Same-Tracking Real Kinds in the Social Sciences

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Forthcoming in *Synthese*

Abstract. The kinds of real or natural kinds that support explanation and prediction in the social sciences are difficult to identify and track because they change through time, intersect with one another, and they do not always exhibit their properties when one encounters them. As a result, conceptual practices directed at these kinds will often refer in ways that are partial, equivocal, or redundant. To improve this epistemic situation, it is important to employ open-ended classificatory concepts, to understand when different research programs are tracking the same real kind, and to maintain an ongoing commitment to interact causally with real kinds to focus reference on those kinds. A tempting view of these non-idealized epistemic conditions should be avoided: that they signal an ontological structure of the social world so plentiful that it would permit ameliorated (norm-driven, conceptually engineered) classificatory schemes to achieve their normative aims regardless of whether they defer (in ways to be described) to real-kind classificatory schemes. To ground these discussions, the essay appeals to an overlooked convergence in the systematic naturalistic frameworks of Richard Boyd and Ruth Millikan.

Keywords: Natural kinds; reference; conceptual engineering; ameliorative strategy; social ontology; Boyd; Millikan

Acknowledgements: I wrote this article during the height of covid lockdown, and I owe a great deal of gratitude to: my two young children, whose near-constant and enthusiastic presence provided a model of perseverance and engagement; Maureen, for keeping things functioning while also working from home; and to all the essential workers who delivered goods to our home and provided care to the community. I am also thankful to two anonymous reviewers whose insightful comments improved the article.

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1 Introduction

The National Poison Data System (NPDS) compiles data from all 55 US regional Poison Control Centers, providing real time information about nearly all suicide attempts by poisoning in the United States. Between 2000 and 2010, the average number of yearly self-poisoning incidents for females in the 13-15 years old age group was 12,936. Something changed starting around 2011. From 2011 to 2018 (and ongoing), the average number of females in the same age group who attempted suicide by poisoning per year nearly doubled, increasing to 22,274 (Spiller et al., 2019, p. 204). Similar increases occurred for females in the 10-12 years old and 16-18 years old age groups. For all three age groups, the severity of outcome for these attempts also increased. The incidence, rate, and severity of outcome of suicide attempts by poisoning for males in these same age groups also increased during this time-period, though these increases were significantly less than those of females in the same age groups (Spiller et al., 2019).

This is clearly a situation that we want to understand. We want conceptual tools, methods of data gathering, and ways of theoretically framing that will uncover exactly what is happening here so that we can intervene precisely and effectively. But as Spiller et al. make clear – and this is a recurring theme in contemporary social scientific discussions of this topic (see, e.g., Cha et al., [2018]) – there is a great deal that we do not understand about this situation including causal mechanisms, the explanation of sex differences, the role of risk factors, the role of contagion, and effective intervention and prevention strategies.

This investigative dynamic, in which social scientists have a limited or partial empirical grasp of a target and where there is a clear epistemic and moral imperative to improve that grasp, generalizes broadly throughout the social sciences. This essay responds to that dynamic in two ways. The first way is diagnostic: I aim to improve our understanding of the source and nature of the limited grasps. The second way is prescriptive: I explain why the improved diagnostic understanding discloses a particular set of conceptual practices as important for improving the empirical grasps, and why an alternative set of conceptual practices might weaken those grasps.

In Sect. 2 and Sect. 3, I offer the diagnostic account. I analyze a kind of natural or real kind that is explanatorily central to social scientific investigation but is difficult to identify and track. I explore three metaphysical features of this kind – mutability, intersecting relationships, and sporadic property presentation – that help explain its investigative elusiveness. In Sect. 3, I

explain why the scientific project of identifying and tracking this kind of kind leads to muddled (equivocal, partial, or redundant) forms of conceptual reference and epistemic access. I situate this account in an overlooked but compelling convergence in the systematic naturalistic epistemologies of Ruth Millikan and Richard Boyd.

In Sect. 4, I offer the prescriptive account. I explain why the descriptive account from Sect. 2 and Sect. 3 grounds a dual epistemic and normative imperative to employ open-ended classificatory concepts, to understand when different research programs are tracking the same real kind, and to interact causally with real kinds in ways that will further focus reference on those kinds. I also explain why the descriptive account uncovers important constraints (and a potential concern) for ameliorative, or norm-driven revisionary, conceptual projects.

2 Real but elusive kinds for the social sciences

An important claim of this essay is that social scientists refer (achieve epistemic access) to causally and explanatorily important kinds and phenomena, but they often do so in ways that are muddled or confused. In this section, I discuss a type of real or natural kind that social scientists are tasked with identifying and understanding, and I examine several features of this kind that explain why it gives rise to muddled reference (the nature of such muddling the focus of Sect. 3).

In some respects, the claim that there are natural or real kinds (hereafter "real kinds") that are central epistemic targets of the social sciences has become somewhat familiar. One finds versions of this claim in Griffiths (1997, 1999), Millikan (1999, 2000, 2017), Kornblith (1995), Boyd (1999, 2021), Root (2000), Mallon (2016), and Khalidi (2013). In other respects, some important implications and motivations for this claim remain underexplored.

Imagine a world without real kinds. It would be a world like the one described by Locke in his *Essay*, where everything is just a matter of degree – "a continued series of things, that in each remove differ very little one from the other…. we shall find everywhere that the several species are linked together, and differ but in almost insensible degrees" (*Essay*, III. vi. 12). There would be no "gaps" or "chasms." The logical space of possible property co-instantiations would be evenly saturated. Boyd (1979, p. 381), Kornblith (1995, p. 41), and Millikan (2017, p. 11) have each claimed in their own way that if the world had come packaged this way – that is,

without itself containing discrete property-packages – then it would not have been possible to think, talk, or gather knowledge about it productively. This is because any property that one encountered would be equally compatible with, and as likely to be accompanied by, any other property. A world like that is an inductive nightmare, making useless the following epistemic procedure on which we standardly rely: you identify that an individual *I* is of kind *K*, and then you reliably generalize what you know about *K* to *I* without exhaustively studying *I* (and often enough, you learn *new* things about *K* on the basis of your encounter with *I*, which helps you and members of your epistemic community reliably project these additional features to newly encountered *K*-members, and so on).

Fortunately, and as a matter of empirical fact, the world is not the way that Locke supposed. Most of logical space is empty, except for the centers-of-property-gravity in which features reliably cohere, for a reason rather than accidently, to comprise real kinds like *comets*, *orb-weaving spiders*, *diamonds*, and *water* (note that there is no stability for properties at the union of comets and orb-weaving spiders, for example).

But is this true of the *social* parts of the world? Given the unlawful and complex ways that human concepts, language, and behavior causally structure the world, there is a temptation to say that the social world is the way that Locke supposed. This too is a mistake. While it is true that the real kinds fashioned by human activity generally exhibit less stability and have less crisp borders than the kinds fashioned by laws of nature or genetic and biological mechanisms, there is nonetheless sufficient property clustering or "clumping" to make these kinds suitable objects for scientific study.

Following Millikan (1999, 2000), what distinguishes many social scientific kinds is that historical-based copying or reproductive processes, rather than facts about internal constitution or laws of nature, causally explain why kind-members share likeness and support induction. The reason that two photo-copies share likenesses (say, an odd mark at the bottom) is that they have been copied from the same original. The reason that different Starbucks cafes are similar or that members of a biological species are alike is similarly historical and replication-based: kind-members have been copied or reproduced from previous kind-members and/or they been forged in the same token historical environment (typically by mechanisms that given *their* history have the purpose of fashioning such kinds).

This view projects the epistemic importance of genealogical categories in the biological sciences to the social sciences generally (Griffiths, 1999; Elder, 2004; Boyd, 1999). The generalization is best defended by case studies and their explanatory value. Millikan (1999, 2000) describes how psychological predicates deployed in various empirical sciences achieve epistemic success by virtue of identifying historical kinds. Elder (2004) examines how various artifact categories are best understood as historical "copied kinds." In Bach (2012), I describe how sociological, economic, and psychological investigations into gender achieve epistemic success by virtue of identifying and tracking the historical kinds *men* and *women*. And Godman (2020) explores how cultural kinds like those connected to religion might be fruitfully modeled as historical kinds.

Three features of these real kinds, each rather underexplored in the philosophical literature, inform the conceptual challenge faced by social scientists who aim to identify and track them. These are their mutability, their intersecting relationships (especially the normative consequences thereof), and their selective property presentation. I discuss each feature in turn.

2.1 Mutability

It is helpful, and not inaccurate, to think of the real kinds targeted in many social scientific investigations as historical individuals that snake through space and time. This is, after all, the construal of biological species that motivated the generalized view of historical kinds sketched above. In fact, there is a closer connection between the ontology of individuals and the ontology of historical kinds than is often appreciated. Griffiths (1999) points out that while Ghiselin and Hull were correct to recognize the importance of genealogy for understanding the unity of species or biological taxa, they were wrong to insist that this individuality thesis was incompatible with the view that species and taxa are natural kinds with (historical) essences. Millikan (1999, 2000) makes clear that the issue here is not merely semantic. Individuals and historical kinds are held together by a similar type of ontological glue, according to Millikan, and thus the reason that each support explanatory practices is similar.

The idea that a scientific kind is changing through time presents an obvious epistemic challenge to investigators. The way that static or not-mutable targets present at $(t)_1$ is typically the same as at $(t)_2$, thus making observed property contrasts between $(t)_2$ and $(t)_1$ a reliable

indicator of kind-difference (and thus unwarranted projections). This inference is less reliable in the case of historical kinds and individuals that persist through change. For example, under what conditions can virologists reliably project what they know about the virus that causes Covid-19 to emerging variants? Under what conditions can sociologists and psychiatrists reliably project what they knew in 2005 about the kinds of adolescents prone to self-poisoning to adolescents in 2025?

This empirical challenge is amplified when the mechanisms that determine change to the historical kind are themselves changing. In the context of biological historical kinds, it is fairly well understood how such "change-mechanisms" can themselves change (e.g., changes to the mechanisms that implement genetic replication). In the case of social historical kinds, on the other hand, analogous changes to change-mechanisms are less well understood and (it would appear) more volatile. Consider the sharp rise in youth self-poisoning reported in Sect. 1. The 2011 inflection point coincides with broader cultural changes in the availability, normative status, and influencing power of information technology generally and social media platforms specifically (Spiller et al., 2019, p. 204). It is plausible to view these technologies as accelerators and disruptors of the norm-based copying mechanisms that fashion historical human kinds, in which case they would be driving faster and more abrupt changes to the trajectory and property syndromes of those kinds. The epistemic side of this coin is that the more volatile and numerous such local accelerators become, the less reliable will previously effective methods be for the reidentification of real kinds (e.g., the kinds explanatory of youth self-poisoning).

2.2 Intersecting kinds and incompatible functions

A second complicating feature is the nesting and intersecting relationships into which historical kinds enter. It is familiar that biological kinds enter into such relationships; e.g., the historical kind *human heart* is nested in the kind *mammalian heart* and intersects with functionally defined hearts. Several commentators have explored the sorts of taxonomic and epistemic challenges that these relationships present.[2] Here I describe a distinct epistemic (and

[2] See, e.g., Kitcher (1984), Griffiths (1997), Boyd (1999), Millikan (2000, ch. 2), and Khalidi (1998; 2013, Sects. 2.5, 3.6).

moral) challenge that derives from these intersecting relationships. This is the challenge posed by individual social kind-members who possess multiple but conflicting normative (or functional) properties – things that they are "supposed to do" – on account of their developmental history.

Consider animals raised in captivity. Whatever epistemic challenges result from an orca's concurrent participation in nested clades and crisscrossing ecological kinds, those challenges increase greatly if that orca, on account of its developmental history, also bears a participatory relation to the (social) historical kind *Sea World Orca*. It is more difficult to predict *that* Orca's behavior (as perhaps evidenced by recent tragedies at Sea World). Why is this? It is because, in part, there is no clear algorithm or empirical method for understanding the interaction between distinct and conflicting functions as conferred to that orca through its participation in the historical kind *Orcinus orca*, on the one hand, and the historical kind *Sea World Orca*, on the other.

Matters are more complicated, both morally and epistemically, in the case of cross-cutting social kinds of humans. Individual persons are members of very many historical kinds simultaneously. These kind-memberships confer distinct and sometimes conflicting functions – different and incompatible behaviors (or performances) that individuals, on account of their developmental relation to the reproductive mechanisms of the respective historical kinds, are "supposed to do."[3] In Bach (2012), I describe how the cultural mechanisms that make sexed individuals reproductions of the historical kinds *men* and *women* (differential conditioning, sex segregation, enforcement of injunctive gender norms, etc.) confer gender functions or real normative assignments to individuals who have been historically subjected to these conditioning regimen.[4] These gender-based functions can then conflict with *other* normative assignments that apply to individuals on the basis of their developmental relationship to other historical-based

[3] It is important that the meaning of "supposed to" here is historical rather than ethical or prescriptive – see Bach (2012, p. 324) and Millikan (2002). Also: the claim about functions being discussed here is quite different from, and does not take on (in fact opposes), the commitments of social or structural "functionalism" as that theory is formulated by some social theorists.

[4] See Bach (2012, Sects. V.*B* – V.*D*). For discussion of the functional component of the historical kind analysis of gender from Bach (2012), see Godman (2018) and Mikkola (2020).

copying mechanisms (e.g., "double binds" in the sense of Frye [1983]).[5] This intersecting feature of human kinds through which individuals have multiple and conflicting normative assignments has proven rather mystifying from an empirical perspective. One can pick at random review articles on the state of intersectionality research in the social sciences to a get a sense of the investigative puzzles.[6]

Finally, this feature of real kinds invites an over-generalization that should be resisted. It is true that real kinds and particularly historical kinds enter into hierarchical (nesting) as well as cross-cutting or intersecting relationships. But it is not true that this fact about them indicates that the objective structure of the social world is gapless, chasmless, or clumpless. The vast majority of (social) logical space remains empty, and real kinds (and classification schemes that accurately identify and track them) retain their special epistemic status. In claiming this, I join company with several other commentators – Griffiths (1997, pp. 190-191), Khalidi (2013, pp. 63-65), and Millikan (2010, Sect. 6.1) to name a few – who while accepting a degree of real-kind pluralism (i.e., the types of cross-cutting relationships sketched above) maintain that it is a mistake to infer from this the type of strong pluralism endorsed in Dupré (1993). I return to this point in Sect. 4.2.

2.3 Selective property presentation

The emphasis on "same-tracking" – a notion most fully developed in Millikan (2017) and explored below – derives from the conditions that are required to *learn* more about real kinds: one must be able to recognize an objectively selfsame kind, through its varied instances, changes, and displays, as *same kind again*. This is how one is able to harness the kind's inductive

[5] The way that social structures distribute these normative incompatibilities is both uneven and unfair. For example, the gender-based normative assignments conferred to men (e.g., to perform a masculine gender role) are more broadly compatible with the performances of other normative assignments (e.g., those attached to various occupations). In contrast, the gender-based normative assignments conferred to women (e.g., to perform a feminine gender role) are often exclusionary or conflict-prone with other normative assignments that derive from individual women's participation in other historical kinds (e.g., those attached to various occupations).

[6] See, e.g., Choo and Ferree (2010) or Cole (2009). Notably, this epistemic impasse was foreseen by feminist scholars, for example Spelman (1988), who warned about the "non-additive" relationships that obtain between a person's memberships in multiple social categories.

and explanatory potential. Now suppose that, as a matter of objective fact, a set of historically situated copying mechanisms grounds twenty axes of similarity ($p_1 \ldots p_{20}$) for the members of a kind *K*. Suppose that when one encounters *K*-members they frequently exemplify properties p_{13}-p_{16} but rarely exemplify properties p_1-p_5. Suppose further that there is a small percentage of *K*-members that always exemplify p_{17}-p_{20}, and there is a large percentage of *K*-members that never exemplify p_8 or p_9. This schema (or something like it) holds true of many social scientific kinds, helping to explain failures in same-tracking.

What is it about social scientific kinds that explains such sporadic property presentation? One reason is variations (e.g., copying errors) in the historical environments and replicative mechanisms that causally fashion kind-members. A second reason is that a kind's characteristic properties are often exemplified dispositionally and the historical or environmental conditions required for the expression of these properties do not obtain.

To illustrate this second reason, suppose that the data on youth self-poisoning reported in Sect. 1 carry information about an underlying if rough social kind – something in the ambit of *Generation Z American Girl*. Members of this kind, on account of a shared developmental relationship to the same rough system of cultural reproduction, are sufficiently similar to ground counterfactual supporting (but exception-prone) generalizations, for example generalizations about self-poisoning. But now suppose that some investigators were to use self-poisoning as a means to reidentify this kind – as a handle by which to same-track it. This same-tracking method would produce many false negatives (and false positives) because the environmental conditions required for the expression of this characteristic property are specific and precarious. In fact, it is because suicidal ideations are in general so fleeting and environmentally contingent that it was wise public health policy to shift the sale of dangerous pharmaceuticals from bottles to blister packs (suicidal ideations tend not to survive the time it takes to excavate pills from packs).[7]

The above schema for selective property presentation has a distinct but important application for cross-disciplinary efforts to same-track real kinds. Different research programs – entire fields perhaps – become over time epistemically tuned to particular property-frequencies for a kind's reidentification. There is a specific range of properties through which sociologists

[7] This observation is reported in Elster (2007, p. 171). See Hawton et al. (2001) for empirical support for the efficacy of this intervention.

identify and keep track of the historical kind *Generation Z American Girl*, a different range of properties through which clinical psychologists reidentify this kind, yet another range on which neurobiologists rely, and so on. These distinctive modes of reidentification become institutionalized in the instruments, methods, and background assumptions that are proprietary to each research program. The resulting challenge for same-tracking, elaborated on in Sect. 3.3, is whether different research programs understand to what extent they are tracking the same kind. Very often, such understanding is lacking, in which case there is muddled reference at a group level.

3 Achieving epistemic access to real but elusive social scientific kinds

The previous section described three metaphysical features of real social scientific kinds that help explain why these kinds are elusive investigative targets. This section, which is situated in the naturalistic frameworks of Ruth Millikan and Richard Boyd, explores why social scientists often achieve only muddled forms of conceptual and linguistic reference to these elusive kinds.

3.1 The Millikan-Boyd solution to the generalized integration challenge

If there has been a trend in contemporary analytic philosophy toward narrow content specialization, then we might distinguish both Millikan and Boyd by their ambitious, system-based approaches to philosophical questions. This makes it especially noteworthy that they have converged, rather independently of one another, on central claims about reference, epistemic success, and ontology.[8] We can say that Boyd and Millikan have produced converging solutions to what Schroeter and Schroeter (2019) call the "Generalized Integration Challenge," which is the challenge to organize and balance simultaneously an acceptable epistemological account, ontological account, and metasemantic theory. For example, both Boyd and Millikan:

[8] Boyd remarked in his (1999) response paper to Millikan that "there is so much that I agree with in Professor Millikan's approach that I think my disagreements are best understood in the context of an account of the points on which we agree" (1999, p. 69). The mature expressions of Millikan's and Boyd's views – see Millikan (2017) and Boyd (2021) in particular – are even clearer in the extent of their convergence.

- appeal to the epistemic importance of tracking real kinds ("Substances" or "Real Kinds" for Millikan, "explanatory definitions of natural kinds" or "Homeostatic Property Cluster Kinds" for Boyd), and both characterize these kinds similarly.
- allow for animals, folk, and scientists to be deeply mistaken or ignorant about the real kinds to which they refer (this is Millikan's rejection of "meaning rationalism;" this is Boyd's accommodationist construal of the relationship between reference and descriptions).
- reject that there are any descriptions that are central to reference determination.
- emphasize that real kinds are identified in many different ways (Millikan, 2000; Boyd, 2021, Sect. 3.7).
- understand human (and scientific) conceptual reference as continuous with the type of signaling that animals employ.[9]
- view language as literally extending the senses to track real kinds (Boyd, 1979, p. 380; Millikan, 2000, Ch. 6).
- understand partial and equivocal reference as common and scientific progress as a process of denotational refinement (Boyd, 1979) or focusing reference (Millikan, 2000, p. 68).
- emphasize the importance of inductively open-ended concepts for achieving epistemic access to real kinds.[10]
- emphasize the role of success (or achievement) in explaining how a term or concept refers to the kind that it does (Millikan stressing historical success, Boyd emphasizing ongoing and socially coordinated epistemic achievement).

[9] See Boyd's discussion of signaling by Belding's ground squirrels (2021, Sects. 3.1, 3.2) and the extension of this to human conceptual practices (Sect. 3.3); see, e.g., Millikan's (well-known) discussions of honeybee dances and beaver tail splashes from Millikan (1984).

[10] This is Millikan's emphasis on concepts that *identify* rather than *classify* (Millikan, 2000, Ch. 3); this is Boyd's emphasis on the dialectical process of reference and his rejection of "static conceptions of reference" (Boyd, 2021, Sects. 4.3, 4.4).

There are of course differences (mostly in emphasis) between Boyd's and Millikan's views,[11] but it is the convergences that are most striking. The next several sections explore how these converged-upon claims shed light on the (often limited) ways that social scientists conceptually identify and track real kinds.[12]

3.2 The causal regulation of epistemic access to real kinds

What does it mean, exactly, for social scientists to same-track a real kind? In Sect. 2.3, I described same-tracking as the ability to recognize an objectively selfsame kind, through its varied instances, changes, and displays, as *same kind again*. But what could that mean at the level of institutional social science?

Boyd's view, pitched more directly at the epistemic practices of scientific institutions than Millikan's, is helpful here. The kernel of Boyd's view combines notions of epistemic access and causal regulation:

> *Roughly* … a term *t* refers to a kind … *k* just in case there exist causal mechanisms whose tendency is to bring it about, over time, that what is predicated of the term *t* will be approximately true of *k* … we may think of the properties of *k* as regulating the use of *t* (via such causal relations), and we may think of what is said using *t* as providing us with socially coordinated epistemic access to *k*. (Boyd, 1988, p. 195).

[11] Millikan tends to focus on integrating metasemantics, epistemology, and ontology at the level of individual cognizers, biological organisms, and local language conventions, whereas Boyd focuses on this integration at the level of epistemic institutions, i.e., scientific "disciplinary matrices." This difference leads Millikan to rely more on the selectional history of conceptual mechanisms and linguistic conventions.

[12] A further reason for offering this Boyd-Millikan exposition is that it assuages the concern that I am adopting a lawyer-like approach here – that I am scanning a landscape of theoretical positions for a precedent that will support my case. The degree of independent convergence between Millikan and Boyd, especially considering their system-based approaches, is a compelling piece of evidence in favor of the accuracy of the converged-upon claims. We should take seriously any implications this shared view has for attempts at understanding and revising concepts relevant to social scientific investigation.

I interpret and will be applying this notion of "causal regulation" as a type of epistemic conditioning regimen where objectively existing real kinds are the source of the conditioning. Consider a simple case: that of a detective hunting a suspect through a crowded area. Causal interactions between the detective's sensory system (e.g., adjustments in visual tracking mechanisms) and the physical properties of the suspect (a running motion, a lingering odor, etc.) act as regulating relations that underwrite in the detective a singular suspect-concept that provides epistemic access to that suspect (recall from Sect. 2.1 that individuals are a kind of real kind). On the basis of this access, the detective can reap epistemic and practical rewards, for example predicting and then intercepting the suspect at the next location.

Things are more complicated for social scientists who seek epistemic access to real social kinds, but something analogous to the above is required – there need to be causal interactions between kinds and investigators that "extend the senses" (Boyd, 1979, p. 380) of the latter to identify, track, and achieve epistemic access to the former. The relevant forms of causal interaction will include observing and measuring samples (individuals) and their properties, conducting surveys, ethnographies, ostension, experimentation, trial and error, and so forth. Then there is feedback – the epistemic/practical rewards and punishments (e.g., accurate versus inaccurate prediction, effective versus ineffective intervention). Over time, investigators adjust their end of these interactions (changing surveys, modifying descriptions, revising operational definitions, ostending to different samples, etc.) so that these interactions are increasingly directed at, and more effectively culling the causal effects of, real social scientific kinds. Such conceptual and methodological revisions then corral other investigators more precisely and accurately toward the investigative targets – the real kinds – narrowed in on as such. This is what it means to improve epistemic access to – to refer more directly to – real kinds.[13]

[13] A couple of implications of this view are worth noting. First, if one is employing concepts insufficiently shaped by the causally important clusters of properties that constitute real kinds, then one will be employing concepts that fail to provide access to those real kinds. Such concepts will be deficient in terms of their capacity to organize explanatory, predictive, and intervention-based success. As Griffiths (1997, p. 171) observes, it was precisely because Aristotle's "superlunary" category, which grouped together objects outside the moon's orbit, failed to provide access to a real kind that it offered no epistemic pay-off. Second, even refined definitions do not determine what the kind is or which causally important properties in fact mediate the feedback process. These are things about which investigators can remain mistaken or unaware. This compatibility between epistemic access and ignorance about the nature of the referent is perhaps most clear in cases of animal signaling and infant cognition, (e.g., to

I conjectured earlier that Spiller et al.'s data indicated a real kind (I hazarded the label *Generation Z American Girl*). I suggested that this was a rough historical kind – the kind of kind described in Sect. 2 – for which historically situated copying processes (in this case a complex of educational, technological, and social institutions that differentially condition youth behavior) causally explain shared likenesses among kind-members. One of these likenesses is an increased propensity for self-poisoning. By way of contrast, consider a set of individuals who are accidentally similar in that respect: an individual who self-poisons because of confusing medications, an individual who self-poisons to advance a specific political or military agenda, and a behaviorally complex creature created in an instant by a swamp lightning storm and who is prone to self-poisoning. None of these individuals, along with a contemporary 12-year-old female, are prone to self-poisoning for the same reason. They form a disjunctive class (ala jadeite and nephrite) rather than a real kind a characteristic property of which is self-poisoning. Empirical discoveries about the causal explanation of self-poisoning for one will not reliably generalize to the others.

To meet predictive and intervention-based goals, investigators need epistemic access to real kinds, as that type of access directs investigators to the basis of the kind's unity – to a causal-historical explanation of target properties (e.g., youth self-poisoning). To achieve that type of access, investigative and conceptual practices need to be causally regulated by the real kinds themselves, for example the kind *Generation Z American Girl* (assuming it is such a kind), in the sense described above. The Spiller et al. study appears to make (limited) progress to this end. It benefits from regulating causal pathways between kinds and investigators already in place for public health purposes. Regional Poison Control Centers provide a telephone service line to healthcare providers who seek toxological advice and who report self-poisoning incidents. The National Poison Data System (NPDS) then compiles information from these reports. This is the source of the Spiller et al. data. If there are real kinds of persons for whom self-poisoning is characteristic, then the telephone service line and the national data system represent causal links between those kinds and investigators. Spiller et al.'s age-based and sex-based curation of these data are ways of further regulating those causal connections so that they provide more focused

predators, milk, care-giver). Further discussion of this point can be found in Millikan (2000) and Boyd (2021, Sect. 3.8).

access to the relevant explanatory real kinds. Whether these and other conceptual practices succeed in this respect – whether they are in "epistemically fruitful alignment" (Boyd, 2021) with the real kinds of persons prone to self-poisoning – is difficult to determine from the armchair. The true test is whether they facilitate epistemic achievement, for example more accurate ways of measuring, predicting, and intervening. As we will see in the next section, the historical-kind features sketched in Sect. 2 pose specific challenges to this effort to causally regulate reference to real kinds.

3.3 Why partial reference, equivocal concepts, and redundant concepts are the rule rather than the exception in the social sciences

The causal regulation account of reference just given, when combined with the view of elusive real kinds offered in Sect. 2, predicts that muddled epistemic access to real kinds will be the rule rather than the exception in the social sciences. What is the nature of that muddling? And why think the kinds described in Sect. 2 give rise to it? This section employs resources from the Boyd-Millikan overlap to answer these questions.

A common form of muddling is the conflation or confusing together of several real kinds. These are the "confused ideas" from the "On Clear and Confused Ideas" title of (Millikan, 2000):

> More than two substances might also be entwined under one concept. If it is not definite which among various similar, closely related, overlapping or nesting substances was the one primarily responsible for the information that has been gathered and/or for the tuning of the (would-be) tracking dispositions, then the concept is equivocal or vague. Two or more are being thought of as one. (2000, p. 68)

While Millikan focuses on the role that equivocal concepts play in cognition, they are, I submit, important for understanding concept development in the social sciences (and specifically research programs aimed at the elusive kinds described in Sect. 2). For example, it was not long ago that central concepts in economics like "the unemployed" were equivocal between several real kinds (see below, Sect. 4.2.1). It was not long ago that central concepts in the cognitive sciences, for example memory, intelligence, emotion, and consciousness, were all equivocal

between several real kinds. Feminist social scientists and philosophers have long agued (correctly in my view) that the concepts *woman* and *man* as widely used in the social and biological sciences (and in folk contexts) conflate biological (sex) and social (gender) kinds. The history of science is full of cases like these, all featuring equivocal reference to real kinds.

And yet, investigators and philosophers continue to idealize the referential success of contemporary social scientific conceptual projects and the reference relation itself. For example, they might implicitly (if not explicitly) maintain that their own conceptual projects refer determinately rather than diffusely. Or they view episodes of equivocal reference, such as those sketched above, as mostly confined to textbook historical cases (i.e., the mix-up of jadeite and nephrite or mass and weight). Or they theorize reference itself in idealized terms or through idealized cases (more on this below).

These overly optimistic impulses are easy to indulge if one has the wrong view of social scientific kinds. They can be avoided if one assumes that the objects of social scientific study are (typically) the real kinds discussed in Sect. 2 – kinds that are too shifty, too intersectional, and too diagnostically fickle to make readily available the types of regulating causal pathways required for achieving determinate epistemic access.

To further explain this connection between elusive kinds and muddled reference, consider again the causal relations that regulate concepts and terms for the investigation of youth self-poisoning. The data reported to Poison Control Centers are sourced in individual young persons who are (presumably) members of many social kinds (gender, race, religion, etc.). But for a given self-poisoning incident, which participatory relation to which kind (if any) causally explains it? How might intersections between these kinds (recall from Sect. 2.2 that individuals are sites of intersecting real kinds) affect the expression of characteristic but environmentally dependent kind-properties (Sect. 2.3), for example self-poisoning behavior?

The problem is that the causal relations that currently regulate investigators' access to the relevant explanatory kinds are just too rough to carry the type of kind-cutting information needed to answer questions like these. If there was a kind of adolescent causally fashioned by historical connections to the opiate crisis and that was prone to self-poisoning, then we would need causal relations in place between investigators and that kind to provide determinate epistemic access to it and its properties. The same applies for kinds of young person connected to ethnicity and sex identification. Alas, the causal relations that underwrite the NPDS and Spiller et al. data do not

regulate such access: the NPDS does not collect information about ethnicity, its data about sex identification are limited by a forced binary choice given to callers (Spiller et al., 2019, p. 207), and it is not clear whether the data showing a 2011 inflection in self-poisoning are catching up a kind of young person affected by the opiate crisis.[14] In the absence of these more fine-grained modes of causal regulation, current investigative terms and concepts, for example *11-13 yr. old girls with suicidal ideations*, remain likely equivocal between several explanatorily important real kinds.

The fact that social kinds are in a state of change (Sect. 2.1) makes equivocal social scientific concepts even more likely. A psychologist's 1975 concept *adolescent with suicidal ideations* is today, as suggested by the Spiller et al. data, equivocal between gendered kinds of adolescents. A researcher's *philosopher* concept that in 1850 may have provided epistemic access to a rough historical kind will today be equivocal between distinct historical kinds (e.g., analytic and continental philosophers). The economic concept "inflation" likely referred to a different kind and warranted different generalizations in a 1970s pre-globalized economy than it does today. Similar observations apply to *prima-facie* changing kinds like *spouse, immigrant, head of household, college student, farmer, man,* and *woman*.

Boyd, employing Field's (1973) notion of "partial denotation," shares with Millikan the view that diffuse epistemic access to undifferentiated real kinds is standard:

> The situation in which a term affords substantial epistemic access to more than one partial denotation, until more precise accommodation is achieved in the light of later discoveries, is so commonplace that we may think of it is as one of the typical ways in which language is connected to the world. (Boyd, 1979, p. 399)

> If things go well, reference – understood as an ongoing process – may result in the establishment of the determinate reference suggested by the idealization in the literature but that sort of situation may be somewhat rare. (Boyd, 2021, p. 2876)

[14] Spiller et al. (2019, p. 204) mention this as one of the broader societal changes that correlates with the increase in self-poisoning.

In many classical discussions, the real kinds that anchor reference behave in idealized ways – instances of water, gold, or arthritis the causal profiles of which are dictated by internal constitution. But as we have seen, the target kinds of the social sciences are far shiftier, intersectional, and irregular; it is *women senators*, not *spring water* or *dormant arthritis*, that are positioned in empirically and normatively complex double binds (to note one complicating feature; see Sect. 2.2). Nor should we follow classical discussions in thinking that reference in the social sciences is secured by a lone ostender at a baptism event. Instead, epistemic institutions assemble a hodge-podge of causal relations (see, e.g., Boyd [1979], p. 380, p. 386, p. 393) between kinds and investigative communities that regulate the degree of epistemic access, the mark of reference, that the latter achieve to the former.[15]

So far, I have interpreted "muddled reference" in terms of equivocal concepts that result from confusing together distinct real kinds. But there are other forms, one of which is redundant concepts. Redundant concepts are familiar from "Frege-cases," where one is led to think of one thing (e.g., the planet Venus) as two things (e.g., Hesperus and Phosphorus). This is the inverse same-tracking error of equivocal concepts, where many things are glossed over as one thing. At the level of social scientific investigation, we should view redundancy as occurring whenever investigators fail to unify informational stores that are causally and historically sourced in the same real social kind. In these cases, the research community is missing opportunities to judge correctly "same kind again."

We should view this type of muddling as common in the social sciences. It is especially likely in cross-disciplinary contexts or where research communities have grown increasingly specialized and fractured. In Sect. 2.3, I discussed how different research programs are tuned to different ranges of proximal properties for the (re)identification of real kinds. It should not surprise us if there is failure to coordinate these streams of proximal information as being sourced in the same distal target. With respect to the investigation of youth suicide, for example, Wray, Colen and Pescosolido (2011, p. 506) point out this same-tracking error in their overview

[15] In theorizing reference determination in such distributed terms and rather than (only) conditions that did or did not obtain at a supposed baptism event, the account on offer, together with claims from Sect. 2.2 about mutable real kinds, has tools to address concerns from Mallon (2016) about an awkward fit between baptism events and reference switching for socially constructed kinds. A fuller discussion and defense of this claim will have to be taken up elsewhere.

of current and past approaches to the study of suicide by sociologists. They observe that sociologists have maintained an unwarranted allegiance to disciplinary boundaries, failing to integrate findings from biomedicine and public health. This form of investigative myopia or "silo-tracking" will result in conceptual redundancy that obstructs knowledge gathering about real kinds.[16]

Finally, it is worth flagging that various features of social scientific discourse are the way that you would expect them to be if the project of same-tracking social scientific kinds was beset by the types of equivocal and redundant concepts discussed here. These features include failure to replicate experimental results, empirical audits that reveal expert social scientists as often failing to outperform novices (Camerer and Johnson, 1991; Shanteau, 1992), evidence that non-epistemic factors causally explain a social theory's institutional success (Davis 1971, 1974), and lack of theoretical convergence on central questions. There are various ways of explaining these features, and they do not need to have the same explanation. But none of them should surprise us if the challenge of causally regulating epistemic access to elusive historical kinds is as described above.

4 Going forward: focusing reference on real kinds

Much of the essay so far has had a pessimist tone, with discussions of muddled reference, weak empirical grasps, and the conflation of explanatorily important real kinds. This section improves the mood in several ways. I make clear that diffuse epistemic access is epistemic access nonetheless. I explain the developmental importance of partial forms of reference – that they are the critical step-ladders for developing concepts that more effectively identify and track real kinds. I discuss which conceptual practices improve the same-tracking of real kinds and

[16] A good example of a same-tracking *success*, and thus the resolution of both equivocal and redundant concepts, are cross-disciplinary conceptual projects in the cognitive sciences aimed at identifying and describing the cognitive kinds related to analogical processing. These projects are a "success story" (Forbus et al., 1998) given their unification of information about the same distal kind delivered through distinct conceptual languages, background assumptions, and methods (e.g., those of machine learning, linguistics, cognitive psychology, and analytic philosophical psychology). This has led to convergence on answers to central questions (Holyoak and Hummel, 2001, p. 161; Gentner and Kurtz, 2006, p. 609).

which do not. To this end, I develop a contrast between recommendations that emerge from the Boyd-Millikan overlap, on the one hand, and the norm-driven recommendations of ameliorative projects, on the other.

4.1 The importance of open-ended concepts and ongoing causal interactions with real kinds

To harness the inductive potential of real kinds, we want investigative concepts that are equivocal to become focused, concepts that are redundant to become unified, and epistemic access that is partial and diffuse to become determinate. Which conceptual practices promote these improvements?

Discussing the common situation of partial reference, Boyd disparages what he terms the "empiricist solution," which is "to erect contrived categories as the referent of general terms at the cost of abandoning the project of "cutting nature at its joints"" (Boyd, 1979, p. 405).[17] The error here, as I interpret it, is over-projecting, or over-indulging, a particular phase in the always-ongoing project of reference-focusing. The contriver has taken a snap-shot at a moment of muddled reference and then uses the captured image to lock in a category's content. In the context of the investigation of youth self-poisoning, this strategy might manifest as an allegiance to stipulated classificatory schemes, for example the current definition of a self-poisoning "incident" or the conceptual and methodological importance of a particular age range (e.g., "11-13 yr. old's"). These concepts surely blur important causal distinctions among kinds of self-harming events and among real kinds of at-risk adolescents respectively. If they became entrenched, they would obstruct the empirical discovery of whichever real kinds (kinds currently muddled together) causally explain and best inform intervention towards youth self-poisoning. Thus rather than investing "inwards" to general concepts that are artifacts of immature phases of same-tracking, Boyd urges that we invest outwards – "the ongoing project of continuous accommodation of language to the world in the light of new discoveries about causal powers…. careful and critical research about the structure of causal relations" (Boyd, 1979, p. 405).

[17] By "empiricist" Boyd means the type of Lockean, kind-denying nominalist that we used as a foil in Sect. 2.

Millikan, using different terminology, presents essentially the same two options as Boyd and makes the same recommendation. Millikan contrasts *classifiers*, which are terms or categories the extensions of which are determined by description, with *identifiers*, which are concepts that have the function of acquiring more information about real kinds. Only the latter type of concept, according to Millikan, allows for the type of productive learning that over time will improve one's grasp of a real kind. Classifiers, on the other hand, "contain exactly as much information as is analytically put into them, no more no less" (Millikan, 2000, p. 37).[18] These are the contrived categories mentioned by Boyd. Classifiers are inevitable and even necessary, but they should be understood as place-holders – as merely instrumental to achieving future and improved access to real kinds.

An analogy is helpful here. Think of classifiers as nets and identifiers as harpoons. Think of real kinds – what we want access to – as whales that swim below. Classifiers function like nets in that they get casted out according to the caster's rule – "starboard, 3 fathom" – and they catch up whatever is there. The things they catch up need not share likeness (e.g., there is no causal homeostasis). In contrast, harpoons function by lodging into and then tracking something the properties of which remain unknown and might change through time. We might say that equivocal reference occurs if the harpoon has speared several things at once – a whale, a smaller fish, some adjacent seaweed, and a nearby tire – in which case the whalers are tracking and receiving information about this multitude without realizing. We might say that redundant reference occurs if several harpooning vessels have speared the same whale without realizing. We can understand the differing functions and developmental interplay between nets (classifiers) and harpoons (identifiers) as follows: as a harpooned whale of still unknown location is tracked (in a limited way) and brought closer to the vessel, the whalers cast nets to seize it in accordance with their theories about its properties and particularly its location. If all goes well, such net-

[18] Millikan's notion of conceptually *identifying* is tied up with the emphasis that Millikan places on the history of conceptual mechanisms and linguistic conventions, what accounts for the proliferation of these, and what functions (e.g., identifying functions) these histories confer to these items. Whether or not Millikan's emphasis on selective history and function is apt for these types of items, I am reluctant to import it here to explain the reference determination of terms and concepts that develop through epistemic organizations (e.g., sciences), preferring instead Boyd's account of causal regulation as sketched earlier. Regardless, both views centralize the type of inductive-open-endedness that I am claiming is critical for conceptual development in the social sciences.

casting becomes more accurate over time. Nonetheless, the nets and the netting rules never determine what it is that has been identified by the harpoon. Successful whaling requires maintaining an ongoing and open-ended tracking of that which has been harpooned, and while nets can be helpful and perhaps necessary to this end, their purpose and role should not be confused with that of harpoons, which is to serve as the basis for (epistemic) access to the target.

In summary, Millikan's and Boyd's positive views share that the concepts needed to improve epistemic access and focus reference must be open-ended. They must be open-ended in the sense that their content is always at the mercy of the ongoing *a posteriori* investigation of real kinds – kinds that are often being tracked or identified in a limited or partial way. Classifications (Millikan) and contrived categories (Boyd), on the other hand, do not have this deference to real kinds built into them. As a result, they lack the type of open-endedness that is critical to the ongoing project of learning more about explanatorily important real kinds.

4.2 Contrasts with the ameliorative approach

There is a contemporary recommendation for making social classifications that appears to lack the world-deferring open-endedness recommended above. These are the norm-driven revisionary projects – or the "ameliorative approach" – most carefully described in Haslanger (1999, 2000, 2005).[19] This approach revises categories in the purview of the social sciences – examples include *women*, *men*, *racialized group*, *marriage*, *misogyny*, *law*, *social generics*, *parent*, *imposter syndrome* – on the grounds of achieving normative ends, for example the values of anti-racism, anti-sexism, or the reduction of anxiety.[20]

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[19] Haslanger (1999, 2000) initially called this an "analytical" approach to draw out connections to previous feminist scholarship (see Haslanger, 1999, pp. 477-478, fn. 18). Haslanger then switched to terming it an "ameliorative" approach (see Haslanger, 2005). Contemporary scholars who employ Haslanger's normative strategy generally use this "ameliorative" label.

[20] For instance, Haslanger claims that "at the most general level, the task is to develop accounts of gender and race that will be effective tools in the fight against injustice" (2000, p. 36). Manne (2017), observing that "ameliorative projects are partly stipulative in nature" (p. 62), offers "an ameliorative proposal about how we *ought* to understand misogyny, at least for my purposes" (p. 63) – purposes that include "highlighting misogyny's political dimensions, rendering it psychologically more explicable" (p. 34). Hawley (2019) and Paul (2019) both advance ameliorative analyses of imposter syndrome. As Hawley puts it: "this kind of situation lends itself to what Haslanger (2012) calls

I worry that these revised categories lack the empirical open-endedness and built-in deference to the ongoing empirical investigation of real kinds that is required for meeting either epistemic (i.e., improved same-tracking) or normative (e.g., anti-sexism, anxiety-reduction) ends.[21] Ameliorativists might respond that their revisions are intended for normative work rather than scientific or same-tracking work and thus are not dependent on the same-tracking of real kinds. However, as ameliorativists themselves acknowledge (see Anderson, 1995; Haslanger, 2012), to perform that normative work, the revised categories must be empirically adequate. But what does this require, exactly? Ameliorativists do not provide much detail here. Contemporary ameliorativists like Manne (2017) mostly defer to Haslanger (they are using, not analyzing, the ameliorative program). The places where Haslanger explicitly addresses the relationship between "descriptive" (science-guided) classificatory practices and ameliorative classifications are footnoted or lack specifics.[22] Mainly, Haslanger appeals to the following idea from Anderson (1995): that the world makes available many cross-cutting and causally relevant classificatory schemes, and this allows room for background values (e.g., anti-racism and anti-sexism) to steer taxonomic choice.[23] Haslanger's and Anderson's claim here is that, given the way that the world is metaphysically, there are a wide range of empirically adequate classifications from which to choose, and many of these classifications will correspond to human interests but not natural kind-tracking scientific interests. To support this way of metaphysically supporting the ameliorative strategy, both make footnoted appeals to the promiscuous realism thesis from Dupré (1993) – a thesis that endorses "a metaphysics of radical ontological pluralism" (Dupré, 1993, p. 18).[24]

'ameliorative inquiry': we can try to work out what concept best suits our normative goals..… which concept will be helpful for sufferers to use" (p. 219).

[21] Haslanger's ameliorated gender category (to mention one example) is non-open-ended in the sense that it is incompatible with the empirical discovery of a current or future state-of-affairs in which women are not subordinated.

[22] See, e.g., Haslanger (2012, p. 353, fn. 22). It is worth noting that Haslanger's more recent scholarship appears less committed to the ameliorative approach codified in Haslanger (1999, 2012). Nonetheless, contemporary ameliorativists focus on and embrace the approach as described in Haslanger (1999, 2012).

[23] Compare highly similar passages from Anderson (1995, p. 45) and Haslanger (2012, p. 188).

[24] See Anderson (1995, p. 57, fn. 43) and Haslanger (2012, p. 188, fn. 8, p. 91, fn. 2).

While I think that the ameliorative strategy is a valuable one, I worry that the above conception of empirical adequacy, especially as it informs questions about conceptual revision over time, is too weak. Anderson (1995, Sect. 4) argues explicitly that natural kind classifications do not constrain the legitimacy of theoretical classifications. Haslanger (2012) claims that "objective types" – Haslanger gives "things exactly one mile from my dog's nose" (2012, p. 202) and "the things on my desk" (2012, p. 149) as examples – can be empirically suitable for norm-driven classifications, and these clearly lack the grounded unity of real kinds as sketched in Sect. 1.[25] And by appealing to Dupré's (1993) brand of radical pluralism, both Haslanger and Anderson appear committed to Dupré's (1993) view that theoretical classifications of whales as fish, as well as various other folk classifications that do not align with scientific real-kind classifications and that are not empirically open-ended, are empirically adequate in the relevant sense.[26]

These commitments allow the content of ameliorated categories to come apart, particularly over time, from ongoing developments in the same-tracking of real kinds. We should thus be wary of gender, race, or imposter syndrome concepts the analytic commitments of which prejudge what you can and cannot learn about these things. If there was ever a time to impose such classificatory seal-offs, it would be when we were confident that partial and equivocal reference had been sufficiently resolved. One of the points of the foregoing is that the very nature of the real kinds relevant to the social sciences, and how epistemic access to those kinds is determined, precludes such confidence.

Focusing specifically on the normative aims of ameliorated categories, because these aims almost always require causal intervention in the world (e.g., *reducing* the rate of youth self-poisoning), any constraint of empirical adequacy should require the content of these categories to defer in an ongoing way to open-ended empirical concepts that have the function of identifying and tracking real kinds. (They ought to defer in the same way that net-casting defers to the ongoing tracking and reeling-in of harpooned whales – see Sect. 4.1).[27] To make this dependence

[25] See Bach (2016) for critical discussion.

[26] For critical discussion of this feature of Dupré's (1993) view, see Khalidi (2013) and Griffiths (1997).

[27] Griffiths (2004, p. 908) points out that normative categories can be open-ended in the sense that the normative projects that define them can be open-ended, i.e., changes in the scope or content of the normative aims of the project. While that is correct, for the relevant changes to serve the interests of the normative project (assuming that

claim more concrete, it is worth working through general *kinds* of ameliorative proposals and explaining for each its ongoing dependence on the open-ended same-tracking of real kinds. I can find three such kinds of (or general contexts for) ameliorative revisionary projects (these tend not to be distinguished by amelioratívists or their critics), two of which I discuss below.[28]

4.2.1 Ameliorative revisions that are justified on epistemic grounds because they help disambiguate real kinds

Several examples that amelioratívists use to support their norm-driven approach to conceptual engineering are, I submit, cases in which changes to the conceptual and linguistic practices through which social scientists are regulating reference are justified on empirical grounds. In these examples, the ameliorative proposal is gesturing at a real kind currently conflated with other real kinds. If this is correct, then there is sufficient epistemic reason to adopt conceptual changes that will bring about more focused epistemic access to the (disambiguated) real kinds. The epistemic nature of this justification is easily overlooked if one is assuming an idealized picture of social scientific reference (see Sect. 3.3). If one embraces the non-static account of reference advanced earlier, according to which equivocal forms of conceptual and linguistic reference to elusive real kinds is the developmental norm, then the epistemic nature of the justification for conceptual change is more apparent.

Consider Anderson's (1995) critique of the classification "the unemployed" as (previously) defined by economists. That classification did not include discouraged non-active job seekers, and while it made available generalizations about wage rates it obscured generalizations about crime, divorce, and poverty rates. Anderson suggested a revised

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project targets effective interventions) they will need to track revisions to the open-ended epistemic concepts that result from the ongoing discovery of real kinds. In other words, the open-endedness of the empirical concepts drives, or ought to drive, changes to the normative category.

[28] I provide critical discussion of the third kind of ameliorative project – revisions that classify disjunctions of real kinds based on a common property – in Bach (2016, p. 190) and Bach (2019, p. 253). The type of revisionary concept that underwrites that kind of project corresponds closely to what Millikan means by "classifier" (as discussed above), so its lack of empirical open-endedness is an epistemic and normative concern (see also fn. 20 above).

classification inclusive of discouraged non-active job seekers on the grounds that it will better promote normative ends connected to crime, divorce, and poverty rates (Anderson, 1995, pp. 45-47). Anderson further suggests that this case demonstrates that we must defer to background values, over and above what we can learn through empirical investigation into nature's (social scientific) kinds, to determine the content of social scientific categories.

The point I want to highlight is that changes to the conceptual practices through which investigators were causally regulating epistemic access to real kinds of labor utilization (and underutilization) were justified on epistemic (real-kind same-tracking) grounds. There were (and are) real kinds of labor utilization that previous conceptual practices were confusing together (much like, as explained in Sect. 3.3, there were real kinds of memory that the old memory concept was confusing, kinds of intelligence that the old intelligence concept was confusing, etc.). Such equivocal epistemic access to real kinds of labor utilization is what explains the unavailability or unclarity of empirical generalizations about crime, divorce, and poverty rates. The Boyd-Millikan response to such (common) episodes of confused reference is to double-down on the open-ended project of empirically identifying and causally regulating epistemic access to the explanatorily rich real kinds. Indeed, contemporary economists have improved causal connections to economic kinds and properties in various ways, for example changing the survey questions on which labor statistics are based.[29] At present, the monthly news release from the US Bureau of Labor and Statistics distinguishes between six kinds of labor underutilization.[30] As economists continue to regulate reference to real kinds in a more focused way, and as the kinds themselves change (Sect. 2.1), we can expect these conceptual distinctions to change as

[29] The gender bias in telephone survey questions previously used to determine unemployment statistics (flagged by Anderson 1995, p. 45) is precisely the type of causal regulating relationship between kinds and investigators that is likely to underwrite equivocation in investigative concepts.

[30] See table (A-15) "Alternative measures of labor underutilization" (Bureau of Labor and Statistics, 2021) of the monthly "Employment Situation" news release. Measures U1-U6 distinguish between different kinds of "marginally attached," discouraged, and unemployed workers. This is not to say that ongoing muddling is now entirely absent (particularly given the Bureau's continued reliance on U3 as the "official unemployment rate"). Nor is to say that the U1-U6 measures must correspond to real kinds of person as opposed, say, to characteristic properties of an economic individual (i.e., the US economy). Either way, improved same-tracking is needed to make investigative concepts more focused on real kinds and their characteristic causal-explanatory profiles.

well. Of course, how *policy makers* (activists, etc.) choose to use, frame, prioritize, combine into classes, and label the disambiguated real kinds is a further, and surely value-guided, matter.

This example is not unique. There appears to be a pattern in which ameliorative revisions are aimed at (or develop in reaction to) historical periods of social scientific conceptual development in which empirical investigators, whether it is because the targeted kinds are particularly elusive or new or the research program itself is in an immature phase, are achieving very limited (equivocal) forms of reference to real kinds.[31] These cases illustrate rather than challenge the epistemic and normative priority of focusing reference on currently conflated real kinds – for example removing biases in current modes of causally regulating investigative concepts. It is only after real kinds have come more clearly into investigative focus, when their causal-explanatory profiles are better understood, that economists (feminists, social workers, environmentalists, firm managers, etc.) can more effectively plot intervention-based policies that promote their normative agenda (whatever these might be). But to achieve this type of intervention-assisting focused reference, the contents of ameliorated categories should be tied to the ongoing and open-ended *a posteriori* investigation of real kinds – they should not be tied to value-laden descriptions or classifications that are artifacts of a developmental period during which investigators were achieving very limited forms of epistemic access to explanatorily important real kinds.

4.2.2 Ameliorative revisions that manage social meaning for the purpose of manipulating real kinds

[31] It is reasonable to classify Hawley's (2019) ameliorative analysis of *imposter syndrome*, which is informed by scientific concepts that are likely equivocal in the sense described throughout this essay, as fitting this pattern. Haslanger provides various examples in her (2012) collection that appear to fit this category, for example the "critical reframings" listed on (p. 29) and arguably the concept "parent" (pp. 388-394). On this later concept, it is worth noting that folk categories tend in general to be more egregiously equivocal between real kinds than social scientific categories.

Many ameliorated categories are designed to bring about specific material effects by managing the social meaning (in the sense of Lessig, 1995) of a category.[32] Haslanger justifies her ameliorated gender concept by claiming that its social adoption will cause people to reevaluate their gender self-conceptions in a way that is politically helpful. Manne's reworked misogyny concept, designed for "rendering it psychologically more explicable" (2017, p. 34), is supposed to make it easier for people to identify and combat misogyny. Hawley's "broad" imposter syndrome concept is supposed to have the effect of "improving people's grasp of their own capability and success" and "to minimize the distress caused by impostor attitudes" (2019, p. 219).[33]

Many meaning-management revisions are aimed at starting new social conventions. These "convention starters," as we might term them, are discussed throughout Haslanger's (2012) collection and they are put forward as paradigm cases of norm-driven classification. Examples include "tardiness" (p. 368), "incomplete" (p. 378), and "don't keep" (p. 188). These are essentially rule-following considerations that bear on the construction of future social conventions: *How should late arriving students be treated? Which end-of-course student-work policy is best? Which of Haslanger's daughter's old clothes should be donated?* In all these cases, one must make value-based decisions about which rules to institute, and there will be new (semantic, and eventually material) categories, e.g., "donatable clothes," that are a function of the selected rule.

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[32] Gostin et al. (1999) provide a helpful illustration of Lessig's idea in the context of HIV prevention: "If bringing out a condom means 'I think I (or you) might have a disease,' it simply will not be done as frequently as it would be if the common meaning of the act is 'Everybody uses condoms'" (p. 73). To promote public health outcomes, then, one needs to manage the social meaning of condom use. To do that, one might employ public health campaigns that conceptually "tie" condom use (or the term "condom," etc.) to another cluster of concepts (or symbols, persons, etc.) that will import to condom use the targeted social meaning that *everybody uses condoms*. We should view amelioratívists as pursuing a similar strategy; they are (to use one example) tying the concept "subordination/ privilege" to the concept "gender" in order to change the social meaning of the latter so as to bring about (they predict) people's re-evaluation of their gender self-conceptions.

[33] The ameliorated categories we considered in Sect. 4.2.1 can also be used this way. For example, previously conflated kinds brought into sharper focus can then be labeled ("the true unemployed") and conceptually deployed to bring about desired effects (often via the causal looping mechanisms described in Hacking, 1995).

Even in the case of these meaning-management ameliorations, the effectiveness of the revision is dependent on the empirical same-tracking of real kinds. If you want your selected convention to intervene in the desired ways, then you will want its content to be premised on accurate empirical information about the real kinds (of students, teachers, one's daughter, etc.) that it places into causal interaction. More generally, whether revisionists are justified in making (often implicit) forecasts about the causal effects of the adoption of ameliorated concepts, terms, or conventions will ultimately depend on the degree of epistemic access that they have to the real kinds that they are (implicitly) attempting to manipulate. This means that the content of ameliorative meaning-management categories should be tethered to the ongoing and open-ended empirical tracking of whichever real kinds causally bear on their projected influence.

If there are exceptions to this, they appear trivial. In the case of meaning-management concepts or convention-starters that involve matters that are low-stakes (Bach, 2016, p. 187) or aesthetic (Khalidi, 2013, p. 63), one might reasonably float free from open-ended empirical concepts for real kinds and still achieve one's ends (Haslanger's "don't keep" clothing convention/category is a candidate). Such cases, however, are of limited philosophical and moral interest, and they should not inform our thinking about best practices (e.g., real-kind dependency) for concept formation involving cases that are morally pressing and that require precise worldly intervention (e.g., the cases of gender, race, imposter syndrome, and youth-self poisoning).

4.3 The importance of social coordination for achieving epistemic access to real kinds (and contrasts with the ameliorative approach)

In Sect. 3.2, I discussed how the content of terms and concepts that accommodate successful epistemic practices in the social sciences refer to the actual kinds that causally regulate their success. Here I emphasize that this causal conditioning of epistemic success by real kinds occurs in a way that is socially diffuse – it is spread out, both synchronically and diachronically, through socially organized research communities.

Boyd imagines that the authors of a recent paper in the journal *Cladistics* had prefaced their paper with a stipulative definition of species, picking from among the over 25 definitions currently available (*by "species" here we will mean*…). Boyd then asks:

> Would that have brought it about somehow that all uses of the term 'species' in their paper, and all of the species names they deployed, referred to phenomena satisfying their proposed definition? No. In the first place reference is a profoundly social phenomenon. The referents of the terms in the paper were determined—to the extent that they were determined—by the methodologically relevant relationships between their uses in the relevant biological communities and relevant causal features in the world. (2021, p. 2874)

Moreover, had these authors employed an *incorrect* definition of the term "species" (as revealed, say, by future investigations), then they still would have been referring to the kind that had been causally regulating their communities' productive uses of that term, despite their mistaken definition.

This socially embedded view of how terms refer to real kinds has important implications for how we might understand ameliorative projects. When these projects appropriate terms or draw from the cognitive labor of socially coordinated research communities, we can view the ameliorated terms as referring to the real kinds that causally regulate these communities' productive uses of the terms, despite the revisionist's stipulated and contrary classifications. The revisionist is referring to the same real kind as the social scientist and the natural kind theorist – the revisionist is saying about *it* that if you can get others to classify *it* in a certain way (a way that is perhaps non-open-ended and that misdescribes the kind to which they are referring) then the communal acceptance of this framing will cause morally positive changes to this real kind. As I argue in Bach (2019, p. 253), this is how we should understand Haslanger's ameliorated concepts of gender.

A concern motivated by our previous discussions is that by deploying new terms and descriptions for the same real kind, amelioratívists are actively facilitating the redundancy form of muddled reference described in Sect. 3.3. We can consider Manne's ameliorated misogyny concept in this light. I think that Manne's concept, which describes the "property of social environments" that subjects women to "the enforcement and policing of patriarchal norms and expectations" (2016, p. 19), refers to a causally and politically important real kind. Thus contrary to Mikkola's (2019, p. 199) objection that Manne's misogyny concept is too broad to achieve its normative aims, I think that misogyny's different manifestations as defined by Manne do exhibit

a (politically important) ontological unity. But I also think that Manne's category is one that social scientists have been researching and referring to for quite some time, typically in the context of discussions about gender expectancies and especially in discussions of "injunctive gender norms" that perform the very patriarchal policing functions discussed by Manne.[34] While the term "misogyny" is more punchy than "gender expectancies" and "injunctive gender norms," the worry is that Manne's ameliorative appropriation of it will bring about same-tracking redundancies (which carry their own normative cost, for reasons made clear in the foregoing) to the degree that it is successful.[35]

Related to this, and keeping the descriptive claims of Sect. 2 and Sect. 3 firmly in mind, we should ask whether ameliorative revisions overlook or make more difficult important contributions that philosophers are positioned to make to same-tracking. I discussed in Sect. 2.3 that different research programs are tuned to different ranges of proximal properties for the identification of real kinds. Philosophers, equipped with various forms of background knowledge about explanatory levels, theoretical identities, reduction, multiple realization, mechanistic explanation, (etc.), are well positioned to take a panoramic view of the way that different research program causally interact with real kinds. From this perch they can offer cross-theory identifications, naturalistic definitions, and recommend new ways of interacting with real kinds that will help resolve episodes of equivocal and redundant reference.[36] In addition, philosopher's training in ethics and normative concepts make them well positioned to theorize about the causal impact of the intersectional phenomena (e.g., functional double binds) attributed to real kinds in

[34] See, e.g., Eagly Wood, and Diekman (2000).

[35] Perhaps the hope is that everyone can quarantine the various uses of concepts like "misogyny" and "gender" so as to preserve the manipulative value of conceptual rebrandings alongside independent improvements to the causal regulation of investigative concepts. I am not so sure. There is the blurry question of whose purposes are at stake in the formation of a given ameliorative concept (the folk? philosophers? theory-minded empirical researchers? policy makers?), and that blurriness is made worse by the often unrecognized differences in the forms taken by norm-driven revisions, with some forms instrumentally invested in the empirical same-tracking of real kinds (Sect. 4.2.2) and others directly invested (Sect. 4.2.1).

[36] A notable example of a philosophical recommendation for interacting with real kinds that improved epistemic access was the suggestion, made independently by Dennett, Harman, and Bennett in each of their commentaries on Premack and Woodruff's 1978 article "Does the Chimpanzee Have a Theory of Mind?," to conduct (what is now called) a false belief task to gauge theory of mind (representational) capacities.

Sect. 2.2. All these contributions are arguably made more difficult in a situation where terminology is reappropriated for conceptual rebrandings.

5. Conclusion

Given the kinds of real kind that social scientists are tasked to identify and track – particularly their mutability, intersecting relationships, and selective property presentation – it is standard for social scientists to achieve only partial, equivocal, and redundant reference to them.

This situation is one that we want to improve for both epistemic and moral reasons. We want determinate rather than diffuse epistemic access to the kinds of adolescents that are at risk for self-poisoning, for example, so that we can intervene more precisely and effectively.

To improve our epistemic access to these kinds, it is important to embrace fully the ongoing and socially coordinated project of identifying and tracking real kinds – a commitment that requires open-ended investigative concepts, causal interactions with real kinds that further focus reference, and an improved understanding of when different research program are tracking the same real kind.

If researchers pursue norm-driven revisions of categories that are in the purview of the social sciences, then those classifications should be calibrated in reference to, or directly tied to, the ongoing same-tracking of social scientific real kinds.

References

Anderson, E. (1995). Knowledge, Human Interests, and Objectivity in Feminist Epistemology. *Philosophical Topics* 23(2), 27–58.

Bach, T. (2012). Gender Is a Natural Kind with a Historical Essence. *Ethics* 122(2), 231–72. https://doi.org/10.1086/663232

Bach, T. (2016). Social Categories Are Natural Kinds, Not Objective Types (and Why It Matters Politically). *Journal of Social Ontology* 2(2), 177–201. https://doi.org/10.1515/jso-2015-0039

Bach, T. (2019). Real Kinds in Real Time: On Responsible Social Modeling. *The Monist*, *102*(2), 236-258. https://doi.org/10.1093/monist/onz008

Boyd, R. (1979). Metaphor and theory change: What is "metaphor" a metaphor for? In A. Ortony (Ed.), *Metaphor and thought* (pp. 356 – 408). Cambridge, England: Cambridge University Press

Boyd, R. (1988). How to Be a Moralist Realist. In G. Sayre-McCord (Ed.), *Essays on Moral Realism* (pp.188-228). Ithaca, NY: Cornell University Press.

Boyd, R. (1999). Kinds, Complexity and Multiple Realization: Comments on Millikan's 'Historical Kinds and the Special Sciences'. *Philosophical Studies*, 95(1–2), 67–98.

Boyd, R. (2021). Rethinking natural kinds, reference and truth: towards more correspondence with reality, not less. *Synthese* 198, 2863–2903. https://doi.org/10.1007/s11229-019-02138-4

Bureau of Labor and Statistics (2021). *The Employment Situation* – May 2021. https://www.bls.gov/news.release/pdf/empsit.pdf. Accessed June 2021

Camerer, C. F., & Johnson, E. J. (1991). The Process-Performance Paradox in Expert Judgment: How Can Experts Know So Much and Predict So Badly?. In K. A. Ericsson & J.

Smith (Eds.), *Toward a General Theory of Expertise: Prospects and Limits* (pp. 195-217). Cambridge: Cambridge University Press.

Cha, C. B., Franz, P. J., M. Guzmán, E., Glenn, C. R., Kleiman, E. M., & Nock, M. K. (2018). Annual Research Review: Suicide among youth–epidemiology, (potential) etiology, and treatment. *Journal of Child Psychology and psychiatry*, *59*(4), 460-482.

Choo, H. Y., & Ferree, M. M. (2010). Practicing intersectionality in sociological research: A critical analysis of inclusions, interactions, and institutions in the study of inequalities. *Sociological theory*, *28*(2), 129-149.

Cole, E. R. (2009). Intersectionality and research in psychology. *American psychologist*, *64*(3), 170.

Davis, M. S. (1971). That's interesting! Towards a phenomenology of sociology and a sociology of phenomenology. *Philosophy of the social sciences*, *1*(2), 309-344.

Davis, M. S. (1986). That's classic! The phenomenology and rhetoric of successful social theories. *Philosophy of the Social Sciences*, *16*(3), 285-301.

Dupré, J. (1993). *The disorder of things: Metaphysical foundations of the disunity of science*. Harvard University Press.

Eagly, A. H., Wood, W., & Diekman, A. B. (2000). Social role theory of sex differences and similarities: A current appraisal. In T. Eckes & H. M. Trautner (Eds.), *The developmental social psychology of gender* (pp. 123–174). Mahwah, NJ: Lawrence Erlbaum.

Forbus, K. D., Gentner, D., Markman, A. B., & Ferguson, R. W. (1998). Analogy just looks like high level perception: Why a domain-general approach to analogical mapping is right. *Journal of Experimental & Theoretical Artificial Intelligence*, *10*(2), 231-257.

Elder, Crawford (2004). *Real Natures and Familiar Objects*. Cambridge, Mass.: Massachusetts Institute of Technology Press.

Elster, J. (2007) *Explaining social behavior: More nuts and bolts for the social sciences*. Cambridge University Press.

Field, H. (1973). Theory change and the indeterminacy of reference. *Journal of Philosophy, 70*, 462–481.

Frye, M. (1983). *The politics of reality: Essays in feminist theory*. Crossing Press.

Gentner, D., & K. Kurtz. (2005). Relational Categories. In W. K. Ahn, R. L. Goldstone, B. C. Love, A. B. Markman, & P. W. Wolff (Eds.), *Categorization inside and outside the laboratory: Essays in honor of Douglas L. Medin* (pp. 151–75). Washington, DC: America Psychological Association.

Godman, M. (2018). Gender as a historical kind: a tale of two genders?. *Biology & philosophy*, *33*(3-4), 21.

Godman, M. (2020). *The Epistemology and Morality of Human Kinds*. Routledge.

Gostin, L. O., Burris, S., & Lazzarini, Z. (1999). The law and the public's health: a study of infectious disease law in the United States. *Colum. L. Rev.*, *99*, 59.

Griffiths, P. E. (1997). *What Emotions Really Are: The Problem of Psychological Categories*, Chicago: University of Chicago Press.

Griffiths, P. E. (1999). Squaring the Circle: Natural Kinds with Historical Essences. In Robert A. Wilson (Ed.), *Species: New Interdisciplinary Essays* (pp. 209-228). Cambridge, Mass.: Massachusetts Institute of Technology Press.

Griffiths, P. E. (2004). Emotions as natural and normative kinds. *Philosophy of science*, *71*(5), 901-911.

Hacking, I. (1995). The Looping Effects of Human Kinds. In D. Sperber, D. Premack, & A. J. Premack (Eds.), *Causal Cognition: A Multidisciplinary Debate* (pp. 351-394). Oxford: Clarendon Press.

Haslanger, S. (1999). What knowledge is and what it ought to be: Feminist values and normative epistemology. *Philosophical Perspectives*, *13*, 459-480.

Haslanger, S. (2000). Gender and race: (What) are they? (What) do we want them to be?. *Noûs*, *34*(1), 31-55.

Haslanger, S. (2005). What are we talking about? The semantics and politics of social kinds. *Hypatia*, *20*(4), 10-26.

Haslanger, S. (2012). *Resisting Reality: Social Construction and Social Critique*. Oxford: Oxford University

Hawley, K. (2019, June). I—What Is Impostor Syndrome?. In *Aristotelian Society Supplementary Volume* (Vol. 93, No. 1, pp. 203-226). Oxford University Press.

Hawton, K., Townsend, E., Deeks, J., Appleby, L., Gunnell, D., Bennewith, O., & Cooper, J. (2001). Effects of legislation restricting pack sizes of paracetamol and salicylate on self poisoning in the United Kingdom: before and after study. *Bmj*, *322*(7296), 1203.

Holyoak, K. J., & Hummel, J. E. (2001). Towards an Understanding of Analogy within a Biological Symbol System. In D. Gentner, K. J. Holyoak, & B. N. Kokinov (Eds.), *The Analogical Mind: Perspectives from Cognitive Science* (pp. 161-195). Cambridge, MA: MIT Press.

Khalidi, M. A. (1998). Natural kinds and crosscutting categories. *The Journal of Philosophy*, *95*(1), 33-50.

Khalidi, M. A. (2013). *Natural categories and human kinds: Classification in the natural and social sciences*. Cambridge University Press.

Kitcher, P. (1984). Species. *Philosophy of Science*, *51*(2), 308-333.

Kornblith, H. (1995). *Inductive Inference and its Natural Ground: An Essay in Naturalistic Epistemology*. Cambridge, Mass.: Massachusetts Institute of Technology Press.

Lessig, L. (1995). The Regulation of Social Meaning. *The University of Chicago Law Review* 62(3), 943–1045.

Locke, John (1975). *An Essay concerning Human Understanding*, ed. Peter H. Nidditch, Oxford: Clarendon Press.

Mallon, R. (2016). *The construction of human kinds*. Oxford University Press.

Manne, K. (2017). *Down girl: The logic of misogyny*. Oxford University Press.

Mikkola, M. (2019) Down Girl: The Logic of Misogyny, by Kate Manne, *Australasian Journal of Philosophy*, 97:1, 198-201, https://doi.org/10.1080/00048402.2018.1475497

Mikkola, M. (2020). The Function of Gender as a Historical Kind. In Hufendiek, R., James, D., & van Riel, R. (Eds.), *Social Functions in Philosophy: Metaphysical, Normative, and Methodological Perspectives* (pp. 159-182). Routledge.

Millikan, R. (1984). *Language, thought, and other biological categories: New foundations for realism*. MIT press.

Millikan, R. (1999). Historical Kinds and the ‘Special Sciences’. *Philosophical Studies* 95(1–2), 45–65.

Millikan, R. (2000). *On clear and confused ideas: An essay about substance concepts*. Cambridge University Press.

Millikan, R. (2002). Biofunctions: Two Paradigms. In Ariew, A., Cummins, R., & Perlman, M. (Eds.), *Functions: New essays in the philosophy of psychology and biology* (pp. 113-143). Oxford University Press, USA.

Millikan, R. (2017). *Beyond concepts: Unicepts, language, and natural information*. Oxford University Press.

Paul, S. K. (2019, June). II—What Should ‘Impostor Syndrome’ Be?. In *Aristotelian Society Supplementary Volume* (Vol. 93, No. 1, pp. 227-245). Oxford University Press.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind?. *Behavioral and brain sciences*, *1*(4), 515-526.

Root, M. (2000). How We Divide the World. *Philosophy of Science* 67, S628–39.

Schroeter, L., & Schroeter, F. (2019). The Generalized Integration Challenge in Metaethics. *Nous*, *53*(1), 192-223.

Shanteau, J. (1992). Competence in experts: The role of task characteristics. *Organizational Behavior and Human Decision Processes*, *53*, 252–266.

Spelman, E. V. (1988). *Inessential woman: Problems of exclusion in feminist thought*. Beacon Press.

Spiller, H. A., Ackerman, J. P., Spiller, N. E., & Casavant, M. J. (2019). Sex-and age-specific increases in suicide attempts by self-poisoning in the United States among youth and young adults from 2000 to 2018. *The Journal of pediatrics*, *210*, 201-208.

Wray, M., Colen, C., & Pescosolido, B. (2011). The sociology of suicide. *Annual Review of Sociology*, *37*.