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# Posttraumatic Stress Disorder: Seeking Natural Kinds in a Controversial Diagnosis

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POSTTRAUMATIC STRESS DISORDER: SEEKING NATURAL KINDS IN A  
CONTROVERSIAL DIAGNOSIS

by

PAUL KENNETH PFEILSCHIEFTER

Under the Direction of George Graham

ABSTRACT

Posttraumatic stress disorder (PTSD) is a debilitating condition that results from the experience of a traumatic event. Natural kinds are mind-independent entities found in nature and are the objects of scientific inquiry. It is common to deny that PTSD is a natural kind, but extant denials assume a thesis of natural kinds that can be called “essentialism”. According to essentialism, many entities are not natural kinds that one would expect should be natural kinds. The homeostatic cluster view of natural kinds offers an alternative that accommodates these cases, including, superficially, the claim that PTSD is a natural kind. I introduce two novel objections to this claim and recommend a distinction aimed to resolve the newly introduced problems.

INDEX WORDS: Posttraumatic Stress Disorder, PTSD, Natural kinds, Looping effect, Normativity, Rationality, Essentialism, Homeostatic property cluster

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PAUL KENNETH PFEILSCHIEFTER

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Georgia State University

2010

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2010

POSTTRAUMATIC STRESS DISORDER: SEEKING NATURAL KINDS IN A  
CONTROVERSIAL DIAGNOSIS

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For Ryan

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## CHAPTER 1.

### INTRODUCTION

Posttraumatic Stress Disorder (PTSD) is a mental disorder that results as a response to the experience of a tragic, severe, and often life-threatening event, such as witnessing a natural disaster, wartime experience, or freak accident.<sup>1</sup> It has been stated that, "...no other DSM diagnosis...has generated so much controversy in the field as to the boundaries of the disorder, diagnostic criteria, central assumptions, clinical utility, and prevalence in various populations."<sup>2</sup> Some deny that PTSD is a legitimate diagnostic category.<sup>3</sup> Others prescribe caution in its application or suggest various amendments to the diagnostic criteria of PTSD.<sup>4</sup> Although I will have something to say about these disputes later in this thesis, they will not be my main focus here.

My aim will be to answer a philosophical question concerning PTSD: Is PTSD is a natural kind? The answer to this question provides a framework within which to understand the problems that surround this controversial disorder. Briefly, natural kinds are categories of things that are found in nature, rather than products of mental construction.<sup>5</sup> Water is a paradigmatic instance of a natural kind. Water was discovered, not created. "Fans of Miles Davis" do not

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<sup>1</sup> Cantor, Chris. *Evolution and Posttraumatic Stress*. London: Routledge, 2005. Yehuda, Rachel, and Joseph LeDoux. "Response Variation following Trauma: A Translational Neuroscience Approach to Understanding PTSD." *Neuron* 56 (2007): 19-32.

<sup>2</sup> Spitzer, Robert L., Michael B. First, and Jerome C Wakefield. "Saving PTSD from Itself in DSM-V." *Journal of Anxiety Disorders*, (2007): 233-241.

<sup>3</sup> McHugh, Paul R., and Treisman, Glenn. "PTSD: A problematic diagnostic construct." *Journal of Anxiety Disorders*, 21, (2007): 211–222.

<sup>4</sup> Rosen, Gerald, and Steven Taylor. "Pseudo-PTSD." *Journal of Anxiety Disorders*, (2007): 201-210. Spitzer, Robert L., Michael B. First, and Jerome C Wakefield. "Saving PTSD from Itself in DSM-V." *Journal of Anxiety Disorders*, (2007): 233-241.

<sup>5</sup> Boyd, Richard. "Realism, Anti-Foundationalism and the Enthusiasm for Natural Kinds." *Philosophical Studies*, (1991): 127-148. Samuels, Richard. "Delusions as a Natural Kind." In *Psychiatry as Cognitive Neuroscience: Philosophical Perspectives*, edited by M. Broome and L. Bortolotti. Oxford: Oxford University Press, Forthcoming. The question, "What is a natural kind?" is answerable in various ways. For a semantic version of this answer, see Scott Soames, "What are Natural Kinds?," *Philosophical Topics*, Forthcoming.

constitute a natural kind category, as this is a result of mental interpretations. So is PTSD more like water or “Fans of Miles Davis”? This is the question I will pursue here.

Paul Griffiths states the importance of natural kinds bluntly: “...natural kinds are categories about which we can make scientific discoveries.”<sup>6</sup> I will go into further detail soon, but here are some briefly stated reasons that Griffiths offers in support of the claim that natural kinds are important for scientific practices. First, natural kinds justify inferential generalizations. A limited number of observed samples allow inferences to be ‘projected’ towards the larger class of which the samples are members. Moreover, categorization of particulars within scientific domains depends upon this justification. Also, natural kinds are important for science, as they provide targets for mechanistic explanation.<sup>7</sup> One can explain the fact that water is wet at ideal temperatures by looking at the molecular structure of water. Thus, if PTSD is a natural kind, it would be possible to make scientific discoveries about PTSD.

One way to deny that PTSD is a real disorder is to argue that PTSD is not a natural kind, and one could accomplish this by stating that there is nothing *essential* that all persons with PTSD share.<sup>8</sup> Past arguments that deny the claim that PTSD is a natural kind proceed in exactly this way.<sup>9</sup> I will show that these arguments are insufficient to demonstrate that PTSD is not a natural kind, as they rely upon an overly restrictive notion of natural kinds. Endorsing an alternative understanding of natural kinds offers a way to defend the thesis that PTSD is a natural kind. However, this understanding of natural kinds faces a pair of different challenges that are not discussed in the literature concerning PTSD. The first challenge stems from the fact that

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<sup>6</sup> Griffiths, Paul E. "Is Emotion a Natural Kind?" In *Philosophers on Emotion*, by Robert Solomon, 233-249. Oxford: Oxford University Press, 2004. The next few points are due to Griffiths.

<sup>7</sup> Samuels, forthcoming.

<sup>8</sup> Much of what I state here in this paper is based upon Richard Samuels, forthcoming. For a similar discussion concerning the status of emotions as natural kinds, see Lisa Feldman Barrett, "Are Emotions Natural Kinds?," *Perspectives on Psychological Science* (Blackwell Publishing), 2006: 28-58; also, Griffiths, 2004.

<sup>9</sup> For example, see Allan Young, *The Harmony Of Illusions - Inventing Post-Traumatic Stress Disorder* (Princeton, New Jersey: Princeton University Press, 1995).

mental disorders *qua* disorders violate norms. Thus, in the case of PTSD, we might ask what norms have been violated. I will argue that the norms that the disorder PTSD violates are norms of rationality. If I am right, then the thesis that PTSD is a natural kind faces a difficult objection, as natural kinds are not subject to violations of rational norms. A second challenge is that diagnosis of mental disorders can affect the patient's self-understanding. As a result, the patient's disorder also changes, a phenomenon discussed by Ian Hacking that he calls the "looping effect."<sup>10</sup> It doesn't seem right to say that natural kinds are susceptible to the looping effect; water does not change as a result of self-understanding. Thus, if PTSD patients are susceptible to the looping effect, this challenges the claim that PTSD is a natural kind. To deny PTSD is a natural kind generates a problem for this disorder, as one would like to say that PTSD is an object of scientific inquiry. I will offer a preliminary reconciliation of the problems I raise by suggesting that the definition of PTSD in the context of clinical practices and theoretical practices is different.

Before I begin, I need to acknowledge two points. First, I will be referencing the diagnostic criteria of the American Psychological Association's Diagnostic and Statistical Manual (DSM) as though it is definitional, although I recognize that there is a distinction between diagnostic criteria and definitions.<sup>11</sup> Diagnostic criteria are intended for clinical applications, whereas definitions state what something *is*. One way of putting this distinction is to say that diagnostic criteria help to identify instances, in this case PTSD patients, whereas definitions explain what persons that meet a diagnosis have in common. A second point is closely related to the point just mentioned. If the DSM offers a definition, it is an operational definition. Operational definitions can be problematic, as they do not offer a satisfactory set of

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<sup>10</sup> Hacking, Ian. "Kinds of People: Moving Targets." *Proceedings of the British Academy* 151 (2007): 285-318.

<sup>11</sup> American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4<sup>th</sup> Ed., Text Rev. Washington D.C., 2000.

conditions stating what is essential to being a member of a category.<sup>12</sup> An operational definition of water might be that it is the stuff found in lakes and rivers, but this does not tell one what water *is*. A better definition of water would be ‘water is H<sub>2</sub>O’. The DSM offers the first kind of definition; natural kinds concern the second. Therefore, the distinction between clinical criterion and definitions is important to the debate concerning the status of PTSD as a natural kind and this distinction is important to my inquiry here. I will account for this as follows.

I am going to begin this essay by following the literature that criticizes this disorder, which typically overlooks the distinction between criteria and definitions, and proceeds with the assumption that the DSM criterion is definitional. Overlooking this distinction generates numerous conceptual difficulties and these problems will remain in the background throughout. Again, I will say more at the end of this essay in an effort to clarify conceptual confusions arising out of the points just stated.

Here is the organization of the remainder of this thesis. In the next section of this chapter, I will offer a working definition of PTSD and a paradigm case. In chapter two, I will offer reasons to support the claim that PTSD is a natural kind. In chapter three, I offer two accounts according to which natural kinds have been understood, essentialism and the homeostatic cluster view. Most arguments that attempt to show that PTSD is not a natural kind assume essentialism. I argue that if PTSD is a natural kind, it is a natural kind according to the homeostatic cluster view. In chapter four, I introduce two new objections to the claim that PTSD is a natural kind, addressing a series of challenges to my argument along the way. In chapter five, I conclude by developing a set of recommendations to address the issues I raise in this thesis.

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<sup>12</sup> The reason for the DSM’s use of operational definitions can be attributed to the influence of Carl Hempel. For a discussion see William C. Follette and Arthur C. Houts, "Models of Scientific Progress and the Role of Theory in Taxonomy Development: A Case Study of the DSM," *Journal of Consulting and Clinical Psychology* 64, no. 6 (1996): 1120-1132.

## 1. What is PTSD? Corporal Michael Smith & The DSM Criterion

The fourth edition of the Diagnostic and Statistical Manual (DSM-IV) offers the following diagnostic criteria of PTSD:<sup>13</sup>

- A. Criterion A: Stressor
  - a. Exposure to stressor
  - b. Emotional reaction to stressor
- B. Criterion B: Re-experiencing (requires one or more)
  - a. Intrusive recollections
  - b. Distressing dreams
  - c. Acting/feeling as though event is recurring
  - d. Psychological distress to reminders or cues that resemble the event
  - e. Physiological reactivity when exposed to reminders
- C. Criterion C: Avoidance (requires three or more)
  - a. Avoidance of thoughts, feelings, or conversations associated with the stressor
  - b. Avoidance of activities, places or people associated with the stressor
  - c. Inability to recall aspects of the trauma
  - d. Diminished interest in significant activities
  - e. Detachment or estrangement from others
  - f. Restricted range of affect (e.g. unable to feel loving towards others)
  - g. Sense of a foreshortened future (e.g. does not expect to have a career, marriage, children, or normal life span)
- D. Criterion D: Arousal (indicated by two or more)
  - a. Difficulty falling or staying asleep
  - b. Irritability or outbursts of anger
  - c. Difficulty concentrating
  - d. Hypervigilance
  - e. Exaggerated startle response
- E. Criterion E: Duration
  - a. Disturbance is present more than one month
- F. Criterion F: Distress or Impairment
  - a. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning

Criteria B-D can be understood as forming the core criteria of PTSD. First, PTSD patients exhibit re-experiencing symptoms (Criterion B) that may include intrusive memories or

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<sup>13</sup> For an alternative diagnostic criterion see ICD-10. For a comparison between the two sets of criteria, see L. Peters, T. Slade and G. Andrews, "A Comparison of ICD10 and DSM-IV Criteria for Posttraumatic Stress Disorder," *Journal of Traumatic Stress* 12, no. 2 (1999): 335-343.

dreams of the trauma, accompanied by physiological distress. Secondly, patients manifest avoidance symptoms (Criterion C), which may include a restriction of thoughts and distancing from reminders of the event, as well as emotional and social isolation or withdrawal. Further, PTSD patients display hyper-arousal symptoms (Criteria D), where these include hypervigilance, insomnia, increased irritability, and difficulty concentrating. In addition to meeting the core criteria of PTSD, a diagnosis also requires each of the following symptoms are present: experience of a stressful event (Criterion A), prolonged duration of symptoms (Criterion E), presence of distress or impairment (Criterion F). These additional criteria form a set of additional conditions, which are coupled to core criteria B-D.<sup>14</sup>

The story of Corporal Michael Smith provides a clear case of a patient who meets the diagnostic criteria for PTSD.<sup>15</sup> During his third tour of duty in Iraq, Michael lost his right leg due to the explosion of a roadside bomb. At the same time, two other men in Michael's squad were killed. I think it is clear that Michael meets Criterion A. Michael received physical therapy at Walter Reed Army Hospital and returned home. Six months later, Michael's wife noticed that he had become irritable, moody and socially withdrawn. For example, Michael was emotionally avoidant of his family and friends and no longer enjoyed outings with his wife. In addition, Michael avoided potential triggers of war memories, such as watching war movies and fireworks displays. Eventually, Michael came to complain of difficulty sleeping, of intrusive thoughts and of nightmares of his experience. Michael meets the additional Criteria, B-F. In the next chapter, I provide a working account of natural kinds.

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<sup>14</sup> Yehuda et al., 2007; Brewin, Chris. *Posttraumatic Stress Disorder*. New Haven: Yale University Press, 2003.

<sup>15</sup> Rumpler, Carol Hawthorne. "How Do You Intervene in Posttraumatic Stress Disorder Symptoms Associated With Traumatic Injury?" *Rehabilitation Nursing*, (Sep/Oct 2008): 187-191.

## CHAPTER 2.

## WHAT IS A NATURAL KIND?

To discover a natural kind is to discover something that represents nature, carved at her joints.<sup>16</sup> Besides water, additional examples of natural kinds might include gold, salt, tigers, children, vitamin C.<sup>17</sup> Natural kinds are things that exist, without categorization, as members of a category (i.e., kind). Probably not everyone would agree that the members I include in my list are natural kinds. It is likely, however, that everyone would agree that a category such as “Fans of Miles Davis” does not constitute a natural kind category, as this category does not represent nature according to articulations of her design. My argument will focus on the status of PTSD as a natural kind. Thus, what counts as paradigmatic instances of a natural kind will not be discussed further, unless in the context of my arguments.

Before proceeding, certain points of caution are worth pausing to address. There are many interesting issues concerning natural kinds.<sup>18</sup> For example, not everyone agrees that there are natural kinds. These issues are not the target of this paper and are beyond the current scope of the issues I will address. I will not defend the thesis that there are natural kinds; I will assume

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<sup>16</sup> Many trace the origin of natural kinds back to Plato. In the *Statesman*, a visitor from Elea discusses what it is to divide a class according to its real nature. The relevant, if not somewhat grotesque, quote is spoken by the visitor: “Then let’s divide them limb by limb, like a sacrificial animal, since we can’t do it into two. For we must always cut into the nearest number we can” (*Statesman* 287c). I am going to go along with the crowd and point to Plato’s dialogue as an early mention of natural kinds. See also Ian Hacking, “A Tradition of Natural Kinds,” *Philosophical Studies*, 1991: 109-126. I note that there are disputes over the history of natural kinds; for example, see Richard Boyd, “Realism, Anti-Foundationalism and the Enthusiasm for Natural Kinds,” *Philosophical Studies* (Kluwer Academic Studies), 1991: 127-148 and Ian Hacking, “On Boyd,” *Philosophical Studies*, 1991: 149-154.

<sup>17</sup> Bird, Alexander, Tobin, Emma, “Natural Kinds”, *The Stanford Encyclopedia of Philosophy* (Spring 2009 Edition), Edward N. Zalta (ed.), forthcoming URL = <<http://plato.stanford.edu/archives/spr2009/entries/natural-kinds/>>.

<sup>18</sup> Hacking, 2007. Hacking, Ian. “Natural Kinds: Rosy Dawn, Scholastic Twilight.” *Royal Institute of Philosophy Supplement* (Cambridge) 82 (2007): 203-239. Hacking, I. “A Tradition of Natural Kinds.” *Philosophical Studies*, (1991): 109-126. Hacking, Ian. “On Boyd.” *Philosophical Studies*, (1991): 149-154. In reply, see Richard Boyd, “Realism, Anti-Foundationalism and the Enthusiasm for Natural Kinds,” *Philosophical Studies* (Kluwer Academic Studies), 1991: 127-148. Also, semantic issues are discussed in Scott Soames, “What are Natural Kinds?,” *Philosophical Topics*, Forthcoming.

that some categories of classification are natural kind categories and refer to this claim as “the thesis of natural kinds.”

It is not necessary that a category (or anything else, for that matter) is a natural kind category for it to be “real” – whatever “real” means. Money is not a natural kind, but certainly money is real in an important way.<sup>19</sup> Also, many things are natural, in some sense of the word “natural” and these things may form a *kind* of thing, but they are not *natural kinds* in the relevant sense. For example, ‘Fans of Miles Davis’ is a real category in some sense of the word “real.” The persons that constitute this category are, in a sense, *natural* and form a *kind*, but these persons do not constitute a natural kind category. In contrast, paradigmatic examples of natural kinds are such things as water, salt, neurons, and protons. These things belong to a unified category and are natural in a way that warrants granting that these are candidates that should be considered natural kinds. In the next section I present some fundamental assumptions and *desiderata* that I will be assuming to hold with respect to natural kinds.

### 1. General *Desiderata* of Natural Kinds

There are six *desiderata* that one should expect of natural kinds<sup>20</sup>:

- Natural Kinds are Mind-Independent
- Natural Kinds Support Non-Accidental Inferences
- Natural Kinds are Targets of Mechanistic Explanation
- Natural Kinds are the Objects of Scientific Discovery
- Natural Kinds Form Discrete Categories
- Natural Kind Categories are Homogenous

The mind independent *desideratum* should be expected of all natural kinds. The remaining *desiderata* are not assumed to be conditions that are individually necessary; nor are

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<sup>19</sup> Thanks to Dr. George Rainbolt for a discussion of this point.

<sup>20</sup> I am borrowing here from Richard Samuels, forthcoming.

they assumed to be individually or jointly sufficient.<sup>21</sup> In this essay, these *desiderata* will serve to measure whether PTSD succeeds or fails to be a natural kind. It is worth mentioning that if it can be shown that PTSD meets all of the *desiderata* provided here, it is very likely to be a natural kind. If PTSD fails to meet all of the conditions mentioned here, it is very likely that PTSD is not a natural kind. Intermediate grounds might rest between these two extremes – failing to meet the *desiderata*, on the one hand, and succeeding to meet the *desiderata*, on the other. Intermediate cases should be, I believe, considered individually. Also, as our understanding of categories develops, the data will determine where or if the category fails to be a natural kind. This approach is, I think, ideal because it is likely that sometimes nature does not provide clear boundaries to be discovered in the first place and so it is unreasonable that a theory of natural kinds should be expected to find such boundaries in all cases. To be sure, there are natural boundaries and some of these are likely to be clearly circumscribed, meeting each of the *desiderata* I will present; nonetheless, the boundaries of nature are perhaps not always distinct and clear, and so possibly fail to meet the *desiderata* I have proposed. I would expect that some cases will fit the mold offered here perfectly and others will not. Perhaps PTSD will be of the second variety, the imperfect variety. In the next section I explain further each of the six *desiderata* and how they apply to PTSD.

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<sup>21</sup> Samuels states the same in a footnote: “What is the status of these characteristics of natural kinds? Clearly, they are important aspects of natural kinds and their role in scientific practice. But are all (or some) of them necessary conditions on natural kindhood; or are they merely typical, though unnecessary, features of natural kinds? These are interesting questions, though not ones I address here” (Samuels, forthcoming, fn 5, p. 9).

## 2. PTSD & The General *Desiderata*

### *PTSD & Mind-independence*

Natural kinds are “natural” in the sense that neither the members of a natural kind category nor the category itself depend on minds for their existence. Natural kinds exist independently of human understanding and practices; individuation of natural kinds does not depend upon mental categorization.<sup>22</sup> For example, constellations are not natural kinds. The collection of stars denoted by the name Orion fails the mind-independence *desideratum*, as this category depends upon minds for its existence. In contrast, the stars that make up the constellation Orion exist independently of human minds. Stars are likely to be natural kinds.

One might argue that the diagnostic category provided in the DSM appears to be a constellation of symptoms, akin to the group of stars that form the constellation Orion. Thus, one might argue that it takes minds to categorize persons as having PTSD; therefore, PTSD is not a natural kind. This argument would confuse diagnosis with existence. I think it is fair to say that a diagnosis functions to identify one who has a disorder, but the fact that one has a disorder does not depend upon a diagnosis. A patient with PTSD might never be diagnosed with the disorder, but nevertheless have PTSD. In contrast, the constellation Orion would never have existed as such, were it not for minds to categorize the stars that make up this constellation into the set that forms the constellation we call Orion.

One might also object that the DSM criteria require minds for their construction and inclusion into DSM, so the diagnosis is mind dependent in this sense. Therefore, PTSD, or any mental disorder for that matter, violates the mind independent *desideratum*. I offer two replies. First, this confuses the mind-independence of DSM criteria with the mind-independence of the

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<sup>22</sup> Boyd, 1991; Samuels, forthcoming.

disorder. We can concede that diagnostic criteria require minds for their individuation without committing to the disorder being mind dependent. Second, this would suggest that other disorders, mental or otherwise, which are diagnosed in terms of symptoms, would fail the mind-independence requirement. However, there is no reason that simply having a constellation of diagnostic criteria warrants a denial of the mind-independence of the disorder itself.

One might also argue that PTSD is a mental disorder and so, necessarily, mind dependent. To repeat, that PTSD is a mental disorder does not necessarily entail that it is not a natural kind. The question that is relevant to the status of PTSD as a natural kind is whether the disorder is mind dependent, not whether the disorder is a mental (as opposed to physical) disorder. Thus, PTSD might still be a natural kind, even if it is a *mental* disorder. Also, PTSD is a *disorder*; it is not a mental state. Beliefs, desires, and hopes are examples of mental states. PTSD disrupts these. My concern is with the nature of PTSD as a disruption (i.e., disorder) of mental states, not with the mental states themselves.

### *PTSD & Non-Accidental Predictions*

In the introduction I mentioned that natural kinds are such that a limited number of observations of members of a natural kind category warrant non-accidental generalizations about all members of that category. In other words, natural kinds justify inferences insofar as inferences based upon a limited number of observations of members of a natural kind category are not mere accidents. We can infer that, if we were to discover water on Mars it would consist of H<sub>2</sub>O and, therefore, if we brought the water we found on Mars back to Atlanta, it would be wet. Other categories that are not natural kinds do not warrant such inferences. One who had seen only male United States Postal Workers would not be warranted to conclude that all United

States Postal Workers were male, even if this happens to be true. United States Postal Workers do not belong to a natural kind category.

Confusingly, some non-natural kind categories appear to support inductive inferences.<sup>23</sup> For example, legend suggests the Super Bowl predicts stock market performance.<sup>24</sup> If the AFC wins, there appears to be approximately an 80% chance that the stock market will be down. The correlation between the Super Bowl and the stock market appears to support the prediction that, if the AFC wins, the stock market will be down. Someone could make a happy accidental prediction using this information and perhaps know when to buy or sell stock. However, if the prediction holds, it is not because the Super Bowl and the stock market form a natural kind. The correlation between the Super Bowl and the stock market is accidental. Natural kind categories do not support accidental inductive inferences of this kind.

Empirical evidence suggests that PTSD yields reliable non-accidental predictions.<sup>25</sup> Here are some examples of predictions that one might make of persons with PTSD. Veterans with PTSD appear to have higher peripheral levels of catecholamines, which are neurochemicals that are involved in stress responses.<sup>26</sup> Another neurochemical, cortisol, appears to be lower in patients with PTSD than in patients with other psychiatric disorders.<sup>27</sup> It has been argued that the hippocampus appears to be susceptible to damage as a result of stress experiences.<sup>28</sup> Numerous

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<sup>23</sup> Some might want to include the category I mention as an example here as a type of natural kind. Boyd's categorization is liberal enough to possibly support such categories as natural kind categories. If my example does not work for the reader, another may. For example, I would expect that there is a positive correlation between swimming pool installations in a neighborhood and higher water bills.

<sup>24</sup> <http://www.snopes.com/business/bank/superbowl.asp> Unknown, *The Super Bowl Indicator*, January 29, 2009, [www.snopes.com/business/bank/superbowl.asp](http://www.snopes.com/business/bank/superbowl.asp) (accessed March 18, 2009).

<sup>25</sup> The information mentioned here is taken from a summary provided by Rachel Yehuda and Joseph LeDoux, "Response Variation following Trauma: A Translational Neuroscience Approach to Understanding PTSD," *Neuron* 56 (2007): 19-32. For an alternative presentation of similar findings, see J. Douglas Bremner, *Does Stress Damage the Brain?* (New York: W.W. Norton & Company, 2005).

<sup>26</sup> Yehuda and Ledoux, 2007.

<sup>27</sup> Mason, John W. "Urinary Free-Cortisol Levels in Posttraumatic Stress Disorder Patients." *Journal of Nervous and Mental Disease* 174, no. 3 (1986): 145-149.

<sup>28</sup> Bremner, J. Douglas. *Does Stress Damage the Brain?* New York: W.W. Norton & Company, 2005.

other findings dispute those mentioned here; nonetheless, it is likely that as research develops, so will the set of predictions provided by the categorical understanding of PTSD.

### *PTSD is a Target of Scientific Inquiry*

Non-accidental inferences are important to scientific discovery. Therefore, it should be no surprise that natural kinds make a likely study target for scientific domains of inquiry.<sup>29</sup> The fact that natural kinds are objects of scientific discovery is also closely connected to the mind-independence condition. Recall that natural kinds are *discovered* by minds, although they are mind independent. Because natural kind categories are discovered, their warrant is an *a posteriori* matter.<sup>30</sup> One does not decide what categories are going to be natural kinds and then go and discover those categories. The business of science is to find natural kinds and to make (inductive) predictions about those kinds, eliminating unruly categories that do not yield reliable predictions.<sup>31</sup> This elimination of categories is tantamount to a category's demotion to the status of non-natural kind.<sup>32</sup>

Aside from the fact that an abundance of research efforts are directed towards PTSD, PTSD appears to be a justified domain of inquiry within the sciences. I have already stated that PTSD appears to be mind-independent and to allow for non-accidental inductive inferences. Since science is in the business of discovering natural kinds, and it would appear that PTSD is a

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<sup>29</sup> See Samuels, forthcoming, p. 4. Also, it is not necessary that a member of a natural kind is an object of scientific inquiry – although I would suppose that natural kinds are all potential domains of scientific inquiry; nor is it sufficient that something is an object of scientific inquiry to render it a natural kind. It is not sufficient because many objects of scientific inquiry turn out to be scientific dead-ends, i.e., they fail to yield the results that are expected by scientific practices.

<sup>30</sup> Samuels, forthcoming

<sup>31</sup> For a recent exchange concerning scientific progress that is related to this position, see Darrell P. Rowbottom, "N-rays and the semantic view of scientific progress," *Studies in the History and Philosophy of Science*, 2008: 277-278 and Alexander Bird, "Scientific Progress As Accumulation Of Knowledge - A Reply To Rowbottom," *History and Philosophy of Science* 39 (2008): 279-281. I can't address the issues in dispute between Bird and Rowbottom here.

<sup>32</sup> Phlogiston might be an example of such a case.

target of scientific explanation, one would expect it to be a natural kind. Of course science is an inductive enterprise, so this could turn out to be false.

*The Mechanisms that Underlie PTSD are a Target of Explanation*

We might identify water as the clear, wet, drinkable liquid that is found in lakes and rivers. However, statements such as “Water is wet” and “Water is clear” are contingently true statements - true only under the appropriate conditions (e.g., when the temperature is above freezing). Contingent statements can be contrasted with necessarily true statements such as “All bachelors are unmarried males.” While it might have turned out that water was not wet, it could never be that a bachelor was not an unmarried male.<sup>33</sup> The contingent properties of kinds such as water (e.g., water is wet) establish a target for non-accidental predictions that can be explained by looking at the mechanisms that underlie these properties (e.g., the chemical structure of water). The contingently associated, yet reliably predictable non-accidental properties of kinds such as water are the targets of mechanistic explanation in the sciences. Once the chemical structure of water, H<sub>2</sub>O, was discovered and understood, it served as a mechanistic way to explain the contingent properties of water, such as why water is a wet liquid at certain temperatures.<sup>34</sup>

The possibility that natural kinds have contingent properties helps to put into perspective some of the puzzling features of PTSD that appear to challenge its status as a legitimate disorder, as these contingent features may nonetheless be understood in mechanistic terms. Two of these features are worth discussing in a bit more detail, as much of the literature concerning problems

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<sup>33</sup> Indeed, a contingent property of water is that it boils at various temperatures, depending on the altitude.

<sup>34</sup> There might be an invitation to interpret the Mechanistic Explanation *desideratum* as suggesting that all discoveries will eventually be of a reductive kind, such as that demonstrated by the discovery that the chemical composition of water is H<sub>2</sub>O. However, there is no reason that this should be the case, although the Mechanistic Discovery *desideratum* is consistent with the possibility that a completely reductive account of all target *explananda* within the sciences is someday achieved. As it stands, this is an open matter that is to be resolved empirically. I make no claims here, one way or another.

with this disorder focuses on these, and both focus on Criterion A.<sup>35</sup> One puzzling feature of PTSD is that not everyone gets PTSD as a result of the experience of a traumatic event (hereafter, “Not Everyone Problem”). This can be interpreted as a way of saying that the emergence of PTSD is contingent, which is similar to the fact that water’s being wet is a contingent fact about water. Just as there are contributory factors that supplement the chemical structure of water resulting in the phenomenon that water is wet, the phenomenon of PTSD following the experience of a traumatic event may not be explained solely in terms of mechanical features of the kind in question. Just as water’s wetness is contingent upon factors that are external to the chemical structure of water, so it is possible that external factors contribute to the emergence of symptoms of PTSD. A similar explanation is likely to apply to what I will refer to as the “Absent Cause Problem,” the problem that some persons that do not appear to have experienced a traumatic event nonetheless instantiate PTSD symptoms. Arguments that focus on issues resulting from Criterion A would be wise to recognize the prevalence of contingency in other less problematic areas of scientific discourse.

#### *PTSD Appears to Form A Discrete Category*

In addition to the four *desiderata* offered so far, natural kind categories must be discrete. Natural kind categories are circumscribed independent classes.<sup>36</sup> For example, the term “water” picks out a distinct substance. Note that the boundaries of natural kinds may nonetheless be vague. For example, there may be no determinate temporal boundary that denotes when a person

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<sup>35</sup> See, e.g., Thomas Maier, "Weathers' and Keane's, "the Criterion A Problem Revisited: Controversies and Challenges in Defining and Measuring Psychological Trauma", *Journal of Traumatic Stress*, October 2007: 915-916. Also, Thomas Maier, "Post-traumatic Stress Disorder Revisited: Deconstructing the A-criterion," *Medical Hypothesis*, 2006: 103-106. Frank W. Weathers and Terence M. Keane, "The Criterion A Problem Revisited: Controversies and Challenges in Defining and Measuring Psychological Trauma," *Journal of Traumatic Stress*, April 2007: 107-121.

<sup>36</sup> Samuels, forthcoming, p. 5 – 6

becomes an adult human, but that does not mean that “adult humans” are not a natural kind (ibid). Note further that the discreteness *desideratum* does not entail that natural kind categories will not overlap. One might be both a “human” and an “adult,” where both are understood as natural kind categories. However, if one natural kind category is co-extensional with another natural kind category, these two categories are likely to be one and the same natural kind (ibid).

Although PTSD might exist along a continuum, where some cases are more paradigmatic than other cases, there are clear cases of PTSD. These cases are likely to form a discrete class of persons. I introduced Michael as a paradigm case of a patient with PTSD. Michael’s conditions would likely be conditions that, stated explicitly, help to circumscribe a discrete category of disorder; other persons with conditions similar to those that Michael exhibits would fall within the same diagnostic boundaries. While another patient might not instantiate PTSD conditions as clearly as Michael, this does not entail that PTSD is not a natural kind. Also, patients with PTSD may also have other mental (e.g., addictions) or physical problems (e.g., somatic injuries), but this does not preclude PTSD from being a natural kind.

#### *Patients with PTSD form a Homogenous Kind*

The final *desideratum* is that natural kinds are homogenous, rather than heterogenous, which is a way of saying that members of a natural kind form one cohesive unit. Disjunctive categories would violate this condition, as these categories are not unified in a way that is appropriate to natural kinds. An example of a violation of this *desideratum* is the category “house or car or bicycle.” The category “house or car or bicycle” would not be a likely source of reliable predictions and would not “carve nature at its joints.” Such categories are arbitrary

categories and so are not natural kind categories, although it is possible to stipulate that they are a *kind of category*.

The Homogeneity *desideratum* would be violated if the persons meeting the diagnosis of PTSD were to be discovered as being different, *in kind* – i.e., if it were to be found that the members of the category were of several distinct types of un-related kinds, similar to the category of “house or car or bicycle.”<sup>37</sup> Because the data is still coming in, this remains an active and open possibility. Nonetheless, there does seem to be evidence favoring the conclusion that PTSD patients are sufficiently similar so as to form a homogenous kind.<sup>38</sup>

### *Summary*

I have provided reasons to think that PTSD meets the *desiderata* one would expect of a natural kind. Admittedly, some of the reasons I have provided are tentative and others are offered in defense of the arguments criticizing this claim. I will proceed on the assumption that PTSD meets the *desideratum*. In the next section, I present two theories of natural kinds. One is appropriate to considering PTSD as a natural kind, whereas the other is an overly restrictive and inappropriate thesis of natural kinds according to which to consider PTSD.

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<sup>37</sup> For exactly this kind of argument, see Allan Young, *The Harmony Of Illusions - Inventing Post-Traumatic Stress Disorder* (Princeton, New Jersey: Princeton University Press, 1995). Young’s argument fails for a deeper reason, which I will address in the next section.

<sup>38</sup> Bremner, 2005, does a nice job of summarizing this evidence. For another summary, see also Yehuda and LeDoux, 2007.

## CHAPTER 3.

### TWO THESES OF NATURAL KINDS

According to “essentialism,” natural kinds have an essential property or feature that groups them together.<sup>39</sup> Alternatively, one can understand natural kinds as having a causal basis that is manifested in a clustering of observable properties according to which the members of a kind are grouped together, a thesis known as the “homeostatic cluster view” of natural kinds. I will argue here that if PTSD is a natural kind, it is best understood as a natural kind according to the homeostatic cluster view and not essentialism.

#### 1. The First Thesis: Essentialism

The essential features of natural kinds required by essentialism are assumed to be both necessary and sufficient for inclusion into a natural kind category. “Traditional” essentialism holds that the following basic tenets are met by a natural kind category:<sup>40</sup>

- E1. All and only the members of a kind share a common essence.
- E2. The essence is a property, or a set of properties, that all the members of a kind must have.
- E3. The properties that comprise a kind’s essence are intrinsic – i.e. non-relational – properties.
- E4. A kind’s essence causes the other properties associated with that kind.

I will assume that water can be used as an example that meets these criteria. Satisfying E1, the essence of water is the chemical structure, H<sub>2</sub>O. That is, combining two hydrogen molecules with an oxygen molecule makes water and this will only make water. Satisfying E2, instances of the

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<sup>39</sup> Samuels, forthcoming

<sup>40</sup> Quoted here from Samuels, forthcoming, p. 11

natural kind category *water* will have the same chemical structure, H<sub>2</sub>O. One will not find water that is essentially something other than H<sub>2</sub>O.<sup>41</sup> Satisfying E3, the chemical structure (H<sub>2</sub>O) is intrinsic to the members or instances of the natural kind *water*, rather than relationally dependent upon something external to water. For example, the chemical structure H<sub>2</sub>O is non-accidental, unlike the fact that water is drinkable by humans and animals. Finally, satisfying E4, the chemical structure of water, H<sub>2</sub>O, is the cause of the other properties associated with the kind *water*. One can explain why water is wet in virtue of its chemical structure.

Essentialism is committed to a strict notion of essences, which can be called *sortal essences*.<sup>42</sup> Sortal essences are “as a matter of metaphysical necessity” possessed by *all* members of a kind and *only* members of a kind.<sup>43</sup> The sortal essence of water is H<sub>2</sub>O. To say that the sortal essence of water is H<sub>2</sub>O means that if the essential structure of a substance is H<sub>2</sub>O, then that substance is *water*, and if an essential structure of something is not H<sub>2</sub>O, then that something is not water. This does not mean that other things can’t be constituted by water. Humans, for example, are largely constituted by water; however, it is not essential to being a human that one’s chemical structure is H<sub>2</sub>O.<sup>44</sup>

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<sup>41</sup> See Saul Kripke, *Naming and Necessity* (Cambridge, MA: Harvard University Press, 1972, 1980).

<sup>42</sup> Samuels cites Gelman and Hirschfield, 1999. Gelman and Hirschfield state, “The sortal essence is the set of defining characteristics that all and only members of a category share” (Susan A. Gelman and Lawrence A. Hirschfeld, “How Biological is Essentialism?,” in *Folkbiology*, 403-446 (Cambridge, MA: The MIT Press, 1999).

<sup>43</sup> Samuels, forthcoming, p. 12

<sup>44</sup> There is a problem with using water as an example. Is soda water *water* in the same sense as tap-water? What about fruit punch? What is the essence of these? If this is a problem for the reader, the example might be changed to gold or electrons. In any case, I take it that there is some paradigmatic case of a natural kind in the essentialist sense. Perhaps not, but this does not undermine my argument and in fact may make my position more tenable because it seems that something must carve nature at its joints, and if it is not according to the essentialist account it must be according to the non-essentialist account. Thus, I leave the assumption in place here that water meets the essentialist criteria.

*Problems with Essentialism*

Essentialism works well for some paradigmatic instances of natural kinds such as water. However, because sortal essences prescribe a set of necessary and sufficient conditions for membership into a natural kind category, this is a problematic way to understand natural kinds. One problem is that many categories that are the objects of interest in the sciences have vague boundaries and do not adhere to a set of necessary and sufficient conditions; thus, essentialism rules out many plausible natural kind categories. For example, biological kinds, such as the species “dog,” do not appear to possess any essence that would qualify them as constituting a natural kind, according to the requirements of essentialism.<sup>45</sup> Is it essential that all dogs have four legs? Is it essential that all dogs have hair? No. A bald three-legged dog is still a dog; thus, neither having four legs nor being hairy should be considered as essential to being a member of the species “dog.” Moreover, it is not clear what *is* essential to being a dog. Nonetheless, it seems that biological kinds such as the category “dog” are “appropriate for the purposes of formulating robust empirical generalizations.”<sup>46</sup> Also, to the extent that biological kinds such as dogs are appropriate for the purposes of formulating robust empirical generalizations, they “are natural kinds of the sort that concern us.”<sup>47</sup> This last statement raises an important point, which is that natural kinds are relative to domains of inquiry and this point is worth pausing to discuss further.

It appears that a natural kind is whatever concerns “us.” Thus, one might think that anything goes when it comes to natural kinds because the referent of “us” may be just about

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<sup>45</sup> Of course, it could be discovered that there is some essence – perhaps genetic – that does warrant the category of dogs as being a natural kind according to essentialism. For a discussion of genetics and natural kinds see Peter Zachar, “Psychiatric Disorders Are Not Natural Kinds,” *Philosophy, Psychiatry & Psychology*, 2001: 167-182.

<sup>46</sup> Samuels, forthcoming, p. 12

<sup>47</sup> Ibid

anyone. This is not the correct interpretation, however. The conditions mentioned in section one serve to rule out the possibility of such relativistic theses. This is consistent with natural kinds being relative to a domain of inquiry. For example, what is a natural kind in psychology may not be a natural kind in neurobiology. The objects of interest in each domain should be expected to meet most, if not each, of the *desiderata* of natural kinds offered above. I set this aside and return to the discussion of essentialism.

An essentialist might simply submit that the things that don't meet the essentialist criteria are, as a matter of metaphysical fact, not members of a natural kind category. An essentialist might suggest further that there are other kinds, for example, human kinds (e.g., "Fans of Miles Davis"), that are objects within a domain of inquiry relative to some, perhaps scientific, practices.<sup>48</sup> Nonetheless, an essentialist might insist that these kinds fail to meet the essentialist criteria for natural kind-hood and so are not natural kinds. It is worth pausing to address this complaint in further detail.

First, I am not arguing against essentialism in this paper. I am assuming that essentialism is not a workable thesis for *all* cases of natural kinds because it excludes certain categories as being natural kinds that are important for certain domains of scientific inquiry. Second, it is consistent with my position that some natural kinds may adhere to essentialist requirements. Of course, it could turn out that I am wrong to make this assumption because I also maintain that natural kinds are discovered *a posteriori*.<sup>49</sup> Therefore, empirical evidence will bear upon this issue. It might turn out that science fails to discover any essences whatsoever in the case of PTSD, causal or sortal.<sup>50</sup> For now it is enough to say that essentialism appears to be problematic

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<sup>48</sup> See Ian Hacking, 1991, 109-126. I am not claiming that Hacking is an essentialist, however.

<sup>49</sup> Samuels makes this point several times.

<sup>50</sup> Gelman and Hirschfield write, "Biologists insist that biological species do not truly have essences" (p. 405). I am sure there is a biologist ready to refute this statement, or perhaps a philosopher. It is worth noting that the human

in some cases that would otherwise be plausible candidates for inclusion into a natural kind category and that this should lead us to seek out an alternative understanding of natural kinds.

### *PTSD and Essentialism*

Essentialism provides several reasons to suggest that PTSD is not a natural kind.<sup>51</sup> Here I present an argument that one might make in support of the claim that PTSD is not a natural kind, aimed at Criterion A:

P1) Not everyone that meets Criterion A (i.e., experiences a traumatic event) gets PTSD.

P2) Not everyone with the symptoms of PTSD meet Criterion A (i.e., some persons have PTSD symptoms that have not experienced a traumatic event)

P3) Therefore, Criterion A is not essential to developing PTSD.

C) Therefore, PTSD is not a natural kind.

The first two premises of this argument are true and these provide support for premise three. Thus, if essentialism were the only way to understand natural kinds, the argument would be cogent. It is likely that other diagnostic criteria of PTSD can be substituted for the premises offered here to construct different arguments for the same conclusion. For example, one might argue that not everyone with PTSD meets Criterion B (re-experiencing) and so forth.

The key, however, is to notice that *if* essentialism were the only means by which to understand natural kind categories, the Anti-Essentialist Argument would be a serious challenge, if not outright threat, to the potential for PTSD to be considered a natural kind. But I have shown that similar arguments can be made for other categories that are target *explanandum* within the

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genome was mapped around the same time as Gelman and Hirschfield's publication. Perhaps this would challenge their claim.

<sup>51</sup> Essentialism's requirements have been the ground for the rejection of psychiatric disorders as natural kinds in other places (e.g., Zachar 2001). I don't intend to reply to these criticisms here; however, there is a chance that what I will argue as applying to PTSD is likely to apply, *ceteris paribus*, to other categories of mental disorder as well – though perhaps not all categories of mental disorder.

sciences (e.g., species such as “dogs”). Thus, we should seek an alternative thesis of natural kinds. The homeostatic cluster view provides this alternative.

## 2. The Second Thesis: Homeostatic Property Cluster View

Here is the central idea of the homeostatic property cluster view (hereafter, “HPC”). First, HPC is consistent with the claim that some natural kind categories are grouped according to a set of contingently correlated properties.<sup>52</sup> Second, these correlated properties are brought about by a mechanism or set of mechanisms and this explains the correlation.<sup>53</sup> Thus, HPC avoids commitment to necessary and sufficient conditions.

Unlike essentialism’s appeal to sortal essences, HPC appeals to causal essences. Sortal essences are to be understood as a subset of causal essences; all sortal essences are causal essences, but not all causal essences are sortal essences.<sup>54</sup> Gelman and Hirschfield state, “The causal essence is the substance, power, quality, process, relationship, or entity that causes other category-typical properties to emerge and be sustained and confers identity.”<sup>55</sup> Sidestepping disputes over Gelman and Hirschfield’s definition, the difference between sortal essences and causal essences can be understood as a difference between an essentialist requirement for natural kinds and the HPC requirement for natural kinds, which is provided by a possibly mutable, causal foundation that accounts for the emerging properties by which one identifies a member of a natural kind. Thus, causal essences are neither necessary nor sufficient for membership in a natural kind category - although they could be, in which case a set of causal essences would turn out to be identical to a set of sortal essences. Causal essences provide a looser framework upon

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<sup>52</sup> Boyd, 1991

<sup>53</sup> Ibid

<sup>54</sup> Samuels, forthcoming, p. 12

<sup>55</sup> Gelman and Hirschfield, 1999, p. 406

which to build natural kind categories and for cases such as “dog” to be included in a natural kind category - and as we will see, PTSD.

HPC can be characterized according to the following claims (Samuels forthcoming, p.9-10):

H1: It [a natural kind] is associated with a contingent property cluster – a range of characteristics or symptoms, which tend to be co-instantiated by instances of the kind but need not be genuine necessary conditions for membership.

H2: There is some set of empirically discoverable causal mechanisms, processes, structures and constraints – a causal essence, if you will – that causally explains the co-variation of these various symptoms.

H3: To the extent that there is any real definition of what it is for something to be a member of the kind, it is not the symptoms, as such, but the causal essence that defines membership. More precisely, to the extent that natural kinds have definitions, it is the presence of a causal essence producing (some of) the symptoms that comprise the property cluster that defines kind membership.

It will be helpful to provide a clear example of a kind that meets Samuels’s requirements.

Earlier, it was mentioned that the species “dog” did not fit into the essentialist view of natural kinds. However, the species “dog” can be understood as a natural kind category according to HPC. Satisfying H1, we can understand being covered with fur, having four legs, making a barking noise, and chasing one’s tail in a circle as a cluster of contingent properties that most, but not all, dogs share. Satisfying H2, there is likely to be a mechanism or a set of mechanisms that explain these properties that dogs commonly share (e.g., perhaps the information carried by DNA would be an example of such a mechanism). Finally, satisfying H3, if there is a definition of “dogs” based upon these shared properties, the properties that form the basis of this definition are due to some kind of causal essence (e.g., perhaps the DNA structure is a likely candidate that would meet this requirement). HPC can be applied to PTS, as I will show next.

*PTSD fits the HPC Thesis of Natural Kinds*

Beginning with H3, the DSM criteria can be understood as a definition that is formed on the basis of contingent properties that may be explained in mechanistic terms.<sup>56</sup> The source of these contingent properties is the subject of ongoing discovery within the domains of psychology, neurobiology, neurophysiology, etc. Thus, if patients fail to manifest each and every DSM criteria, this does not in any way constitute a challenge to the status of PTSD as a natural kind. Return again to the “Absent Cause Problem” and the “Not Everyone Problem.” I have already discussed that these problems might be best understood in a way that is analogous to the contingent features of other natural kinds such as the fact that water is wet or that dogs have fur. Here I suggest that there are likely to be mechanisms discovered that causally relate to the contingent properties according to which one diagnoses PTSD, just as the chemical structure of water causally explains the contingent feature of water’s wetness.

Turning to H2, it is the causal mechanisms that are relevant in determining the natural kind status of a category. The progress of disciplines that work towards a discovery of the mechanisms underlying the symptoms provided in the DSM is, as mentioned earlier, ongoing. Therefore, it is an open question as to whether there is a discrete set of causal mechanisms responsible for PTSD and its associated symptoms. It is too early to rule out such possibilities. Earlier, however, I mentioned a set of predictions that PTSD provides. It is likely that these predictions will guide the discovery of mechanisms that underwrite PTSD’s status as a natural kind. Let me set this aside and address a distinction that is crucial to recognize.

There is an important distinction between proximate causal sources, contributory causal sources, and distal causal sources. Water is wet because of the molecular structure of H<sub>2</sub>O – arguably, a *proximate cause*. However, for water to be wet also requires that the air pressure and

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<sup>56</sup> A mechanistic explanation need not be at a “lower level” of description (e.g., neurobiological).

temperature is at a particular level – arguably, a pair of *contributory causes*. Finally, water is wet because of the big bang – arguably, a *distal cause*. The essence, in the case of water, is attributed to the proximal cause, the chemical structure H<sub>2</sub>O. It is reasonable to expect that there might be found an analogous set of causes responsible for the disorder known as PTSD. Empirical evidence supports this claim.

As an example of divergent, yet consistent, explanatory levels employed in an explanation of PTSD, anatomical evidence points to the hippocampus as an explanatory source of the emergence of PTSD following traumatic experience.<sup>57</sup> Other evidence rests at the neurochemical level, appealing to explanations involving an imbalance of (e.g.) cortisol levels.<sup>58</sup> Still others suggest that previous social experiences are implicated in those who develop the disorder, implicating causes at a “higher” social level, which might be understood as remote causes of PTSD.<sup>59</sup> Nonetheless, whatever mechanisms turn out to be relevant to the status of PTSD as a natural kind, assuming that some set of mechanisms are eventually found, they are not likely to be identical to the DSM criterion, as this criterion rests upon observable, contingent features – analogous to the fact that, under optimal conditions, water is wet and dogs have fur. Of course, it is also possible to identify, from the start, the essences of natural kinds based upon superficial features alone. It is not likely, however, that PTSD is one such case.

I have already mentioned the role of H1, but it is worth stating again: the contingent properties used to define PTSD are not necessary to the disorder. Again, an analogy is helpful. It would appear that water is necessarily wet; this is not the case. At best, water is necessarily

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<sup>57</sup> Bremner, 2005

<sup>58</sup> Yehuda and Ledoux, 2007

<sup>59</sup> Ibid

H<sub>2</sub>O.<sup>60</sup> Similar points are likely to apply to PTSD, assuming that PTSD is a natural kind. Certain features of PTSD are *apparently* necessary to the diagnosis, but this necessity might be mistaken. Again, empirical discovery will bear upon this issue.<sup>61</sup> I turn now to a common objection to HPC.

*Is HPC Overly Permissive?*

Whereas essentialism is too restrictive, one might complain that HPC is too permissive.<sup>62</sup> According to HPC, it might appear that many things can be natural kinds that we don't want to be natural kinds. For example, one might suggest that "Fans of Miles Davis" is a category that meets the HPC criteria, but not a class that should be considered a natural kind.

Samuels provides a two-pronged response to this concern. First, if it is a problem for HPC, then it appears to be a problem for essentialism as well. Samuels argues that there is no *a priori* reason that one couldn't find something essential about, e.g., Miles Davis's fans that makes them members of the category "Fans of Miles Davis."<sup>63</sup> After all, they are all his fans. Perhaps this might be explained by appealing to some causal essence they all share. The second horn of Samuels's reply is that HPC is also consistent with the *impossibility* of social kinds being natural kinds.<sup>64</sup> It may be that there is a fact or set of facts that make it impossible for kinds such as "Fans of Miles Davis" to be considered members of a natural kind.<sup>65</sup> For example, perhaps

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<sup>60</sup> This is largely held to be true. "Water" is a rigid designator, which is to say that once the initial baptism of water takes place, i.e., once the term "water" was used to identify H<sub>2</sub>O, whatever ostensive definition was given at the time determined the extension of the natural kind term. Thus, because H<sub>2</sub>O was the thing that was "pointed" to in the initial baptism of water, it is this that we now call water. Had it been XYZ, things may have been different. These issues are beyond the scope of this paper. See Saul Kripke, *Naming and Necessity* (Cambridge, MA: Harvard University Press, 1972, 1980).

<sup>61</sup> There is another contingency that concerns arguments for the multiple-realizability of mental states, but I don't have space here to address these issues.

<sup>62</sup> Samuels, forthcoming; Hacking, 1991

<sup>63</sup> Perhaps there is a gene that explains why some are addicted?

<sup>64</sup> Samuels, forthcoming, p. 14

<sup>65</sup> *Ibid*

some persons are fans of Miles Davis because they like his music, whereas others are fans of Miles Davis because they like what he did for music. That is, perhaps there is neither a causal nor a sortal essence that explains the homogeneity of the class “Fans of Miles Davis.”

I am not going to adjudicate the success of Samuels’s response here. One might reply that there might be a way to hang together many kinds such as “Fans of Miles Davis” and call them a natural kind because they meet the criteria for HPC so far mentioned and one might think this is a problem. Because I am not attempting to argue that PTSD is *in fact* a natural kind, but rather that *if* it is discovered to be a natural kind, it will likely be discovered to be a natural kind according to the HPC thesis of natural kinds, my argument does not hang on defending HPC from the over-permissiveness objection. However, Samuels provides an alternative response consistent with my argument that I do think is right. The defense is that it is an *a posteriori* matter whether social kinds are natural kinds.<sup>66</sup> I will add to this defense: true, it might be strange to find that categories such as “Fans of Miles Davis” meet the requirements of HPC and so appear to be a natural kind, but I suppose that many things discovered by science look strange at first glance. This is bolstered by the point Samuels makes in stating that it is consistent to say that certain categories might not be found to have causal essences that appear, *prima facie*, to meet HPC. That is, we might think that something will turn out to be a natural kind, whereas there is nothing available to support such a claim.

### *Summary*

Most arguments that reject the claim that PTSD is a natural kind assume essentialism and I have shown why PTSD is not best understood in essentialist terms, defending the claim that PTSD might be found to be a natural kind according to the HPC view of natural kinds. In

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<sup>66</sup> Ibid

addition, I have addressed a common objection to HPC. So far, there is no reason to think that PTSD is not a natural kind. In the next section, I provide two novel challenges to this claim.

## CHAPTER 4.

## TWO WORRIES: RATIONALITY AND THE LOOPING EFFECT

What makes PTSD a disorder? I will argue that rationality can help answer this question.

## 1. The First Problem: Rationality and Norms

To say that PTSD is a psychological or mental disorder implies that there is, somehow and somewhere, order. Order implies there are standards or norms.<sup>67</sup> Recall Michael. To diagnose Michael as a person with PTSD is not merely *describing* Michael. To say that Michael has PTSD is also claiming that there is a way that Michael *ought* to be.<sup>68</sup> What are these standards? I am going to claim that the standards that make Michael's condition a disorder are standards of rationality.

Consider the following display of Michael's avoidance behavior. In response to his wife's pleading, Michael would take his wife to outings and events such as parties, but remain in the car while she attended.<sup>69</sup> Assuming that Michael *desires* to go to the party and *desires* to be with his wife, how should we explain Michael's behavior?<sup>70</sup> If it is Michael's desire, then he should attend the party with his wife. One explanation for Michael's behavior is that Michael wants to avoid triggering the nightmares and memories that are so distressing to him. After all, who wants to feel distress? Thus, in a sense, Michael's reaction is a rational response to avoiding distress. If we were like Michael, we might behave in the same way. But Michael's memories

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<sup>67</sup> I will be using the term "standards" as a synonym for "norms". Most philosophers talk about norms.

<sup>68</sup> The idea I apply here is adopted from Christine Korsgaard, *The Sources of Normativity* (New York, NY: Cambridge University Press, 1996).

<sup>69</sup> Rumpler, 2008, p.187

<sup>70</sup> In other words, I am going to assume that Michael is not simply "throwing a tantrum" or something similar, eliminating from the possible explanations that Michael is being stubborn, immature, hates his wife, dislikes parties, etc.

and nightmares and the roles they play require further understanding, as it is likely that everyone has distressing memories and nightmares, but this does not typically make persons avoid social gatherings that they otherwise *desire* to attend. Thus, it is not simply that Michael has memories and nightmares and that he wants to avoid these, but Michael's memories and nightmares are disrupting his life by getting in the way of his desires and wishes and it is this disruption that begs for understanding. It is in this sense that Michael is irrational: PTSD is disrupting Michael's otherwise rational thought processes.

One explanation for this disruption is provided by two claims that are made of persons with PTSD: 1) PTSD patients view the world as unsafe; and 2) PTSD patients view themselves as unfit to act in the world.<sup>71</sup> Suppose these claims are true. If so, we can describe Michael as seeing the world as an unsafe place and as understanding himself as unfit to act in the world. Thus, rather than joining his wife at a party, Michael chooses to stay in the car in order to avoid a world that he sees as dangerous and that he interprets himself as unfit to act upon.<sup>72</sup> Avoidance symptoms such as Michael's can be understood as a breakdown in rationality insofar as the patient's view of the world disrupts the patient's life. Notice that I say it is a "breakdown" in rationality, which is not the same as saying that Michael is irrational, full stop. Michael's behavior displays a breakdown in rationality because it is, in a sense, rational for Michael to stay in the car. Once we understand Michael, we can understand why he does what he does. Again,

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<sup>71</sup> Herbert, James D., and Evan M. Forman. "Posttraumatic Stress Disorder." In *Practice Guidelines for Evidence Based Psychotherapy*. New York, New York: Springer, Forthcoming. Foa, Edna B., and Barbara Olasov Rothbaum. *Treating the Trauma of Rape*. New York, New York: The Guilford Press, 1998. Bolton, Derek, and Jonathan Hill. *Mind, Meaning, and Mental Disorder*. Oxford: Oxford University Press, 1996.

<sup>72</sup> Dr. Kim Huhman points out that Michael might be avoiding the scene that might ensue if he were to have a flashback or a panic episode. Thus, it is rational for Michael to stay in the car. I concede this point, but I think that this still entails a rational process that is disrupted by his disorder. A person without PTSD (and perhaps this is true for other anxiety disorders) would seem to be able to reason with themselves and convince themselves that no threats existed at the party that warranted thoughts such as those that lead to panic attacks and flashbacks. This is not available to Michael. In other words, you and I may be able to "snap out of it" but Michael can't. This is where his disorder is located.

the flashbacks and panic attacks that accompany this disorder are no doubt terrible to experience. Nonetheless, avoiding the party is not what we think Michael *ought* to do, nor is it (I am assuming) what *Michael* thinks he *ought* to do.

Moreover, unlike you or I, Michael can't just "snap out of it" and get on with things according to a plan that would allow Michael to live a flourishing life.<sup>73</sup> Michael's wife can't simply reason with Michael to get him to attend the event by her side. This point is important for Michael's disorder. Michael's disordered behavior is not subject to rational influences of reason in the same way you and I might be when we are asked to go to a party that perhaps we would rather not attend. For Michael, reason and rationality have been truncated (see Graham 2010). It is not rational to think that the world is unsafe and it is not rational for Michael to think that he is unfit to act upon the world when these thoughts are false. We can speculate that a social event is likely to be held in a safe place and that, for the most part, Michael is likely to be plenty fit to attend such an event. Indeed, a social event in America is a long way from the streets of Baghdad and many persons would likely be interested in hearing about Michael's experiences, were he comfortable enough to share them.<sup>74</sup> But for Michael, these points do not matter. He represents the world differently. These points bear upon the status of PTSD as a mental disorder as follows.

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<sup>73</sup> For a related point: Nomy Arpaly, "How It is Not "Just Like Diabetes": Mental Disorders And the Moral Psychologist," *Philosophical Issues* 15 (2005).

<sup>74</sup> There is a sense in which Michael views the world quite accurately. After all, he has been severely wounded. For him, the world is not a safe place. But this should be contextually dependent. Michael is likely to be very accurate in his assessment of the safety of the world with respect to war zones, but not accurate with respect to social venues. Similarly, perhaps Michael is accurate to think that he is unfit to act in a war zone, but this is not likely to be the case in a social setting – assuming that all else is equal for Michael, which it is not. This, of course, is the target to be explained.

*Mental States, Intentionality and Rationality*

Intentionality is often regarded as the “mark of the mental” and rationality is closely tied to intentionality.<sup>75</sup> Paradigmatic intentional states are mental states such as beliefs and desires. When we assume that Michael wants (i.e., desires) to attend the party with his wife, we have assumed that Michael has an intentional mental state. Intentionality can help to explain the *disorder* of PTSD. I will use Michael as a vehicle to demonstrate how intentionality and rationality can help to accommodate this explanation.

Michael’s beliefs and desires concerning the party are connected to a network of other beliefs and desires.<sup>76</sup> For example, perhaps Michael *believes* that attending the party would be a good thing to do with his wife because he loves her, because he *believes* that the party is important to her, and because friends that he hasn’t spoken with since his return that he *desires* to see will also be attending, and so on. Thoughts such as these represent beliefs and desires that are rational. On the other hand, Michael probably does not *believe* that the host or hostess will serve rocks for dessert or that Baby Jesus will attend the party to perform solo on a tin drum. These thoughts would represent irrational beliefs.

Michael appears to think that it is better that he stays in the car while his wife attends the party, which we have assumed is contrary to his *desires*. Presumably, he does this for *some reason*. I have suggested that an explanation of Michael’s behavior is that he behaves so as to avoid memories and nightmares; however, the memories and nightmares aren’t at the party – at

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<sup>75</sup> A paradigmatic account of intentionality is offered in John Searle, *Intentionality* (Cambridge: Cambridge University Press, 1983). For further explanation of intentionality and rationality in the context of mental disorders, see George Graham, *The Disordered Mind* (Routledge, 2010); Derek Bolton and Jonathan Hill, *Mind, Meaning, and Mental Disorder* (Oxford: Oxford University Press, 1996).

<sup>76</sup> For an explanation of the network of intentional states that I am modeling this account on see John Searle, *Intentionality* (Cambridge: Cambridge University Press, 1983). There are likely to be other alternative explanations of rationality in intentionality, consistent with my claims.

best, there may be reminders of events he has witnessed at the party, but this is not definite. It is also true that an event at the party may elicit an episode that is a manifestation of Michael's disorder, but this is support of the claim that I am making. Here is why. Michael's disorder is interrupting his life because his beliefs and desires are in conflict with one another. Thus, the disorder of PTSD is a disorder due to the interruption of rationality that PTSD is causing among Michael's intentional states. The set of beliefs that form the network of Michael's intentional mental states is altered as a result of Michael's experience. Understanding Michael's behavior as the result of truncated rationality can be of assistance in understanding Michael.

It does not work for Michael's wife to simply assure Michael that "everything will be O.K." It is precisely this kind of breakdown in rational thought that makes Michael's disorder be the disorder that it is. This is why Michael stays in the car while his wife attends a party and this point applies as a challenge to the natural kind thesis.

#### *Norms of Rationality Make PTSD Mind-Dependent*

Earlier I stated that natural kinds should be mind-independent. The nature of natural kinds is such that they are not susceptible to mental influences. Water does not stop being the thing that it is or change its behavior because of the presence of some set of beliefs. Water will be what it is, in the same way that it has always been, no matter where and how one might find it. The challenge that rationality provides to the thesis that PTSD is a natural kind is that when one considers the role of rationality in mental disorders such as PTSD, it is not clear that these disorders are mind-independent in a way that is required to regard them as natural kinds. Insofar as minds are subject to norms of rationality and norms of rationality are constitutive of intentional states, then the *absence* or *truncation* of rational norms appear to be constitutive of

disordered mental states. And this consequence seems to be avoidable only by eliminating norms of rationality from the explanation of all intentional states, which does not appear to be plausibly in view at this time.<sup>77</sup>

Recall that natural kinds allow one to seek causal mechanisms that explain a given phenomenon. In the currently considered case, one seeks the causal mechanisms of PTSD. I have suggested here that what is necessary to explain PTSD will entail an explanation that accounts for breakdowns in rationality. Therefore, a mechanistic explanation of PTSD would entail an explanation of the truncated norms of rationality. This is a tall order and one that it is not currently in view. Of course, one can remain optimistic. To return to an assumption of this essay - that natural kinds are to be discovered, *a posteriori* - it is possible that such a mechanistic account of rationality and the mechanisms underlying PTSD will one day be developed. For now the challenge stands as a stubborn obstacle to explanations of mental disorders, PTSD included, and thus of their status as natural kinds. Before moving on, I will address two challenges to my claims.

#### *Challenge One: Samuels's Reply to the Norms of Rationality*

I am suggesting that norms of rationality help to determine the *disorder* of PTSD and that this challenges understanding PTSD as a natural kind. Samuels offers a challenge to this argument that deserves a reply. Samuels argues that there are two sources of norms relative to mental disorders, medical norms and rational norms.<sup>78</sup> According to Samuels, medical norms would challenge the thesis that PTSD is a natural kind only if it was determined by these norms

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<sup>77</sup> I have in mind here efforts to "naturalize" the mind. See, e.g., Fred Dretske, *Naturalizing the Mind* (Cambridge, MA: MIT Press, 1995).

<sup>78</sup> I remind the reader that Samuels's concern is aimed at delusions, not mental disorders on a whole. I have adopted his account for my purposes.

that PTSD is “*necessarily* harmful or otherwise problematic relative to the relevant medical norms.”<sup>79</sup> I don’t think that PTSD is problematic only according to medical norms, relative or otherwise. I think it is safe to say that PTSD is harmful and problematic, *simpliciter*. That is, I think that PTSD is necessarily harmful. Even if we grant that PTSD functions to keep one alive in a certain circumstance, there is evidence that the longterm result is detrimental to one’s health.<sup>80</sup> Thus, medical norms are not going to concern me further here. Samuels’s reply to the challenge that norms of rationality provide, as I have presented it here, is more difficult.

According to Samuels’s reasoning, it would need to be shown that manifestations of PTSD are essentially, i.e, necessarily, irrational. I have suggested that PTSD might not be essentially irrational, as it is a reasonable (i.e., rational) response that results from the experience of trauma. There is nothing irrational about being fearful of a life threatening circumstance. On the other hand, I have argued that what makes PTSD a *disorder* is that persons with PTSD exhibit abnormal and irrational responses in other circumstances and that these are a source of explanation accounting for the *disorder* in PTSD patients. It follows from this that patients without truncations of rationality in such circumstances would not be disordered. So, I am arguing that PTSD, *qua disorder*, is essentially irrational. However, a response to Samuels’s reply requires a further step, as simply showing that norms of rationality are involved in the disorder is not enough. What needs to be shown is that norms of rationality are themselves sufficient to violate the mind-independence *desideratum*. Here is how Samuels presents this problem.

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<sup>79</sup> Samuels, forthcoming, p. 32

<sup>80</sup> Bremner, 2005

In order for norms of rationality to challenge the natural kind thesis, Samuels argues that these norms must be social.<sup>81</sup> Samuels suggests that there are alternative norms of rationality that are not social.<sup>82</sup> The upshot is that rationality does not necessarily challenge the possibility of understanding a mental disorder as a natural kind. The challenge from rationality is withstanding only on the assumption that rational norms are social norms.

I am willing to concede Samuels's defense on this point, as I take no stance on whether norms of rationality are social norms. I will say that it seems that social practices determine what one ought to consider rational in at least some cases, so it would appear, *prima facie*, that rational norms are social norms. I won't argue for this point, but consider Michael again. The reason that Michael's behavior is abnormal appears, at least in part, to be due to considerations that bear upon his relationship to others. From the standpoint of rationality, what is normal for Michael is normal, relative to us. Without others to interact with, it does not matter if Michael attends a party. Thus, norms of rationality appear to be, at least partially, social. I am open to the suggestion that alternative accounts of rationality might be non-social, however. In any case, this problem is a much larger problem than this paper allows room to solve.

*Challenge Two: Suppose PTSD is a Neurobiological Disorder*

One might be optimistic about the possibility of discovering the underlying mechanisms that account for the disorder known as PTSD. It would then be possible to provide a definition of PTSD in purely mechanistic terms, which is analogous to defining water as H<sub>2</sub>O. All talk of rational norms could thus be avoided. Further, just as this definition of water offers reason to regard water as a natural kind, the same could be expected in the case of PTSD. If so, we could

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<sup>81</sup> Samuels, forthcoming, p. 32 - 33

<sup>82</sup> Samuels cites Bayesian accounts of rationality, reliabilist accounts of rationality, and pragmatic accounts of rationality as possible non-social alternatives.

salvage the claim that PTSD is a natural kind from the challenge I am presenting that concerns rational norms. Here I want to consider a candidate example of this kind of account.

It may someday be possible, for example, to define PTSD as a failure of the mechanisms of fear extinction, where these mechanisms and the specific way in which they have failed are provided in the course of the definition.<sup>83</sup> This is a promising approach to understanding this disorder as a natural kind, but such an approach faces challenges.

The first challenge to a purely reductive neurobiological account of PTSD of the kind I have suggested here is that such an account would still require a source of norms according to which PTSD qua disorder is understood. A significant challenge to achieving this task, the task of finding norms for neurobiology according to which one can say that PTSD is a disorder and that it is a natural kind, is that PTSD may be a normal response to abnormal conditions, and so understanding the source of disorder may not be obtainable by such an account.<sup>84</sup> Moreover, the task of such an account of PTSD would be to substitute the source of normativity that I am suggesting rationality provides with a source of normativity applicable to neurobiological functions, where neurobiological functions are not subject to rational norms. One possible avenue to account for the normativity of biology is by appealing to evolutionary “design.”<sup>85</sup> For example, one might suggest that evolution has designed the mechanisms of fear to be such that they are eventually extinguished via processes that can be attributed to the function of the

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<sup>83</sup> Garakani, Amir, Sanjay Mathew, and Dennis Charney. "Neurobiology of Anxiety Disorders and Implications for Treatment." *The Mount Sinai Journal of Medicine* 73, no. 7 (November 2006): 941-949. Dr. Kim Huhman deserves thanks for her insights on this point.

<sup>84</sup> For an account that explains PTSD as a normal response to fear, see J. Douglas Bremner, *Does Stress Damage The Brain?* (New York: W.W. Norton & Company, 2005). Also, Rachel Yehuda and Joseph LeDoux, "Response Variation following Trauma: A Translational Neuroscience Approach to Understanding PTSD," *Neuron* 56 (2007): 19-32.

<sup>85</sup> Another possible avenue is by appealing to statistical norms. There are problems with this approach as well. Briefly, this assumes that the majority is the norm. This requires an argument and there are likely to be numerous counterexamples to such an assumption. Further discussion is found in George Graham, *The Disordered Mind* (Routledge, forthcoming).

amygdala.<sup>86</sup> Failure of the amygdala to perform its function can then provide an explanation of the disorder of PTSD.

All of this assumes that failure of the amygdala to perform its function in the extinction of fear-response mechanisms is not what nature “intended.” This is not a straightforward matter to assume. One obstacle to this assumption is that learning that something is deadly (or some similar danger) confers an obvious survival advantage, which would be lost if all fear mechanisms were intended by nature to be eventually extinguished. Thus, understanding disorder by appealing to failures located in the function of biological mechanisms such as the amygdala, as I have quickly reviewed here, would have to explain why, for example, fear extinction is the norm and failure of fear extinction is outside of the norm.

I am not suggesting that such an account is not available. What I am suggesting is that rationality provides a way to account for the norm violations involved in PTSD. Further, to account for disorders such as PTSD by appealing to violations of norms of rationality is consistent with locating the sources of these norm violations in mechanisms such as the amygdala. Furthermore, one need not recoil from such an approach due to concerns of dualistic anachronisms. Though it is not yet understood how rationality can result from physical sources, an account may be forthcoming and we can remain optimistic over the possibility of such an account while simultaneously endorsing the thesis that there really is such a thing as rationality and it is not identical to mechanisms of neurobiology. One final point is important to mention. Should it turn out that the disorder known as PTSD is a neurobiological disorder and that the disorder can be accounted for in purely reductive, mechanistic terms, it should be expected that a

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<sup>86</sup> Jerome Wakefield defends this kind of account. Jerome C. Wakefield, "The Concept of Disorder as a Foundation for the DSM's Theory-Neutral Nosology: Response to Follette and Houts, Part 2," *Behavior Research and Therapy* 37 (1999): 1001-1027. Jerome C. Wakefield, "The Concept of Disorder as a Foundation for the DSM's Theory-Neutral Nosology: Response to Follette and Houts, Part 1," *Behavior Research and Therapy* 37 (1999): 963-999.

diagnosis of this disorder no longer requires DSM criteria. Thus, in this case, PTSD should no longer be regarded as a mental disorder.<sup>87</sup>

The second problem for mechanistic explanations such as those that are provided by the biological sciences is the “Unity Problem.”<sup>88</sup> The Unity Problem arises from the fact that there are likely to be many mechanisms that account for a disorder such as PTSD. Why should these be treated as a *set* of mechanisms? Why not treat them as individual mechanisms that underlie a disorder? If there is nothing binding together the mechanisms, then why treat the disorder as a natural kind? The problem, according to Samuels, is that to understand the unification of the mechanisms involved in a disorder such as PTSD requires that one provide a “unifying characterization of the mechanism type... without merely deferring to the fact that [the mechanisms] produce similar effects.”<sup>89</sup> In other words, one wants to avoid categorizing the mechanisms involved in PTSD by saying that they are all the same type due to their involvement in the disorder known as PTSD. I think the challenge to this obstacle can be overcome by better understanding the functions of the biological mechanisms underlying the disorder.

For now, I maintain the position that rational norms appear to be the norms according to which one can understand PTSD as a disorder. Norms of rationality are not appropriate for natural kinds. If correct, this challenges the claim that PTSD is a natural kind, though there are promising programs to overcome the challenge.

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<sup>87</sup> I am offering an account that is provided by Graham (forthcoming).

<sup>88</sup> Samuels, forthcoming, p. 40

<sup>89</sup> Samuels, forthcoming, p. 41

## 2. The Second Problem: The Looping Effect

At one point in time, Ian Hacking urged caution concerning natural kinds, suggesting that the “tradition of natural kinds” has a limited, although helpful, utility.<sup>90</sup> One example of the limits of this utility applies to what Hacking calls “human kinds,” which are kinds that are appropriate to apply to human categories.<sup>91</sup> Earlier, I mentioned that it might be problematic to consider “Fans of Miles Davis” as a natural kind. “Fans of Miles Davis” might form an example of a category that Hacking would call a “human kind.” In plain terms, Hacking thinks that “there are senses in which many of our traits of character and types of action are made up.”<sup>92</sup> This much certainly seems true of “Fans of Miles Davis.” What Hacking points to here is a difference between natural kinds, such as water, and kinds that apply to humans, such as “Fans of Miles Davis.”<sup>93</sup> According to Hacking, human kinds are created. PTSD is a category that applies to humans.

### *Human Kinds and Natural Kinds*

Hacking distinguishes human kinds from natural kinds stating, “...the histories of human kinds are quite different from those of natural kinds, for as some classifications are formed and moulded they loop back, interact with, and alter the individuals and the types of behaviour to

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<sup>90</sup> Hacking, 1991, p. 153

<sup>91</sup> Hacking has since retired the term “human kinds”: “I am glad that my (former) term ‘human kinds’ has become a tool with which to analyze the Us-and-them use of names for groups of people....But it is not a term that I will continue to use” (Ian Hacking, “Kinds of People: Moving Targets,” *Proceedings of the British Academy* 151 (2007): 285-318). I am going to borrow Hacking’s retired term here. I should note that this is an issue that deserves its own paper.

<sup>92</sup> Hacking, 1991, p. 152

<sup>93</sup> Hacking does not state explicitly a referent of “human kinds”, but in a related article writes, “When I have tried to indicate that there are interesting differences between ‘human kinds’ – kinds of people and their behaviour – and what are commonly called natural kinds, I found myself assaulted from left and right” (Ian Hacking, “A Tradition of Natural Kinds,” *Philosophical Studies*, 1991: 109-126, p.109). Ignoring the assault to which Hacking refers (interesting as it is), the human kinds to which Hacking refers are likely to include mentally disordered humans, such as those with PTSD.

which they apply.”<sup>94</sup> Hacking calls this phenomenon the “looping effect” (for a discussion, see Graham 2010). According to Hacking, the looping effect makes categories that apply to humans “moving targets” (Hacking, *Kinds of People: Moving Targets* 2007, p.293). Hacking suggests that natural kinds are not subject to the looping effect, whereas human kinds are. Natural kinds are not moving targets.

The looping effect is bidirectional. According to Hacking, “...our investigations interact with the targets themselves, and change them. And since they are changed, they are not quite the same kind of people as before.”<sup>95</sup> The investigations to which Hacking refers are investigations such as those that occur within psychology and psychiatry. The targets of these investigations are the persons these investigations are concerned with. These investigations change the people and the people change as a result.

The looping effect raises an issue peculiar to mental disorders. To see this, consider a somatic disorder, diabetes. Merely knowing that one has diabetes does not influence the disorder. True, one might alter their eating habits or exercise habits and these changes can influence the course of the disorder; however, *merely knowing* one is diagnosed as diabetic is not likely to change the course of the disorder. Mental disorders do not appear to be immune to the looping effect. There is evidence that persons with PTSD are subject to the looping effect, explained next.

### *Looping in PTSD*

Interpretations of the PTSD patient’s condition by the patient can influence the condition of the patient. Let me explain with an example. Patient debriefing immediately following the

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<sup>94</sup> Hacking, forthcoming, p. 153

<sup>95</sup> Hacking, 2007, p. 293

traumatic stressor is designed to gather victims together in an effort to present victims with information concerning the typical effects of trauma and to encourage discussion of the event among the victims.<sup>96</sup> It is not clear that such debriefing programs are effective and some have argued that these programs may even increase the likelihood of symptom development (ibid). If debriefing influences the symptoms manifested by the patient, this would be an instance of the looping effect. Knowledge of a disorder, as prescribed by clinicians and theoreticians, influences the outcome of the disorder.

If it is true that such debriefing programs are malevolent in PTSD symptom development, then the mind-independence *desiderata* is seriously challenged. Thus, PTSD is unlike many natural kinds that are not subject to mental influences. It is in this sense that the many character traits and action types of persons with PTSD may be made up in the way that Hacking describes.

The influence of looping is not equivalent to denying that types of disorders are “real” or “natural.” Nonetheless, Hacking’s caution has two implications. First, the looping effect suggests that human kinds determine possibilities for action and this might apply in an important way to PTSD patients. A patient with PTSD *becomes* a PTSD patient, interpreted by clinicians as such, and the world of possibilities available to the patient is grounded upon this description. One theoretician offers an example of such influences: “I frequently counsel my patients not to pursue a career or training that requires memorization.”<sup>97</sup> Here, patients are being told who they are and what they are capable of, based upon a diagnosis. This is not a criticism of clinical practices such as Bremner’s. I simply mention this as an example of clinician to patient influences. Second, PTSD patients can themselves “aim” to fit the description of the disorder, and the world that the

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<sup>96</sup> Herbert and Forman, forthcoming

<sup>97</sup> Bremner, 2005, p. 238

patient inhabits after the etiological event becomes the world of a PTSD patient.<sup>98</sup> There is a very serious reason to consider that this might be true of PTSD patients, as I will explain next.

### *Looping and Secondary Gain*

A wide body of literature has been motivated by the fact that PTSD patients might stand to benefit from financial gains resulting from their disorder.<sup>99</sup> In fact, this was a complaint raised in opposition to PTSD's inclusion in DSM-III. Moreover, DSM-IV includes a preventative mechanism in an effort to remedy these exact concerns.<sup>100</sup> Potential motivation provided by possibility of secondary gain to fit the diagnostic category is reason enough to wonder if some patients have not in fact feigned the disorder, eventually becoming, in a sense, victims of the very disorder that they once faked – if only in their own minds.<sup>101</sup> A more subtle motivation is that persons with legitimate claims to PTSD risk forfeiting financial benefits if they demonstrate improvement; thus, there is a motivation to self-maintain the disorder in this case as well.<sup>102</sup>

These concerns raise serious challenges to the mind-independence *desiderata*, for two reasons. First, the data on PTSD is therefore vulnerable to contamination by false-positives generated by the motivations mentioned here. Thus, understanding of the disorder is also contaminated, which then feeds back to client interpretations. Moreover, even reductive efforts aimed towards seeking the causal mechanisms of this disorder run the risk of contamination by

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<sup>98</sup> This is closely related to numerous other issues that are prominent in the literature concerning PTSD. For examples of such issues with respect to narrative identity see Valerie Gray Hardcastle, *Constructing the Self* (Philadelphia, PA: John Benjamins Publishing Company, 2008); with respect to narration in diagnosis, Bahar Hashemi, Richard J. Shaw, David S. Hong, Rebecca Hall, Kristin Nelson and Hans Steiner, "Posttraumatic Stress Disorder Following Traumatic Injury: Narratives as Unconscious Indicators of Psychopathology," *Bulletin of The Menninger Clinic*, 2008: 179-190.

<sup>99</sup> Loftus, Elizabeth. "The Reality of Repressed Memories." *American Psychologist* 48, no. 5 (May 1993): 518-537.

<sup>100</sup> Rosen and Taylor, 2007

<sup>101</sup> *Ibid.* Also, Elizabeth Loftus has shown that memories can be manufactured. One question to answer is whether such memories can result in PTSD.

<sup>102</sup> Freuh et al., 2007. For a response to Freuh et al., see: Brian Marx, Mark Miller, Denise Sloan, Brett Litz, Danny Kaloupek and Terence Keane, "Military-Related PTSD, Current Disability Policies, and Malingering," *American Journal of Public Health* 98, no. 5 (2008): 773-774.

the wishes and desires of persons in these cases. The resulting risk is that the category itself is changed, and the patients that are diagnosed with the disorder are the ultimate victims of this cycle.

A second worry is more straightforward. Patients with PTSD are aware of themselves as such and act accordingly. When Bremner's patients follow his recommendation to avoid jobs that require memorization, they are acting as Bremner expects they should. Thus, what ought to be the case is determined by clinicians – clinicians impose norms that define the disorder. A patient with PTSD might think, "My doctor told me that I should avoid jobs that require memorization; thus, I won't seek those jobs."

If Hacking is correct, and if I have interpreted Hacking's caution correctly, the looping effect raises grave concerns over the status of PTSD as a natural kind. Natural kinds don't change according to their understanding of their place in the world. Further, the looping effect in PTSD is an instance of rationality influencing this disorder, similar to the problem of normativity and rationality discussed earlier. Finally, the looping effect is also, perhaps, more subtle in its influence than the norms of rationality, while at the same time less likely to be avoidable. Part of having PTSD might be that one is susceptible to looping.

### 3. Maybe PTSD is Not a Natural Kind, After All is Said and Done

Evidence may ultimately support the final conclusion that rationality is simply indispensable to the diagnosis of PTSD, and it may be impossible to eradicate the influence of the looping effect. Either problem would challenge the mind-independence *desiderata* in ways that have not been discussed in the literature concerning PTSD's status as a natural kind. What would be appropriate to conclude in this case? What should be said of the diagnosis? What should be

said of patient treatment of PTSD? These are all good questions, but here I can only supply a limited response, as follows.

First, I hope I have made it clear that discovering that PTSD is not a natural kind would still not entail that PTSD is not “real” or that it does not exist. Rosen and Taylor state, “Regardless of whether PTSD represents a distinct disorder, it has served at least one useful function; to promote research and advance our understanding of how individuals react to severely adverse events.”<sup>103</sup> It is worth noting here that PTSD is recognizable in some persons – persons such as Michael – and that this is enough to get questions started.<sup>104</sup> Recognizing PTSD is sufficient to serve as a diagnostic category towards which one can aim in developing and understanding of this disorder. Perhaps the utility of this category might be replaced by a more useful classification in the future, but until this occurs the status of PTSD should remain in place as a diagnostic category and theoretical posit.

Second, natural kinds can be “in” a diagnosis, without a diagnosis being a natural kind.<sup>105</sup> It might be discovered, for example, that certain brain divisions contribute to a system of responses and that this system is malfunctioning in PTSD, which we currently recognize as the symptoms belonging to PTSD patients.<sup>106</sup> The spirit of this kind of analysis was present when I discussed the role of the amygdala and mechanisms of fear extinction. There, I noted that it might turn out that multiple systems underlie the diagnosis, which would entail an analysis that breaks down the individual levels contributing to the disorder. These levels could then provide

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<sup>103</sup> Rosen and Taylor, 2007, p. 207

<sup>104</sup> For an analogous approach in emotion theory see Barrett (2006).

<sup>105</sup> Special thanks to Dr. George Graham for discussion on this matter, to whom I owe the point I make here. For a related discussion, see Robert Aunger and Valerie Curtis, “Kinds of behavior,” *Biology and Philosophy*, 2008: 317-345.

<sup>106</sup> One system that comes close to standing in for this approach is the system involving the HPA axis. See Rachel Yehuda, Earl L. Giller, Steven M. Southwick, Martin T. Lowy and John W. Mason, “Hypothalamic-Pituitary-Adrenal Dysfunction in Posttraumatic Stress Disorder,” *Biological Psychiatry*, 1991: 1031-1047.

reliable inductive generalizations in the way that is expected of natural kinds. An implication of this suggestion is worth pausing to clarify.

If biological mechanisms are found that underlie PTSD, does this show that PTSD is therefore a somatic disorder and not a mental disorder? To answer this question, consider a distinction, which I present through an analogy.<sup>107</sup> Suppose I ride my bicycle through a patch of thorns and that this results in my bicycle tire deflating as a result of a hole. My bicycle tire would have a hole; my tire is disordered. But, is the tire to blame? Is this a disorder a disorder *of* the tire? No. The tire wasn't designed to withstand the conditions it was exposed to. True, the hole is *in* the tire, but the problem is not a problem *of* the tire. If the problem is to be located anywhere, it is to be located with me, the negligent bicycle rider.

Using this analogy, we can ask whether locating biological mechanisms responsible for PTSD would entail that the disorder is a somatic disorder, rather than a mental disorder. That is, we can ask, "If it is found that there is a circumscribed set of causal mechanisms that underlie PTSD, would this disorder then be a disorder *of* the brain, and not a *mental* disorder *in* the brain?"<sup>108</sup> Perhaps. Earlier, I entertained the possibility that purely mechanistic explanations will account for the breakdown in rationality that appears to be present in the disorder known as PTSD. However, the challenges provided by such levels of analysis, like the level of explanation that would be provided by rationality insofar as rationality explains the norm violation and, therefore, the disorder of PTSD, are still outstanding. Thus, the best explanation of PTSD is one

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<sup>107</sup> This distinction is owed to Dr. George Graham. See George Graham, *The Disordered Mind* (Routledge, Forthcoming).

<sup>108</sup> George Graham makes the distinction between *disorders of the brain* and *disorders in the brain* to which I refer here. George Graham, *The Disordered Mind* (Oxford: Oxford University Press, Forthcoming).

that suggests PTSD is a disorder *in* the brain and that partially accounts for the disorder by appealing to rationality.<sup>109</sup>

One way to understand the biological processes and mechanisms that underlie disorders such as PTSD is that they provide “irruptions” of rationality.<sup>110</sup> The biological mechanisms that underlie PTSD are malfunctioning in such a way as to truncate rationality, similar to the malfunctioning of a bicycle tire when it is run through a thorn patch. Michael’s response to his wife’s pleading was to stay in the car; metaphorically speaking, PTSD is a thorn in Michael otherwise rational thought processes. Perhaps it will be discovered that Michael’s rationality is truncated by a dysfunction located in the hypothalamic-pituitary axis (HPA) of Michael’s brain or in the amygdala, as discussed earlier.<sup>111</sup> The HPA and the amygdala might be the natural kinds present in the diagnosis of PTSD, at least in Michael’s case. Whether this would be a sufficiently complete way to understand PTSD as a disorder, however, is not clear. Again, I flag it as a suggestion and as a possible area for future research.

#### 4. A Point of Caution

The trend towards “going deeper” in an effort to discover natural kinds in mental phenomena might be the beginning of a discipline chasing an illusion. Seeking mechanisms such as those that are involved in the HPA or the amygdala are examples of this trend. Hacking warns of something similar when he rejects the following condition:

*Uniqueness:* There is a unique best taxonomy in terms of natural kinds that represents nature as it is, and reflects the network of causal laws. We do not have nor could have a final taxonomy of anything, but any objective classification is right or wrong according

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<sup>109</sup> There is a significant amount of literature that speculates on the “design of the brain”, but there is not room to discuss this very interesting topic here. Let me just baldly state that I am skeptical of univocal explanations provided by evolutionary theories of functions in nature, while simultaneously a champion of such attempts. For an application of such an approach to PTSD, see Chris Cantor’s 2005.

<sup>110</sup> Graham, 2010

<sup>111</sup> Yehuda et al., 1991

as it captures part of the structure of the one true taxonomy of the universe. (Hacking, *A Tradition of Natural Kinds* 1991, p. 111)

According to Hacking, the Uniqueness Condition does not make sense. Hacking rejects this condition for reasons that are similar to P.F. Strawson's rejection of the notion of an exhaustive description.<sup>112</sup> Hacking's idea seems to be that there is no one "unique best taxonomy" that is right or wrong according to how it captures the "true" taxonomy of the universe. In other words, there is not a way to "carve nature at its joints" because nature does not have joints. Should one follow Hacking and endorse his rejection of the fourth condition quoted above? If so, perhaps the issue of natural kinds is not as central to PTSD as one might expect. If correct, this might apply just as well to all sciences. In a sense, all sciences might be made up. Perhaps there are no natural kinds - at least in the sense that these kinds dissect nature in such a way that one might regard such a dissection as capturing nature according to her natural articulations, articulations to be judged by nature herself. Perhaps PTSD is once such kind. I don't mean to endorse Hacking's claim, but I will say one final thing before closing. The truth, I would expect, is probably somewhere in the middle, between essentialism and Hacking's skepticism over the natural kind thesis.

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<sup>112</sup> Hacking quotes Strawson, who writes in a footnote: "The idea of an 'exhaustive description' is quite meaningless in general; though meaning may be given to it in a particular context of discourse. But this is an objection I shall waive" (P.F. Strawson, *Individuals* (Routledge, 1959)). Hacking leaves out the last sentence of Strawson's footnote. I am not sure that the idea of exhaustive descriptions is a meaningless one. Perhaps it is impossible, but this does not entail that the notion is meaningless. Whatever the case, this is beyond the scope of this paper. I take it that Strawson's point is sufficient to make Hacking's point clear enough.

## CHAPTER 5.

## CONCLUSION: IMPLICATIONS &amp; SUGGESTIONS FOR FURTHER RESEARCH

I began by tentatively defending the thesis that PTSD is a natural kind. My method was to provide a set of *desiderata* natural kinds should be expected to fulfill and offer reasons to think that PTSD can fulfill these *desiderata*. I then introduced two views according to which natural kinds might be understood, the homeostatic cluster view and essentialism. I argued that, if it is accepted that PTSD is a natural kind, this claim is best understood according to the homeostatic cluster view of natural kinds. I also defended the claim that PTSD is a natural kind from common criticisms, as these criticisms assume essentialism, which is an overly restrictive notion of natural kinds. Next, I introduced two novel challenges to the claim that PTSD is a natural kind. The first challenge was that norms of rationality are the appropriate norms according to which PTSD is best understood as a disorder, whereas paradigmatic instances of natural kinds (e.g., water) are not constitutively tied to norms of rationality. During this section, I considered the role of reductive accounts, such as those that are provided by the neurosciences, in understanding PTSD, suggesting that these accounts provide a promising source according to which we might understand natural kinds in mental disorders such as PTSD. I noted that these accounts also face the obstacle of finding their own source of norms. I left these accounts as open suggestions subject to future research. The second challenge I provided to the claim that PTSD is a natural kind was due to Hacking's looping effect. It appears that PTSD is subject to change due to rational processes that take place in a dynamic relationship that exists between the clinician, researchers, and the patient, unlike what one would expect of a natural kind. I will conclude by

addressing a question that I have left open and by making a suggested revision to our understanding of PTSD.

#### 1. Diagnostic Models are not Necessarily Theoretical Models

I introduced an assumption early on, stating that I would follow the literature that criticizes this disorder in assuming that the DSM criteria are also definitional models of mental disorders. I want to address an important distinction that should be made between theoretical models and diagnostic models.

The DSM is a diagnostic tool, not a theoretical tool. Thus the efficacy of the DSM criteria should be judged according to its utility in clinical contexts, not according to its theoretical utility. I have not attempted to provide an analysis of the DSM's efficacy with respect to PTSD within clinical contexts in this essay. My concern has been to address whether PTSD should be considered a natural kind. Natural kinds are theoretical tools. The utility of a theoretical tool is not the same as the utility of a diagnostic tool. Arguments that deny PTSD is a natural kind according to DSM criterion are aimed at a theoretical concept but are based on clinical criteria. These arguments should address this distinction, at the very least. At the very worst, they are simply bad arguments.

The clinical criteria and the theoretical entities that the criteria are intended to pick out would ideally be co-extensional. It is not clear that this is where things currently stand with respect to the DSM criteria of PTSD.<sup>113</sup> This is the problem with understanding PTSD as a

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<sup>113</sup> For an exchange related to this matter, see William C. Follette and Arthur C. Houts, "Models of Scientific Progress and the Role of Theory in Taxonomy Development: A Case Study of the DSM," *Journal of Consulting and Clinical Psychology* 64, no. 6 (1996): 1120-1132.; for a reply, Jerome C. Wakefield, "The Concept of Disorder as a Foundation for the DSM's Theory-Neutral Nosology: Response to Follette and Houts, Part 1," *Behavior Research and Therapy* 37 (1999): 963-999. Also, Jerome C. Wakefield, "The Concept of Disorder as a Foundation for the DSM's Theory-Neutral Nosology: Response to Follette and Houts, Part 2," *Behavior Research and Therapy* 37 (1999): 1001-1027.

natural kind according to the DSM criteria. If we are to understand PTSD as a natural kind, this should be according to a theoretical model.

The search for natural kinds within psychiatry and psychology can begin with DSM criteria, but this is not where they must end. Just as water was once identified by its surface features, so too can psychiatric kinds be initially identified by their surface features, where the DSM provides a model of these features by offering the symptomatic criteria of mental disorders. The theoretical problems that are inherited by the DSM criteria, however, would be mitigated by adopting models that are more useful within theoretical contexts.<sup>114</sup> In other words, keeping the distinction between theoretical models and clinical models is the best way towards progress. This would provide a number of advantages.

First, the research programs that are guided by theoretical models could evolve without having necessary patient treatment implications. Clinicians would, therefore, be free to use whatever tools were most helpful in assisting patients without being tacitly tied to a theoretical commitment contained in the DSM.<sup>115</sup> I believe that this could remedy some, but not all, concerns that are invited by the looping effect. Briefly, making theoretical models distinct from clinical models might provide a barrier between theoretical and clinical practices. True, the influences of looping would still be present in patient and clinician relations, but the theoretical implications might be mitigated. This, of course, is a proposal and claim that calls for further development.

Second, theoretical models can be used to search for more basic laws to underwrite the classifications of DSM. Recall that not everyone gets PTSD after a traumatic experience and that

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<sup>114</sup> For an example of a theoretical model of PTSD that I think is promising, see: David Rubin, Dorthe Berntsen and Malene Klindt Bohni, "A Memory-Based Model of Posttraumatic Stress Disorder: Evaluating Basic Assumptions Underlying the PTSD Diagnosis," *Psychological Review* 115, no. 4 (2008): 985-1011.

<sup>115</sup> For a statement of these kinds of concerns within the development of DSM see William C. Follette and Arthur C. Houts, "Models of Scientific Progress and the Role of Theory in Taxonomy Development: A Case Study of the DSM," *Journal of Consulting and Clinical Psychology* 64, no. 6 (1996): 1120-1132.

the stress response of PTSD is possibly a normal response to abnormal conditions, where the disorder comes from a failure to extinguish fear. Diagnostically, this seems important. Some persons may show PTSD symptoms and then overcome the disorder. As it stands, there is a separate category within the DSM to account for these kinds of cases (Acute Stress Disorder).<sup>116</sup> Theoretically, however, this distinction may not be important. It might be that persons in this circumstance are identical to persons that have experienced a traumatic event and failed to recover - identical, perhaps, from a neurobiological standpoint. The mechanisms shared by each clinical group might account for the similarities across these patients manifesting the symptoms of PTSD. In other words, the utility of separate categories may serve a clinical function, whereas reality is not reflected by these category distinctions.

Carl Hempel, a influential figure in the current DSM design, suggested that theoretical progress entailed a reduction of categorization. As theories are developed that can account for a variety of phenomenon according to increasingly general laws, the number of categories required to explain the observable phenomenon should diminish.<sup>117</sup> Call this Hempel's thesis. My suggestion is consistent with Hempel's thesis, and I will assume Hempel's thesis is consistent with the aims of DSM and that it is true. What I am suggesting is that seeking neurobiological mechanisms that explain mental disorders can lead to natural kinds that are relevant to those disorders. Thus, we can take the theoretical weight off of the DSM criteria. The mechanisms relevant to understanding disorders such as PTSD are likely to apply to other disorders that are similar to PTSD.<sup>118</sup> Here, the categories are reduced in number without assuming that the

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<sup>116</sup> Laura E. Gibson, *Acute Stress Disorder*, United States Department of Veterans Affairs, [www.ncptsd.va.gov/ncmain/ncdocs/fact\\_shts/fs\\_asd](http://www.ncptsd.va.gov/ncmain/ncdocs/fact_shts/fs_asd) (accessed March 21, 2009).

<sup>117</sup> Follette, William C., and Arthur C. Houts. "Models of Scientific Progress and the Role of Theory in Taxonomy Development: A Case Study of the DSM." *Journal of Consulting and Clinical Psychology* 64, no. 6 (1996): 1120-1132.

<sup>118</sup> I think my recommendation is similar in spirit to Bremner's recommendation that there be a new category of "trauma-spectrum disorders", although Bremner's recommendation is not consistent with Hempel's thesis.

categories within the DSM must also reduce. I think that this is what we should aim for and hope for.

So, is PTSD a natural kind? Not if what I have argued is correct. Is it a real disorder? Yes. How should this disorder be understood? By developing theoretical models that can account for the puzzling features that bring controversy to this diagnosis. Are natural kinds relevant to the disorder? Yes, and perhaps they can be at a reductive level, such as those that are provided by neurobiology and the neurosciences. Is it best, therefore, to expect that one day it will be most appropriate to regard PTSD as a neurological disorder, rather than a mental disorder? Not if PTSD is subject to norms of rationality and the looping effect. Thus, there is a significant amount of both clinical and theoretical work that is outstanding with respect to this disorder.

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