

Chapter 10

Psychopathy as a Scientific Kind: On Usefulness and Underpinnings



Thomas A. C. Reydon

Abstract This chapter examines the status of psychopathy as a scientific kind. I argue that the debate on the question whether psychopathy is a scientific kind as it is conducted at present (i.e., by asking whether psychopathy is a natural kind), is misguided. It relies too much on traditional philosophical views of what natural kinds (or: legitimate scientific kinds) are and how such kinds perform epistemic roles in the sciences. The paper introduces an alternative approach to the question what scientific (or: natural) kinds are. On this alternative approach, the *Grounded Functionality Account* of natural kinds, psychopathy emerges as a “good” scientific kind that is best understood as a region on a multidimensional space of behaviors rather than as a traditional natural kind.

Keywords Grounded functionality account · Natural kinds · Psychiatric kinds · Psychopathy · Scientific kinds

10.1 Introduction

Diagnosing a person as suffering from psychopathy – that is, as “being a psychopath” – seems to amount to placing that person into a particular category of people that supposedly share certain symptoms (i.e., a set of behavioral traits) as well as a common set of causes that underlie those symptoms. In the same way as for classifications in other domains of science and everyday practice, it seems that the grouping of people in the category of psychopaths is intended to serve a variety of epistemic functions in the biomedical sciences and in clinical practice. Presumably, it is used to serve certain functions in juridical settings and everyday contexts too

T. A. C. Reydon (✉)

Institute of Philosophy & Centre for Ethics and Law in the Life Sciences (CELLS),
Leibniz University Hannover, Hannover, Germany
e-mail: reydon@ww.uni-hannover.de; <https://www.reydon.info/>

© Springer Nature Switzerland AG 2022

L. Malatesti et al. (eds.), *Psychopathy*, History, Philosophy and Theory of the
Life Sciences 27, https://doi.org/10.1007/978-3-030-82454-9_10

169

(see, e.g., Malatesti & McMillan, 2014), but for reasons of space I shall ignore those here.

Important (but certainly not the only) epistemic functions of scientific classifications are the making of inferences (knowing the properties that the observed members of a kind share allows us to make reliable inferences about as yet unobserved members of the kind) and the construction of explanations (knowing that an entity is a member of a particular kind explains its behavior). Accordingly, the grouping of persons in the category of psychopaths is supposed to allow researchers, clinicians, aid workers, and so on to make predictions about how a person falling into the category will behave under particular circumstances, as well as how the person's behavior might be changed by means of therapies or other measures (Brazil et al., 2018). Thus, the category of psychopathy is supposed to serve researchers, clinicians, aid workers, and so on as a basis for investigations into the causes of psychopathy and possible ways of intervention.

A set of questions that now arises, is the following: Does the category of psychopathy indeed successfully serve the purposes that it is intended to serve? And if it does, *how* does it succeed? More generally, what makes classifications and the kinds that feature in them suitable to perform their epistemic functions, that is, what makes some classifications and kind suitable to stand at the focus of scientific investigations, and others much less so (Brazil et al., 2018)?¹ These are questions that have a long history of discussion in the philosophy of science, as well as analytic philosophy more broadly. A traditional way of approaching these questions is by using the philosophical theory of natural kinds as a tool for the analysis of individual cases and distinguishing “good” scientific kinds – i.e., kinds of things, phenomena, etc. that represent groups in nature – and thus can stand at the focus of scientific research – from groupings that are unsuitable for use in scientific research (MacLeod & Reydon, 2013; Reydon, 2010a, b). Thus, authors have asked whether kinds of entities in physics, chemistry, biology, and the social sciences can be conceived of as natural kinds – and, indeed, whether psychiatric kinds such as psychopathy *are* natural kinds (Beebe & Sabbarton-Leary, 2010; Brzović et al., 2017; Haslam, 2002a, b; Held, 2017; Kendler et al., 2011; Samuels, 2009; Tsou, 2013, 2016, 2019; Varga, 2018; Zachar, 2000, 2015). A guiding assumption in these debates is that natural kinds are “good”, “legitimate” or “valid” kinds for the purposes of scientific research, while other kinds (such as arbitrarily constructed groupings) are not useful for scientific use. Whether or not psychopathy and other psychiatric kinds can be counted as natural kinds thus could have profound ramifications for psychiatric research and clinical practice.

In what follows, I will explore the question whether psychopathy is a “good” scientific kind and – answering this question affirmatively – I will try to clarify how psychopathy as a scientific kind is best conceived of. This will entail a perspective

¹Presumably, classifications and kinds also perform non-epistemic roles, such as practical and social roles (e.g., the medical treatment of patients with certain symptoms, or implementing affirmative action measures for individuals of particular groups). For reasons of space, however, I shall ignore these in the present paper and only look at the most prominent epistemic roles.

of psychopathy as a kind that is quite different from traditional views of natural kinds. I will begin by briefly reviewing the state of the art in the philosophy of kinds and classification, and then examine the debate on the question whether kinds in psychiatric research and clinical practice, such as psychopathy, can be conceived of as natural kinds. I will argue that this debate as conducted at present is misguided, and introduce an alternative approach to the question what natural (or, scientific) kinds are.² By way of conclusion, I will suggest an alternative view of how psychopathy – if it cannot be understood as a natural or scientific kind – may still play a useful role in research and clinical practice.

10.2 The Philosophy of Kinds and Classification

The philosophical literature on (natural) kinds and classification is vast. Within the scope of the present chapter I can only provide a brief sketch of what (for the purposes of this chapter) I consider to be the most relevant aspects of the debate.

Traditionally, natural kinds are thought of as kinds of substances (gold, water, etc.) or of entities (material objects, processes, properties, events, behaviors, phenomena, etc.) that exist in nature independently of human classificatory activities, or – better formulated – as kinds of things that represent aspects of nature and as such have a firm foundation in nature. This natural foundation is supposed to hold the kind's member entities together, keep them separate from members of other kinds, explain the characteristic traits of the members of a kind, underpin the possibility of making generalizations about the members of a natural kind, and so on. Because of their natural foundation, natural kinds can stand at the focus of scientific investigations, and can be used to perform crucial epistemic roles in the sciences such as the ones mentioned in the preceding section. On this view, one of the principal aims of science is producing new knowledge about the various natural kinds of substances and/or things that exist in the world. As Bird and Tobin (2018) put it in their authoritative entry on natural kinds in the *Stanford Encyclopedia of Philosophy*:

Scientific disciplines frequently divide the particulars they study into *kinds* and theorize about those kinds. To say that a kind is *natural* is to say that it corresponds to a grouping that reflects the structure of the natural world rather than the interests and actions of human beings. We tend to assume that science is often successful in revealing these kinds [...]. The existence of these real and independent kinds of things is held to justify our scientific inferences and practices.

Unfortunately, the situation is much less simple than the above quotation suggests. On the picture suggested by the quotation from Bird & Tobin – which is a widespread picture in the philosophical literature on natural kinds – there is something

²I will use the terms 'natural kind' and 'scientific kind' interchangeably. Whether one chooses to talk about scientific kinds or natural kinds, is merely a matter of terminological preference, I think. When it comes to this choice, though, nothing hinges on the usage of terms.

in nature that natural kinds latch onto. That is, natural kinds represent “the structure of the natural world” adequately and because science is interested in various aspects of this structure, natural kinds are suitable groupings for scientists to investigate. But what, exactly, *is* this presumed “structure of the natural world” that natural kinds are supposed to represent? And what about that structure should they represent – the core elements of that structure, those aspects that we happen to find interesting, or what? Does the world *have* a structure at all, or does it have no structure, or does it have many structures that all could be represented by natural kinds? How can we know whether the world has a definite structure, and what that structure consists in? These are long-standing metaphysical as well as epistemological questions that problematize the traditional picture of natural kinds and so far have not been conclusively answered.

Available accounts of natural kinds tend to assume that there is *one* specific aspect of the structure of the natural world that natural kinds should represent, but authors disagree on what this aspect is. For the longest time, the notion of natural kinds was connected to essentialism, i.e., the claim that for every natural kind there is a set of intrinsic, deep-level traits – the essence of the kind – that all and only members of that kind share, and that explain the observable traits that members of the kind typically exhibit. The idea thus was that essences are parts of the world’s structure, and natural kinds latch onto those parts. For the various kinds of elementary particles (the kinds featuring in the Standard Model of particle physics) and atoms (the chemical elements featuring in the Periodic System) this picture seems to make sense. Consider one of the well-worn examples usually mentioned in the literature on natural kinds: gold. All gold atoms have 79 nuclear protons, and only gold atoms do, so the intrinsic property of having a nucleus that contains 79 protons is both necessary and sufficient for being a gold atom. The property of having a nucleus that contains 79 protons performs an explanatory role with respect to the typical interactions of gold atoms with other atoms. In this sense, having a nucleus that contains 79 protons can be thought of as the essence of the kind gold.

Essentialism has, however, come under fire in the philosophy of science as a view that does not fit many of the kinds and classifications that actually feature in scientific practice. Consider the biological classification of organisms into species. Once a paradigmatic example of a classification into natural kinds, the view that biological species are natural kinds characterized by essences in the aforementioned sense is very difficult to uphold (Reydon, 2010b, 2012, 2013: 207–208).³ Most importantly, there usually is considerable variation among the members of any biological species, both synchronically and diachronically. Diachronically, due to evolutionary change, the early members of a species will not necessarily resemble late members of the same species. Synchronically, there must be variation among the members of a species to make future evolution by means of natural selection

³For the story of the demise of essentialism in biology, see Ereshefsky (2001: 95–102). For an extensive discussion of the notion of natural kinds and its connection to essentialism, as well as an argument against essentialism that has strongly influenced the contemporary discussion on natural kinds, see Dupré (1993, Chapters 1–3).

possible. In both cases, variation can occur with respect to any of the organisms' traits, such that no trait or set of traits can be singled out as the species' essence.

Notwithstanding the demise of essentialism, present-day accounts of natural kinds still tend to focus on one aspect of nature that all natural kinds are thought to represent. Consider the following examples. One account that is widely applied to kinds in the various sciences, Boyd's *Homeostatic Property Cluster* account (e.g., Boyd, 1991, 1999, 2000), treats all natural kinds as representing homeostatic mechanisms in nature that cause stable patterns of similarity between a kind's members to exist and in this way underwrite inferential statements about those kind-typical similarities.⁴ In a similar way, a recent account proposed by Khalidi (2013, 2018) treats all natural kinds as representing nodes in the causal network structure of the world. And on an account proposed by Slater (2013, 2015), all natural kinds represent stable patterns in nature that should simply be taken as brute facts of nature. This is not to say that there are no causes underlying such patterns, but rather that the nature of these causes is irrelevant for accepting a pattern as a natural kind. Slater's point is that if we find a stable pattern of properties that regularly co-occur, we can highlight this pattern as a natural kind without knowing more (or anything) about what causes the co-occurrence. Moreover, there can be a plurality of such underlying causes on Slater's account. Notwithstanding the differences between Boyd's, Khalidi's and Slater's accounts, all treat natural kinds as representing *one* particular aspect of the world. In the contemporary debate, essences came to be replaced by homeostatic mechanisms, or by nodes in the world's causal network, or by stable patterns, or by other factors, depending on which account one prefers.

As argued elsewhere (Ereshefsky & Reydon, 2015, [forthcoming](#)), this focus on one single aspect of nature that is supposed to underwrite all natural kinds (be it homeostatic mechanisms, nodes in nature's causal nexus, stable patterns, or something else) is problematic. When considering the diverse sciences, we see that scientists can have a variety of aspects of nature in mind when they construct classifications. Some classifications may be aimed at supporting inferential statements, other at obtaining stable groups in which every entity under study can be uniquely located, others at obtaining groups of organisms that can stand at the focus of nature conservation efforts, others at mapping out all the causal factors that play a role in a particular domain of phenomena, still others at obtaining groups of people that are useful as the basis for therapeutic and social interventions, and so on. Sometimes homeostatic mechanisms might be in focus, while in other context causal nodes are highlighted, still other areas focus on brute stable patterns, and so on. Any adequate account of natural kinds should therefore recognize a plurality of

⁴Boyd's account has become popular among scientists in various areas of work as well as philosophers of science, and is often seen (but also criticized) as a promising account of kinds in psychology and psychiatry (Beebe & Sabbarton-Leary, 2010; Brzović et al., 2017; Held, 2017; Kendler et al., 2011; Samuels, 2009). However, Boyd's account is problematic as an account of natural kinds or kinds that successfully feature in the sciences – for reasons of space, I am unable to elaborate this matter here, but for detailed criticism see Ereshefsky and Reydon (2015).

aspects of nature that natural kinds might latch onto. Available accounts, thus, are too monistic and insufficiently attuned to what scientific practice is actually like.

Moreover, lacking direct access to what the natural world is like, we lack foundations for the assumption *that* the world has any clear-cut general structure (Waters, 2017, 2019). This makes it doubtful that the kinds that feature in the sciences can be interpreted as simply representing unique aspects of *the* world's structure. There might be many – even innumerable many – structures, or there might be no structure at all. As we don't have any direct access to the world's inner workings (i.e., we cannot straightforwardly see what the world is really like, but have to use mediated observations, experiments, inferences, and so on), the assumption that the world has a unique structure that natural kinds should latch onto is unwarranted.

For the reasons discussed above, the view according to which “[t]o say that a kind is *natural* is to say that it corresponds to a grouping that reflects the structure of the natural world rather than the interests and actions of human beings” (Bird & Tobin, 2018) does not seem tenable. We cannot say much about *the* structure of the natural world independently of the interests and actions of human beings, after all. Any account of natural kinds should account for those kinds that we use to describe, explain, and intervene in the world – i.e., the kinds that feature in the investigations of the world that we conduct because of the particular interests that we have.

By way of an alternative account (called the *Grounded Functionality Account* of natural kinds) that takes up the preceding considerations, Ereshefsky and Reydon (forthcoming) have suggested that “good” scientific kinds are kinds that further the specific epistemic and non-epistemic aims of the particular context in which they are used. The “goodness” of scientific kinds thus is a matter of functionality, i.e., of how well kinds perform as judged by the specific aims of the research context in which they feature. In addition, a kind's functionality must be explained in terms of what it is in the world that the kind represents. That is, a kind must not only be functional to count as a “good” scientific kind, but its functionality must also be explained by how it is grounded in specific aspects of nature. Both the functionality and the grounding of kinds are local matters on this account, and not global matters: functionality is assessed only with respect to the specific aims of a particular research context, and the explanation of how kinds achieve their functionality is given only in terms of the aspects of nature that are in focus of the corresponding research context. On the *Grounded Functionality Account*, natural kinds depend on the world as well as on human interests and classificatory activities.

This account follows the view of classification that was formulated more than three centuries ago in Locke's *Essay Concerning Human Understanding*. Locke observed that there always are two sides to every classification: as Locke put it, nature makes entities, phenomena, etc. similar and different, while we group entities, phenomena, etc. into kinds on the basis of the similarities and differences that we are interested in.⁵ While many available accounts of natural kinds only look at

⁵For discussions of Locke's view and how it relates to the contemporary debate on kinds, see (Reydon, 2010a, 2014, 2016).

one side (what it is in nature that kinds represent) and as such can be said to think of natural kinds as “zooming in” onto aspects of nature, adequate accounts should look at both sides and think of kinds as equally being the result of nature and of human interests and classificatory activities (what I elsewhere called “co-creation” of kinds by nature and by us – Reydon, 2016). More generally (and that is the gist of the *Grounded Functionality Account*), when assessing the question at the beginning of this chapter – what makes some classifications suitable to stand at the focus of scientific investigations and others much less so – one has to look at both *what a classification is for* (i.e., the specific epistemic and non-epistemic aims in focus) and *how the classification achieves what it is for*.

10.3 Is Psychopathy a Natural Kind?

In the past 1–2 decades a body of literature has come into existence in which kinds of mental disorders are discussed as putative natural kinds. Several authors have noted that we have a – possibly innate – tendency to think of diseases and mental disorders in essentialist terms and thus as there being a set of deep-level, explanatory traits that, must necessarily be exhibited by a person to be classified as suffering from a particular disease or disorder, and is sufficient to classify the person as a sufferer from that disease or disorder (for discussion, see Haslam & Ernst, 2002; Adriaens & De Block, 2013). Because of such an essentialist understanding of natural kinds, a widespread consensus emerged that psychiatric disorders cannot be thought of as natural kinds.

For example, Zachar argues that “that it is a mistake to think of psychiatric syndromes as natural kinds, meaning bounded categories that have necessary and sufficient internal conditions for their diagnosis” (Zachar, 2000: 168) and that “this kind of essentialistic thinking is scientifically malignant” (Zachar, 2000: 169). Zachar – as well as other participants in the debate, such as Haslam (2002a, b) – think of natural kinds as grounded in essences (in the sense specified above) and reject psychiatric kinds as such natural kinds. Instead, Zachar suggests that they are practical kinds, that is, “stable patterns that can be identified with varying levels of reliability and validity” (Zachar, 2000: 167). But, as was briefly discussed in Sect. 10.2, there are many other accounts of what natural kinds are, some of which might fit psychiatric kinds better than essentialism. In particular, it is noteworthy that Zachar’s notion of practical kinds seems the same as Slater’s notion of natural kinds, mentioned above. While Zachar rejects mere stable patterns as natural kinds, Slater accepts them and argues that this is precisely what natural kinds *are*: stable patterns in the world. Zachar seems to object to the assumption that there always must be a clear-cut set of intrinsic traits underlying a pattern of behavior for it to count as a psychiatric natural kind. But the brief discussion in Sect. 10.2 showed that this is too strict a view of what natural kinds – or “good” scientific kinds – are. In this sense, the debate on psychiatric kinds is misguided.

In later work, Zachar (2015; Kendler et al. 2011) is more positive about Boyd's *Homeostatic Property Cluster* account of natural kinds, as he conceives it as less essentialistic than traditional views.⁶ But he criticizes Boyd's account for not acknowledging the role of social factors in the construction of psychiatric kinds. As he put it:

Natural kind concepts are supposed to represent what exists independent of our classifications, but in application, concepts for disorders become subject to our goals and interests. The clinical goals of practitioners and patients, the various scientific goals of researchers, philosophical theories about the nature of disorders, the priorities of health service administrators and social policy analysts, and commercial interests, for better or worse, have all played a role in how constructs for psychiatric disorders are developed. [...] The homeostatic property cluster model [...] says little about the role of background assumptions and goals in selecting "good" classifications. [...] Such is the inspiration behind the claim that psychiatric disorders are practical kinds. (Zachar, 2015: 289).

I agree with Zachar that the *Homeostatic Property Cluster* does not have social factors, such as clinical goals and priorities of health service administrators, in view when it comes to accounting for how kinds and classifications are constructed. The aim in view in Boyd's account is purely epistemic (i.e., the making of inferences). But I have quoted Zachar at length, because this quotation is illustrative of a further important aspect of the debate. Besides essentialism Zachar also assumes that natural kinds represent "what exists independent of our classifications" (Zachar, 2015: 289), thus expressing something similar to Bird & Tobin's view of natural kinds representing "the structure of the world", quoted above.

Zachar argues – correctly, I think – that psychiatric kinds do not necessarily represent nature as it is independently of human interests and classificatory activities, but to an important extent represent the interests of researchers, clinicians, health service administrators, and other parties with a vested interest in mental health. Indeed, as Hacking famously argued (e.g., Hacking, 1993, 1995, 1999, 2007) kinds in the human sciences (including psychiatric and psychological kinds and categories) to a considerable extent are products of social construction. What Hacking called "human kinds" are kinds of people, who are being grouped together by scientists into a kind because they exhibit the same scientifically interesting behaviors, characteristics, dispositions, etc. (Hacking, 1995: 351–352) – kinds like child abuser, genius, obese person, or unemployed person. Human kinds thus are intended as "good" scientific kinds, i.e., as kinds "about which we would like to have systematic, general, and accurate knowledge; generalizations sufficiently strong that they seem like laws about people" (Hacking, 1995: 352).

Hacking pointed to two important differences between human kinds and natural kinds. First, in contrast to the entities studied in the natural sciences the entities that the human/social sciences study (i.e., individual humans) may become aware that

⁶Zachar also proposed an account of psychiatric kinds as "moral-medical kinds" (Zachar & Potter, 2010) in response to Charland's (2004) suggestion that many personality disorders are moral disorders rather than medical disorders, that is, moral categories that are to be conceived of in a different way than the (natural) kinds that stand at the focus of biomedical science.

scientists classify them in a particular manner. Consequently, they may become motivated to alter their behavior or their characteristics and, in so doing, may bring it about that what scientists thought they knew to generally hold about members of the kind no longer holds. Thus, in contrast to the natural sciences, classifications in the human/social sciences may induce changes in the properties of the classified entities in such ways that useful scientific generalizations over the kinds will not be possible. Hacking calls such feedback effects between classifications and the classified subject matter “looping effects”. Second, “[t]he chief difference between natural and human kinds is that the human kinds often make sense only within a certain social context” (Hacking, 1995: 362). Hacking argued that the kinds of people studied in the human/social sciences are not simply “given”, but are kinds that are constructed at some point in human history in response to changes in the cultural context. The kind homosexual, for example, “as a kind of person came into being only late in the nineteenth century as homosexual behavior became an object of scientific scrutiny” (Hacking, 1995: 354). Thus, it is not the case that this kind was *discovered* by social scientists in the late-nineteenth century – as, for example, sodium was discovered earlier that century. Rather, according to Hacking, the kind was *created* at a particular time and in a specific cultural context as a result of a particular human behavior becoming socially and scientifically interesting. Moreover, the criteria for being a member of the kind may change with the interests of society and science, leading to changes in kind membership and even to kinds ceasing to be recognized.⁷

Such dependence of kinds on human interests makes it questionable, on Hacking’s view, whether the natural grounding of such kinds is sufficiently strong and the kinds themselves sufficiently stable to perform its epistemic roles. At least, for Hacking it was sufficient reason to think that kinds in the human sciences do not live up to the expectations of “good” scientific kinds (and Zachar seems to agree on this point). But the assumption that natural kinds represent the world as it is independently of human interests, is much too strict. As I pointed out in Sect. 10.2, accounts of natural kinds exist that explicitly take natural kinds to represent human interests *as well as* aspects of the world (Ereshefsky & Reydon, 2015, [forthcoming](#); Reydon, 2014, 2016). Moreover, this way of thinking about natural kinds has been present in philosophy for over 300 years. Zachar’s conclusion that psychiatric kinds are not natural kinds because they are affected by our goals and interests, thus, is mistaken.⁸

But I believe that there is another reason why claims like the ones made by Zachar – and the debate on whether psychiatric kinds are natural kinds more

⁷Hysteria is a prominent example of a kind that made sense within a particular context, but ceased to be recognized at a later time.

⁸I also believe that Zachar’s claim, that Boyd’s account does not acknowledge the role of human interests and goals in the construction of classifications, is mistaken. In his work, Boyd explicitly refers to Locke’s views on kinds and presents his work as a continuation of Locke’s ideas and philosophers tend to understand Boyd’s account as allowing human interests to play a part in classifications (e.g., Beebe & Sabbarton-Leary, 2010).

generally – are mistaken. The debate focuses on available philosophical accounts of what natural kinds are, and then asks whether psychiatric kinds fit those accounts. (And, as I argued, the debate does not include the whole spectrum of available accounts, but considers only essentialism and the *Homeostatic Property Cluster* account, and finds that psychiatric kinds do not fit those accounts.) Participants in the debate often come to a negative conclusion that psychiatric kinds in general, or at least one or several important psychiatric kinds, cannot be thought of as natural kinds (e.g., Brzović et al., 2017; Haslam, 2002a, b; Varga, 2018; Zachar, 2000, 2015).⁹ Some authors, such as Zachar (discussed above) introduce other ways of thinking about psychiatric kinds. But what is gained by such arguments? The original question that at the beginning of this chapter I highlighted as standing at the heart of the philosophical debate on natural kinds – what makes some classifications suitable to stand at the focus of scientific investigations (and others much less so) – remains unanswered. Zachar’s claim that psychiatric kinds are practical kinds takes psychiatric kinds out of the natural kinds fold, but does not explain why psychiatric kinds are successfully used in scientific research, clinical practice, and other contexts. The focus on what philosophers have written about the concept of natural kinds thus has led the debate astray, away from the question that the debate should have been about.

Taking available philosophical accounts and asking whether the case of psychopathy fits any of these accounts amounts to putting the cart before the horse, I suggest. So, in what follows I want to refocus the debate on its proper question: how can the successful use of psychiatric kinds be explained?¹⁰ In so doing, I will also focus on the psychiatric kind of psychopathy, as so far I have said little about that kind.

Note first that traditional views of natural kinds, such as voiced by Bird and Tobin (2018), indeed do not fit the case of psychopathy. The kind psychopathy is not simply found in the world. We find individual human beings, each with a specific set of traits and behaviors and with a considerable variety between individuals, and some of those individuals we group together into the category of psychopaths on the basis of certain traits that are considered to be characteristic. In his influential account of case studies, *The Mask of Sanity*, Cleckley ((1976); see also Thomas-Peter, 1992: Table 1) listed 16 traits as characteristic of psychopaths, and contemporary definitions typically are variations on Cleckley’s list. An article aimed at a general audience, for example, says:

⁹But see Tsou (2013, 2016, 2019) for a more positive view of psychiatric kinds as natural kinds.

¹⁰Assuming that psychopathy and other psychiatric kinds that feature in classificatory systems such as ICD-10 and DSM-5 are successfully used in the sciences, that is. I will not question that assumption at this point in the paper, but will discuss it further below. Here, it should be noted that several authors have shed doubt on the usefulness assumption, highlighting the problem that such kinds might not be useful precisely because they do not capture unified sets of causal factors, mechanisms, etc., that underwrite re-occurring clusters of phenomena. For discussion, see Insel and Cuthbert (2015), Brazil et al. (2018) or Jurjako et al. (2019).

psychopathy consists of a specific set of personality traits and behaviors. Superficially charming, [...] self-centered, dishonest and undependable, and at times they engage in irresponsible behavior for no apparent reason other than the sheer fun of it. Largely devoid of guilt, empathy and love [...]. Psychopaths routinely offer excuses for their reckless and often outrageous actions, placing blame on others instead. They rarely learn from their mistakes or benefit from negative feedback, and they have difficulty inhibiting their impulses (Lilienfeld & Arkowitz, 2007/2008: 90).

At present, we have a situation in which different definitions encompass different lists of characteristic traits (see, e.g., MacKenzie, 2014; Brzović et al., 2017: 192ff.). At the phenomenological level, that is, the level of observable behavioral traits thought characteristic of members of the kind psychopath, there is profound disagreement with respect to the question which set of traits can be taken to delimit the kind.

This disagreement is deepened by a long-standing debate on the causal basis of the set of behavioral traits characteristic of psychopaths. In the “Hare vs. Blackburn” debate (discussed in detail by Thomas-Peter, 1992), for example, one side proposed a classification of psychopaths into “primary psychopaths” (characterized by low levels of anxiety and thought to be strongly genetically based) and “secondary psychopaths” (characterized by high levels of anxiety and thought to be strongly environmentally based) on the basis of clear differences in behavior,¹¹ while the other side in the debate argued that secondary psychopaths should not be classified as psychopaths at all, because the two kinds of behavior were due to different underlying causes. The debate ensued in different conceptualizations of psychopathy, which Thomas-Peter (1992: 339) identifies as a North American and a European conceptualization. But the debates are not limited to these two conceptualizations. In a recent inventory of the debates, Lilienfeld et al. (2015) highlighted that authors disagree on the questions which behavioral traits should be included in the set of characteristic traits, whether psychopathy is a unidimensional or multidimensional condition, whether adaptive traits (traits that generally benefit their bearers, such as boldness) are part of the condition, whether antisocial behaviors constitute an integral part of the condition or merely are consequences of it, and whether the correlations between behavioral symptoms is sufficient to understand psychopathy as a syndrome. As the authors point out, it is not clear whether psychopathy is a unified category or encompasses a plurality of quite distinct behavioral phenomena, how sharply delimited the category is or can be made, and what exactly psychopathy *is* (Lilienfeld et al., 2015). The authors’ diagnosis is severe: “If researchers cannot agree on whether psychopathy is one condition or several, or on whether the traits that some researchers view as essential to the condition are even relevant to it, the field is bound to be in intellectual disarray.” (Lilienfeld et al., 2015: 594). If this

¹¹ “[T]he inappropriate behavior of the primary psychopath is presumed to be a consequence of some intrinsic deficit that hampers self-regulation and normal adjustment, whereas secondary psychopathy is viewed as an indirect consequence of inadequate intelligence, psychotic thinking, excessive neurotic anxiety, unusual sex drive, or other attributes that increase a person’s vulnerability to chronic misbehavior” (Newman et al., 2005: 319).

diagnosis is correct, it may be doubted whether psychopathy is a “good” scientific kind at all, i.e., a kind that can be used fruitfully in research and clinical contexts. Under such circumstances, asking whether psychopathy can be thought of as a natural kind is moot.

The problem with respect to the kind ‘psychopath’ as a “good” scientific kind (or, even, a natural kind), then, can be summarized as follows. First, there exists persistent unclarity regarding the question which behavioral traits are characteristic of the members of the kind ‘psychopath’. At the level of the phenomena, thus, there is a debate whether ‘psychopathy’ denotes a stable pattern of behavioral traits at all. Second, there exists persistent unclarity regarding the question how the kind is grounded, i.e., which deep-level traits, causal factors, mechanisms, or other factors are responsible for the regular co-occurrence of the aforementioned characteristic traits. Some participants in the debate hold that, while ‘psychopathy’ does denote a stable pattern of behavioral traits, there is no common grounding for all instances, such that psychopathy cannot be seen as a natural kind but should be thought of as a mere practical kind (Zachar, discussed above). Third, and connected to the second point, there exists persistent unclarity regarding the question to what extent the kind ‘psychopath’ is grounded in nature (i.e., to what extent factors in nature play a role in supporting the kind, be it one factor for all instances or a diversity of factors) and to what extent it is grounded in the interests of researchers, clinicians, health administrators, and others. As we have seen in the above discussion, for authors such as Zachar, the partial grounding of psychiatric kinds in human interests reinforces the view of such kinds as practical – but not natural – kinds.

But if these considerations are right, what does this imply for the use of ‘psychopathy’ as a technical term in mental health research and clinical practice? The term continues to be widely used and even if the debate ends in the determination that psychopathy cannot be conceived of as a natural kind, its roles in research and clinical practice still must be explained. To conclude, I will now turn to this issue.

10.4 Psychopathy as a Behavioral Variant Rather Than a Kind

To what extent can we judge whether psychiatric kinds, such as psychopathy, are “good” scientific kinds? The philosophy of kinds and classification, briefly discussed above, can provide us with tools to accommodate this debate. Recall from Sect. 10.2 that a diverse spectrum of accounts of natural kinds is available in the philosophical literature. Most of these focus on the first and/or second issues mentioned in the previous paragraph, i.e., the properties that are thought to be characteristic of a kind’s member entities at the phenomenal level and/or the deep-level properties or causal factors that cause the regular co-occurrence of those characteristic properties. That is, most available accounts of natural kinds focus on what it is *in nature* that kinds represent, either at the level of empirically accessible

phenomena, or at the level of what underlies these phenomena, or both.¹² What is much less in focus is the question what a classification *is for* – in what ways kinds are successfully used in scientific practice and other contexts of practice, and (subsequently) what underwrites their success.

I want to suggest that it is not a fruitful approach to ask (1) what aspects of nature a kind represents without first considering (2) what it was *intended* to represent and why researchers, clinicians, and so on, in the first place chose to focus on those aspects of the world rather than on other aspects. The *Grounded Functionality Account* of kinds, mentioned above, inverts the order of questions (1) and (2) and begins with question (2). It begins by asking how well a kind or classification performs in light of the specific aims for which it was developed, and only then moves on to asking how the kind's functionality can be explained in terms of what it is in the world that the kind represents. Taking this perspective on the case of psychopathy or psychiatric kinds more generally leads us to focus on the questions for what aims the kind psychopathy was devised, whether it performs successfully in research, clinical practice and elsewhere, and if it does perform successfully, what underpins its success. I suggest that in this way the *Grounded Functionality Account* of kinds provides tools with which the debate can be reoriented in a more fruitful direction.

When asking whether psychopathy is a “good” scientific kind, then, the first question that presents itself is whether the kinds furthers the aims of *that* classificatory context within which it is used. An interesting aspect of the debate that was examined in the previous section is that it is conducted against the background of the assumption that psychopathy *is* a functional kind. That is, it is a kind that performs at least *some* role in scientific research and clinical practice. This assumption seems right: a quick search in Google Scholar yields a plethora of research publications that center around the kind psychopathy. But statements like the one from Lilienfeld et al. (2015), quoted above, suggest otherwise. The disagreement among researchers and clinicians about questions whether ‘psychopathy’ denotes one condition or multiple, which behavioral traits should be counted as part of the set of characteristic behaviors of psychopaths, and what psychopathy ultimately is, suggests that it may be doubted whether psychopathy is a useful scientific kind at all. It is odd that the debate that was reviewed briefly in the preceding section largely passes by the question *for what* the kind term ‘psychopathy’ is used, and lets itself be bogged down by the dichotomy between kinds that represent the world as it is independently of us (natural kinds, on traditional views of what natural kinds are)

¹² In a recent paper, for example, Brzović et al. (2017) argued that there is insufficient evidence to assume that psychopathy is associated with a stable behavioral pattern (i.e., a stable set of behavioral traits that is seen in most psychopaths) and that there is insufficient evidence to assume that the kind psychopathy is supported by a stable set of underlying mechanisms or causal factors. Thus, the authors conclude, psychopathy cannot be understood as a natural kind – neither on Boyd's *Homeostatic Property Cluster* account nor on Slater's account, which (alluding to Boyd) he called the *Stable Property Cluster* account.

and kinds that in part represent human interests (kinds that on traditional views cannot be thought of as natural kinds).

On the *Grounded Functionality Account* of scientific kinds this is the wrong way to approach the issue – first one has to clarify *what a kind does* or *what it is used for* within a particular context of practice, and then one can ask *in what way it is connected to nature* such that its grounding in nature supports what it does or what it is used for. The first questions to answer, then are what, exactly, the function(s) of the kind psychopathy is/are in the particular contexts of research and clinical practice in which it is used, how the kind relates to other kinds that feature in the same contexts, whether the kind's functions can be realized in a better way by subdividing the kind into multiple kinds or removing a subgroup from the kind, and so on. The metaphysical question regarding the grounding of the kind's functions in aspects of nature comes up second in line in the course of exploring these questions.

Consider Zachar's claim that psychopathy and other psychiatric kinds are not natural kinds but practical kinds. Zachar argues that psychiatric kinds are not generally well-grounded in deeper features of the world but nonetheless perform well in practice *as* stable patterns of behavior that we find in the world. Hence, such kinds are practical kinds. As Zachar writes: "Concepts for psychiatric disorders are constituted by discoveries *and* decisions. There is an interaction between what the world produces and what we find useful to notice." (Zachar, 2015: 289). That is surely right, but *this holds for all kinds in the sciences* (Reydon, 2016). There are no kinds in the sciences that represent the world as it is independently of human interests!

Kinds are always embedded in contexts of practice – they are always embedded in a context that is affected by decisions about which theoretical perspective should be used to understand the world and on which aspects of the world focus should be placed. Kinds always are both theory- and practice-laden.¹³ Thus, the question whether psychiatric kinds are natural kinds or practical kinds is a red herring. Zachar's (2015) question whether psychiatric disorders are natural kinds made by the world or practical kinds made by us, is a non-starter. *All kinds* that are successfully used in research and clinical practice are practical kinds in Zachar's sense – they are stable patterns of recurrent properties (as in the case of kinds of elementary particles and the chemical elements) or behaviors (as in the case of kinds in animal ethology and kinds the sciences of human behavior), patterns of descent (such as biological species), patterns of stages (for example, kinds of physical, chemical, and biological processes), and so on, that we highlight because they are of interest in the

¹³A minority of contemporary accounts of natural kinds acknowledge this, including Boyd's *Homeostatic Property Cluster* account and the *Grounded Functionality Account*. A crucial difference between the *Homeostatic Property Cluster* account and the *Grounded Functionality Account*, though, is that the former only acknowledges epistemic interests as guiding classification, while the latter acknowledges both epistemic and non-epistemic interests as guiding classification. Another crucial difference is that the *Homeostatic Property Cluster* account makes a priori assumptions regarding how kinds are grounded in the world (namely, by homeostatic mechanisms), whereas the *Grounded Functionality Account* makes no such assumptions and allows for a plurality of ways of grounding.

context of our efforts to understand the world and intervene in it. But they cannot be merely stable patterns, because their successful use in scientific research and practices of application must be a matter of how the kinds are connected to the world (or, of what aspects of the world they represent).

To give a quick example, the grouping of fruits and vegetables in supermarkets (where fruits such as tomatoes and cucumbers are usually grouped with the vegetables) is a stable pattern in the context of a particular practice. But the pattern is exclusively grounded in our decisions regarding what goes well with what on your plate – it is wholly ungrounded in nature, as there is nothing in nature that makes tomatoes belong to the vegetables. This is where theories of natural kinds come into play – they are supposed to enable us to distinguish between stable patterns that are grounded in the world and those that are not grounded in the world. This means that nothing is gained by Zachar’s proposal to think of psychiatric kinds as practical kinds rather than natural kinds: if they indeed are useful kinds in research and clinical practice, one cannot be content by the observation that they are stable patterns, but must move beyond that observation to explain what might underwrite their usefulness. Practical kinds, too, must have a metaphysical basis in the world – if they don’t, they are as arbitrary as the common grouping of tomatoes and cucumbers with the vegetables. But while for the latter grouping its arbitrariness does not matter much, psychiatric kinds are aimed at understanding the causality behind certain patterns of behavior, and at interventions that change those behaviors. For psychiatric kinds, then, arbitrariness is not acceptable.

Given the debate about the functionality of ‘psychopathy’ as a kind term in psychiatric and behavioral research, as well as clinical practice, at present it is not possible to answer the question whether psychopathy is a “good” scientific kind. But we might achieve a little more clarity on this issue by looking at how the kind might be grounded in the world. Note that, while defending a view of psychiatric kinds as stable patterns (i.e., practical kinds), Zachar (2000: 173) leaves open the option that psychopathy is a maladaptive variant in the human population, rather than a dysfunction of the brain. Interestingly, in a recent paper Jurjako et al. (2019) argued that psychopathy might be an *adaptive* variant in the human population.¹⁴ In the same way as Zachar, Jurjako observes that “psychopathic traits present a constant and stable variation in human personality” (Jurjako, 2019: 12), or, in Zachar’s terms, constitute a stable pattern. But while Zachar suspects that the pattern constitutes a maladaptive constellation of behavioral traits (and thus a constellation that does not need to be explained), Jurjako conjectures that it can be explained as a consequence of evolution by means of natural selection, that is, as a set of traits that is adaptive in relation to a particular social niche. As he writes,

the peculiar activation patterns of amygdala and related neural circuitry in psychopaths can be seen as adaptations to an environment where it pays off to engage in the antisocial lifestyle that is sustained by the balancing selection [i.e., selection where the fitness of a phenotype depends on the frequencies of other phenotypes in the population – clarification added]. [...] this life strategy can be beneficial in environments where life expectancy is

¹⁴For authors who made this suggestion earlier, see Mealey (1995) and Lalumière et al. (2008).

lower and thus it pays more to invest in reproductive efforts [...]. Since the amygdala's role in psychopathy might be to enable such a life strategy, we do not have grounds for claiming that it is malfunctioning, even if it is correlated with reduced longevity. [...] psychopathic traits instantiate an adaptive life strategy that is maintained by frequency-dependent selection. I maintain that until this hypothesis is proven false we should be reluctant in judging that psychopathic traits present harmful dysfunctions (Jurjako, 2019: 19).

In both Zachar's and Jurjako's account, then, psychopathy represents a behavioral variant, i.e., a particular area in the space of possible human behaviors. Contrary to how behaviors are often defined in evolutionary game theoretic models (in which, for example, two discrete behaviors such as "hawk" and "dove" are present in a population and after a number of rounds a stable pattern of behaviors emerges – Maynard Smith, 1982: 10ff.; Jurjako, 2019), human behaviors constitute a continuous many-dimensional space. In either case – whether psychopathy is an adaptive variant that is kept in the population due to natural selection, or a maladaptive variant that remains in the population due to other causes –, 'psychopathy' can be conceived of as denoting a non-strictly delimited area in the behavioral state space, where some people may occupy a position squarely within that area while others are located somewhere in the diffuse (and probably quite extensive) boundary area. This view would do justice to the fact that psychopathy is not a yes-or-no matter, but comes in degrees.

What does this mean for the question that we started out with, namely whether psychopathy is a "good" scientific kind (or a natural kind, even)? I want to suggest that the view of psychopathy as a behavioral variant can provide a clue to its function in contexts of research and clinical practice without it being relevant whether or not it can be counted as a natural kind on any of the traditional philosophical accounts of natural kinds. What the term 'psychopathy' does, I suggest, is to locate individual persons somewhere on a continuum of behaviors. Saying that someone is a psychopath does not put that person into a scientific kind or category, but rather locates that person somewhere in the space of distribution of behavioral traits. This is an important function for purposes of scientific research as well as clinical intervention (as well as in other contexts, such as attributions of moral responsibility in criminal trials – see Malatesti & McMillan, 2014), and we have seen two suggestions as to how that function may be supported by the world (as an adaptive variant kept in the population by natural selection, or as a maladaptive variant that may remain in the population as an evolutionary stable strategy).

What this leads to is a view of psychopathy not as a kind of people or a kind of behavior, characterized by a set of behaviors that are typical for psychopaths, but of psychopathy as a region on a multidimensional space of behaviors. Saying that a person is a psychopath, on this view, amounts to locating that person at a particular point within that region.

10.5 Conclusion

The conclusion of the considerations presented in this chapter must be: yes, psychopathy is a good scientific kind. Proponents of the *Grounded Functionality Account* would acknowledge it as a natural kind (but, as highlighted in footnote 2, it is merely a terminological matter whether one uses ‘natural kind’ or ‘scientific kind’). But on (by far) most accounts of natural kinds, psychopathy would not count as a natural kind, as psychopathy does not fit their views of what natural kinds *are*.

Indeed, psychopathy as a grouping does not seem particularly useful as the basis of inferential statements (i.e., generalizations about the traits that all, or at least the large majority of, psychopaths exhibit) or as the basis of scientific explanations and as such it does not seem to perform the epistemic function that is commonly attributed to natural kinds in the philosophical literature. But there are many other functions besides supporting inferences, epistemic ones as well as non-epistemic ones, that kind terms perform in the sciences (Ereshefsky & Reydon, 2015, *forthcoming*). Focusing too much on just one epistemic role entails missing much of how kind terms function in actual scientific practice, clinical practice, and elsewhere.

In this chapter, I hope to have shown why asking whether psychopathy is a natural kind is the wrong question, at least when the question is approached using most of the available philosophical theories of natural kinds. We should ask what the grouping that the term denotes is good for, and whether its role is grounded in the world. Approaching the matter in this way avoids getting stuck on the question whether psychopathy represents a grouping in the world as it is independently of human interests and classificatory activities and allows us to focus on the questions that really matter.

References

- Adriaens, P. R., & De Block, A. (2013). Why we essentialize medical disorders. *Journal of Medicine and Philosophy*, 38, 107–127.
- Beebe, H., & Sabbarton-Leary, N. (2010). Are psychiatric kinds “real”? *European Journal of Analytic Philosophy*, 6, 11–27.
- Bird, A., & Tobin, E. (2018). Natural kinds. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (Spring 2018 edition). <https://plato.stanford.edu/archives/spr2018/entries/natural-kinds/>
- Boyd, R. N. (1991). Realism, anti-foundationalism and the enthusiasm for natural kinds. *Philosophical Studies*, 61, 127–148.
- Boyd, R. N. (1999). Kinds, complexity and multiple realization. *Philosophical Studies*, 95, 67–98.
- Boyd, R. N. (2000). Kinds as the “workmanship of men”: Realism, constructivism, and natural kinds. In J. Nida-Rümelin (Ed.), *Rationalität, Realismus, Revision: Vorträge des 3. Internationalen Kongresses der Gesellschaft für Analytische Philosophie* (pp. 52–89). De Gruyter.
- Brazil, I. A., van Dongen, J. D. M., Maes, J. H. R., Mars, R. B., & Baskin-Sommers, A. R. (2018). Classification and treatment of antisocial individuals: From behavior to biocognition. *Neuroscience & Biobehavioral Reviews*, 91, 259–277.

- Brzović, Z., Jurjako, M., & Šustar, P. (2017). The kindness of psychopaths. *International Studies in the Philosophy of Science*, *31*, 189–211.
- Charland, L. C. (2004). Character: Moral treatment and the personality disorders. In J. Radden (Ed.), *The philosophy of psychiatry: A companion* (pp. 64–77). Oxford University Press.
- Cleckley, H. (1976). *The mask of sanity* (5th ed.). Mosby.
- Dupré, J. (1993). *The disorder of things: Metaphysical foundations for the disunity of science*. Harvard University Press.
- Ereshefsky, M. (2001). *The poverty of the Linnaean hierarchy: A philosophical study of biological taxonomy*. Cambridge University Press.
- Ereshefsky, M., & Reydon, T. A. C. (2015). Scientific kinds. *Philosophical Studies*, *172*, 969–986.
- Ereshefsky, M., & Reydon, T. A. C. (forthcoming). The grounded functionality account of natural kinds. In W. Bausman, J. Baxter, O. Lean, A. Love, & C. K. Waters (Eds.), *From biological practice to scientific metaphysics*. University of Minnesota Press.
- Hacking, I. (1993). World-making by kind-making: Child abuse for an example. In M. Douglas & D. L. Hull (Eds.), *How classification works: Nelson Goodman among the social sciences* (pp. 180–231). Edinburgh University Press.
- Hacking, I. (1995). The looping effects of human kinds. In D. Sperber, D. Premack, & A. J. Premack (Eds.), *Causal cognition: A multidisciplinary debate* (pp. 351–383). Clarendon Press.
- Hacking, I. (1999). *The social construction of what?* Harvard University Press.
- Hacking, I. (2007). Kinds of people: Moving targets. *Proceedings of the British Academy*, *151*, 285–318.
- Haslam, N. (2002a). Kinds of kinds: A conceptual taxonomy of psychiatric categories. *Philosophy, Psychiatry & Psychology*, *9*, 203–217.
- Haslam, N. (2002b). Practical, functional, and natural kinds. *Philosophy, Psychiatry & Psychology*, *9*, 237–241.
- Haslam, N., & Ernst, D. (2002). Essentialist beliefs about mental disorders. *Journal of Social and Clinical Psychology*, *21*, 628–644.
- Held, B. (2017). The distinction between psychological kinds and natural kinds: Can updates natural-kind theory help clinical psychological science and beyond meet psychology's philosophical challenges? *Review of General Psychology*, *21*, 82–94.
- Insel, T. R., & Cuthbert, B. N. (2015). Brain disorders? Precisely: Precision medicine comes to psychiatry. *Science*, *348*, 499–500.
- Jurjako, M. (2019). Is psychopathy a harmful dysfunction? *Biology and Philosophy*, *34*, 5.
- Jurjako, M., Malatesti, L., & Brazil, I. A. (2019). Some ethical considerations about the use of biomarkers for the classification of adult antisocial individuals. *International Journal of Forensic Mental Health*, *18*, 228–242.
- Kendler, K. S., Zachar, P., & Craver, C. (2011). What kinds of things are psychiatric disorders? *Psychological Medicine*, *41*, 1143–1150.
- Khalidi, M. A. (2013). *Natural categories and human kinds: Classification in the natural and social sciences*. Cambridge University Press.
- Khalidi, M. A. (2018). Natural kinds as nodes in causal networks. *Synthese*, *195*, 1379–1396.
- Lalumière, M. L., Mishra, S., & Harris, G. T. (2008). In cold blood: The evolution of psychopathy. In J. D. Duntley & T. K. Shackelford (Eds.), *Evolutionary forensic psychology: Darwinian foundations of crime and law* (pp. 176–197). Oxford University Press.
- Lilienfeld, S. O., & Arkowitz, H. (2007/2008). What “psychopath” means. *Scientific American MIND*, December 2007/January 2008: 90–91.
- Lilienfeld, S. O., Watts, A. L., Francis Smith, S., Berg, J. M., & Latzmann, R. D. (2015). Psychopathy deconstructed and reconstructed: Identifying and assembling the personality building blocks of Cleckley's chimera. *Journal of Personality*, *83*, 593–610.
- MacKenzie, P. M. (2014). Psychopathy, antisocial personality & sociopathy: The Basics. A history review. *The Forensic Examiner*, December 2014, http://www.theforensicexaminer.com/2014/pdf/MacKenzie_714.pdf

- MacLeod, M., & Reydon, T. A. C. (2013). Natural kinds in the life sciences: Scholastic twilight or new dawn? *Biological Theory*, 7, 89–99.
- Malatesti, L., & McMillan, J. (2014). Defending psychopathy: An argument from values and moral responsibility. *Theoretical Medicine and Bioethics*, 35, 7–17.
- Maynard Smith, J. (1982). *Evolution and the theory of games*. Cambridge University Press.
- Mealey, L. (1995). The sociobiology of sociopathy: An integrated evolutionary model. *Behavioral and Brain Sciences*, 18, 523–541.
- Newman, J. P., MacCoon, D. G., Vaughn, L. J., & Sadeh, N. (2005). Validating a distinction between primary and secondary psychopathy with measures of Gray's BIS and BAS constructs. *Journal of Abnormal Psychology*, 114, 319–323.
- Reydon, T. A. C. (2010a). Natural kind theory as a tool for philosophers of science. In M. Suárez, M. Dorato, & M. Rédei (Eds.), *EPSA – Epistemology and methodology of science: Launch of the European philosophy of science association* (pp. 245–254). Springer.
- Reydon, T. A. C. (2010b). How special are the life sciences? A view from the natural kinds debate. In F. Stadler (Ed.), *The present situation in the philosophy of science* (pp. 173–188). Springer.
- Reydon, T. A. C. (2012). Essentialism about kinds: An undead issue in the philosophies of physics and biology? In D. Dieks, W. J. Gonzalez, S. Hartmann, M. Stöltzner, & M. Weber (Eds.), *Probabilities, Laws, and structures* (pp. 227–240). Springer.
- Reydon, T. A. C. (2013). Classifying life, reconstructing history and teaching diversity: Philosophical issues in the teaching of biological systematics and biodiversity. *Science & Education*, 22, 189–220.
- Reydon, T. A. C. (2014). Metaphysical and epistemological approaches to developing a theory of artifact kinds. In M. P. M. Franssen, P. Kroes, T. A. C. Reydon, & P. E. Vermaas (Eds.), *Artefact kinds: Ontology and the human-made world* (pp. 125–144). Springer.
- Reydon, T. A. C. (2016). From a zooming-in model to a co-creation model: Towards a more dynamic account of classification and kinds. In C. E. Kendig (Ed.), *Natural kinds and classification in scientific practice* (pp. 59–73). Routledge.
- Samuels, R. (2009). Delusion as a natural kind. In M. R. Broome & L. Bortolotti (Eds.), *Psychiatry as cognitive neuroscience: Philosophical perspectives* (pp. 49–82). Oxford University Press.
- Slater, M. H. (2013). *Are species real? An essay on the metaphysics of species*. Palgrave Macmillan.
- Slater, M. H. (2015). Natural kindness. *British Journal for the Philosophy of Science*, 66, 375–411.
- Thomas-Peter, B. A. (1992). The classification of psychopathy: A review of the hare vs. Blackburn debate. *Personality and Individual Differences*, 13, 337–342.
- Tsou, J. Y. (2013). Depression and suicide are natural kinds: Implications for physician-assisted suicide. *International Journal of Law and Psychiatry*, 36, 461–470.
- Tsou, J. Y. (2016). Natural kinds, psychiatric classification and the history of the DSM. *History of Psychiatry*, 27, 406–424.
- Tsou, J. Y. (2019). Philosophy of science, psychiatric classification, and the DSM. In Ş. Tekin & R. Bluhm (Eds.), *The Bloomsbury companion to philosophy of psychiatry* (pp. 177–196). Bloomsbury.
- Varga, S. (2018). “Relaxed” natural kinds and psychiatric classification. *Studies in History and Philosophy of the Biological and Biomedical Sciences*, 72, 49–54.
- Waters, C. K. (2017). No general structure. In M. H. Slater & Z. Yudell (Eds.), *Metaphysics and the philosophy of science: New essays* (pp. 81–108). Oxford University Press.
- Waters, C. K. (2019). An epistemology of scientific practice. *Philosophy of Science*, 86, 585–611.
- Zachar, P. (2000). Psychiatric disorders are not natural kinds. *Philosophy, Psychiatry & Psychology*, 7, 167–182.
- Zachar, P. (2015). Psychiatric disorders: Natural kinds made by the world or practical kinds made by us? *World Psychiatry*, 14, 288–290.
- Zachar, P., & Potter, N. N. (2010). Personality disorders: Moral or medical kinds—Or both? *Philosophy, Psychiatry, & Psychology*, 17, 101–117.