, which goes in the opposite direction of attempts to construe psychiatric kinds as far as possible in terms of endogenous, brain-based conditions—as promoted by other aims (e.g., epistemic and traditional medical aims).

Not all of the non-epistemic aims mentioned—most in fact social aims—may matter for all psychiatric kinds. After all, we encountered the political aim of not aggravating racial injustices in the specific case of oppositional defiant disorder, while the protection of others from harmful behavior or the stigmatization of diagnosed persons is only an issue for certain psychiatric categories. But my general methodological framework is explicitly open to pointing to the relevance of different aims for different kinds in the same domain, and calls for assessing the appropriateness of a suggested psychiatric kind in terms of the specific aims germane to it. It is even possible that some neuropsychiatric conditions primarily answer to epistemic aims. At the same time, some non-epistemic aims may be particularly salient in debates about how to revise and formulate certain diagnostic categories. One possible objection to my account may acknowledge that non-epistemic values play some role, while relegating them to a motivating function. For instance, concerns about social injustice may guide the *discovery* of a specific type of oppositional defiant disorder (which does not raise equity concerns for the persons so diagnosed), but the articulation of this psychiatric kind is done in epistemic and empirical terms. This objection parallels attempts to uphold the value-free ideal of science by granting that non-epistemic values can be legitimately be used in the context of discovery when choosing research questions, while insisting that the subsequent evaluation of theories is in terms of epistemic values only. Yet the feasibility of relegating non-epistemic values to specific steps of scientific research has been challenged in the sciences and values literature (Brigandt 2015), where it has specifically been argued that the use of non-epistemic aims to set research questions and to motivate discovery also has implications for which scientific models and theories are to be

adopted (Elliott and McKaughan 2014; Intemann 2015). Generally, my vision is that empirical considerations, epistemic values, and non-epistemic are often jointly used when justifying any construal of the nature and boundaries of a kind. Non-epistemic aims such as social equity that originally contributed to the discovery of a specific psychiatric kind may well have to be returned to when re-assessing the adequacy of this diagnostic category.

6. Why we should tackle kinds without talking about 'natural kinds'

Rather than putting forward yet another ontological account of the nature of a natural kind (claiming to hold for all and only natural kinds), I have set out a general *methodological* framework for how philosophers or anyone else can fruitfully investigate and articulate kinds. The framework's *first* component is that any kind has to be articulated together with the scientific and other human aims that motivate referring to this kind. This methodological guideline is fruitful given that such aims are often only implicit in scientific practice. And having gotten clear about the aims at hand is a precondition for adjudicating disagreements about the boundaries and proper construal of the kind. After all, the actual kind is that category whose empirical properties best serve the given aims. The *second* component of my framework is to be open to the situation that one kind answers to a set of specific aims, while other kinds in the same domain may answer to quite different aims. Going beyond prior philosophical accounts that have indexed scientific aims and standards to domains or disciplines, following my second guideline permits one to employ different considerations for different kinds. The *third* component of my methodological agenda of how one should tackle kinds is to acknowledge the role of non-epistemic values, which may be practical, ethical, environmental, and social-political aims and values. Generally, a *combination* of epistemic and non-epistemic kinds may motivate the use of a kind in scientific practice, which needs to be taken into account to assess the most appropriate construal of the kind. The cases that I discussed across Sections 4 and 5 have illustrated the relevance of all three components, some of which other perspectives on scientific kinds may

miss. The case discussion in particular addressed how non-epistemic aims, especially social-political aims, matter when considering how to construe the boundaries and nature of a kind.

This general framework of mine is at variance with those accounts of natural kinds who eschew any involvement of non-epistemic values (e.g., Griffiths 1997, Sect. 7.7; but see Griffiths 2004). A clear example of the latter position is Khalidi (2013), even though he clearly recognizes the existence of natural kinds in the social sciences and psychiatry. Section 3 quoted his view that only epistemic aims get at causal structures (which he deems to be constitutive of natural kinds), while non-epistemic interests inevitably lead us away from causal structures. Another assertion to this effect:

> we are forced to conclude here, as before, that our opinions as to the existence of a natural kind and its boundaries are capable of being influenced by nonepistemic interests, especially in the social sciences. When this occurs, scientific categories will not correspond to natural kinds, … (Khalidi 2013, 197)

Khalidi discusses some examples where non-epistemic interests had an influence. But not only are these all cherry-picked cases where the values had a problematic impact, the fundamental flaw is that he misses the real issue. The mere observation that non-epistemic aims had an influence is irrelevant, because the crucial question is whether or not the non-epistemic aims used were *legitimate*. Of course illicit aims (even if scientists widely endorsed them in the past) must not be used. The brief discussion on major depression in Section 5 acknowledged the problematic influence of the interests of pharmaceutical companies; and Horwitz's (2014) criticism of how 'major depression' is nowadays construed (as an inflated category) is made possible by him pointing to these particular non-epistemic interests as illegitimate. The flipside of some aims being illicit (as used in a certain context) is that the use of other aims can be defended (Goldenberg 2015). Such a justification needs to be provided, but the same holds for the use of epistemic aims. For instance, there have to be reasons for why a scientific model ought to serve the aim of causal explanation, and why the alternative epistemic virtue of very accurately describing data is insufficient (Potochnik 2017).

Khalidi's vision that non-epistemic aims generally make us fail to capture causal patterns or other structures of reality is likewise misguided. *Actually* meeting a non-epistemic aim, such as improving human health or preventing climate change, requires that we make use of the relevant aspects of reality, which are often causal structures and processes that we need to know about to successfully intervene in nature to improve human health or the global climate (Intemann 2015). The fulfilment of political aims, e.g., diminishing systemic discrimination and achieving social equity, likewise presupposes that we capture social processes and other relevant aspects of social reality (Kourany 2010). As the presence of different positions in the metaphysics of race makes plain, the issue is often not whether some putative kind is real, but which aspect of reality the kind should correspond to. Both social 'constructivism' about race and population naturalism get at causal patterns—current social processes in the former case, and groups governed by mechanisms of reproductive isolation (and existing in the evolutionary past) in the latter case. The issue is which kinds consisting of the interaction of biological and social factors should be referred to as 'races,' given our legitimate interests. This is also something that Ron Mallon recognizes, when clarifying his position that the question of race should not be framed as a metaphysical, but a normative issue: "What is normative is not what is in the world, but how, when, and where we decide to talk about what is in the world" (Mallon 2006, 550).

There is a substantial literature on science and values, which recognizes that non-epistemic values can in fact play legitimate roles in science and in some cases can even be conducive to better scientific knowledge (de Melo-Martín and Intemann 2011; Elliott 2011, 2017; Elliott and McKaughan 2014; Intemann 2015; Kourany 2010; Longino 1996; Potochnik 2017; Winsberg 2012; Wylie and Hankinson Nelson 2007). These accounts not only provide argumentative support for my position, but this literature provides a fruitful resource for any future agenda of investigating and articulating kinds—in a manner that is attentive to non-epistemic aims while still getting at scientific kinds. One issue that the science and values literature has recently come to emphasize is that appropriate non-epistemic aims and values need not be the ones that a scientist happens to personally favour, but should take into considerations the democratic

interests of society, especially the interests of stakeholder groups or minorities affected by environmental, health, and other public policy (Biddle 2020; de Melo-Martín and Intemann 2011, 2018; Elliott 2011, 2017; Intemann 2015; Schroeder 2017, 2020). This also holds for psychiatry, where it has been argued that patients or patient advocates should be included in the design of psychiatric research and the development of psychiatric classifications (Bueter 2018, 2019; Potter 2019). Consequently, the legitimacy of the non-epistemic aims employed by scientists and philosophers (when using or articulating scientific kinds) is to be defended also in terms of being reflective of the diversity of relevant stakeholders.

While having emphasized non-epistemic aims, I now need to reiterate that epistemic aims matter as well. In general, my position is that a kind may answer to a *combination* of several epistemic and non-epistemic aims. Although one should not assume a clear separation between epistemic and non-epistemic purposes in science (Kitcher 2001; Longino 1996; Ludwig 2016; Rooney 2017), this point is not essential, given that on my account various aims (no matter how they are categorized) operate on the same level when in combination motivating the referring to a kind. My discussion of psychiatric kinds has pointed to the entwinement of empirical and social considerations, which cannot be conducted independently of each other. How to draw boundaries between different mental disorders or whether to decrease the class of persons who count as having 'major depression' is as much a question of how well putative symptoms cluster (and whether they have a similar etiological basis) as it is a question of how conducive this boundary drawing is to the practical psychiatric treatment of persons without unnecessary stigmatization. What criteria to use to diagnostically characterize 'oppositional defiant disorder' is best dealt with by means of a joint consideration of whether these criteria are empirically indicative of a persistent behavioural disorder (possibly with some endogenous basis) and of whether these criteria socially reflect the problematic ideology of a dominant group.

To be sure, it is difficult to articulate which set of aims a kind answers to. And when adjudicating which kind best serves a given set of aims, different aims relevant to a kind can actually pull in different directions, as we have seen in the discussions on species, race, and

psychiatric kinds. There are reasons for construing 'race' in line with how current racial identification works in a certain society, but current racial schemes and discourse have created racial discrimination in the first place, so as to suggest a different construal of what race is or should be considered to be (Section 4).[11] Despite these difficulties, the need to attempt to articulate the aims at stake remains—something that my methodological framework calls for from the outset. Indeed, because of the involvement of non-epistemic aims and situations where the relevance and legitimacy of some aims are controversial, it is especially important to achieve *transparency* about the aims one takes to be germane to a kind, where philosophers and scientists alike should be transparent about the scientific and practical aims to which a kind's use contributes in theorizing and practice (Elliott 2020). Only when the aims at stake have been articulated and made transparent is it possible to negotiate disagreements about the relevance of some aims and to justify the legitimacy of these aims, including by highlighting that the interests of affected stakeholders are being taken into account (Biddle 2020; de Melo-Martín and Intemann 2018).[12] Moreover, given that the adjudication of the proper construal of the boundaries and characteristics of the kind is contingent on the underlying human aims (the question being which aspect of reality best serves certain aims), those aims have to be articulated beforehand.

My agenda of articulating kinds together with the underlying human aims is a far cry from the project sometimes pursued in analytic metaphysics of articulating a mind-independent

[11] This also suggests that there may be more than one category in the vicinity of race or more than one fruitful way of speaking about 'race.' But even if different kinds are recognized in the larger domain of race, these kinds would have to be articulated with reference to the underlying epistemic and non-epistemic aims, which then would most likely be different sets of aims for different kinds.

[12] The negotiation of aims also points to the fact that a kind's underlying aims need to be static, but can be subject to historical change. The latter aligns with Reydon's (2016) account, which replaces the traditional vision that the scientific investigation of kinds consists in 'zooming-in' to a fixed target with a 'co-creation' model of kinds (see also Chang 2016; Kendig 2016b; Ludwig 2017).

structure of reality or exhibiting a fundamental level of reality. But this reinforces the need for philosophers of science to not cede the field and to keep studying kinds, at least based on a general methodological agenda—especially how paying attention to human aims matters, and why restricting the philosophical scope to a distinctive type of kinds (regarded as the only genuine natural kinds) fails to scrutinize many biological, social, and other kinds that are important in science and elsewhere. However, while extensively talking about 'kinds,' I urge all philosophers and other scholars to stop using the traditional term 'natural kinds' altogether—which can be seen as the *fourth* component of my methodological framework. There are two reasons for my terminological recommendation. First, the label 'natural kind' erroneously suggests that a kind is simply part of the order of nature, opposed to the kind being codetermined by *human* aims and interests. The slogan of 'carving nature at its joints' likewise paints this misleading picture. Yet this slogan is normally used for introductory purposes only and can then be immediately clarified and qualified by detailed explanations, whereas a continuing use of 'natural' kinds (as a sheer term) propagates the problematic connotation that obscures the involvement of human aims.

Second, the label 'natural kind' erroneously suggests that the kind has a physico-chemical or narrowly biological basis, so as to problematically convey that the kind is historically invariant as opposed to (in some cases) involving *contingent social* processes. In Section 4 we saw that even though race has biological aspects, such as health disparities consisting in physiological differences, these biological difference may well be due to social discrimination (Kaplan 2010; Lorusso and Bacchini 2015).[13] Discussions about race, but also about biological determinism and biological essentialism in other contexts, make vivid the dangers of conveying that such kinds

[13] This is related to Ian Hacking's point that human kinds are interactive (rather than indifferent kinds), although he sometimes presupposes the awareness of being classified (Hacking 1999). A crucial difference is that whereas Hacking is skeptical about the very idea (and philosophical project) of natural kinds (Hacking 2007), my objection pertains specifically to the lexical term 'natural kind.'

are simply 'natural.' Such harmful effects particularly obtain when talking to a general audience (where not only philosophers bear a responsibility for avoiding such problematic implications; Havstad 2020). But even within professional philosophical discussions there is no need to insist on using specifically the term 'natural kind.' And scholars should avoid using words that have connotations that obscure that many kinds reflect social processes, and thus are ultimately subject to human responsibility. This clearly holds for the examples of race, gender, and psychiatric kinds discussed, and even for species as kinds.[14]

In summary, my pressing recommendation is that philosophical practice should not involve any use of the term 'natural kind' (my discussion has already followed this and only mentioned 'natural kind' when characterizing other accounts). But even without talking about 'natural kinds,' there is a positive methodological agenda for how to philosophically tackle kinds—as I have laid out in this paper. The examples discussed have illustrated the relevance of non-epistemic aims, in particular social-political aims, pointing to the philosophical fruitfulness of investigating and articulating kinds together with their underlying human aims.

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[14] My account can be seen as an instance of *conceptual engineering*. Unlike traditional conceptual analysis (which merely makes explicit an existing concept), the emerging research trend of conceptual engineering consists in creating the best concept for a given philosophical task, which may involve revising or even abandoning existing concepts (Burgess et al. 2020; Burgess and Plunkett 2013; Cappelen 2018; Prinzing 2018). This can also include lexical recommendations, e.g., that a new meaning be associated with a previous term. The first way in which I am conducting conceptual engineering is by amending the content of the concept 'scientific kind' so that it includes that scientific kinds may be answerable to specific non-epistemic aims. Second, I make the terminological suggestion of not using the lexical term 'natural kind' at all, and instead to associate the concept I have engineered with such terms as 'kind' or 'scientific kind.' Given that 'natural kind' is likely to be used in analytic metaphysics with its traditional meaning, a further potential advantage of my terminological recommendation is to highlight the alternative naturalistic practice that attempts to capture the diversity and nature of scientific kinds (while contrasting it with the limitations of still ongoing visions under the 'natural kind' label).

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