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A Prismatic Account: Body, Thought, Action in Trauma

Mary Catherine McDonald

RESUMEN

Este artículo, como la mayor parte, está motivado por una serie de cuestiones. ¿Cómo podemos comenzar a entender cómo se relacionan el cuerpo, el pensamiento y la acción? ¿Está mediada *siempre* la conducta corporal humana por la mente consciente? ¿Es la acción un modo de materialización de los pensamientos? ¿Se responde mejor a esto por medio de la neurociencia? ¿de la psicología? ¿O de la filosofía? En este artículo, uso el paradigma del trauma del combatiente para explorer el problema de la unidad dinámica del cuerpo, el pensamiento y la acción. Usando la fenomenología de Merleau-Ponty podemos entender mejor tanto esta relación entre cuerpo, pensamiento y acción, como el fenómeno del trauma

PALABRAS CLAVE: *cuerpo, pensamiento, acción, fenomenología, Merleau Ponty, trauma*.

ABSTRACT

This paper is motivated (as most are) by a series of questions. How can we begin to understand how the body, thought, and action are related? Is bodied human behavior *always* mediated by the conscious mind? Is action a way for thoughts to play out? Is this best answered by neuroscience? Psychology? Or philosophy? In this paper, I use the paradigm of combat trauma to explore the issue of the dynamic unity of body, thought and action. Using Merleau-Ponty's phenomenology we can better understand both this relationship between body, thought, and action as well as the phenomenon of trauma.

KEYWORDS: *Body, Thought, Action, Phenomenology, Merleau-Ponty, Trauma.*

I. INTRODUCTION

Recent philosophical discussion in the fields of phenomenology, neurophenomenology and cognitive science has attempted to sketch the nature and limits of consciousness. Many of these works discuss what it means to be bodied, and how embodiment interacts with thought and/or consciousness [e.g., Thompson (2015); Zahavi and Gallagher,

(2008), (2012); Noë (2012)]. Though some of these authors talk about specific human phenomena, such as shame or empathy, until very recently, trauma has not been given much focus [e.g., Ataria (2018); Fuchs (2012)]. When it has been discussed, trauma is referred to in a general manner. In this article, I explore the experience of combat trauma by looking closely at what it is like to have traumatic memories. This exploration reveals two things. First, traumatic memories, from a psychological and neurobiological perspective, influence one's body, thought, as well as one's actions, in ways that reveal all three to work in a dynamic unity. Second, taking a prismatic approach – meaning one in which disciplines are brought to bear on the same phenomenon – enhances our understanding both of the discipline and of the phenomenon in question.

I begin with the way that traumatic memory is described in psychology to provide a framework for the concept of traumatic memory as a central symptom of PTSD. I use a common psychological framework, the *Diagnostic and Statistical Manual of Mental Disorders*, to provide a working definition of traumatic memory. This definition is functional (though certainly not exhaustive), allowing me to provide scaffolding for the concept of traumatic memory as a central symptom of PTSD.

I then move into a basic understanding of the neurobiology of memory in order to illuminate some of the mechanisms of traumatic memory on a biological level. When the neurobiological account is coupled with the theory from psychology, we begin to see how experience permeates both psychology and biology. This allows us to escape from the pernicious idea that trauma is merely psychological.

The final section of the paper shows the way in which the phenomenological perspective adds a third, critical level to this prismatic and interdisciplinary account of PTSD. I first provide an account of embodiment that helps us understand bodily memory, and then use this account to more deeply understand the experience of trauma. Using the paradigm of trauma, we are able to see both how body, thought and action are united as well as how the three disciplines of psychology, neuroscience and phenomenology can form an interdisciplinary whole.[1]

II: Psychology and Traumatic Memory

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), organizes the symptoms of PTSD into clusters.[2] To receive a PTSD diagnosis, a patient has to experience at least one symptom from each of

the clusters for longer than one month (this purpose of this temporal limiting factor is to ensure that we do not over and/or mis-diagnose). The second cluster, which I will focus on here pertains to the way that the traumatic event is remembered.

According to this cluster, traumatic memories are experienced in at least one of the following ways:

1.) Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).

2.) Recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s).

3.) Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.)

4.) Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

5.) Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s) [APA (2013), pp. 265-590].

There are three substantial dissimilarities between traumatic and non-traumatic memories to take note of.

First, note that in criterion two, it is specified that traumatic memories are retrieved *as* sensory and affective elements, not *alongside* sensory and affective elements. The implication here is that the traumatic memory is primarily (and sometimes only) sensory and affective and *not* necessarily available as the subject of conscious thought. Second, the sensory and affective elements in traumatic memory cause anguish (the word 'distress' appears in three of the five criteria). Positive memories may carry with them elements from the past, but they do not cause anguish.

We can understand the way these two criteria by way of example. Marcel Proust's famous example of the madeleine provides an especially vivid illustration:

> When from a long-distant past nothing subsists, after the people are dead, after the things are broken and scattered, taste and smell alone, more frag-

> ile but more enduring, more immaterial, more persistent, more faithful, remain poised a long time, like souls, remembering, waiting, hoping, amid the ruins of all the rest; and bear unflinchingly, in the tiny and almost impalpable drop of their essence, the vast structure of recollection [(1928/1992), pp. 63-64].

Memories like this – a taste or a smell which seems to hold the past remarkably intact within it – can be immensely powerful. Power is not synonymous with distress, however. Smelling cinnamon and being reminded of the warmth of the holidays in childhood, though poignant, is not typically an upsetting experience. Further, though the memory might be arresting, sensory and affective aspects can be pulled apart. One can bring into conscious memory the content of the memory and consciously understand that the smell of cinnamon or the taste of a madeleine triggers happy memories of childhood.

Third, as specified in criteria one and three, traumatic memories are *invasive*. While the memory of childhood may appear unbidden, this memory is not intrusive in the same way that traumatic memories are. They may flood us in a way that we cannot control, but they do not take over the present moment. When the memory of childhood is called up by the scent of cinnamon, this memory exists within the present moment as a memory, it does not *take over* the present moment, tricking us into thinking we are actually *in* the past. As we will see below, traumatic memories seize and suffocate the present moment, effectively manipulating one's action and behavior in significant ways.

Traumatic memories, then, though they may retain some of the same features as non-traumatic memory, are distinct from non-traumatic memories in at least three ways: they are experienced as primarily sensory and affective and therefore not available cognitively, they are invariably distressing, and they are intensely intrusive.

Cases from the psychological literature also provide vivid examples. Psychiatrist Jonathan Shay compiled accounts from his patients, many of them veterans. A Vietnam veteran with PTSD describes the way that traumatic memory intrudes on his life in the following way:

> I haven't spent a complete night in bed with my wife for at least ten years. I always end up on the sofa. It's safer for her… After I couldn't work anymore… I'd do this crazy shit at night. I once threw her out of bed so hard it broke her shoulder. I thought there was an NVA potato-masher [a grenade] come in on us. Another night I thought *she* was a Gook, and I had my hands around her throat before I woke up [Shay (1995), pp. xvii].

The symptoms described here are consistent with criteria one, three and four from the DSM entry above. Beyond that, there are several notable aspects to this report. The first is the longevity and intensity of the traumatic memory. *Ten years* after the event, the patient still has intense reactions that lead him to *act* and *think* as if he is under attack despite the fact that he rationally knows he is no longer in Vietnam. His dissociation is so total that he cannot tell the difference between the past and the present. What this shows is that traumatic memory is *not* simply memory in the sense of conscious recollection. The memory of a traumatic event causes the individual to experience the present moment *as if* it were the past. As Shay puts it, "Traumatic memory is not narrative. Rather, it is experience that *reoccurs*" [(1995), pp. 172]. Even the most intensely positive memories do not have this kind of power.

To take another example, Abram Kardiner, a clinician who worked with veterans after World War I, describes the rotating nightmares of one of his patients, who had been home from war for more than eight years. One variation is as follows.

> I am in the yard while playing the water hose upon the flagstones. Water stops running. After a while it begins again. Then the neighbor from whom I borrowed the hose comes out and reproaches me, finally swears at me, and then strikes me. Then all the neighbors come running out, and they chase me all over. Then I awaken in a sweat, feeling as though I had the life pounded out of me [(2012/1941), pp. 91].

This account is consistent with criterion two above. Here it is notable that the subject material of the dream is not directly related to the traumatic experience of combat. Rather, here it is the affect of combat – feeling under attack, exhausted, beaten down – that is represented in the dream. What is being relived here is the emotion that accompanied the original trauma rather than its content. While anyone could have a distressing dream like this one, this patient has a distressing dream of some kind nearly every night and has for the past eight years. His mind is held hostage by the past – again in a way that influences his bodily behavior ('I awaken in a sweat').[3]

Traumatic memories are marked by relentless, persistent, invasive and evocative instances of reliving that take hold of the present. This sets them far aside from the most vivid of non-traumatic memories. In traumatic memory, the past is not recollected consciously, it is instead relived in these sense that the memory *carries* the past with it and alters the experience of the present moment. Now that we have a basic framework

for understanding just what traumatic memory entails, and the ways that it can grip the mind and influence one's action and behavior, we can move on to explore the neurobiology behind these symptoms.

III. The Neurobiology of Traumatic Memory

Memory shapes human behavior. As noted in the previous section, traumatic memories can become chronic symptoms, intrusive instances of reliving instead of opportunities of remembrance. It is not clear, however, *how* traumatic events tend to create memories that intrude on the present endlessly. Understanding some of the basic neuroscience behind the differences between traumatic and non-traumatic memories can explain the etiological theories behind some of these psychological symptoms. In this section, I examine the way that events are processed and encoded in the brain (on the most basic level), and how this can differ when the event is traumatic. What we will see is that the neurobiology behind traumatic memory corroborates the foundation set forth in psychology, and further, provides plausible biological explanation for symptoms. This links the experience of memory in the mind to the body in a very strong relationship (that will be further articulated in the phenomenological account).

It is thought that there are two systems that regulate the formation of memories in the brain.[4] The hippocampal system is responsible for encoding and storing what have been termed declarative or explicit memories. These are memories that the subject can distinctly focus her attention on, recall consciously and refer to. The amygdala system, on the other hand, is responsible for non-declarative or implicit memories that have strong emotional resonance, which are not (and sometime cannot be) the subject of conscious recollection in quite the same way [LeDoux (1993), pp. 69-79; van der Kolk (2014), pp. 51-105 & pp. 171-202; van der Kolk (1998), p. 52-64; Porges (1995), pp. 301-318].

For example, you might have an explicit memory of going to dinner with a friend last night. This explicit memory is a distinct episode from the past that you can bring into conscious attention. If asked about the meal the next day, you would be able to focus your attention on the events of yesterday, recall what you ate for dinner, and even remember some of the details from the conversation that you had over the meal.

Implicit memories, on the other hand, are *not* brought into conscious attention, though they still shape much of our behavior. If you

drove to the aforementioned dinner, it is likely that you did not have to specifically recall each lesson from driving school in order to operate your vehicle. When you looked at the menu to find something to order, it is likely that you did not have to recite the alphabet and sound out each of the words in order to understand the names of dishes. The lessons that you learned in order to drive and to read have become implicit over time. Thomas Fuchs helpfully explains the difference by referring to explicit memory as 'a knowing that' and implicit memory as a 'knowing how' [(2012) pp. 11].

Research has shown that these two systems can operate independently. In a well-known case, Édouard Claparède, a French doctor, demonstrated this by experimenting on a patient with amnesia. Claparède's patient could not form new conscious memories. Each time she met with the doctor, he had to re-introduce himself to her, and she had no conscious memory of their previous conversations. One day, Claparède greeted her with a tack in his hand that pricked her when they shook hands. The next day, though the patient still did not consciously remember Claparède, she refused to shake his hand, and continued to refuse to do so despite never being able to remember why [LeDoux (1996), pp. 180-182]. This patient was *physically incapable* of creating a conscious memory that would allow her to remember being pricked in the hand by Claparède's tack. *And yet*, she still somehow knew not to shake his hand. This patient is held hostage by a memory that is held not within the conscious mind but instead within the body. Fuchs refers to this kind of memory as unconscious body memory. Unconscious body memory is "characterized by the absence of forgotten or repressed experiences, and at the same time by their corporeal and intercorporeal presence in the lived space and in the day-to-day life of a person" [Fuchs (2011), pp. 69]. In other words, one's life might be drastically influenced by memories that manifest in the body even though these memories are absent from consciousness.

It is a mistake to think that implicit and explicit memories are at opposing sides of a spectrum. In fact, there are many ways in which implicit and explicit memories coincide. For example, if when you went to dinner with your friend you had an argument, you likely have both explicit and implicit memories of this. When explaining what happened the next day, you can consciously bring the event into your mind and describe details about the meal and the conversation. It is also likely that as you do that, you feel some of the same emotions that you felt last night. You may feel as upset and frustrated as you did during the argument it-

self. In this case you have both implicit and explicit memories of the same event.

The ability to connect implicit and explicit memories helps enable us to change our perspective or assign new meaning to a past event. The dynamic interaction between the hippocampal and amygdala systems and the rest of the brain is what makes this possible on the neurological level. Problems occur, however, when the hippocampus is not involved in the memory creation, which is thought to be the case in cases of trauma.

To understand how this can happen, it is necessary to briefly explore how explicit and implicit memories are formed in the brain. Though we are talking about the brain, this will bring us back to Fuchs' idea of a bodied memory.

When an event occurs, the amygdala and the medial prefrontal cortex ascertain what is happening and what the body's response should be, sending this information along to the brain stem, which responds by activating the body accordingly through use of the hormone system. The information is then sent to the hippocampus that sorts it in relation to data that already exists. The job of the hippocampus in this regard can be likened to a filing system; the event occurs, and the hippocampus organizes it, labels it, and files it away accordingly. When the event gets processed in these regions of the brain, it can become a distinct 'file' that the subject can 'pull out,' as it were, and refer to in relation to the other events or files that the brain has already processed. Experiences that follow this particular course become explicit memories that the subject is able to bring to her attention and focus on, refer to, and think through. The formation of explicit memory *requires* the intervention of the hippocampus. When the hippocampus is not involved, the memories can still be stored by the mind, but they do not get encoded explicitly, and therefore *cannot* be brought forth as objects of attention [LeDoux (1996) pp. 179-224].[5] Why might the hippocampus not be involved?

When an event elicits an especially strong emotional response in the amygdala (i.e., one in which one feels significant threat), the neurobiological process focuses on adapting to that threat in the present. As a result, the hippocampal processes are overridden because forming higher-level autobiographical memories of the event is less important than survival. Though this can become problematic, the process by which information bypasses certain sections of the brain is an evolutionarily adaptive one. When the subject is experiencing an event that is threatening, the amygdala sends information to the brain stem that the body is under attack. The brain stem responds by sending a signal to release

stress hormones (norepinephrine, cortisol) that prepare the body to deal with that situation. Both of these hormones have functions that increase the chance of survival for the individual but decrease the likelihood of the creation of an explicit memory [Bremner (2004), pp. 167-176].

The most important result of this increase in hormone levels for the present discussion of memory is that increased hormone levels in the trauma response effectively shut the hippocampus down, as the organizing of data is less important than responding to that data in the moment. When this occurs, an autobiographical, conscious 'memory' that the subject can *recognize* as a memory does not get fully formed. What *does* become encoded is an implicit memory, or a set of somatic bodily responses; i.e., increased heart rate, heightened senses, hyperarousal, and so on. In other words, the 'bodied' memory takes hold of the subject and influences action. This is how an experience can permeate the brain, lodge itself (as it were) in the body and influence one's actions or behavior without being available consciously.

These the bodily memory is triggered, the subject does not simply remember the past event, she feels the emotions and goes through the bodily responses *as if she were experiencing the event all over again*.[6] Claparède's patient illustrated this same result. For her, the memory of being pricked by a tack is implicit because she physically does not have access to the part of her brain that creates new explicit memories. When Claparède offers his hand to shake, the implicit memory brings forth an emotion of fear in the patient though she is not consciously aware of where the fear comes from. The same thing is happening in Shay's patient who mistakes a noise for grenade fire and his wife for an enemy combatant; because of the way that the memory was encoded in his brain, he *cannot distinguish* between the past experience of war and the present reality of being home and in bed. Though he may be rationally aware that he is not in Vietnam, past events come crashing in and take over in the form of implicit, bodily memory.

Though this is a very simple gloss on what is a much more complex process, we can already see how the mind and body exist in a dynamic unity as what is not available consciously can still influence thought, behavior, and action. Though a sufferer of trauma may not be conscious of the ways in which the trauma is impacting behavior, the memory of the trauma is still in dynamic relationship with the body, and it is still influencing the individual's behavior. What, then, can phenomenology add to this discussion?

IV. The Phenomenology of Traumatic Memory

To understand how phenomenology adds another dimension to the discussion of trauma and traumatic memory, it is helpful to begin with some background regarding the way that the phenomenologist – specifically Maurice Merleau-Ponty – orients himself toward the human being and human behavior.[7] Merleau-Ponty would argue that human behavior cannot be reduced to *any* singular scientific explanation. Neither psychology nor neuroscience can capture the human experience in entirety. This is because of the embeddedness of what he called their "being-in-the-world." According to him, there is not a strict divide between a human being and the world that she exists within. Instead, she exists in dynamic interaction with the world, having before her a particular horizon, or phenomenal field that she engages with. In the broadest terms possible, the horizon is what is available to consciousness. However, there is a crucial caveat: what is perceived, what comprises the horizon, is shaped not just by objective truths in the external world, but also by meanings conveyed by and in pre-theoretical experience.

In order to understand what this means, it is helpful to recall the constancy hypothesis and Merleau-Ponty's stance on it [(1962/1945), p. 30). The constancy hypothesis is the claim that the inputs of consciousness have constancy to them in their correlation such that the same stimulus will consistently produce the same reaction. Merleau-Ponty *rejects* the constancy hypothesis, arguing that the reaction that a stimulus produces is not only determined by the stimulus, but also by the individual perceiving it. As he says, the perceptual apparatus is not just a "transmitter" [(1962/1945), p. 10]. When we look at something, we don't simply *see* it. Rather, "it *awakens resonances* within our perceptive apparatus" [(1988), p. 17]. The resonances that are awoken are unique to each of us and to our horizons or phenomenal fields. This is a complicated (and beautiful) way of saying something rather simple.

If a person begins struggling with insomnia, for example, it is likely that her perception of her bed will change as the meaning of it changes for her. What was once seen as a comfortable and warm place might start to actually *look* and feel like something dark and unwelcoming. This shows that there is *not* constancy between the stimulus and the reaction that the stimulus produces. In other words, the things that we perceive are perceived *as* this or that, i.e., as bearers of this or that meaning. What they are perceived as depends on the experiential horizon in which they appear.

This is relevant because things like the constancy hypothesis impact the way that we understand perception. In another example, Merleau-Ponty invites us to imagine a child who is attracted to the flame of a candle and touches it, burning herself. Merleau-Ponty points out that the child's perception of the candle changes so that what once looked attractive comes to signify danger. We might be tempted to say that what is going on here is related to a kind of perceptual mistake related to knowledge of the objective world: the child did not know that the flame would burn her, so she misperceived it as something that she could grasp. Merleau-Ponty points out that this is not an accurate assessment. It is *not* that the child had an incorrect perception, which has now been corrected since she has been exposed to the objective truth of the external world, but that her experience has colored her horizon such that the immediate perception of fire is now imbued with a different meaning.

There is much more that can be said about these basic ideas in Merleau-Ponty's phenomenology. However, even this brief gloss on Merleau-Ponty's phenomenology of perception can be used to contribute to the discussion of traumatic memory. The emphasis on meaning in perception helps to understand traumatic memory because it enables us to see that it is not simply that the trauma patient is misperceiving reality, but that *their perceptual world has been stamped with the trauma that they have sustained.* This in turn influences the way that they think (mind), the way that their body responds to the horizon (body), which in turn influences behavior (action). Beyond fleshing out the way that trauma reverberates through one's being in the world, phenomenology can help us reframe and more deeply understand the traumatic symptoms we have been talking about.

Phenomenology – with its initial focus on the dynamic unity between mind, body, action in the world – can help us reframe and more deeply understand the traumatic symptoms we have been talking about.

To see this more vividly, we can take a look back at the examples from above First, the veteran who cannot sleep through the night:

> I haven't spent a complete night in bed with my wife for at least ten years. I always end up on the sofa. It's safer for her… After I couldn't work anymore… I'd do this crazy [stuff] at night. I once threw her out of bed so hard it broke her shoulder. I thought there was an NVA potato-masher come in on us. Another night I thought she was [the enemy], and I had my hands around her throat before I woke up [Shay (1995), pp. xvii].

To be sure, the veteran who hears grenade fire and then pushes his wife out of bed is not actually under fire. However, it is not accurate to say that it is *false* either. The perception of gunfire and the chain of behavior that follows that perception are *very real* for the veteran. And it is this reality – the reality of the lived experience – that influences the veteran's behavior, causing him to respond as if he were under attack. To reduce the experience of traumatic memory to an incorrect perception misses a vital part of the phenomenon as a *lived* experience. It is also to take apart the unity that is mind, body, and action.

The psychological viewpoint allows us to see this as a symptom of a particular disorder. The neurobiological research can give us an explanation for why it is happening. The phenomenological viewpoint returns us to the experience of the patient and opens up another channel for understanding that phenomenon. That channel reveals that the traumatic memories that this patient is dealing with are not *simply* a problem of the body, of the mind, or of one's actions; it is all three. These symptoms are a sign that the traumatic events sustained have *altered the fabric of his world*, and that he perceives loud noises *as* threatening and his wife as the enemy. The traumatic experience of combat permeates the way the subject thinks, feels, and behaves – not just in that moment but forever after. The issue is not that he is attempting to address a world that does not objectively exist and is therefore false. The problem is quite the opposite. The world in which he could be attacked at any moment *does* exist; it is his world. *He is addressing the world that the experience of trauma has created for him*.

Reframing traumatic memory in this way is vitally important because failing to understand the way that trauma has stamped the individual's world with a meaning that was not previously there risks reducing the experience to a kind of misperception, or that the problem can be understood in diagnostic criteria from psychology, or singularly located in one region in the brain. Any of this reduction can lead to the conclusion that to fix the problem, the mistaken perception simply needs to be overridden. Again, the trauma *has altered the fabric of his horizon*; it is not just this particular instance of remembering that is a problem, but the very way that he perceives the world. What phenomenology reveals, then, is that there is no such thing as overriding.

This is perhaps even more vivid in the second example from 2.1 above.

> I am in the yard while playing the water hose upon the flagstones. Water stops running. After a while it begins again. Then the neighbour from whom I borrowed the hose comes out and reproaches me, finally swears

> at me, and then strikes me. Then all the neighbours come running out, and they chase me all over. Then I awaken in a sweat, feeling as though I had all the life pounded out of me [Kardiner (2012/1941), pp. 91].

It is not just this patient's dreams that are the problem; it is that his combat experience has shaped the entire world into an attack. His horizon has been colored in such a way that he perceives everything – friendly neighbours and mundane gardening activities – as dangerous. It is not just that he was under attack in the past, and that the past sometimes inconveniently peaks through into the present. It is that the past experience has shaped his perception so that *everything* is, at any moment, a potential attack.

In both of these cases, Merleau-Ponty's phenomenology grants us access to a critical level of understanding; namely, that these soldiers are not simply suffering from their traumatic memories, but that their experience of themselves in a particular world has been shattered.

It is vitally important to understand that the phenomenological viewpoint is not at odds with the accounts in the sciences. This is why the viewpoint that gathers all of these perspectives together is best thought of as prismatic. If a prism is thought of as a transparent glass object whose distinct sides each offer a different viewpoint, through which other viewpoints are clarified and deepened, we can understand these perspectives as enlightening one another as well as our understanding of the phenomenon on the whole.

Consider how these perspectives work together. The long-term effects of trauma and traumatic memory are not only destructive neurobiologically, as we have seen above. The phenomenological viewpoint further reveals that the persistence of traumatic memory can chip away at the victim's sense of self, causing her to lose the feeling of authority over her mind and over her body. Since the memory doesn't get encoded explicitly, or filed away, the subject cannot relate herself to that memory or recognize it as autobiographical. When the memory is relived the present morphs into the past and then back into the present without conscious awareness. This is frustrating not because these things turn out to be false, but because the memory of them is so immediate, so vivid, that there can be no distinction between the past and the present. As a result, victims become unable to trust their own perceptions in general. As one of Shay's patients describes, "Nothing is what it seems. That mountain there — maybe it wasn't there yesterday, and won't be there tomorrow. You get to the point where you're not even sure it is a mountain" [Shay (1995), pp. 170].

This loss of trust in one's own perceptions extends to the lens through which one navigates the world. We can see this in the patient above who says, "Nothing is what it seems." It is not simply the mind that is unsafe, but the world. The traumatic event permeates existence in both directions – from mind, to body, to world, and then back from the world, to body, to mind. The common misconception evident is that the traumatic event is simply a relationship from world to mind. The role of the body is often minimized or taken as secondary to the mind. It is rarely understood that trauma also extends from mind to world. After experiencing trauma and the subsequent irreality of a world in which one could be transported back to that awful moment at any moment, the knowledge that the world does not have an objective horizon that we can count on, is inescapable. This forces a new perception of the world onto the individual. And *this* is perhaps the most profound injury that comes from trauma - the intractable loss of one's blueprint of the world.

V. Conclusion

By bringing psychological, neuroscientific, and phenomenological perspectives to bear on the phenomenon of traumatic memory, we see that body, thought, and action are unified in experience. A prismatic account of trauma also allows us to combine these perspectives toward a deeper understanding of how and why this occurs. The psychological framework for understanding traumatic memory as distinct from non-traumatic memory sets parameters for discussing traumatic memory in neuroscience and phenomenology. Neurobiology provides a model of the mechanisms of memory that makes it possible to investigate the etiology of symptoms associated with traumatic memory. Phenomenology returns to the individual and lays the groundwork for understanding that a key part of traumatic injury is the way that it can shape one's view of the world altogether. Using traumatic experience as a paradigm allows us to explore the ways in which mind, action, and the body are dynamically related, and therefore are dynamically impacted by traumatic experience.

Department of Philosophy and Religious Studies
Old Dominion University
9006 Batten Arts nad Letters
Norfolk, VA 23529 USA
E-mail: mymcdona@odo.edu

NOTES

[1] Since the purpose of this paper is to examine how these disciplines might work together to enhance our understanding of symptomatology, it is beyond the scope of this work to provide a full and comprehensive account of any of these disciplines. Some generalization is therefore necessary. I have sought to do this through limiting my discussion to traumatic memory, rather than the entire diagnostic criterion for PTSD, and by speaking of the DSM, and not the various other models of diagnostics that might be used. This is by no means a suggestion that traumatic memory is the only symptom of PTSD, or that the DSM is the only diagnostic tool. These are intended as paradigms and not exhaustive accounts.

[2] The DSM is used in the United States and corresponds with the International Classification of Diseases Classification of Mental and Behavioural Disorders (ICD-10). The clusters in the ICD-10 for traumatic memory are similar, if less specific. I've chosen to use the DSM in this case for two reasons. First, the cases in the paper are from United States veterans, and second, because the DSM gives a more detailed description of traumatic memory. 1

[3] Implicit here is the idea that at least a part of what is wounded here is one's sense of agency. The individual with PTSD no longer has control over one's perceptions. See also, Ataria (2015). Ataria argues here that the relationship between trauma and loss of agency is directly proportional, so loss of agency increases the worse the traumatic event. Research suggests that predicting dissociation is not this simple. The relationship between dissociation and the traumatic event depends on a variety of factors [See, for example, Bernstein and Putnam (1986); Marmar, Weiss, and Metzler (1998)]. It should also be noted that dissociation is not always a symptom in even the worst cases of PTSD, and of course one can have a dissociative disorder without comorbid diagnosis of PTSD. That being said, no matter the traumatic symptom, it is clear that in the case of traumatic memory, there is a notable loss of one's sense of agency.

[4] This section will provide a simplified account of current work on memory within neuroscience. The views presented here are consistent with the current studies and commonly held theories in the field. There are debates and nuances within neuroscience regarding memory, and many more parts of the brain involved with memory creation and maintenance. These more detailed considerations will not be taken up here since the goal in the present context is to understand traumatic memory and distinguish between regular memories and traumatic memories, while providing an overview of the most prevalent scientific account of traumatic memory.

[5] Implicit memories are not necessarily negative. When someone learns to play the piano, or drive, this memory still gets encoded in the mind. Over time, these memories get encoded implicitly rather than explicitly. When people refer to a musician's ability to play without thinking as 'muscle memory,' or the ability one has to drive to work 'without thinking' these are examples of implicit memory at work. They shape the function of the individual, but are not brought

to attention. In fact, since the hippocampus is thought to develop at age two, much of what is learned in the first year of life (which typically includes walking and talking at very basic levels) is encoded as implicit memory that is called upon for the rest of one's life. We cannot, however, remember facts or retain any sense of autobiographical memory until the hippocampus is developed.

[6] In their paper "Consciousness-Body-Time: How do People Think Lacking Their Body?" Ataria and Neria (2013) discuss how traumatic events can disturb one's sense of time *as* a bodied being. They argue that as one's sense of time diminishes, so does one's sense of ownership over one's body.

[7] In his 2016 paper, "I Am Not My Body, This Is Not My Body," Ataria also uses Merleau-Ponty's conception of embodiment to examine posttraumatic stress. Specifically, he examines the ways in which trauma makes the subject into an object. My account differs as I am focusing on traumatic experience in general and not exclusively the feelings that the survivor has about her body specifically – but how she relates to the outside world in light of her experiences and the traumatic symptoms that follow.

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