

THESIS

ADAPTIVE DISEMBODIMENT: TOWARDS AN ENACTIVIST THEORY OF BODY

SCHEMATIC SENSORIMOTOR AUTONOMY

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## ABSTRACT

### BODY SCHEMA AS SENSORIMOTOR AUTONOMY: AN ENACTIVIST APPROACH TO BODY-BASED TRAUMA

The enactivist approach to embodied cognition relies on a non-reductive biological naturalism that is recursive at higher levels of complexity in living systems. In addressing an account of cognition, I will consider Xabier Barandiaran's objection that biological autonomy properly sets biological norms but under-specifies sensorimotor normativity. Barandiaran suggests the implementation of pluralist autonomy to the meta-pattern of organization in the enactivist agent that becomes recapitulated. By forming an account of sensorimotor autonomy, we can then specify normativity at the sensorimotor (cognitive) level. In consideration of this issue, I will propose the body schema functions to provide sensorimotor autonomy to the embodied subject through motor stability and thus functions to specify normativity at the sensorimotor level. This then allows for what enactivists term 'sense-making' in terms of enacting affordance structures. The position I take within the enactivist frame is thus a pluralist autonomist view on cognition. I go on to consider how this view bears on cognitive case studies often addressed in body schema literature. Drawing primarily from the work of Shaun Gallagher, body schema interacts with and develops body image through primary and secondary intersubjective capacities. I argue that body image is intersubjectively constructed through joint attention, thus invoking considerations of one's social milieu. This consideration shifts the discussion to address how the pluralist autonomist enactivist, through body schema and body image interaction, can account for alterations of the body schema due to distortions in one's body

image that result from oppression. This pluralist autonomist enactivist theory provides three benefits for understanding these alterations: (1) enactivism begins with a fundamental postulate that individuals are embedded in a world; (2) in distinguishing between different levels of autonomy, we can thus discuss different forms of normative interaction with the environment; (3) and finally, with differentiated forms of normativity, we can thus differentiate and track different modes of adaptation an embodied subject can take when faced with various sorts of perturbations. I argue that disembodiment can be seen as an adaptation of the body schema in relation to hostile environments where stigma targets the body image. This hostile environment does not allow one's comfortable and normative navigation of the world due to the hypervisibility of the body. I explore this case of adaptive disembodiment through fatphobia and public weight stigma.

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## DEDICATION

*This thesis is dedicated to my younger self and the women who raised her.*

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## CHAPTER ONE: LIFE

Empirical studies in the cognitive sciences have discovered several pathologies in the bodily experience that have been analyzed through a phenomenological lens on embodiment. Such cases to be addressed include disembodiment and disassociation, where one does not feel at home in the body or is alienated from the world. While disembodiment can originate in one's psychology, there are also cases in which the social world can alienate and disembody the subject. These cases point to a clear alteration in the ways one experiences one's own body from the inside. Thus, in attempting to provide an explanation for such phenomenal experiences of disembodiment, the view must be able to provide an account of embodied subjectivity that focuses on the phenomenology of the body. Enactivism, having its roots in embodied phenomenology, seems best equipped to meet the explanatory demands of such cognitive cases of impairment to bodily experience. While enactivism requires a starting point in a non-reductive biological phenomenology, it eventuates into an account of the embodied subject. Thus, while the account used here begins with a simple iteration of biology in chapter one, it provides us with the tools that build into a robust account of embodied cognition and embodied subjectivity that will be developed in chapter two. Specifically, I argue for pluralist autonomy within the autonomist approach to sensorimotor cognition as a promising path for enactivism. I argue this framework and its organizational and processual tools work best to explain the anomalies in bodily experience to be addressed in chapter three – where the social world inflicts stigmatization targeted at the body that leads to somatic consequences of disembodiment.

## 1.0 Enactivism: a conceptual introduction

Enactivists' original aims were to provide a theoretical means to embody cognition by linking perception and action, leading to a continuity between life and mind. The embodiment of cognition serves to highlight a continuity between mind and life, and thus, the dependence cognition has on the kinds of experiences that come from having a body. The mind life continuity statement, taken to be the core proposition of Thompson's 'Mind in Life' is as follows: "Where there is life there is mind, and mind in its most articulated forms belongs to life. Life and mind share a core set of formal or organizational properties, and the formal or organizational properties distinctive of mind are an enriched version of those fundamental to life."<sup>1</sup> Thus, in attempting to understand cognitive bodily awareness it is beneficial that the organization of our cognitive capacities, being sensorimotor patterns based in bodily action, have a fundamental link to the body. For this reason, I will begin with the fundamental biological organization of enactivism, namely the autopoietic system. From here, a more "enriched" or cognitively complex organism arises and evolves toward an embodied subject with sensorimotor capacities. Further, in discussing how such an embodied mind acts, it is emphasized that action, perception, and those sensorimotor capacities are inseparable from each other in lived cognition.

The canonical definition of enactivism consists of two key points, namely, that perception is constituted by perceptually guided action, and second, that the emergence of cognitive structures comes from the recurring sensorimotor patterns which enable action to be guided by perception.<sup>2</sup> After its original conception, this approach to cognition has taken on three varieties: sensorimotor enactivism, autopoietic enactivism, and radical enactivism. I will be primarily

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<sup>1</sup> Thompson, Evan. *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*. (Cambridge, MA: The Belknap Press of Harvard University Press, 2010).

<sup>2</sup> Thompson (2010), 173.

concerned here with the autopoietic (later referred to as autonomist) account, and the influences sensorimotor patterns have within that autopoietic structure. I emphasize a structural account of the enactivist approach to provide clear processual scaffolding that will be re-considered in developing the bodily subject and cognitive agent. The account I will put forward will convey, in a structural form, the five unified ideas Thompson takes enactivism to bring together.<sup>3</sup> These ideas are as follows: (i) Living beings have an autopoietic biological organization providing ‘biological selfhood’ that enacts its own cognitive domain; (ii) the nervous system is an autonomous system that perpetually generates and maintains meaningful patterns of activity as an operationally closed sensorimotor network that creates meaning non-computationally; (iii) cognition is recurrent sensorimotor patterns of perceptually guided action; sensorimotor coupling between organism and environment modulates neural activity which then informs the sensorimotor coupling; (iv) a cognitively complex being is coupled with a world<sup>4</sup> that is not a pre-specified environment which is external and represented internally by the brain, but a relational domain enacted through biological selfhood<sup>5</sup>; and (v) experience is not an epiphenomenon, but central to understanding mind. These core concepts will slowly become clear in this chapter as the adaptive autopoietic organism engages in sense-making, built up through biological examples of a living cell and chemotaxis.

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<sup>3</sup> Thompson, Evan. “Sensorimotor subjectivity and the enactivist approach to experience.” In *Phenomenology and the Cognitive Sciences* 4, (2005): 407.

<sup>4</sup> Throughout the enactivist literature, the terms world and environment are employed to have different meanings. Often which term is employed for which meaning is inconsistent across writers. In this work, I will follow the influences of the phenomenological use of world to mean one’s domain of significance, enacted or brought forth by the individual. Thus, environment will stand to refer to the total physicality of one’s surroundings. This is a sort of objective third person concept of an organism’s surroundings that we may see in scientific contexts.

<sup>5</sup> I will argue in chapter three that we need more than biological selfhood (autonomy) when discussing cognition. While this will suffice for establishing a relational domain on a biological level, the relational domain of cognition requires, I argue, sensorimotor selfhood (autonomy).

## 2.0 Biological Individuation: Autopoiesis and the Living Cell

The enactivist view of cognition emphasizes embodiment by establishing roots in the structural and organizational history of the organism. The structure of biological autonomy and the organizational pattern which gives rise to it gets “recapitulated in a more complex form in metazoan organisms” such as embodied subjects with nervous systems.<sup>6</sup> To understand the specifics of that organization, I will focus on its most simple iteration. I will outline this structural history as follows: This history begins with and develops from the autopoietic theory of living systems. Through the individuation, self-production, and self-maintenance of the organism, it interacts with its environment. The view later develops to include adaptive capacities (adaptivity) that allow the organism to make sense of and interact with its environment in a graded form of viability relative to the system’s autonomy. This is regarded as adaptive sense-making, where an organism is said to truly be autonomous in its coupling (relation) to the environment. This dynamic interaction between the organism and environment in the process of ‘sense-making’ brings forth (enacts) a domain of significance specific to, or relative to, that organism.

The autopoietic organization of living systems describes the emergence of a biological individual with an identity. Etymologically, autopoiesis translates to *self* (auto) *creating* (poiesis). More precisely, ‘poiesis’ refers to bringing forth something into existence that did not previously exist. While Autopoiesis was originally theorized by Varela and Maturana in an attempt to define what the criteria are for a system to be considered living, the autopoietic organization of a biological individual services the enactivist view to explain the first instance of agency or autonomy in a biological form. To say that a living individual has biological autonomy

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<sup>6</sup> Thompson (2005), 417.

is to say that “it can specify its own laws, what is proper to it.”<sup>7</sup> Thus, when enactivists attribute autopoietic organization to an organism, they are demarcating a specific pattern of organization that is a self-producing and self-maintaining network that constructs its own membrane boundary and actively regulates those boundary conditions to remain viable in its environment.<sup>8</sup> It may be useful here to make clear what is meant by ‘organization,’ and what features of a system enactivists are concerned with depicting. Organization refers to “those relations that must exist among the components of a system for it to be a member of a specific class.”<sup>9</sup> In the case of enactivism, that “specific class” is biologically autonomous individuals. To be clear, the autopoietic organization is a meta-pattern that sustains and is recurrent in other biological individuals. That pattern of organization is retained despite the flux in the system’s entire physicochemical constitution.<sup>10</sup> This basic meta-pattern involves or invokes many of the processes and functions that will be essential to higher states of cognitive or agential complexity in the forthcoming account.

Varela and Maturana differentiate between first-order and second-order autopoietic systems. I will discuss both to build all the necessary theoretical elements for the autonomous organism. The living cell is an example of a first-order autopoietic system, where something like a multicellular motile bacterium performing chemotaxis is a second-order autopoietic system or “multicellular”.<sup>11</sup> I will begin with the living cell; this example captures the emergence of the

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<sup>7</sup> Humberto Maturana and Francisco Varela, *The Tree of Knowledge* (Boston, MA: Shambhala Publications, Inc., 1998): 48.

<sup>8</sup> Thompson (2005), 417.

<sup>9</sup> Maturana and Varela, 47.

<sup>10</sup> Varela, Francisco J. “Patterns of Life: Intertwining Identity and Cognition.” In *Brain and Cognition* 34 (1), (1997): 77.

<sup>11</sup> Thompson (2010), 105; There is contention as to whether a second-order autopoietic system is also a first-order autopoietic system. The issue is a matter of how one interprets boundaries and reactionary networks in terms of the autopoietic criteria, and if those first-order systems are allopoietic and in service to the production of the second-order system. This issue will not be addressed here; we are simply concerned with setting up the organizational basics of the autopoietic system in order to utilize the organization for understanding cognition and mind.

organism, individuation, and all the capacities which ensue because of, and in service to, that individuation. Several scholars in the enactivist literature use the example of a living cell to get biological autonomy off the ground.<sup>12</sup> As an autopoietic system, the cell is a network of chemical reactions producing molecules which “(i) through their interactions generate and participate recursively in the same network of reactions which produce them, and (ii) realize the cell as a material unity.”<sup>13</sup> The cell is thus “topologically and operationally” distinguished from the background environment and sustains its separation in the turnover of matter or energy.<sup>14</sup> I would like to take this example more carefully to pick out the exact organizational and relational components – namely, individuation, self-production, and self-maintenance.<sup>15</sup> These allow the organism to remain viable, to which we can then discuss sense-making and adaptivity.

### *2.1 Individuation and Operational Closure*

The first, and perhaps most important, piece of this cell example to the autopoietic organization is the semipermeable membrane. The membrane itself is that by which the cell becomes a systemic unit and spatially constituted as an individual apart from a background of environmental conditions, thus, giving it an identity.<sup>16</sup> Precarious conditions refer to the fact that in the absence of the organization of the system as a network of processes, under otherwise equal physical conditions, isolated component processes would tend to run down or extinguish.<sup>17</sup> The identity formation of the organism defines what is not part of the organism through negation. The membrane performs the function of individuation that distinguishes the cell and its internality

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<sup>12</sup> Thompson (2005); Thompson (2010); Varela; Maturana and Varela.

<sup>13</sup> Varela, Francisco J, H.R. Maturana, R. Uribe. “Autopoiesis: The organization of living systems, its characterization and a model.” In *Biosystems* 5 (4), (1974): 188.

<sup>14</sup> Varela, Maturana, and Uribe, 188.

<sup>15</sup> Thompson (2005), 417.

<sup>16</sup> Thompson (2005), 417.

<sup>17</sup> Thompson, Evan, Stapleton, Mog. “Making Sense of Sense-Making: Reflections on Enactivism and Extended Mind Theories.” In *Topoi* 28, (2009): Footnote 1.

from the external environment.<sup>18</sup> In this individuation, the organism also enacts a perspective on the environment, a point of view by which it interacts with the environment and builds its world of significance. This will become clearer in the discussion of chemotaxis. The boundary of individuation as a semipermeable membrane also plays a key role in the further conditions of an autopoietic system, namely operational closure, self-production, and self-maintenance. In sum, to be expanded on below, the boundary generates a metabolic network that produces the molecular components which determine and regenerate both the bounded system, and that which binds it together - its boundary.<sup>19</sup>

The emergence of a boundary also invokes the guiding principle of co-arising or co-emergence between organisms and their world. It is important to keep central this principle not simply in this autopoietic organization, but also in the broader view of enactivism and cognition. The boundary which forms to individuate the organism does not simply give rise to the interiority of, in this case, the cell, but also its exteriority being the environment where the cell is situated and embedded. Varela hits on this point as the emergence of the identity of a biological organism demarcates what the organism is and what it is not, i.e., exterior to it. Further, this “exteriorization” of the environment is only understood from the interiority of the biological organism which creates a perspective on its environment through this individuation, giving rise to its world.<sup>20</sup> It is from the organism’s unique perspective that significance is developed, which will be important for an account of sense-making. The significance added by the organism’s perspective builds that world of significance *within* the environment. For now, and more

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<sup>18</sup> Thompson and Stapleton, 101.

<sup>19</sup> Thompson (2010), 102.

<sup>20</sup> Varela, 78.

basically, this simple emergence of a boundary individuates the organism and gives rise to operational closure.

The operational closure and identity boundary of an autonomous (autopoietic) system is actively generated and sustained under precarious conditions.<sup>21</sup> The exchange of matter and energy which supplies the generation and sustenance of the biological individual, namely through the metabolism, are recursively dependent and operationally closed. Operational closure is a fundamental aspect of any autopoietic system. A system has operational closure if those processes, which come to constitute the organism, are themselves contingent upon other processes in the system, and simultaneously, other processes are contingent upon it.<sup>22</sup> Another way of defining this is, “the result of any process within the system is another process within the system.”<sup>23</sup> All processes in the system create a causal and operational closure in which all processes are dependent upon each other and not upon the external environment.<sup>24</sup> While the boundary provides the individuation and identity of the organism, this operational closure characterizes the autopoietic system as autonomous. It can self-produce and self-maintain its organizational composure independently from its environment.

## *2.2 Self-production*

Self-production is a key mark of an autonomous (autopoietic) system. An autopoietic system is one that “continuously produces the components that specify it, while at the same time realizing it (the system) as a concrete unity in space and time, which makes the network of production of components possible.”<sup>25</sup> Among those components is the boundary of the system,

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<sup>21</sup>Thompson and Stapleton, 24.

<sup>22</sup> Varela, 73 and 82.

<sup>23</sup> Thompson (2005), 417-418.

<sup>24</sup> Thompson (2005), 417.

<sup>25</sup> Varela, 76.

responsible for identity. Thus, autopoiesis attempts to capture the mechanism or process that generates the identity of the living.<sup>26</sup> Varela clearly defines the self-production of components in that these components: (i) continuously regenerate and realize the network that produces them, and (ii) constitute the system as a distinguishable unity in the domain in which they exist.<sup>27</sup> Thus, it is clear how self-production gets tied up in a circular process with boundary and identity formation through the constitution and generation of the components produced. It is through that metabolic process that the organism continually replaces the components that are being destroyed, including the membrane, and thus continually re-creates the individuation of itself apart from everything else.<sup>28</sup> This is comparable to the cell maintaining the cell membrane that differentiates it.

### *2.3 Self-maintenance*

The second key mark of an autopoietic (self-creating) system is its capacity for self-maintenance. This operational closure and the boundary of the cell are also important to the conditions of autopoiesis for it to be self-maintaining. To be continually regenerating and producing itself is to maintain itself as an individual and identifiable biological unit. For the system to be perpetually re-generated through self-production, it must be self-maintaining in the sense of maintaining the boundary conditions that supply and import matter and energy for the metabolic processes. Self-maintenance requires specific conditions for specific organisms. The viability norms for each organism are defined in relation to the organism's metabolism. Thus, based on those norms, the self-maintenance of the organism requires a specific response motivated by internal laws. The concepts related to self-maintenance in response to viability

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<sup>26</sup> Ibid., 76.

<sup>27</sup> Di Paolo, Ezequiel A. "Autopoiesis, Adaptivity, Teleology, Agency." In *Phenomenology and the Cognitive Sciences* 4, (2005): 431; Varela, 76.

<sup>28</sup> Thompson (2010), 98-99.

norms will become clearer in discussing the example of chemotaxis in a second-order (multicellular) system. What is important at this stage is to notice the asymmetrical structural coupling a biological individual has with its environment. The significance enacted through a need to maintain viable systemic conditions places a surplus of both agential capacity and meaning on the side of the organism and its reactions.

### **3.0 Adaptivity: The Primordial Tension**

With the autopoietic frame in place, a central tension in the organizational requirements of the living biological individual must be addressed before proceeding into a more complex account of sense-making and sensorimotor capacities important to the enactivist thesis (i.e., perceptually guided action). E. Di Paolo picks up on a key conflict in the autopoietic theory which he refers to as the ‘primordial tension’.<sup>29</sup> One might have noticed that self-distinction (individuation) involves a perpetual reassertion of a stable boundary that separates the cell from the environment. Additionally, self-production and self-maintenance seem to necessitate an openness (thermodynamically open cell) to the environment to take in energy and matter for the regeneration process of the metabolism. This is precisely where the tension lies as the requirements for self-production and self-maintenance on one end, and self-distinction on the other, place two conflicting demands on the autopoietic entity gaining biological autonomy in precarious conditions. The primordial tension can be depicted in *Figure 1*.<sup>30</sup>

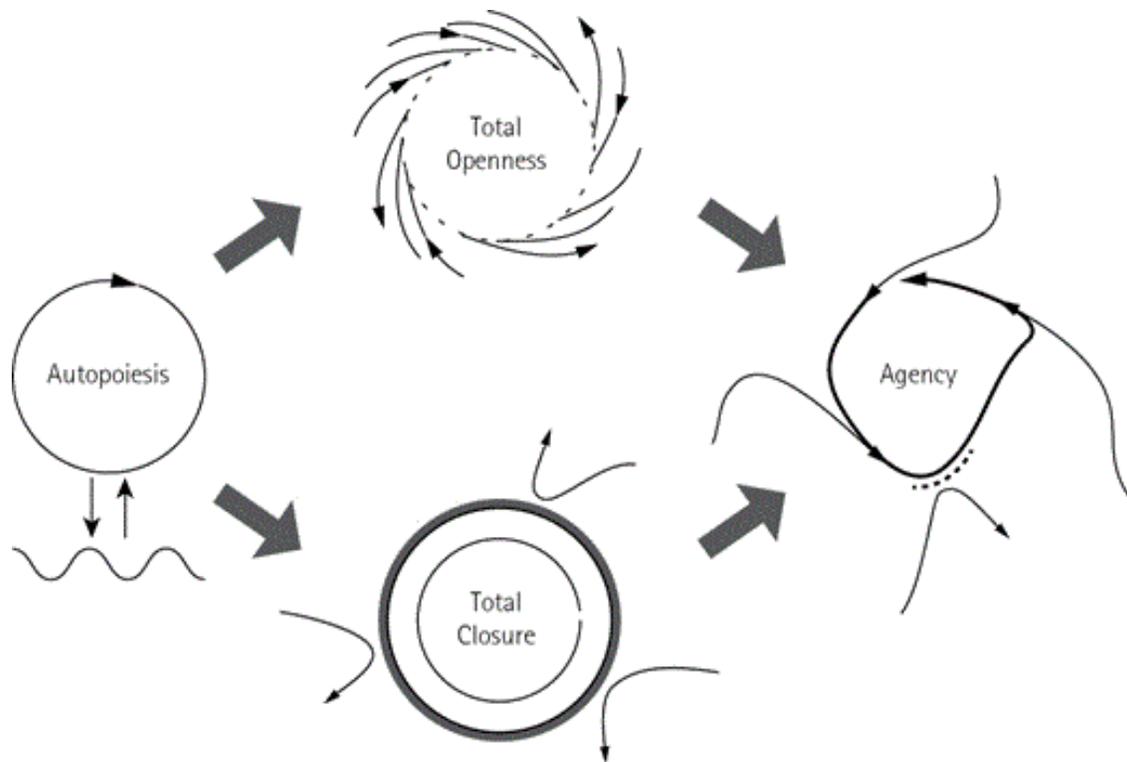
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<sup>29</sup> Di Paolo, Ezequiel. “The Enactive Conception of Life.” In Albert Newen, Leon De Bruin, and Shaun Gallagher (eds), *The Oxford Handbook of 4E Cognition*, Oxford Library of Psychology (2018): 84.

<sup>30</sup> Di Paolo (2018), 85.

Originally published in *Sensorimotor Life: An Enactive Proposal*, Ezequiel Di Paolo, Thomas Buhrmann, and Xabier E. Barandiaran, Figure 5.6, Oxford University Press, Oxford, (2017).

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*Figure 1: The primordial tension of life.*

The demand that the system be self-producing is best actualized in reality via total openness to the environment. This would allow flows of energy and matter to be used in the regeneration of the entity, specifically, through metabolic processes. The demand for self-individuation, conversely, is best actualized where the system has total closure, is protected from environmental flows of energy and matter to conserve the system, and clearly delineates and isolates it. Neither of these conditions are viable for the system. In total closure, the system cannot self-produce or maintain itself.<sup>31</sup> However, in total openness to an environment of precarious conditions, the system is constantly at risk of deterioration from threatening matter or energy flows in the environment.<sup>32</sup> Further, the ideal organism-environment relationship in each

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<sup>31</sup> Di Paolo (2018), 84-85.

<sup>32</sup> *Ibid.*, 84-85.

demand negates the other, comprising the primordial tension. Thus, Di Paolo suggests a “dialectical overcoming” of this tension through an *adaptive* autopoietic system – i.e., an agent.<sup>33</sup> As an agent, the system can regulate the flows of energy and matter that enter the system to perpetuate both distinction and production of the entity by only allowing exchanges viable for those conditions.

Adaptivity brings to the autopoietic system essential tools for the operation, and understanding, of the sense-making process. In discussing organisms’ capacities, autopoiesis is insufficient to derive their sense-making capacities.<sup>34</sup> Rather, as Di Paolo contends, ‘adaptivity’ needs to be added to autopoiesis in order to regulate its interactions with the environment and avoid the all-or-nothing extremes of life or death, allowing for gradation. Explicitly, adaptivity is a normative process defined as the capacity to “monitor and regulate the autopoietic process in relation to conditions registered as improving or deteriorating, viable or unviable.”<sup>35</sup> Thus, adaptivity allows the system to tolerate “natural entropic trends” along a range of environmental perturbations and internal changes to the structure of the system.<sup>36</sup> Anything outside this range will cause the system to break down and lose its autopoietic organization. This regulation of the system to tolerate that range is carried out through the adaptive capacity of the organism.<sup>37</sup> Consider as an example some idealized organism that can survive in environmental temperatures ranging from 20 to 60 degrees Fahrenheit. As it nears either end of this temperature range, its metabolic system begins to slow down and not process energy and matter efficiently for the organism to self-maintain. At 20 degrees and below, or 60 degrees and higher, the organism’s

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<sup>33</sup> Ibid., 85.

<sup>34</sup> Thompson, Evan. “Living Ways of Sense Making.” In *Philosophy Today* 55, (2011): 120.

<sup>35</sup> Ibid., 115.

<sup>36</sup> Di Paolo (2005), 437.

<sup>37</sup> Thompson (2011), 120.

metabolism will completely cease to function, and the organism will begin to decay and shut down. The organism, thus, must adapt to its environment by seeking temperatures that allow it to stay within this range of viability (20-60 degrees).

This example of temperature shows that the ranges in which the organism may persist are set in relation to the organism's metabolic structure and organization. Thus, adaptivity serves as a sort of "meta-metabolic process" through a "set of internal regulatory mechanisms" which it regulates how and with what the metabolic process interacts.<sup>38</sup> This range is often referred to as the organism's norms of viability or viability set. Adaptivity thus creates the sort of dialectical overcoming between its own identity and the environmental perturbations along a graded norm of regulated sensibility or openness to identify and optimize the boundary conditions for maintaining the organisms' metabolic processes of self-production.<sup>39</sup> This gradation of viable conditions and responses accounts for such states of the system as sickness, harm, recovery, etc. which go beyond a simple living or dead dichotomy presented in the original autopoietic system. Important to a concept of agency, adaptivity includes a "transformation of the organism's internal processes and norms according to the demands of an environment that introduces 'sense-producing' or sense-demanding' requirements of its own ..." upon the organism. This meta-metabolic process which must dynamically respond to the environment is intimately tied to a sort of proto-cognition<sup>40</sup> in that, under this view, "...cognition evolved to perform the function of supporting the basic metabolic processes that give rise to intentional directedness by identifying optimizing conditions needed for metabolic processing."<sup>41</sup> This picture of proto-cognition will

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<sup>38</sup> Schlicht, Tobias and Starzak, Tobias. "Prospects of enactivist approaches to intentionality and cognition." In *Synthese* 198, (2019): s109; Di Paolo (2005), 441.

<sup>39</sup> Di Paolo (2005), 439.

<sup>40</sup> By 'proto-cognition' I mean to refer to the sort of basic mind and basic sensorimotor cognition available to biological organism. This is a less complex form of cognition that I am ultimately concerned with in relation to bodily experience.

<sup>41</sup> Schlicht and Starzak, 110.

become clearer in considering adaptive sense-making and sensorimotor processing in the following example of chemotaxis.

#### **4.0 Chemotaxis: Sense-making to Sensorimotor**

To conceptualize sense-making in relation to adaptivity and its contribution to cognition as sensorimotor, the paradigm example of chemotaxis will be useful for guiding the basic biological foundations of an embodied view of cognition. This example expands beyond the living cell model by showing a clear case of sensorimotor activity based on the sense-making process of the organism in its adaptive abilities. Thompson lays out the example of Chemotaxis with a motile bacterium swimming up a sugar gradient.<sup>42</sup> A bacterium is typically a rod-shaped biological individual which swims and moves about by rotating flagella. The bacterium can sense a variety of chemicals in their environment, including sucrose or sugar, which is registered as an attractant. The bacterium can also sense things like acids which are a repellent for the organism. The attractants and repulsions that these chemicals register as for the organism dictate its direction. The bacterium will swim toward the sucrose and away from the harmful acids. This directedness of the bacterium is its coordination of the flagella in response to the chemicals sensed in the environment. Otherwise, the flagella are uncoordinated, and the bacterium tumbles about until it senses a chemical to direct itself toward a path that will increase its exposure to the sugar food source. Upon stumbling across the sugar gradient, the motile bacterium then swims up the gradient toward the increasingly higher concentration of sugar.<sup>43</sup>

The bacterium can sense the sugar in their environment through the sensibility of their membrane (molecular receptors) and thus direct themselves up the gradient of sugar. The

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<sup>42</sup> This is where significance comes in regarding to developing one's world, as mentioned previously. The significance of sugar is nutrition in relation to the bacterium's metabolism.

<sup>43</sup> Thompson (2011), 118.

bacterium maintains its upward direction as long as the concentration continues to increase in nutrient level over time. If the gradient decreases, the bacteria will tumble off until it finds an increasing gradient again that supports its viability and self-rotation. By repeating its behavior, the bacterium can continually direct itself toward viable nutrient-rich boundary conditions. While this behavior establishes the autopoietic system perpetually, it also exhibits a sensorimotor loop: the way they move depends on what they sense, and what they sense depends on how (where) they move.<sup>44</sup> This sensorimotor loop is an expression of the bacterium's autonomy as the bacteria directs itself toward a concentration of the food source. Additionally, it is subordinate to or in service to the autopoietic system that gives rise to that autonomy, as it provides the energy for self-production and self-maintenance that ultimately gives rise to the identity and autonomy of the system. This process of chemotaxis highlights many of the important features of sense-making – namely, involving sensorimotor patterns – to get toward cognition.

#### *4.1 Sense-making and Significance*

The adaptive autopoietic system now has the proper tools for discussing the sense-making capacities of an organism. I will explicate the process of sense-making through the example of chemotaxis. Sense-making is most clearly defined in three parts:

- (1) sensibility as openness to the environment;
- (2) significance as the positive or negative valence of environmental conditions relative to the norms of the living being;
- (3) the direction or orientation the living being adopts in response to significance and valence.<sup>45</sup>

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<sup>44</sup> Thompson (2005), 418.

<sup>45</sup> Thompson (2011), 119-120.

While this first condition is properly established through the autopoietic organization of an adaptive organism, the second and third condition requires further explanation. These three conditions can be understood as sensibility established by autopoiesis, sense-making in relation to adaptivity, and a sensorimotor response. “Sense-making is behavior or conduct in relation to environmental significance and valence, which the organism itself enacts or brings forth on the basis of its autonomy.”<sup>46</sup> It is important to note here that basic autonomy is adaptive autopoiesis: “the capacity of a system to manage the flow of matter and energy through it so that it can, at the same time, regulate, modify, and control: (i) internal self-constructive processes and (ii) processes of exchange with the environment”<sup>47</sup> In general terms, “an autonomous system is a thermodynamically open system with operational closure that actively generates and sustains its identity under precarious conditions.”<sup>48</sup>

Sense-making is tied to autonomy in that it is the established perspective of the biological individual that allows for viability norms to be established. Sense-making is conceived of as the relational aspect of autonomy.<sup>49</sup> Thus, “an autonomous system produces and sustains its own identity in precarious conditions and thereby establishes a perspective from which interactions with the world acquire a normative status,” and that normative status is of good or bad valence according to the organism’s viability norms.<sup>50</sup> Thus, in the example of chemotaxis, sucrose has valence as being an attractant, and conducive (good) for the organism’s self-production, i.e. providing viable conditions.<sup>51</sup> This sucrose is given the significance of being food or a nutrient for the organism. It is in recognizing the sucrose as significant (food) and having positive

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<sup>46</sup> Thompson and Stapleton, 25.

<sup>47</sup> Ibid., 24.

<sup>48</sup> Ibid., 24.

<sup>49</sup> Ibid., 25.

<sup>50</sup> Thompson and Stapleton, 25.

<sup>51</sup> Ibid., 25.

valence in relation to the metabolism of the organism that the bacteria is “making sense” of its world. To be clear, this niche or domain of significance is enacted through the organism. That food shows up for the organism with a specific metabolic organization. It then places significance in its environment which delineates that chemical as part of a domain of significance for the organism’s operation (i.e., its world).

#### *4.2 Sensorimotor: The Biological Basics of Cognition*

The picture presented thus far started with a basic biological individual – the living cell. This basic entity shows the minimal organizational requirements of a biological individual for it to be considered and classified as living. With that organization in place, I move to a picture of that organism in an active relationship with the environment as it regulates itself, its living organization, and its identity in the face of environmental perturbations. This regulation occurs through adaptations to the organism’s relation to the environment it inhabits, both spatially and in *how* it interacts. This adaptivity is seen clearly in an organism’s sensorimotor abilities. First, the organism can make sense of its environment (sense-making), by interpreting perturbations as having a positive or negative valence. This valence is attributed in relation to the organism’s organization, and it is through the relation of the organism to its environment that a domain of significance is enacted (i.e., its world). From here, the organism can then respond through its motor capacities in order to seek viable conditions. These basic biological features (organization, sense-making, adaptivity, sensorimotor capacities) are the building blocks for an account of cognition under the enactivist view. These basic features get recapitulated into a complex cognitive agent. As an embodied view of cognition, the cognitive agent gives rise to an account of the embodied subject. This will involve further consideration of the biological and subjectively lived body in what follows.

## CHAPTER TWO: MIND

Recall the life and mind continuity thesis, put forward by Evan Thompson, which guides the enactivist project. The thesis states that “life becomes a necessary condition for cognition, and cognition becomes a special form of bodily interaction that resembles fundamental interaction at play in the most rudimentary forms of life.”<sup>52</sup> Thus far, an account of life has been provided through the autopoietic, adaptive, and sense-making organism. An important aspect of the continuity between life and mind is the recapitulation of the organizational pattern established in chapter one. Throughout the developmental history of the cognitive agent, the organizational pattern that makes up the basic mind, from autopoiesis to sense-making, gets recapitulated at higher levels of complexity. What has been shown so far is the biological and lower level of complexity for life. Higher-order (second-order) autopoietic systems emerge in multicellular organisms, organisms with nervous systems (metazoan), and organisms that are considered cognitive.<sup>53</sup> While this recapitulation is shown in various enactivist views of cognition, there is an assumption that autonomy need not be part of that recapitulation. This chapter explores the extent to which autonomy is important to the enactivist framework, and how its nature and function influence norm construction for a cognitive agent. This allows for the advancement of the bodily subject as defined by Thompson.

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<sup>52</sup> Sepúlveda-Pedro, Miguel A. “Enactivist Cognition: From Sensorimotor Interactions to Autonomy and Normative Behavior.” In *Enactive Cognition in Place: New Directions in Philosophy and Cognitive Science*. Palgrave Macmillan, Cham., (2023): 78.

<sup>53</sup> What is considered cognitive, and thus a cognitive organism or agent, is the focus of the discussion ahead.

## 1.0 Cognition: Sensorimotor or Autonomist?

In sorting out a view of cognition in the enactivist literature, there are a few types of enactivism that crops up. Following the work of Xabier E. Barandiaran and M. A. Sepúlveda-Pedro, I will consider the accounts of cognition put forward by both dynamic sensorimotor enactivists and autonomist enactivists<sup>54</sup>. What Barandiaran refers to as ‘sensorimotor enactivism’ and ‘autonomist enactivism,’ Sepúlveda-Pedro places under the labels ‘weak enactivism,’ and ‘strong enactivism,’ respectively. In the discussion of these two approaches to accounts of cognition, I will use Barandiaran’s terms moving forward, as they provide a better representation of each view’s content. The sensorimotor view focuses on sensorimotor capacities and coupling with the environment. Autonomist enactivism, on the other hand, focuses on the organizational autonomy of the organism as a system coupled with the environment.<sup>55</sup> While Sepúlveda-Pedro argues against the sensorimotor enactivist in favor of establishing an autonomist account of cognition, Barandiaran critiques both forms. In Barandiaran’s critiques of both sensorimotor enactivism on cognition and the autonomist on cognition, he introduces a potential solution through pluralist autonomy. This calls for a novel form of autonomy at the cognitive (sensorimotor) level. In consideration of a pluralist framing of autonomist enactivist cognition,

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<sup>54</sup> Barandiaran, X. E. “Autonomy and Enactivism: Towards a Theory of Sensorimotor Autonomous Agency.” In *Topoi* 36, (2017): 409-430; Sepúlveda-Pedro (2023).

<sup>55</sup> In this way, the autonomist is more concerned with what Ganeri calls the epistemic question of the self or subject, while the sensorimotor enactivist is more concerned with the ontological question of subjectivity or self. Though these views may not always be targeting the question of self, these views still approach the phenomenon in question with different goals in mind. The autonomist wants to get the systemic picture of how some phenomenon, be it cognition or otherwise, may come about and what gives it this ‘base’. The sensorimotor enactivist on the other hand is trying to answer an ontological question. Where is cognition located, where is it ‘placed’ in the sense of what constitutes it in the system. (i.e., cognition as sensorimotor correlation). From here I try to make that distinction in terms of ‘organization’ vs. ‘content,’ respectively.

and its merits, a potential account of sensorimotor autonomy will be provided in the form of the body schema system.<sup>56</sup>

### *1.1 Sensorimotor Enactivist Cognition*

Sensorimotor enactivism makes central the sensorimotor coupling and coordination between the organism and environment.<sup>57</sup> Further, it highlights the established sensorimotor habits or feedback loops sustained through those continuous interactions.<sup>58</sup> This view is often referred to in positing dynamic sensorimotor cognition and reflects the canonical cognitive thesis of ‘perceptually guided action’ put forward in ‘The Embodied Mind’.<sup>59</sup> As Thompson and Stapleton explain, under this view cognition is in the ‘relational domain’ (i.e., world) in which the organism as a systemic unity relates to the broader context of its milieu or environment.<sup>60</sup> As such, cognition does not belong to the ‘operational domain’ of the *internal states* of the organism.<sup>61</sup> These sensorimotor correlations or habits establish a sensorimotor loop in which what the organism senses depends on how it moves, and how it moves will depend on what it senses.<sup>62</sup> As such, this account of cognition depends on sense-making, a relational process between environment and organism.<sup>63</sup> Despite this contingency on the sense-making process, sensorimotor enactivism takes cognition to be constituted by the resulting sensorimotor loops or the correlation that comes out of this relational sense-making process.

Sepúlveda-Pedro ultimately pushes against this weaker view of cognition put forward by the sensorimotor enactivist in that “the fact [it] is rooted in sensorimotor correlations does not

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<sup>56</sup> The body schema system will be shown to include intermodal interaction between proprioception, and the sensory and motor systems.

<sup>57</sup> Barandiaran, 413.

<sup>58</sup> *Ibid.*, 413.

<sup>59</sup> *Ibid.*, 413.

<sup>60</sup> Thompson and Stapleton, 25.

<sup>61</sup> *Ibid.*, 25-26.

<sup>62</sup> Thompson (2005), 418.

<sup>63</sup> Sepúlveda-Pedro, 66.

exclude the possibility that a set of pre-given properties of the world and the agents' bodies predetermine the constitution of their cycles of action and perception" in a way that makes cognition a heteronomous system.<sup>64</sup> This possibility makes the foundations of cognition subject independent, falling short of the enactivist commitment to co-arising that necessarily includes the cognitive *agent*. Relatedly, Barandiaran pushes against the sensorimotor enactivist account of cognition in that it does not properly consider the necessity of autonomy, claiming that autonomy fills "a theoretical gap that sensorimotor accounts of cognition cannot ignore..." namely, in providing the necessary building blocks of the agent that establishes such correlations sensorimotor enactivists care about.<sup>65</sup> Reconsider the biological basics outlined in chapter one; it is in the autopoietic organization, constituting the autonomous agent, that norms for interactions are established through the adaptive sense-making process. As such, habits, or sensorimotor loops cannot be established without consideration of autonomy to ground those habits formed by sense-making. This is to say, one must consider the agent, its autonomy, and its construction of norms before talking about things like sensorimotor loops which are ultimately dependent on the former.

### *1.2 Autonomist Enactivist Cognition*

Autonomist enactivism<sup>66</sup>, responding to these agential worries, takes seriously the role of biological autonomy, and autonomy generally. Biological autonomy is a synthesized concept of

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<sup>64</sup> Sepúlveda-Pedro, 64.

<sup>65</sup> Barandiaran, 409.

<sup>66</sup> Though the autonomist provides a more systematic and thus operational account of cognition, it need not conflict with a broader context of the cognitive agent fundamentally engaged in and operating across a relational domain. While Thompson and Stapleton claim cognition is relegated solely to the relational domain, Sepúlveda-Pedro claims "The dynamic organization of the system also depends on causal processes that happen beyond the organizational boundaries of the network. However, such processes do not rely on the activity of the network. Hence, there is an organizational but not necessarily a spatial distinction between what is "in" and outside the autonomous system." This is to say, even though the organization of the organism contains the emergence of a boundary in its autopoietic or autonomous organization, the processes which that agent, so constituted, engages in through such processes as

autonomy that fills out the original instantiation of autonomy in the autopoietic organization by considering Di Paolo's revision of the primordial tension through adaptivity.<sup>67</sup> Thus, biological autonomy is present in an organism that is systemically operationally closed with adaptive capacities to modulate its coupling with the environment, and thus determine its own normativity such that a world of significance and opportunities for systemic alteration are enacted.<sup>68</sup>

Cognition, as such, is found in the "constitutive autonomy of agents, and their capacity to create and adapt their own norms of interaction with the environment."<sup>69</sup> It should be noted, that, despite this turn to autonomy and the organizational aspects of the cognitive agent, action and interaction is still vital to cognition. After all, "*it is in the action of agents that interactional norms are enacted.*"<sup>70</sup> This enaction of interactional norms is the act of "bringing forth a world of *significance based on the autonomy* that characterizes the constitution of a cognitive agent."<sup>71</sup>

Put simply, it is not merely the construction of a norm, but it's being in action in terms of the agent, which produces normativity. While the autonomist account of cognition is not constituted by interaction, as it is for the sensorimotor enactivist, there are several beneficial features that this view gives us in making the constitution of the cognitive *agent* the center of their account.

Centering an account of cognition on normativity and autonomy has multiple functions. For starters, it provides an account of identity for the cognitive agent *as* embodied due to the constitutive account autonomy provides. Without autonomy there is no established and maintained distinction of the organism (its identity) and thus no perspective or original meaning;

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sense-making and interaction with the world, do not confine cognition to the boundaries of the organism, but span across the broader organism-interaction-environment system.

<sup>67</sup> Sepúlveda-Pedro, 79-80.

<sup>68</sup> Ibid., 79-80.

<sup>69</sup> Ibid., 56.

<sup>70</sup> Ibid., 65.

<sup>71</sup> Ibid., 65.

“there is only the derivative meaning attributed to certain processes by an outside observer.”<sup>72</sup>

This is the issue pointed to in the sensorimotor view. Further, this view, related to original meaning, makes salient the extent to which autonomy is not merely motivated by the organism as such, but specifically the organism in its existential condition.<sup>73</sup> This mirrors something similar to the primordial tension at the biological level. For interactions to be significant to the organism, and thus rendering an action normative in the sense it is positively viable and adaptive, it must be an interaction that relieves or overcomes some existential tension between the organism and its environment which threatens decay. Given this, significance and meaning emerge in response to this existential tension of potential decay in precarious conditions. Lastly, this autonomist account of cognition brings forward the historic importance of significance and what becomes a sensorimotor habit for an organism (normativity). For such dynamic sensorimotor capacities to occur, it requires they be relevant to the constitution of the cognitive agent as an autonomous system through the patterns of behavior this agent has previously enacted in its environmental interactions.<sup>74</sup> The continued enaction of such habits is due to the significance of the action as viable – i.e., normative.

### *1.3 Barandiaran’s Critique: Pluralist Autonomy*

In the context of enactivism, autonomy originally came to have the role of contributing “a theory for the emergence of identity or individuality and the norms or principles that act as sources of value or guidance.”<sup>75</sup> Noticing the importance of autonomy to an account of cognition, Barandiaran makes clear the nature of autonomy and its role in enactivism. Autonomy refers here to a “process organization that is constituted as a network of interdependent

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<sup>72</sup> Thompson and Stapleton, 28.

<sup>73</sup> Sepúlveda-Pedro, 62-85.

<sup>74</sup> *Ibid.*, 77.

<sup>75</sup> Barandiaran, 410-411.

processes.”<sup>76</sup> As such, autonomous systems maintain their homeostatic organizational stability at a higher level of the systemic whole while adaptations and perturbations occur at the lower level in the interacting parts of the system. Beyond providing this stability and persistence, autonomy also anchors cognition to embodiment in that the body is an experiential structure, i.e., the body as lived through experientially, and the milieu by which cognitive mechanisms are realized. i.e., the living body as an object in the world.<sup>77</sup> In this way, “theories of autonomy ... come to fill a theoretical gap that sensorimotor accounts of cognition cannot ignore as they provide a naturalized account of normativity and the resources to ground the identity of a cognitive subject in its specific mode of organization.”<sup>78</sup> This is a theoretical gap in a view of cognition that Enactivists have yet to address.

In ‘Autonomy and Enactivism: Toward a Theory of Sensorimotor Autonomous Agency’, Barandiaran raises objections to both enactivist approaches to sensorimotor cognition.<sup>79</sup> While the autonomist enactivist account of cognition in Sepúlveda-Pedro’s work responds to the agential worry, Barandiaran finds additional worries with the autonomist enactivist view. Although it brings into frame many important aspects of the constitution of a cognitive agent, it neglects to treat normativity in a context proper to cognition. Not only is an account of autonomy needed, which is typically filled by the autopoietic, or biological autonomy of the basic kind established at the outset of the enactivist project, but the right *kind* of autonomy is needed. Barandiaran argues that the biological autonomy that services such views of cognition presented thus far only provides *biological norms* and does not deliver *cognitive norms* needed for cognition. It does not seem clear how norms of biological (physical/bodily) self-preservation

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<sup>76</sup> Ibid., 411.

<sup>77</sup> Ibid., 411.

<sup>78</sup> Ibid., 409.

<sup>79</sup> Ibid., all.

apply to the construction of a set of viable cognitive projects or normative means for cognizing, even in the sense of sensorimotor cognition.

Barandiaran argues that several instances of cognition seem to be outside of the realm of biology. This is to say, there are instances of cognition that do not clearly need to utilize self-preservation and autopoietic biological functions as reference points for its operations.

Barandiaran brings up such cases as surfing waves or skillfully mastering backgammon, which is cognitively demanding, and yet contributes very little to autopoiesis.<sup>80</sup> What I take Barandiaran to be highlighting here, is the sense in which actions are not only enacted *by* an autonomous system, but *for it*. In this sense, the actions initiated through sense-making processes in reference to the organism, as a constitutively autonomous agent, are initiated based on the significance those actions have for it. Thus, returning to the case of chemotaxis presented in chapter one, it is not simply that the bacteria move motivated by the organism's autonomous constitution as one that desires sugar. It does so because sugar, as a nutrient, contributes to the further maintenance of the organism presented by its existential condition, its self-production, and the continuation of the autopoietic organization and structure. Barandiaran brings up a key point, in that the sort of autonomy that is serviced and perpetuated by such biological interactions as eating a healthy meal, in the case of a human being, is not serviced by such actions as surfing a wave. It is in this way that "biological and cognitive norms and identities are not always coextensive. ...In other words, cognitive normativity remains underspecified by biological normativity."<sup>81</sup>

## **2.0 Developing an Account of Sensorimotor Autonomy**

Considering this argument that cognitive norms remain underspecified, Barandiaran suggests a pluralist view of autonomy, in which multiple kinds of autonomy build on each other.

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<sup>80</sup> Barandiaran, 414.

<sup>81</sup> Barandiaran, 414.

The move to incorporate a pluralist approach to autonomy into the autonomist enactivist view is compatible with the claims of recapitulation vital to the continuity between life and mind, and the overall developmental account of the complexification of organisms.<sup>82</sup> Barandiaran puts forward the following demands for a theory of autonomy compatible with sensorimotor approaches to cognition: “(a) it needs to distinguish itself from raw metabolic or biological autonomy (autopoiesis) and provide explanatory relevance to the constitution of identity and norms at the level of sensorimotor dynamics, (b) it must be capable of specifying how cognition is constitutively sensorimotor, and (c) it must deliver models that can illustrate the concept.”<sup>83</sup> While I will consider one potential path for satisfying the first condition and its additional implications for an account of bodily subjectivity, it will also provide the tools for answering the other two for potential future developments of this view.<sup>84</sup>

What needs to be specified, first, to accomplish this is that the normativity for cognition is not biological autonomy, but rather *sensorimotor* autonomy in order to have *sensorimotor* norms that allow for cognition, i.e., perceptually guided action with organism and environment correlation. If the autonomous constitution of the agent sets the reference point by which norms are constructed, that autonomy needs to give a form of organismic, or rather bodily, identity that also serves to bring relevance to normative behavior at the level at which the behavior is directed to service. This distinction of sensorimotor autonomy from mere biological autonomy will be expanded on, in part, by considering affectivity and sentience. Specifically, it is in the capacity

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<sup>82</sup> I will not be addressing in full the developmental account, though further work needs to be done here in the enactivist literature.

<sup>83</sup> Barandiaran, 418.

<sup>84</sup> Though a more complete account could be developed to answer these final two demands, I believe the tools to do so are present in the account I put forward. In the process of meeting the first demand, I have constructed a model that I employ in Chapter 3.

for interoception, and complex forms of sense-making involved in sentience, which give relevance to normative behavior at the cognitive level.

### *2.1 Affectivity and Sentience*

While much of the picture offered thus far has focused exclusively on the agential components of the organism in its adaptivity, sense-making, and cognition, there is another dimension of the organism and its body that needs to be explored further to get something like the bodily subject off the ground. Sepúlveda-Pedro raises the following point: “When we consider cognition in these [autonomist] terms, the self-regulatory metabolic (homeostatic) functions from which the values and meaning of a particular living system emerge are also those that ground emotion for neurobiological theorists.”<sup>85</sup> While the organism’s agential capacities are grounded in the body, this body is, notably, an *affective* body. Looking at the account developed thus far, sensitivity to one’s environment, and the resulting ability for the organism to attribute valence and significance to its encounters, is motivated by that sensible body being affective and subject to the pains and pleasures of encounters that are then attributed with negative and positive valence and a derived significance. It should be noted that the significance and relevance of certain aspects of the environment, going back to biological basics of the primordial tension, and now the importance of the existential condition, are lived “as affective bodily tensions.”<sup>86</sup> Sense-making, thus, involves a “bodily response to the conditions of the environment” that is formed in relation to what Sepúlveda-Pedro calls *bio-affectivity*.<sup>87</sup>

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<sup>85</sup> Stapleton, Mog, and Froese, Tom. “The Enactive Philosophy of Embodiment: From Biological Foundations of Agency to the Phenomenology of Subjectivity.” In *Philosophy, Biology, and Psychology* (2016): 121.

<sup>86</sup> Sepúlveda-Pedro, 81.

<sup>87</sup> *Ibid.*, 81-82.

This basic form of bodily affectivity is simply a sensible and affectively registered tension that organisms are subject to in states of organizational disequilibrium, i.e., sentience.<sup>88</sup> Thus, the tension between an autopoietic self-preserving organism and the natural tendencies of thermodynamic decay which surround it is in virtue of the existential condition.<sup>89</sup> “The integration of affect and agency can be seen clearly when we consider how value and action are integrated in organismic systems. ...the world for the cell is shaped by this affect – it is what imbues the world with value for it, and thus what imbues the cell with normativity.”<sup>90</sup> In making salient the extent to which the body, self-produced as an autonomous system, is also an affective body that shapes the construction of meaning and normativity, the body has a clearer role in the autopoietic structure recapitulated at complex levels. More specifically, it plays a heightened role in an autonomist view of cognition based in such normative construction. As such, it brings into view how one may begin to develop an account of the bodily subject that goes beyond mere operational closure, identity, and constitution in a biology or body-only sense (the difference between being an object and a subjective object). In forgoing recognition of the affectivity body in relation to interoceptive sentience, scholars have not yet fully developed what is the interiority of the organism in its sense-making relation to the environment. Sentience allows for more substantial talk about the interiority of the organism both phenomenologically and functionally.

With access to the interoceptive felt interiority of the creature, I will first discuss the functionality of affectivity and sentience. The affectivity of the body functions to give relevance to normative behavior through homeostatic regulation between the body and the environment. As such, sense-making is “not a purely cognitive act that informs living agents about external

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<sup>88</sup> Ibid., 81.

<sup>89</sup> Thompson and Stapleton, 24; Sepúlveda-Pedro, 80.

<sup>90</sup> Stapleton and Froese, 122.

conditions of the environment. It is instead affective sentience of the conditions of equilibrium of the agent's body in relation to the conditions of the environment."<sup>91</sup> Sentience arises from affective experience in that it involves "interoceptive processes that inform the organism about the changing states (affect) of its body's internal milieu in order to maintain homeostasis" (i.e., equilibrium between the agent's body and the environment).<sup>92</sup> These affective states of the body in the form of "homeostatic feelings" are a first key component of what enables an organism to be sentient and have a basic form of consciousness that keeps the body in equilibrium relative to the environment.<sup>93</sup> In discussing sentience, specifically as it is tied to the affective and interoceptive body, it provides a felt sense of 'what it is like for me' as a specific bodily creature. This internal feeling of the body allows us to expand the discussion of the coupling between creature and environment by bringing in a phenomenological dimension. This allows for felt experience generally, and a bundle of capacities that allow for a sort of minimal consciousness (i.e., creature consciousness).

Finally, it should be noted that sentience allows for more complex modes of sense-making. This sense of sentience at the affective level allows for homeostatic regulation that gives relevance to normative behavior such that an organism may correlate what is happening in the body to what is happening in the environment. These capacities further allow for more complex kinds of sense-making in the creature. When we consider metazoan creatures who have developed nervous systems, the density of the internal sensations of the body and their interconnection, the infrastructure for correlating the felt body to the sensed conditions of the environment becomes quite complex. Thus, as changes in the environment are correlated with

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<sup>91</sup> Sepúlveda-Pedro, 91.

<sup>92</sup> Cea, Ignacio, and Martínez-Pernía, David. "Continuous Organismic Sentience as the Integration of Core Affect and Vitality." In *Journal of Consciousness Studies* 30 (3-4), (2023): 8.

<sup>93</sup> Ignacio and Martínez-Pernía, 8.

changes in the body, the organism can regulate itself in relation to bodily tensions and affective states in more complex manners as well. Thus, sentience allows for more complex forms of sense-making, and further, when those organisms harbor complex nervous systems that densely integrate the internal feelings of interoception this provides capacities for complex infrastructure for interaction and integration of interoceptive and environmental information.

## *2.2 A Potential Path Forward*

With a rough development of interoception, I will suggest one potential path for satisfying the demands set by Barandiaran for a successful concept of sensorimotor autonomy. To provide such a starting point for cognitive normativity, and cognition proper, it is at minimum beneficial to explore the scientific studies and theoretical work done on the body schema. Body schema is, roughly, the integration of proprioceptive, sensory, and physiological or motor information about the body to form a background awareness of the body for stabilizing balance, posture, and movement in the world. This contrasts with body image. The focus of this discussion will be, however, primarily on the body schema, followed by a consideration of how body image interacts with it in chapter three. It is worth noting that Evan Thompson<sup>94</sup> has previously considered the body schema and body image in the enactivist domain. While Thompson was concerned primarily with an account of bodily subjectivity in employing the concept of body schema, which I will consider after establishing an account of cognition, the concept is underdeveloped. Thompson's concept of body schema misses the distinction made by Gallagher between the unconscious organizational activity of the body schema and the content of the body schema which is organized in a particular way. Thus, Thompson is quick to dismiss body schema as part of an account of bodily subjectivity, or cognition more basically, due to its

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<sup>94</sup> See also Thompson and Stapleton.

apparent inability to be accessed phenomenally. Gallagher gives a robust and detailed account of the body schema as a system which includes inputs from proprioception, and the sensory and motor loops of the body. As such, there are those elements within the set of inputs that one does have phenomenal access to – namely, proprioceptive, and performative awareness.

For Thompson, the body schema is wholly unconscious and unable to be phenomenally accessed as an organizing system of dynamic sensory-motor principles.<sup>95</sup> Thompson defines the body image as a conscious state where the body is an intentional object.<sup>96</sup> “It is consciousness of the body-as-object.”<sup>97</sup> In the body image, the body is experienced as owned by the experiencing subject and the image is typically a partial representation insofar as conscious awareness usually attends to only one part or area of the body at a time.”<sup>98</sup> Further, bodily subjectivity should be pre-reflective, yet in some sense present in consciousness non-intentionally. This, however, Thompson has not identified specifically with some structure or mechanism and claims the distinction made between body image and body schema misses this fundamental form of bodily experience.<sup>99</sup> Thus, body schema is unconscious and inaccessible, while Body image is a conscious and intentional state directed by the agent toward their own body.

While Gallagher has a similar view of the body image, he offers a more detailed concept of the body schema *system*. This body schema system operates in a holistic way including the adding together of proprioceptive inputs that inform this modulation or organizing function. The body schema, for Gallagher, includes this intermodal communication of proprioceptive inputs, both unconscious *and conscious*, that make up the body schema *system*. This will be elaborated

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<sup>95</sup> Thompson (2005), 411

<sup>96</sup> *Ibid.*, 411.

<sup>97</sup> The body as a physical object in the world - the living body.

<sup>98</sup> Thompson (2005), 411.

<sup>99</sup> *Ibid.*, 411-412.

upon in what follows, particularly concerning performative awareness. Performative awareness, part of the organized content of the body schema, is a conscious pre-reflective and non-intentional background awareness of one's body that can be attended to or made intentional and, as such, helps to fill the gap for an account of bodily subjectivity.<sup>100</sup> This intentional mode of performative awareness is proprioceptive awareness. The distinction between the two will be made clearer in what follows. Thus, for Gallagher, the body schema is unconscious in part<sup>101</sup> but conscious in terms of performative and proprioceptive awareness. Performative awareness is pre-reflectively conscious (non-intentional) while proprioceptive awareness is reflectively conscious (intentional).

Broadly, the projects to be addressed both in establishing an account of sensorimotor cognition, and in Thompson's case of establishing bodily subjectivity fall under a set of questions that are closely related due to their being produced in the body-body problem. The body-body problem takes concern with the tension between one's body as one subjectively lives it – the body-as-subject – and one's body as an organism in the world – the body-as-object.<sup>102</sup> This points to the general problem of relating oneself to the world in that attempting to understand one's relation to the world comes nestled with a further question of how one then relates to oneself. What is first, and more fundamentally concerning here is how the organism relates to its world in establishing an account of cognition. This will require that the demands of sensorimotor autonomy are met. With a developed account of body schema in relation to those demands, I will then return to the discussion Thompson poses around bodily subjectivity and body schema.

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<sup>100</sup> Shaun Gallagher, *How the Body Shapes the Mind*, (NY: Oxford University Press, 2005): 46.

<sup>101</sup> This will be expanded upon later. Some forms of physiological information and the active organizing and integration of inputs are unconscious.

<sup>102</sup> Thompson (2005), 409.

### 3.0 The Body Schema System as Sensorimotor Agency

The first demand posed by Barandiaran in providing an account of sensorimotor autonomy is that it distinguishes itself from biological autonomy (autopoiesis) in such a way that is explanatorily relevant to establishing constitutive identity and normativity for an organism *at the level of sensorimotor cognition*. To reiterate, Barandiaran defines autonomy as a “process organization that is constituted as a network of interdependent processes.”<sup>103</sup> The definition provided for body schema fits well with this conception of autonomy. The typical way in which autonomy is established in the enactivist approach is through autopoietic systems, as seen in chapter one, specifically highlighting operational closure. However, Barandiaran argues at the cognitive level operational closure must look different. At the biological level, we are concerned with self-maintenance and definition of the organism as materially, that is, biologically, distinct from the environment and frames the environment as a source of perturbations. However, when we are discussing something like action and affordance for action from the motile sensorimotor agent, the environment becomes intimately tied to those operations, and cannot be seen as mere perturbations, but instead as part of that network of processes that constitutes agency. Agency, at this level, for Barandiaran, implies “the emergence of an interactive, i.e., sensorimotorly constituted, unit or identity understood as a whole (in a manner that is not reducible to the workings of specific neural, bodily, or environmental mechanisms taken in isolation).”<sup>104</sup> This maps onto the definition of autonomy provided above.

Barandiaran states that a pluralist autonomist theory for enactive cognition must satisfy “three necessary and sufficient conditions for the emergence of an autonomous agency at the

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<sup>103</sup> Barandiaran, 411.

<sup>104</sup> Barandiaran, 421.

scale of sensorimotor coordination dynamics.”<sup>105</sup> The following demands provide sensorimotor agency when: “(a) there is a system as a *distinguishable entity* that is different from its environment [individuality condition], (b) this system is *doing* something by itself in that environment [interactional asymmetry condition], and (c) it does so according to a certain *goal* or *norm* [normativity condition].”<sup>106</sup> I have already begun to make distinct the body schema system in consideration of Gallagher’s work, however, a more concrete individuation of the body schema in bodily experience will be met as I proceed through a functional and normative account of the system. In establishing these facets of the body schema, I will then proceed to give an account of bodily subjectivity – an individuated and egocentric perspective of the body and its affordances in relation to the environment. Second, in showing how the body schema functions, I aim to give an account of its operations in coupling itself to the environment, stabilizing balance, and enacting motor programs or habits. Lastly, in establishing this identity of motor stability, the norms for a sensorimotor agent will be elucidated. This normativity of the body schema will become clearer in chapter three in consideration of anomalies in bodily experience. In this way, I will argue body schema meets the three necessary and sufficient conditions set by Barandiaran for sensorimotor agency (autonomy and normativity, with further consideration of individuation).

The body schema, understood as “a certain collection of sensory-motor functions responsible for maintaining posture and governing movement,” operates as a system to provide “a capacity for a specific kind of intermodal communication.”<sup>107</sup> The body schema system functions alongside proprioception which integrates sensory and motor inputs. This account

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<sup>105</sup> Ibid., 421.

<sup>106</sup> Barandiaran, Xabier, Di Paolo, E., and Rohde, M. “Defining Agency: Individuality, normativity, asymmetry, and spatio-temporality in action.” In *Adaptive Behavior* 17 (5), (2009): 369; Barandiaran, 421.

<sup>107</sup> Gallagher (2005), 51.

depicts a network of processes (proprioception, sensory, and motor) as integrated under the body schema organization process, providing an emergent identity that makes the network irreducible. This fits Barandiaran's definition of autonomy. To integrate the two, and thus provide a model of the body schema system in action, getting clear on the functions of both the body schema system and proprioception will guide the account. First, the body schema system provides three functions: (B1) process new information inputs about posture and movement; (B2) provide an output characterized as a set of motor programs or motor habits as well as learned or innate movement patterns; and (B3) allow for communication between proprioception and other sense modalities.<sup>108</sup> Such sensory inputs of environmental information, as well as visual proprioception and visual kinesthesia, involve the tacit processing of visual information of the body's movements in relation to the environment.<sup>109</sup>

Before developing an in-depth account of how the functions of the body schema meet the demands of agency in order to develop sensorimotor agency, I propose the following general account: The individuation demand is met in a basic sense of organizational individuation by the third function (B3) of intermodal communication between the proprioception, sensory, and motor systems that comprise and fulfill the functions of the body schema system. Second, the demand for interactional asymmetry is met in consideration of the second function (B2) where that aforementioned system of subsystems provides an output of motor programs and habits that guide the body's movement. Finally, normativity is met by the first body schema function (B1) of processing the inputs from both body and environment about posture and movement such that normative motor stability can be maintained (in conjunction with the asymmetrical interaction provided by the second (B2) body schema function). While I place each of the demands for

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<sup>108</sup> Ibid., 45.

<sup>109</sup> Ibid., 45.

agency in relation to just one of the body schema functions, it should be noted those body schema functions rely on and pull from the other functions in the system. Though I do not make a full argument here for this system as operationally closed, I argue this is a good starting point. With this rough account, I will further elaborate on how these demands are met by the body schema system and its function in its entirety – proprioceptive, motor, and sensory systems.

### *3.1 The Interactional Asymmetry Condition*

In consideration of the intermodal communication of the proprioceptive system with sensory and motor information, a clearer argument can be made. Gallagher ties the body schema into proprioception stating that the functions of body schema, namely the organizational process necessary for postural balance and guided movement, are informed by a variety of sensory and motor proprioceptive information that communicate intermodally. The most important form of proprioception in this project is the ordinary (non-visual) mechanical information from somatic proprioception. Somatic proprioception is information about joint position and limb extension based on muscle and joint sensation while the body is in movement.<sup>110</sup> It is a major source of information concerning the present position of one's body and posture and in part constitutes what is proprioceptive awareness.<sup>111</sup> Proprioceptive awareness is defined by Gallagher, following O'Shaughnessy, as being either "a reflective (involved) or pre-reflective awareness of movement. The proprioceptive awareness in its explicitly pre-reflective form, is later referred to as performative awareness when discussing proprioception in relation to the sensory and motor systems. Performative awareness is defined as "pre-reflective awareness that one has of one's body in the normal performance of intentional action."<sup>112</sup> It is important, however, that these

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<sup>110</sup> Gallagher (2005), 46-47.

<sup>111</sup> Gallagher (2005), 46-47.

<sup>112</sup> Ibid., 74.

conscious forms of proprioceptive *awareness* be distinguished from proprioceptive *information*. Both of which help to inform and constitute the body schema. In contrast to proprioceptive awareness, proprioceptive information is the “non-conscious performance of movement.”<sup>113</sup> This includes things like the underlying performance of specific physical mechanisms in the body that are required to fulfill a motion, such as the rotation of the wrist bones, the contraction of specific muscles, tendons, and so on, as well as such processes like the heartbeat. This too is later referred to as physiological information, more broadly. That physiological information may be conscious only to the extent it *informs* somatic proprioception, but much of that information remains unconscious.

Given the distinction made, proprioception has a dual nature being both unconscious in the form of physiological information (proprioceptive information) and conscious pre-reflective performative awareness (strictly *pre-reflective* proprioceptive awareness).<sup>114</sup> This helps to illustrate how this intermodal communication between visual perception and proprioception is synchronically the communication between sensory and motor behavioral aspects. The two interrelated processes involved in proprioception, informing the body schema system, are (P1) the intermodal communication between visual perception and performative awareness, as well as (P2) the communication between the broader sensory system, which includes vision and performative awareness, with the motor system, containing physiological information that includes both the conditions for the sensation of somatic proprioception as well as unconscious proprioceptive information.<sup>115</sup> It is worth flagging that, to the extent visual proprioception and visual kinesthetics make up visual information that informs the body schema, it leaves open the

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<sup>113</sup> Ibid., 46-47.

<sup>114</sup> Ibid., 74.

<sup>115</sup> Gallagher (2005), 75, 46-47.

possibility for body image to play a role in influencing the body schema.<sup>116</sup> I will return to this later in chapter three. To summarize the points made in terms of the body schema system, it is informed by proprioceptive information. Proprioception, broadly in terms of the sensory-motor system, constitutes the system as a set of dynamic sensory-motor correlations.

Following the functions of the body schema and its proprioceptive inputs, I will attempt, at minimum, to show how body schema works as an organizational process constituted as a network of interdependent processes. This is the definition Barandiaran puts forward in defining autonomy.<sup>117</sup> I put forward the following account of sensorimotor autonomy in its individuated network provided in *Figure 2*. This system ultimately modulates the posture, balance, and background awareness of one's body, allowing it to guide its movement and enact motor habits in the world, thus giving it the interaction asymmetry necessary. Starting from the sensory system, body schema allows for communication between sensory modalities and proprioception, namely in terms of the intermodal communication between performative (proprioceptive) awareness and visual perception. This intermodal communication of the visual and sensory inputs with performative (proprioceptive) awareness of the body allows for motor stability and the enactment of motor programs (movement as motor habits or patterns). That movement in turn creates spatial and postural changes for the organism in the form of sensory input. These sensory inputs which are directly related to the body schema are sourced in visual proprioception and visual kinesthetic and involve information about the body's movement in relation to the environment which is processed and integrated into the body schema system.

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<sup>116</sup> Think of such cases where we must attend to the placement and movements of the body visually in order to perfect and learn such intricate activities like dance.

<sup>117</sup> Barandiaran, 411.

In addition to these visual sensory inputs about the body in action, information about the physiology of the body also informs sensory inputs. The activation of the motor system in the stimulation of joints, muscles, etc. through motor programs and movement provides somatic proprioception. Somatic proprioception consists of positional information about the body provided by the sensations produced in the stimulation of the motor system – muscles, joints, etc. Collectively, the sensory information gathered from the movement of the body in the form of visual proprioception, visual kinesthetics, and somatic proprioception, among others, are processed by the body schema system to modulate and guide movement or motor habits, as well as postural or motor stability. This modulation and guidance are always in terms of the sensory information provided about the organism and its active navigation of the environment. That new sensory information, processed and integrated into the body schema system, thus perpetuates the sensory-motor proprioceptive and body schema system as a continuous self-organizing network of processes.

Integrating sensory information about the environment with sensory and motor information about the body allows the body schema system to modulate the egocentric point of action through posture and balance in order to guide movement and produce a world of affordance. Through this system, the individuated point of motor stability, and the modulating function of the body schema system, the body schema meets the demand for asymmetrical interaction with the environment. It is in the intermodal integration and communication of information between visual and sensory inputs about the environment and one's movements, alongside proprioceptive information about the body, that the body schema system can stabilize and adapt that egocentric point of action in the environment. This allows for regulating one's movements and how one is coupled to, and interacting within, the environment. This bringing

forth of a world of affordance and the asymmetrical relation the individual has to the world will become clear with the normativity condition. I will elucidate this motile stability and affordance structure below.

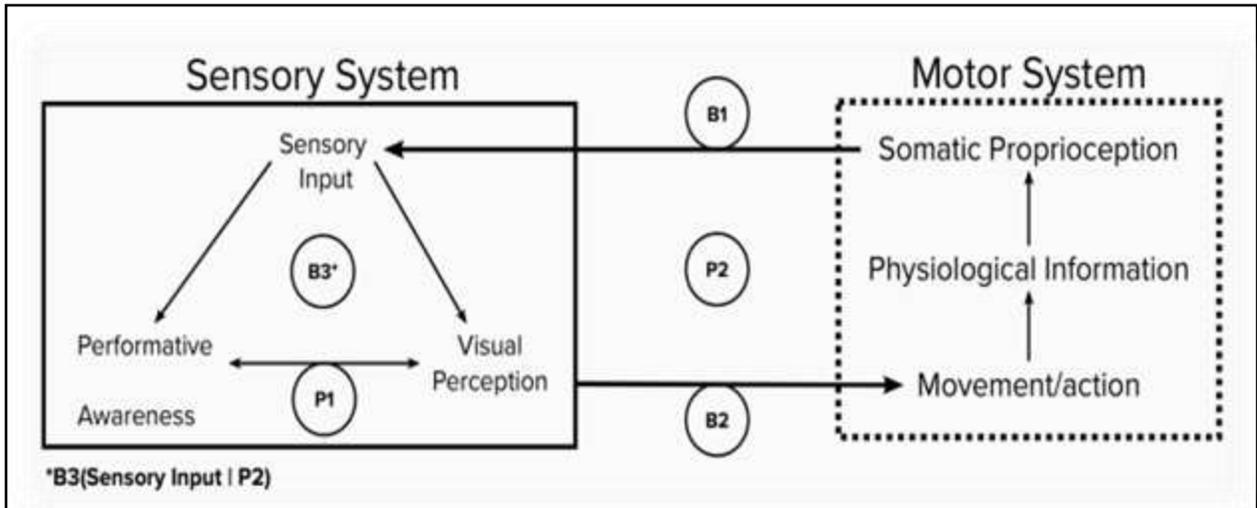


Figure 2: Proprioception and the Body Schema System

**Proprioception Functions:**

**(P1):** the intermodal communication between visual perception and performative awareness

**(P2):** The communication between the broader sensory system, which includes vision and performative awareness, with the motor system, containing physiological information that includes both the conditions for the sensation of somatic proprioception as well unconscious proprioceptive information.

**Body Schema System Functions:**

**(B1):** Process new information inputs about posture and movement.

**(B2):** Provide an output characterized as a set of motor programs or motor habits as well as learned or innate movement patterns.

**(B3):** Allow for communication between proprioception and other sense modalities.

**B3 (Sensory Input | P2):** This communication is subject to the sensory input as it related to the physiological and proprioceptive information supplied by the motor system. When the body moves, both proprioceptive and physiological information change and inform the body schema, in its intermodal communication and organizing, to motivate and guide further movement in the world. This cycle repeats.

### 3.2 *The Normativity Condition*

The account of sensorimotor autonomy provided through the body schema system establishes a stabilized point from which to discuss normativity at a level relevant to sensorimotor cognition. Normativity under this account is not something like reasons for action, rather, it is a gradation of viable functioning from which the organism is able to maintain itself as a sensorimotor agent through control of balance and posture and the guidance of movement. Thus, when the individual is unable to guide movement and control balance and posture, the body schema system is dysfunctional or non-normative in terms of its functioning. Moving forward, when I claim that something is ‘non-normative’ I do not mean that it has nothing to do with the functionality of the organism, but rather that it is functioning in an irregular way – i.e., dysfunctional. This normativity is, on the level of sensorimotor cognition, the point from which the organism can navigate the world successfully through motor programs and the acting body. Though it may not often be given proper attention and importance, interaction and navigation of one’s world requires a stabilized point of balance and posture through the duration of movement. This balance or postural control maintains a state of equilibrium between the body and one’s behavioral space. Further, in this normative state of the acting body as balanced, it can be *unbalanced* and put in a state of disequilibrium with its world. This includes, further, the general functionality of the body as motile and informing the guidance of movement through such physiological and proprioceptive information discussed earlier. Both normative and non-normative states will be discussed here.

Following from this system, normativity is primarily established by the body schema system in terms of motor stability, postural control, and its influence in providing structure to cognition in a spatial form. This modulation of posture and motor control allows for the

implementation of motor habits, the most basic form being posture or balance. The body schema for Gallagher “involves certain motor capacities, abilities, and habits that both enable and constraint movement and the maintenance of posture.” The body schema system involves a “*prenoetic* performance” such that it aids in the structuring of consciousness without itself being conscious. Thus, the organizational and intermodal communication functions of the body schema operate prenoetically, though such content organized may be phenomenally accessible (visual proprioception, proprioceptive awareness). This “structuring of consciousness” is what provides the spatiality of body image, being itself an intentional and conscious image of one’s body. To get clear on the normativity established by the system, consider one’s normal engagement with the world. The integration of visual perception, and performative awareness helps to guide movement, gearing the body into that environment *in the right way*.<sup>118</sup> For example, it appropriates certain habitual postures and movements, and it incorporates various significant parts of its environment into its schema such that it may modulate and respond to environmental factors.<sup>119</sup>

The body schema system performs pre-reflectively (performative awareness). It is not until there is some sort of pain, discomfort, etc. that my bodily situation is made conscious and reflected upon. Thus, when the body is “in tune” with the environment, and the body prenoetically performs a task, perceptual awareness and intention are directed out at the world.<sup>120</sup> The body schema is what controls the interaction between the body and environment while attention is fully on the world.<sup>121</sup> Importantly, however, Gallagher states that the body schema is

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<sup>118</sup> Gallagher (2005), 44.

<sup>119</sup> Ibid., 32.

<sup>120</sup> Ibid., 34.

<sup>121</sup> Ibid., 37.

not “entirely *in-itself*.”<sup>122</sup> In addition to the body schema’s incorporation of elements in the environment, it also assists in defining “its behavioral space and environment under constraints defined by environmental affordances” through postural control and guidance.<sup>123</sup> To put it clearly in enactivist terms, the normative function of postural and motor control given by the body schema system is the reference point for defining a world of affordances as a behavioral space. The body schema works as a “dynamic, operative performance of the body” that is coupled with the environment. This allows the system to integrate its positional states, responses, and dealings with the environment without splitting attention between body and world.<sup>124</sup> It is in this dynamic operation that the sense-making process functions to guide the movement and navigation of the body in the environment. This allows the body to modulate and adapt to changes in movement alongside changes in the environment through the body schema system. It is used to navigate and define its world in terms of that modulation and as such, brings forward a world of affordances.

To make clear this conception of sensorimotor normativity, I will consider instances in which that normativity is not met, and the organism is not ‘tuned in’ to the world in the ‘right way’ – i.e., disequilibrium in motor stability between body and environment or non-normative functionality. It is not until there is a failure in the body schema, or rather, a loss of balance at the level of proprioceptive awareness, that the body takes center stage in conscious attention. It is precisely in the disequilibrium between body and environment that my body becomes reflected upon. It is in these cases where modulation and adaptation must occur for normativity to be restored in terms of motor and postural stability. It is in the successful maintenance and

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<sup>122</sup> Gallagher (2005), 37.

<sup>123</sup> Ibid., 37.

<sup>124</sup> Ibid., 32.

modulation of posture, “an equilibrium obtained between body and environment,” that allows one to attend to the world and carve out a space for motor affordances based on such normativity.<sup>125</sup> Thus, as the body schema operates to organize postural and motor control unconsciously, it forms a stabilized point of motility for the organism as a motor agent or active body being the “null point” for perception and action. Equal consideration should be given to material changes to the body that may affect motor stability and guidance of movement, such as an amputated limb. One must adapt one’s movements and make sense of the world in a new way relative to this body compartment. This adaptation involves a new form of motor stability that accounts for the amputation. The retained point of motor stability relative to the body serves as the *identity* (individuation) of the organism in terms of its normative motor habits, affordances, and situatedness in the world.<sup>126</sup> This then allows for normative interaction focused on the surroundings of the organism which it may navigate skillfully based on this continuously maintained postural stability and resulting motor programming from sense-making.

#### **4.0 Bodily Subjectivity Revisited: The Individuation Condition**

With an account of sensorimotor autonomy established, producing normativity and identity at the sensorimotor level, I have provided a potential path for a pluralist form of autonomist sensorimotor cognition that responds to Barandiaran’s conditions. With cognition developed fully, alongside a detailed consideration of body schema at work in cognition, I will now turn to the discussion Evan Thompson poses centered on these concepts in terms of the embodied self or bodily subjectivity in order to solidify its individuation. Gallagher considers the innate presence of body schema systems in terms of studies on neonate facial imitation. Here, a

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<sup>125</sup> Gallagher (2005), 34.

<sup>126</sup> By identity, I mean the sort of emergent identity we see also at the biological level. It is simply an emergent point of reference from the body schema system that guides movement, action, and interaction in the environment (one’s world). This works toward Barandiaran’s *individuation condition*.

clear account of the embodied self is established with the body schema. Not only does this sense of self Gallagher advocates for work toward the account of bodily subjectivity sought by Thompson, but it also poses interpersonal openness and a precursor to the development of body image. These later two pieces will be vital in thinking about how body image and body schema interact in pathological cases that threaten one's bodily experience or 'being-in-the-world.' For the remainder of this chapter, I will consider bodily subjectivity, intersubjectivity, and body image development.

As mentioned earlier, Thompson does engage with body schema and body image with questions concerning bodily subjectivity. These questions are posed as an afterthought to an established account of sensorimotor cognition. As such, the following concerns he raises with the implementation of body schema and body image will now make sense for the project. Overall, in attempting to bring out an account of the bodily subject, the body as subjectively lived in relation to itself, Thompson claims there is a fundamental aspect of bodily experience missing from body schema and body image, as he construes it. This fundamental aspect is bodily subjectivity defined as pre-reflective bodily self-consciousness. His reasoning, considering the previously established definitions he is operating on, is captured in the following:

The body schema...is not the perception of 'my' body; it is not the image, the representation, or even the marginal consciousness of the body. Rather, it is precisely the style that organizes the body as it functions in communion with its environment. On the other hand, one's body is not limited to the body image, nor is the body image the most fundamental form of bodily consciousness. ...most of the time one's body is ... experienced non-intentionally and pre-reflectively. This kind of experience is consciousness of the body-as-subject.<sup>127</sup>

Thus, Thompson dismisses body image and body schema as providing an account of bodily subjectivity as body schema is not conscious, for him, and body image is not pre-reflective. I

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<sup>127</sup> Thompson (2005), 411 - 412.

would like to reopen the case and consider the demands an account of cognition must meet in order to also provide an account of bodily subjectivity under the more robust considerations of the concepts developed up to this point.

In discussing the dynamic sensorimotor account, which is abandoned for a pluralist autonomist enactive theory of cognition, Thompson notes that it is incomplete in two ways. “First, it needs to be underwritten by an enactive account of selfhood or agency in terms of autonomous systems. Second, it needs to enrich its account of subjectivity to include prereflective bodily self-consciousness.”<sup>128</sup> I will argue the enactivist framework of the body schema system provided can meet these demands. The first criterion for a complete view of cognition has already been fulfilled in adopting a view of pluralist autonomy to construct an account of sensorimotor autonomy that is constitutive of the sensorimotor agent. Thus, this sensorimotor autonomous agent just *is* the sensorimotor selfhood that Thompson is requesting of sensorimotor enactivist accounts which fail to do so in relying only on the biological autonomy of autopoiesis. The second criterion is built into the body schema system in the form of proprioceptive awareness, specifically in the pre-reflective form of performative awareness. This is made clear in Gallagher’s consideration of neonate imitation studies. This will, in turn, further support the account of selfhood in criterion one.

First, it is important to get clear on how Gallagher himself addresses body schema in relation to performative awareness, which I will argue fills the gap for Thompson of bodily subjectivity. Specifically, there seem to be worries about the frequency at which performative awareness is present, and further, the added mechanisms needed for proprioceptive awareness to function. Gallagher notes that, though proprioceptive information and performative awareness

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<sup>128</sup> Thompson (2011), 260; Thompson (2005), 417.

depend on and are constituted by the same physiological mechanisms and information, it is not unreasonable to suppose a connection between them, but it should not be taken to pose an identity.<sup>129</sup> There exists a coordination between the two as proprioceptive information updates the body schema's control and guidance of motor stability while in action, and [performative awareness] accompanies the accomplishment of such action.<sup>130</sup> However, this does not warrant an identity claim between the two, as there are instances in which physiological information, part of proprioceptive information, is not accompanied by such a state of performative awareness.<sup>131</sup> This is referencing such physiological states and actions as the beating of your heart, the contraction of certain muscles, the rotation of bones, the circulation of blood, digesting food, etc. These states do not involve proprioceptive awareness, though there is surely physiological information about those states, unconsciously. Thus, the implication is, there must be some extra dependence on central processes of the body that performative awareness requires beyond mere physiological information and motor control.<sup>132</sup>

I wish to make a distinction here between physiological states of the body which constitute the functioning of the body in an internal sense, and those which are *intentional* and directed at the world, taking the body in its physiological states as an acting body. In the account offered for sensorimotor autonomy, and thus sensorimotor cognition, the interplay between body schema and proprioception also requires a consideration of how those systems are informed by and intermodally communicating with the sensory and motor systems. Thus, the system offered here already makes considerations of the further requirement of the central processing added to bodily experiences that give us performative awareness – in particular, somatic proprioception.

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<sup>129</sup> Gallagher (2005), 76.

<sup>130</sup> *Ibid.*, 76.

<sup>131</sup> *Ibid.*, 76.

<sup>132</sup> *Ibid.*, 75-76.

While somatic proprioception may not be present and a resulting sensory input from *all* physiological states or information, being that it deals particularly with muscle and joint stimulation, this need not affect an account of bodily subjectivity. The bodily experience of subjectivity is not concerned with, I argue, the body in terms of biological maintenance, rather it is concerned with the body as an acting subject in the world, a sensorimotor agent. This further shows the need to set normativity and autonomy at a sensorimotor level if an account of subjectivity in terms of the sensorimotor cognitive agent is to be filled out. Thus, the system I offer here not only addresses Thompson's theoretical and phenomenological worries, but accounts for the scientific accounts presented of such bodily experiences of performative awareness.

I now wish to assert, more definitively, that performative awareness is constitutive of bodily subjectivity. To refresh, performative awareness is defined by Gallagher as "pre-reflective awareness that one has of one's body in the normal performance of intentional action."<sup>133</sup> Thus, this performative awareness, present in action, is pre-reflective and non-intentional, operating in the background as awareness of one's own body as one's self. Further, this performative awareness can be made intentional or "involved," in cases of non-normative body schema function, or in a more mundane case when one closes their eyes and points to their knee, directly attending to the position of the body. Thus, these two states, in their reflective and pre-reflective form make up proprioceptive awareness. As such, in Gallagher's own words, "...if proprioceptive awareness is a form of self-consciousness, then some primitive and primary sense of embodied self is operative."<sup>134</sup> Positioning performative awareness as a pre-reflective consciousness of the self as body, we can thus posit the bodily subject.

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<sup>133</sup> Gallagher (2005), 74.

<sup>134</sup> Gallagher (2005), 78.

Proprioceptive awareness, primarily performative awareness, plays the role of bodily subjectivity that Thompson thought to be missing from the dichotomy between body schema and body image. However, Thompson's account of these two terms did not consider the fullness of body schema in terms of the mechanisms and information which inform its operation and organizing function. Having now considered the fullness of body schema as a system that is operationally closed, self-organizing, and intermodally and dynamically communicating with sensory, motor, and proprioceptive information, an account of sensorimotor autonomy, sensorimotor normativity, and bodily subjectivity may be established. Further, Gallagher notes that this system also couples one with, not only the environment, as has been shown, but it also works to couple one to 'the other.' In sum, "body schemas, working systematically with proprioceptive awareness, constitute a proprioceptive self that is *always already* 'coupled' with the other."<sup>135</sup> This suggests that this account of bodily subjectivity also leaves one intersubjectively open.

#### *4.1 Intersubjective Openness*

Beyond an account of embodied selfhood (bodily subjectivity), Gallagher postulates the ability for the operation of proprioception and vision in the body schema system to also provide the basics for differentiation between self and other, and as such, the availability for constructing a sense of body-image. These considerations are made in terms of neonate imitation. He writes: "The newborn infant's ability to imitate others, and its ability to correct its movement, which implies a recognition of the difference between its own gesture and the other's gesture, indicates a rudimentary differentiation between self and non-self."<sup>136</sup> In terms of proprioceptive awareness, mimicking the facial expressions of another person through one's own body requires

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<sup>135</sup> Ibid., 81.

<sup>136</sup> Gallagher (2005), 83.

that one match what is seen in ‘the other’ to their own bodily awareness. Thus, this “intermodal *intra*-corporeal communication” is the foundation for interpersonal communication, namely, through the corporeal body (“*inter-corporeal communication*”).<sup>137</sup> Further, Gallagher argues that based on the intersubjective openness in the body schema system, as shown with neonate imitation, there are the beginnings of a primitive body image in the innate capacity for its development. There is, in the ability to intersubjectively interact through the visual perception of the other and proprioception, the origins of body-image as an exercise of self-othering, where you take your own body up as the object for directing attitudes toward.<sup>138</sup> This is shown most notably by facial imitations and the bodily appearance presenting the same facial image to the other. I will return to body image in chapter three.

## **5.0 Conclusion**

In this chapter, I have built upon the biological basics of the enactivist view to provide an account of cognition that is constitutively sensorimotor. There have been a few different methods for constructing this cognitive account in the enactivist literature that have undergone criticism. First, sensorimotor enactivism neglected to account for the importance of autonomy in directing the behavior and sense-making projects of an organism from the interiority of the organism. Second, the autonomist enactivist view, responding to the aforementioned worry, did not provide a consideration of autonomy that properly gave us normativity that mattered at the cognitive level to inform such autonomist behavior. In response to these worries, Barandiaran suggested a pluralist approach to autonomy within the autonomist enactivist approach to sensorimotor cognition. This required an account of, specifically, sensorimotor autonomy that was able to establish identity, asymmetric interaction, and normativity relevant at the sensorimotor level.

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<sup>137</sup> Ibid., 76.

<sup>138</sup> Ibid., 73.

This has been accomplished through the body schema system in its intermodal communication with proprioception and the sensory and motor systems.

In establishing this system, presented in *Figure 2*, not only does it provide an account of sensorimotor cognition underwritten by sensorimotor autonomy, but also addresses the concerns Thompson poses for a scientific account of dynamic sensorimotor cognition in terms of bodily subjectivity. In laying out a full systemic view of body schema, the important role of performative awareness, as well as proprioceptive awareness broadly, the gap Thompson notes between body schema and body image has been bridged. Body schema, taken only for its unconscious and subpersonal operations of organization, and body image, as an intentional cognitive state directed at one's own body, missed the mark that performative awareness as pre-reflective non-intentional bodily awareness can provide. From here, intersubjective openness and the capacity for body-image development are established in brief. This will be explored further in the following chapter through the case study of social influences of stigma on body-based trauma and the corresponding responses of dissociative disembodiment. This case involves an analysis of the interaction between body schema and body image, specifically, where the body image alters the body schema as an adaptive response to such body-based trauma which inflicts non-normative functioning of the body schema system.

## CHAPTER THREE: BODY

### 1.0 Intersubjectivity and Body Image Development

Scholars have described the body schema in intersubjective contexts as being able to incorporate the other by extension of the body schema due to its plastic boundaries.<sup>139</sup> It is in this sense that we become familiar with our world both in terms of objects and others – i.e. the social world – operating as a ‘felt mirror’.<sup>140</sup> By felt mirror, it should be understood phenomenally in terms of using our own bodily intentionality as an instrument for deciphering the other and their intentions.<sup>141</sup> Additionally, there are cases of empathy and affective mirroring present even in neonates. Both senses require an extension of the body schema that embodies the other in mimicking and taking up their intentions and emotions.<sup>142</sup> How the body schema extends to the other will be made clear in the discussion of primary and secondary subjectivity. Thus far, I have focused on the body schema, which couples one to the environment in the coordination of movement and sensorimotor stability of the body. The body image, however, is formed and informed by elements that also inform the body schema system – namely, proprioception and vision or incorporation of the other – and plays a key role in one’s navigation of the social world. Speaking specifically to the enactivist framing of this body schema system, which I will return to later, it provides the explanatory tools for conceptualizing how the environment, in this instance the social environment, define and shape the individual in return. This is important in consideration of body image, which is directly shaped by the other.

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<sup>139</sup> Gallagher (2005), 29, 36.

<sup>140</sup> Ataria, Yochai. “When the Body Stands in the Way: Complex Posttraumatic Stress Disorder, Depersonalization, and Schizophrenia.” In *Philosophy, Psychiatry, and Psychology* 26, No. 1, (2019): 26.

<sup>141</sup> Fuchs, Thomas. “Corporealized and Disembodied Minds: A phenomenological view of the body in melancholia and schizophrenia.” In *Philosophy, Psychiatry, and Psychology* 12 (2), (2005): 99.

<sup>142</sup> Fuchs, 98.

## 1.1 Primary Intersubjectivity

The earliest forms of intersubjectivity, namely in the form of empathy as an emotional intersubjectivity, can be seen in what developmental psychologists term ‘primary intersubjectivity.’ This involves “sensorimotor capacities that enable relations and interactions with others.”<sup>143</sup> These capacities are innate and early-developing and present in the ability to perceive another’s feelings and intentions in their movement, gestures, facial expressions, and so forth, while also responding similarly through their own body.<sup>144</sup> These capacities developed in primary intersubjectivity are those that Gallagher discusses with neonate imitation from the angle of body schema, which he claims to also be innate in neonates. Though traditional views on body schema reject such a claim, focusing on the disorganized movements of infants’ limbs, the ability for infants to imitate facial expressions requires one to move one’s body, specifically the face, in the appropriate ways in response to the environment, i.e., the face of the other.<sup>145</sup> I want to draw out here that the ability for neonate imitation shows an intersubjective openness from the start of one’s life through body schema’s coupling to the other and primary intersubjectivity. Further, by the end of the first year of life, humans have the capacity for a “non-mentalizing, perception-based, embodied and pragmatic grasp of the emotions and intentions of other persons.”<sup>146</sup> This is important, in part, to form the body image, but requires further development.

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<sup>143</sup> Butnor, Ashby and MacKenzie, Matthew. “Enactivism and Gender Performativity.” In Keya Maitra and Jennifer McWeeny (eds.), *Feminist Philosophy of Mind*. New York, NY, USA, (2023): 197.

<sup>144</sup> Butnor and MacKenzie, 197.

<sup>145</sup> Gallagher (2005), 73.

<sup>146</sup> Shaun Gallagher, *Phenomenology*, (NY: Palgrave-Macmillan, 2012): 197.

## *1.2 Secondary Intersubjectivity*

While body schema and primary intersubjectivity are innate, secondary intersubjectivity, as well as body image, must be developed in the course of life. Gallagher states, “It is in the intermodal and intersubjective interaction between proprioception and the vision of the other’s face that one’s body image originates.”<sup>147</sup> Thus it is the intersubjective openness of the body schema that gives us the developmental capacities for body image. Body image is, from its very origination in the individual, due to one’s social situatedness in the world with others. As Thompson describes it, the body image is formed in the process of self-othering. That is, we must recognize ourselves as existing for the other, in some form, and take up that view on our own bodies. I will argue that this ability for self-othering and taking up the view of the other on one’s own body requires joint attention, and thus, secondary intersubjectivity.

The capacities for intersubjectivity continue to develop further into what developmental psychologists call ‘secondary intersubjectivity,’ where one’s intersubjective capacities become more mentalized and conceptual. It is important to note that one does not cease to operate on primary intersubjective capacities, but simply acquires further and more cognitively complex tools for intersubjective interaction or coupling to the other. Secondary intersubjectivity allows the individual to not only interact between themselves and the other, but also in a triad that includes objects via the capacity for joint attention.<sup>148</sup> Secondary intersubjectivity involves two processes, one being ‘participatory sense-making.’<sup>149</sup> While sense-making has already been defined in this work, importantly at the cognitive level of affordances in chapter two, the sense in which one is coupled with the other through the body schema allows for sense-making that is

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<sup>147</sup> Gallagher (2005), 73.

<sup>148</sup> Butnor and MacKenzie, 197.

<sup>149</sup> De Jaegher, H. and Di Paolo, E. “Participatory sense-making: An enactive approach to social cognition.” In *Phenomenology and the Cognitive Sciences* 6, (2007): 497; Butnor and MacKenzie, 198.

*participatory*. Participatory sense-making is understood as “the coordination of intentional activity in interaction, whereby individual sense-making processes are affected, and new domains of social sense-making can be generated that were not previously available to each individual on her own.”<sup>150</sup> This process involves making social reference to the other and entering joint attention and joint action upon an object.<sup>151</sup> In this joint state of interaction with an object, both through using the object and watching the other make use of it, the subject begins to “co-constitute the meaning of the world through such interactions with others” in this process.<sup>152</sup>

Finally, these interactions of participatory sense-making help build up one’s ability to make sense of another individual’s behavior.<sup>153</sup> I argue this buildup of one’s understanding of the other, and the ability for joint attention, also build up our understanding of ourselves. In understanding how I make sense of, say, the use of the object, I can then begin to understand, in a more mentalized sense, how another is making sense of the world (sense-making) in the performance of the same behavior and use of that same object. Importantly, these capacities of both primary and secondary intersubjectivity allow the subject to gather information about the other, their intentions, and their emotions, which can then be directed at my own body. If we enter in joint attention with the other, with our own body as the object of attention, we then develop an ability to understand the emotions and intentions one is directing at our own body. In this way, we incorporate those dispositions of the other into our body image system of dispositions. Ataria and Tanaka craft this point beautifully in the following statement: “One’s own eyes and those of the other thus become the tool of the body-image intercourse.”<sup>154</sup> This is

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<sup>150</sup> De Jaegher and Di Paolo, 497; Butnor and MacKenzie, 198; This will become important later in discussion of stigmatization.

<sup>151</sup> Gallagher (2012), 197; Butnor and MacKenzie, 197.

<sup>152</sup> Gallagher (2012), 197; Butnor and MacKenzie, 197.

<sup>153</sup> Gallagher (2012), 197; Butnor and MacKenzie, 197.

<sup>154</sup> Ataria, Yochai and Shogo Tanaka. “When Body Image Takes over Body Schema: The Case of Frantz Fanon.” In *Human Studies* 43 (4), (2020): 658.

important for understanding the social development of body image as being an integration of both my own and others' dispositions and emotions toward my body as an object in the world. As such, the 'self-othering' involved in the development of body image starts with the body schema in primary subjectivity and is constructed in a specific kind of joint attention present in secondary intersubjective capacities.

## **2.0 The Social Body Image**

The body image, as mentioned, is often defined in relation to the body schema. The two concepts have historically been conflated or used interchangeably. Gallagher's work provides a clear conceptual division between the two terms and the two facets of bodily experience. Body image is defined in this discussion based on Gallagher's work as involving consciously attending to the body as an intentional object.<sup>155</sup> This is where our notion of the 'body-as-object' originates as a living object in the world, and notably, an object in the world of/for the other (cue Sartre). Further, when the body is viewed and experienced as an explicit and intentional object, as it is in the body image, "it often appears as clearly differentiated from its environment" with boundaries that tend to be rigid and clearly defined.<sup>156</sup> More precisely, the body image consists of "a complex system of intentional states and dispositions," specifically, in the form of perceptions, attitudes, and beliefs pertaining to one's own body.<sup>157</sup> In this manner, the body is the object to which those states are about or intentionally directed, and requires a form of reflexivity or self-referential capacities.<sup>158</sup>

Ataria and Tanaka discuss the rough content of the dispositions which make up body image – perceptions, beliefs, and attitudes (emotional) – in their work on these concepts in the

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<sup>155</sup> Gallagher, 25.

<sup>156</sup> Ibid., 29, 36.

<sup>157</sup> Ibid., 24-25.

<sup>158</sup> Gallagher (2005), 24.

context of racist hostile environments.<sup>159</sup> They describe perceptions as the visual experience of our body from the third person perspective in a way that conveys “the current state of the body”.<sup>160</sup> This is what some recognize as “the body precept”.<sup>161</sup> Second, beliefs in this system of dispositions that constitute the body image involve the conceptual understanding of the body in general.<sup>162</sup> This can take on two forms. In the impersonal form of what some call the ‘body concept, this includes folk or scientific knowledge. Conversely, personal beliefs about the body involve something like, say, beliefs about one’s own body being of a certain comparative size (i.e. overweight, short, correctly proportioned, etc.).<sup>163</sup> It is important to clarify here, that though body image boundaries are clearly defined and rigid, they do not necessarily represent the body at the biological boundary of the skin but can recede or expand beyond that typically third-person marker.<sup>164</sup> Finally, Ataria and Tanaka include attitudes as the positive and/or negative emotions toward one’s own body. The authors utilize the example of Western dispositions to view being overweight through an attitude of dissatisfaction toward one’s body. Here, the potential for a complex interdependency between belief, attitude, and perception is apparent. One’s belief that they are overweight, whether that be based on a scientific metric or a personally perceived state of the body that does not reduce to the surface of the skin, can thus be layered by a further emotional attitude about that belief, namely dissatisfaction. This then colors the perceptions one has of their body.

I want to raise an important mode in which these dispositions can, and often do, present themselves – that is, being socially contrived. The body image is not merely formed in isolation

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<sup>159</sup> Ataria and Tanka, 657.

<sup>160</sup> Ibid., 657.

<sup>161</sup> Gallagher (2005), 33.

<sup>162</sup> Ataria and Tanaka, 657.

<sup>163</sup> Gallagher (2005), 33. There have been studies that show, in the case of Anorexia patients, they believe their body to be of a certain overestimated size and move between objects in relation to that belief.

<sup>164</sup> Ataria and Tanaka, 657.

from the other, when body image is viewed from the third person, it is from a contextualized and socially embedded perspective of the other that one views their own body. Ataria and Tanaka are careful to state one's body image attitudes are influenced by the society they are embedded in, (i.e., western societies and dissatisfaction with being overweight). Gallagher notes: "Social and cultural factors clearly affect perceptual, conceptual and emotional aspects of body image ... and in many respects are conditioned by cultural norms."<sup>165</sup> However, this fact about the social nature of the body image, acknowledging our bodies as socially embedded, does not typically get retained when analyzing pathological cases through these conceptual frameworks of body schema and body image. Where authors do acknowledge the social influence, it is often minimal, especially in the case where the body schema is the target of inquiry. After setting in place the social nature of the body image, I will return to such cases and how consideration of body image centered case studies shows the way our social embeddedness may interact with our body schema. It is specifically through an enactivist conception of the body schema system, alongside the important work of distinguishing it from body image, that discussion on the interaction between the body image and body schema can commence.

To frame the discussion of body image as social, consider Sartre's 'third ontological dimension of the body' which is characterized in the following manner: "I exist for myself as a body known by the other."<sup>166</sup> This is to say, that the body image is not simply to take my body up as an object through my own self-referential capacities. Rather, it is through self-othering motivated by how I show up for the other – that is, self-objectification in the process of joint attention – that body image is formed. The image I have of my body is as it is reflected in the

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<sup>165</sup> Gallagher (2005), 30.

<sup>166</sup> Ataria and Tanaka, 657.

experience of my body by the other.<sup>167</sup> As such, the other becomes indispensable as a mediator by which I am able to conceive of myself as a body in the world. Further, it is what allows me to occupy such intersubjective states as shame, empathy, embarrassment, and so forth. “By the mere appearance of the other, I am put in the position of passing judgment on myself as an object, for it is an object that I appear to the other.”<sup>168</sup> To make clear its social nature, body image (body-as-object) becomes a space for intersubjectivity between the self and other in the form of negotiating social tensions between each individual, namely, as bodily subjects. Bodily subjects should be understood as comprising the interaction of both body image and body schema as forming bodily experience. I will not turn to the nature of this interaction.

### **3.0 Body Schema and Body Image Interaction**

In making a conceptual distinction between body image and body schema, Gallagher recognizes they are nonetheless heavily coordinated operationally, operating synchronically in behavior or in action.<sup>169</sup> Essentially, the difference between body image and body schema can be conveyed in a distinction between a perception of movement and the accomplishment of such movement.<sup>170</sup> Thus, in the coordination of body image and body schema, there is a coordination between the perception of movement and the accomplishment of movement in constituting and guiding intentional action. While the two systems of body image and body schema are seen as being able to shape one another, the relation between the two most often appealed to is Gallagher’s ‘double disassociation’: “Defects at the body image level do not always result in problems at the body schema level; likewise defects at the body schema level do not affect the

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<sup>167</sup> Ibid., 657.

<sup>168</sup> Sartre, Jean-Paul. *Being and Nothingness*, Translated by Hazel E. Barnes, (London, England: Routledge Classics, 2003): 246.

<sup>169</sup> David, Aviya Ben, and Ataria, Yochai. “The body image-body schema/ownership-agency model for pathologies: four case studies.” In *Body Schema and Body Image: New Directions*, Yochai Ataria, Shogo Tanaka, and Shaun Gallagher (eds), online edn, Oxford Academic 19, (2021): 329; Gallagher (2005), 24.

<sup>170</sup> Gallagher (2005), 24.

Body image.”<sup>171</sup> Consider the case of unilateral neglect in which one does not have the phenomenal experience of bodily ownership over their left arm. Despite this impairment at the body image level, believing the arm not to be part of their body, they continue to retain the motor function of the limb at the body schema level. I take Gallagher to assert “double disassociation” to make a clear distinction between the two concepts’ operations, despite their synchronic and coordinated or reciprocal operation.

Though it seems safe to claim that an impairment to either body schema or body image can have its origins in one of the two systems, the disassociation claim, I argue, is too strong. Often, an impairment in body schema necessitates changes in the body image, and conversely, a change in the body image necessitates a change in the body schema. Consider the famous case of IW who experiences deafferentation, a loss of proprioceptive feel below the neck. This impairment at the level of the body schema brought about changes to IW’s body image. In one sense, IW had to utilize beliefs and perceptions about his body image to navigate the world and compensate for the loss of proprioception, vital to the body schema system that stabilizes and guides movement. Further, IW had changes in his attitudes and dispositions toward his body. IW was often driven to rehabilitate and move ‘normally’<sup>172</sup> around the world due to a social stigma around disability.<sup>173</sup> He viewed his body as abnormal and strived to re-embody what is conceived of as a normal mode of being-in-the-world. If we consider also, a case in which one’s body image is impaired, as will be discussed in the sense of disembodiment, the association between body image and body schema is more closely entangled. In this instance, one’s body

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<sup>171</sup> Ibid., 42-43.

<sup>172</sup> Normally here means *socially normal* and widely accepted. Although, it overlays the base need to navigate the world in a *functionally normative* way, in the sense discussed by the enactivists.

<sup>173</sup> Cole, Jonathan. “The embodied and social self: insights on body image and body schema from neurological conditions.” In *Body Schema and Body Image: New Directions*, Yochai Ataria, Shogo Tanaka, and Shaun Gallagher (eds), online edn, Oxford Academic 19, (2021): 238.

image is under attack through negative stigmatization, leading to a disownership or disassociation from one's proprioceptive awareness (specifically, somatic). In this example, the ownership involved in body image is directed at information explicitly tied up in and produced by the body schema system. Thus, the association between body image and body schema may be stronger than Gallagher claims.

Most of the current literature which does discuss body image and body schema concerning normal and abnormal bodily experiences focuses on those cases in which impairment occurs at the level of the body schema. While some work has been done to consider cases where body image is impaired (i.e., anorexia, and in an even more minimal and novel sector of feminist philosophy, fat embodiment), they do not always consider both the social influence on body image *and* how that goes on to alter and affect one's body schema system. Where the interaction between the two systems is discussed, the social influences tend to be lost, which can be said for both body schema impairment cases and body image impairment cases. Where the literature does discuss body image in terms of its social nature and the bodies being socially embedded, it either has an oversimplified concept of body image, and focuses on the social, or never makes the appropriate connections to the body image and how these social influences may trickle to the body schema and the fundamental ways in which an embodied subject moves in the world and perceives its world as affording or restricting action and movement.

#### **4.0 Disembodiment: Current Approaches**

This work will focus specifically on cases of disembodiment and disassociation. Disembodiment is a kind of somatic disassociation from the body and the basic sense of being-with-others is replaced by a sense of detachment that may pass over into a threatening

alienation.<sup>174</sup> These phenomena of are particular interest due to their ability to occur bi-directionally. Disembodiment is often talked about in the literature on schizophrenia as well as Anorexia.<sup>175</sup> These cases are often analyzed with a diagnostic goal in mind. Though asking questions about the interaction of body image and body schema, scholars tend to discount the social nature of body image. While it seems intuitive that this psychological approach be used in the aforementioned cases of disembodiment or disassociation, it does not seem obvious across the board. One might imagine, for starters, how one’s environment may influence and shape the individual with Anorexia (beauty standards, social pressures, social media), but even more so for cases of oppression. Disembodiment also shows up in an overlapping set of literature on racism and fatphobia as a response to hostile environments and body-based trauma. After leveraging the framing of body schema within the broader enactivist project argued for in chapter three, I will apply the theoretical tools developed thus far to the case of body-based trauma in fatphobia in the context of, specifically, disembodiment.

## **5.0 Benefits of an Enactivist Body Schema**

In noting the missing attention to the social contextualization of these impairments and shifts to body schema and body image, the enactivist approach I have built up, specifically in its pluralist autonomist form, provides several benefits for filling in this gap. The pluralist autonomist enactivist approach to cognition argued for thus far provides three benefits for analyzing the social contexts: (1) The enactivist project, generally, starts with a fundamental postulate of co-emergence or co-arising that necessarily takes the individual as embedded in a world – and for social animals, a social world; (2) Specific to the pluralist autonomist iteration,

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<sup>174</sup> Sturgess, C.M.B., and Stinton D. A. “Fat embodiment for resistance and healing from weight stigma.” In *Body Image* 41, (2022): 53; Ataria, 26.

<sup>175</sup> See Ataria and David.

this framing of enactivism allows for a distinction to be maintained between different kinds of normativity (biological, cognitive and social) to avoid conflation; and (3) In separating out the different forms of normativity, different points of possible adaptation that an individual may employ in the face of a perturbation can be tracked. Each of these points builds on one another and operates through considerations of the body schema system and the sociality of the body image. I will develop each point in turn before developing a precise account of the phenomenality of both normativity and sense-making at the level of embodied cognition. In understanding these enactivist specific tools, the case of disembodiment can be analyzed in terms of adaptation in the case of oppression and body-based trauma.

First, the enactivist project as a general research program starts with the principle of co-emergence. This was discussed in relation to boundary construction at the biological level and the construction of normativity as being formed both by the specific body of the individual and its situatedness in the environment. At the sensorimotor level, this takes the form of motor affordance, or, what *this* environment affords *this* body to enact. Gibson notes a similar co-arising in that affordance cannot be reduced merely to the perception of the individual, but rather it is intersubjective, involving “the whole spectrum of social significance” (i.e. a combination of worlds) such that different social and material layouts afford different mechanical encounters (affordances).<sup>176</sup> When considering the sociality of one’s world, how our world affords and restricts our interaction becomes more complex and relies on the self-referential functioning of the body image. The enactivist view considers, necessarily, how bodily subjects are socially embedded, and as such, provides a framework for understanding how one’s social world may shape one’s perception of, relation with, and interaction in the world. Our world is value-laden

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<sup>176</sup> Ataria and Tanaka, 661.

and involves a primary intersubjectivity through our coupling with the other in body schema, empathetic mimicking, and the general notion of ‘felt mirroring’ alluded to in primary and secondary intersubjectivity.<sup>177</sup>

The second and third benefits of utilizing the enactivist approach are specific to the pluralist autonomist sort I am employing and developing. I have argued that it is beneficial to use a pluralist autonomist view of enactivism to establish normativity at the level of cognition, thus allowing one to make sense of and adapt to their world in terms of cognitive responses and projects. Thus, this pluralist autonomist enactivist view allows for distinctions between what is considered normative at the level of biology, sensorimotor cognition, and social. While a thorough account will not be given here, one can imagine that the set of viable and normative states for biology, cognition, and sociality are different in kind, and require different modulating efforts. This has already been established in chapter two. Following from this, however, is the additional benefit of being able to differentiate between and acknowledge the multiplicity of avenues for adaptation behaviors. The following example should make both points clear. Say one is being verbally attacked, one could choose to: (a) remove themselves from the interaction and physically direct their body to another space (i.e. leave the room); (b) attempt to talk to the individual, salvage the relationship, understand their perception of the situation, and communicate (i.e. socialize); or (c) one might decide to temporarily disassociate from the situation, as is often the response in traumatic events, changing the way they are present in the world to avoid the harsh interaction. While some options for adaptation are easier or more accessible than others and can be contextualized by several affordance factors, it is clear there are multiple options available for adaptation to a situation. It is important to note, however, in the

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<sup>177</sup> Butnor and MacKenzie, 197.

case of oppression, some of those adaptations are simply not possible. Take the example of racism. The color of one's skin is not a mutable feature that can be adapted to avoid the stigmatization associated, setting aside the outright immorality of such a suggested adaptation.

### *5.1 Normativity: Transparency to Corporealization*

Having established the benefits of the approach advocated for thus far in the work, it will be helpful to build up the enactivist tools in a way that allows them to do work at the phenomenologically guided level in which most case studies on body image and body schema are conducted. Normativity, thus far, is defined in terms of the cognitive functioning of the body schema system, integrating perceptual, sensory, and motor information. As I work to analyze phenomenologically guided case studies in the cognitive sciences, specifically concerning one's subjective embodiment or loss of such a phenomenal experience, I can now develop normativity in phenomenological terms. When the body schema system is functioning properly and one is tuned into their world through intentionally directed projects, the body remains a background phenomenon as the world takes up our conscious attention.<sup>178</sup> This presents phenomenally as a transparency of the body in which it acts as an invisible mediator between the subject and the world. The body itself is seen as the medium through which subjects are able to interact with the world perceptually and behaviorally.<sup>179</sup>

Transparency of the body is based on an "as-structure" in which bodily affections are experienced *as* the objects which are perceived and acted upon.<sup>180</sup> This transparency as a sort of know-how for moving in the world is not simply an innate property of the body, but is developed and always changing.<sup>181</sup> Think about the awareness one has in unfamiliar environments where

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<sup>178</sup> Ataria and Tanaka, 654.

<sup>179</sup> Fuchs, 96.

<sup>180</sup> *Ibid.*, 97.

<sup>181</sup> *Ibid.*, 97.

one's own body and actions may be more salient such as navigating a different cultural space. In cases where one is unfamiliar with the world, one becomes aware of and reflective of one's bodily action as it works to gain the know-how of that environment. One begins to watch others and employ the intersubjective capacities (primary and secondary) to develop know-how for movement and interaction. When we take this example in a long-term environment, those know-how structures become motor programs through the organizing of the body schema. This know-how is a familiarized setting, compared to the body schema's capacity for developing and enacting motor programs (as well as incorporating objects into the schema such as tools, prosthetic limbs, etc.), is the phenomenal transparency of the body.<sup>182</sup> When one does have the know-how, and habits are instilled and acted out, this is the pre-reflective proprioceptive background awareness of one's body. This is the 'performative awareness' one has that is continuously updated by the body schema system's integration of information. This transparency of the body, thus, is "vulnerable to disturbances of mediating processes involved, leading to different forms of the opacity of the body and, subsequently, an alienation of the self from the world."<sup>183</sup> This increase in opacity can turn the body into its pure materiality in which one experiences the body not as transparent, but as an obstacle in its object form.<sup>184</sup>

When the mediacy of one's embodied consciousness is disturbed, specifically through a mismatch in body image and body schema, this may show up phenomenally as a loss of body transparency, or positively, *corporealization*. The phenomenon of corporealization was first raised by Fuchs such that "...the body loses the fluidity and transparency of a medium and becomes conspicuous, turning into a heavy, solid body, which puts up resistance to the

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<sup>182</sup> Ibid., 97.

<sup>183</sup> Fuchs, 95.

<sup>184</sup> Ibid., 95.

individual's intentions and impulses. Its materiality and weight, otherwise suspended in everyday performance, comes to the fore and is experienced as a leaden heaviness, oppression, and rigidity."<sup>185</sup> While this description is targeted at a specific sort of corporealization experienced by those with depression or melancholia, corporealization, in general, "means that the body does not give access to the world, but stands in the way as an obstacle, separated from its surroundings: The phenomenal space [of the body] is not embodied anymore."<sup>186</sup> Thus, the way in which the body is made an obstacle may differ (leaden heaviness in the case of depression, or immobile and clunky in disembodiment). This corporealization highlights the existence of a problem or mismatch in body image and body schema through the body's salience.<sup>187</sup> This shows their coordination has been disturbed. This fissure compromises one's ability for being-in-the-world and alienation may set in between one's subjectivity and the world, including one's own body.<sup>188</sup> This sort of corporealization may be realized through disembodiment in which one is alienated from the mediating processes that are normally embodied (specifically, somatic proprioception).<sup>189</sup>

## *5.2 Sense-Making: 'I-Can' to 'I-Can-Not'*

One's mode of being-in-the-world (i.e., embodiment) directly affects how one then relates to and perceives the world. In the normative functioning of the body schema where the body presents as phenomenally transparent, one makes sense of their world (sense-making) in terms of affordance structures. So far in this work, I have discussed how an enactivist reading of the body schema system in relation to sensorimotor cognition works to couple an agent to its

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<sup>185</sup> Fuchs, T., and J.E. Schlimme. "Embodiment and Psychopathology: a phenomenological perspective." In *Current Opinion in Psychiatry* 22 (6), (2009): 572.

<sup>186</sup> Fuchs, 99.

<sup>187</sup> Ataria, 27.

<sup>188</sup> Fuchs, 96.

<sup>189</sup> *Ibid.*, 95.

environment and build a world of affordances for the motile bodily subject. These ‘affordance structures’ present a phenomenal field of ‘I-can.’ This is to say, “we perceive the world in terms of what we can do, that is, in terms of its pragmatic meaning.”<sup>190</sup> Individuals, through their sense-making projects, build up a world of significance in relation to how they are embodied and, typically, enact intentional paths of actions that the coupling affords. However, when disturbances to the immediacy of embodied consciousness occur (i.e., corporealization) one may adapt the way in which (how) it interacts with the environment.

In corporealized agents, where one begins to lose their familiarity with the environment and how to attune to it, the world becomes significant, in the enactivist sense, in terms of a phenomenal field of ‘I-can-not’.<sup>191</sup> It is important to note that in the significance of one’s world, there will always be a mixture of affordance and restriction (think about the case of chemotaxis where the bacterium *avoids* toxins and *pursues* sugar). Which aspects become more salient, affordances or restrictions, will depend on which is a more viable attunement toward the environment in terms of maintaining normativity. In the case of the corporealized agent, the body, being the mediator between subject and world, is an obstacle, and thus, makes the world appear more starkly in the form of ‘I-can-not.’ The world is registered as something restricting one’s interactions, typically due to either one’s own bodily comportment, or the hostility of the environment in which they attempt to navigate. Ataria and Tanaka explain,

“...when our range of possibilities and the pragmatic phenomenal field expressing the ‘I-Can’ decline, we feel incapable of almost everything. Thus, the phenomenal field is transformed into an ‘I-can-not’ kind of field. ... the world no longer calls for action. [And thus,] the sense of belonging to the world is radically modified and one no longer feels at-home in the world.”<sup>192</sup>

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<sup>190</sup> Ibid., 96.

<sup>191</sup> Ataria and Tanaka, 661.

<sup>192</sup> Ataria and Tanaka, 661.

When one's world presents as restrictive, one may feel immobilized or disabled, as though "external forces prevent us from acting in-the-world" or the world of affordances "shrinks into a locked atmosphere" of lost possibilities.<sup>193</sup>

## **6.0 Hostile Environments**

In continuing to develop the theoretic framework for enactivism and its application to cases of disembodiment, the two make contact when considering the influence of hostile environments on individuals. Barandiaran states that the way in which we consider environments in terms of sensorimotor normativity cannot be seen wholly as a source of perturbation that is separate from the target system we wish to explain – namely the sensorimotor autonomous system. Thus, when discussing something like body schema and its production of motor programs in the environment, it necessitates that the environment be one in which we can act via paths of afforded action. In the case of hostile environments, those paths for affordance become few and far between and are determined from the outside in such a way that one's sensorimotor autonomy is thwarted. In this sense, we can say that one experiences tensions and restrictions to their ability to act in the world that produces discomfort for the individual. While we can talk of something like an inhospitable environment, say, in the case of a left-handed person where the world is constructed for interactions of the right-handed majority, a hostile environment creates resistance of a stronger sort. Hostile environments comprise those which harbor pervasive and systemic threats to one's sensorimotor autonomy and ability to act or navigate the world comfortably. The hostile environment, thus, continuously thwarts one's sensorimotor autonomy and leaves the subject in a state where they feel, to some degree, alienated from the world they are embedded within due to the lost know-how.

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<sup>193</sup> Ataria, 26; Fuchs and Schlimme, 572-3.

Butnor and MacKenzie develop this point further by drawing on the work of Maria Lugones. Lugones discusses the plurality of ‘worlds’ or social environments that one may navigate and situate themselves in with different levels of comfort and ease.<sup>194</sup> Some of these social worlds are uncomfortable, and “within these hostile worlds,” one may lack a perfected “social know-how” that enables familiarity and viable conduct for the individual navigating that world.<sup>195</sup> This lack of know-how can be traced to limitations on one’s access to power in the case of gender performativity. Additionally, consideration should also be given to material limitations to power that those who are subject to ableism and fatphobia face. “The affordance structure of the physical and social environments presents myriad obstacles to the exercise of agency and opportunities to flourish.”<sup>196</sup> Thus, one may also face restrictions to know-how in one’s embodied actions through obstacles that are built into the materiality of the social world of objects. These include things such as building access, public seating, public transport, and so on.

Being embedded in an environment that presents as hostile for an individual threatens alienation. When the normative functioning of one’s body schema shifts in response to the hostile world and the body’s opacity increases as an object, the sense of belonging or being at home in the world decreases and the body becomes an object.<sup>197</sup> One feels alienated from the world and not at home due to the bodies’ becoming an obstacle instead of a mediator between the subject and the world.<sup>198</sup> The body blocks one’s ability to engage in the world comfortably and transparently. At the cognitive level, disassociation, of which disembodiment is a kind, can be described as *existence at the body level image*, that is as living through body image or body-

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<sup>194</sup> Butnor and MacKenzie, 202-203.

<sup>195</sup> Ibid., 202-203.

<sup>196</sup> Ibid., 203.

<sup>197</sup> Ataria, 26.

<sup>198</sup> Ibid., 26.

as-object.<sup>199</sup> The alterations in the sense of body while engaged in hostile environments, especially those where hostility is directed at the very body one lives through, necessitates adjustment to a new way of being-in-the-world. These adjustments to one's (dis)embodied mode of being-in-the-world that allow them to navigate or make sense of a hostile environment can better be addressed in relation to the enactivist framing of adaptations to the body schema of the body schema.

## **7.0 Application: Body-Based Trauma and Fatphobia**

In using this phenomenological translation of normativity and sense-making in the context of hostile environments, recalling some of the sensorimotor mechanisms involved, I will discuss the interaction of body schema and body image to analyze cases of disembodiment in the context of fatphobia. I will draw on the work of Ataria and Tanaka in their project on body image and body schema in racism as I apply the tools of body image and body schema from my specific framing of enactivism. Ultimately, this section focuses on cases of disembodiment as coping mechanisms in connection to body-based trauma in hostile environments.<sup>200</sup> After discussing how Ataria and Tanaka utilize body image and body schema concerning racism, recognizing the origins of fatphobia in racist history, I will turn to provide an account of fatphobia as a form of body-based trauma through public weight stigma that often leads to the disembodiment of the stigmatized.

### *7.1 The History of Fatphobia*

It is important to recognize the racist historical roots of Western anti-fat culture in anti-black racist colonialism as well as Christian puritanism of the 18<sup>th</sup> century.<sup>201</sup> This then morphed

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<sup>199</sup> Ibid., 27-28.

<sup>200</sup> Sturgess and Stinson, 52.

<sup>201</sup> Ibid., 52.

into a full-fledged diet culture by the early- to mid-19th century and became medically endorsed by practitioners for the ability of diets to improve health and cure the “sins of the flesh” such as gluttony.<sup>202</sup> Moving forward, our modern diet culture has inherited the “racist, evangelical-medical stance that erroneously conflates thinness with health and morality and fatness with sin.”<sup>203</sup> Thus, Fat people are expected, arguably to the degree of moral obligation, to lose weight due to the incorrect conception of weight as always controllable and fully mutable, and fatness as an external sign of embodying vice, or an unvirtuous body.<sup>204</sup> Under these societal, as well as medical, attitudes toward fat, fat people are stigmatized. Stigma here is described as “an undesired difference that isolates the stigmatized individual from society, a process that ‘spoils’ identity and creates profound feelings of shame.”<sup>205</sup>

The appeal to ‘shame’ inherently calls upon the inflicting gaze of the other, and further the function of the body image to produce feelings of shame. In considering how stigma works to construct a ‘hostile environment’ where one cannot escape the gaze of the other, one then cannot escape the perpetual feelings of shame toward one’s own body or identity.<sup>206</sup> Thus, in the context of fatphobia, fat people experience ‘fat stigma’ or ‘weight stigma,’ explicated as “a social process that ascribes undesired differences and negative stereotypes to fat people.”<sup>207</sup> This weight stigma is often experienced as *public* weight stigma in the form of social media, cinema, public architecture, and so forth. Recall the ability for participatory sense-making. One is engaged with the other, through an extension of body schema in joint attention, to understand these co-constructed meanings in the social world such as systemic and pervasive stigmatizations

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<sup>202</sup> Ibid., 52.

<sup>203</sup> Ibid., 52.

<sup>204</sup> Ibid., 52.

<sup>205</sup> Sturgess and Stinson, 52-53.

<sup>206</sup> Ataria and Tanka, 26-27.

<sup>207</sup> Sturgess and Stinson, 53.

and dispositions towards a group of people or a type of body – i.e., fat. Thus, public weight stigma comes from people and institutions that construct the social world in which one is embedded, and from which one cannot easily escape.

Taking note of the ways in which prolonged stigmatization such as the sort experienced in oppression and hostile environments, Sturgess and Stinson recognize that the typical definitions of trauma do not fit with the trauma associated with oppression and prolonged stigmatization, the authors use an emerging conception of trauma – insidious trauma – that applies to chronic and long-term experiences of oppression. Further, and importantly to the trajectory of this argument, Burstow proposes a radical understanding of trauma that rejects the typical psychiatric conceptualization of it as merely or flatly a disorder.<sup>208</sup> Instead, trauma responses should be framed as reactions to “a kind of wound.”<sup>209</sup> I am trying to make a similar point in treating disembodiment as an adaptive response to hostile environments where one may be subjected to such public stigmatization and insidious trauma toward the body. In this way of viewing trauma associated phenomena such as disembodiment, not as a disorder but a reaction, the experience is taken as embodied. In this embodied, as well as socially embedded, framing of disembodiment as an adaptive response to oppression through stigmatization in hostile environments, the enactivist view becomes especially useful.

## *7.2 Mechanisms for Disembodiment*

Pirana puts forward three mechanisms that work to disembody “the self” from the fat body in the case of public weight stigma that target, specifically, the body image: (1) violations of bodily ownership in which one is subject to body monitoring and policing by others through food choices and appearance; (2) expression of prejudice through invoking one’s body,

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<sup>208</sup> Sturgess and Stinson, 53.

<sup>209</sup> Ibid., 53.

subjecting one's body to slurs and jokes with the goal of shaming; and (3) the flooding of idealized imagery and media of thin bodies and diet transformations that convey a narrative that fat bodies are not the ideal body, and there is "a thin person inside them".<sup>210</sup> This sense of carving up the corporeal body between the fat of the body and the 'true thin person that one *is*' is discussed in detail by Kyrölä and Harjunen as 'liminal fat.' Liminal fat is meant to conceptualize the experiential structures of fat that are shaped by their social world in which fat is seen as transitory, removable, temporary, threatening, continuously disappearing and reappearing, and above all, an unlivable substance.<sup>211</sup> Thus, when instantiated in media, it aims to produce an ideal viewer where one is expected to reject and fear the fat parts of their bodies as being identified with and lived through. Thus, one is encouraged to reject the livability and internality of parts of their body – i.e., disowning (body image) somatic information (body schema).

This analysis of liminal fat, conceptually, is supposed to target the mechanism by which fat is made separate from the "livable 'normal' selves both in personal experiences and cultural representations – even when the current body is felt and lived as fat."<sup>212</sup> What I take liminal fat to show is how fat, taken as a liminal, removable, and temporary substance that morally ought to be both rejected and disappearing, creates the sense in which a very real part of one's body is not able to be lived through. Fat, thus, must be forced out of the plastic boundaries of one's body schema through a hypervisibility or body-image-based corporealization of the fat that one's body possesses. Fat is made into an object and thus poses a paradoxical mode of existence for the fat body. Due to the prevailing stereotypes placed on fat bodies and individuals through weight stigma (unhealthy, lazy, etc.), one is made, not only to feel they do not have the know-how to

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<sup>210</sup> Ibid., 53.

<sup>211</sup> Kyrölä, Kata and Harjunen, Hannele. "Phantom/liminal Fat and Feminist Theories of the Body." In *Feminist Theory* 18, No. 2, (2017): 100-101.

<sup>212</sup> Kyrölä and Harjunen, 112.

navigate the world due to the fat body, but also do not have the know-how to inhabit their body and take care of it. Thus, one is alienated both from the world and from one's own body.

### *7.3 Pluralist Autonomist Enactivist Analysis*

With an understanding of current research on fatphobia and its mechanisms for disembodiment, a more precise account can be provided as to how the body image, shaped by stigmatization, may come to produce body-based trauma in the form of disembodiment, an impairment of the body schema. Again, typical treatments of disembodiment focus only on the impairment of body schema and isolate the instance as a disorder occurring in the patient. In this way, they do not consider the developmental history as involving body image and thus fundamentally being socially contrived. Of specific importance to this application is the sense in which body schema, in relation to performative awareness, is a continuously changing familiarity and know-how of the body in the particular world it encounters. Further, the body image is developed through the intersubjective openness provided by the body schema such that some of the environmental inputs the body schema integrates with other sensory and motor information are likely those of a social kind. Again, recall the primary and secondary intersubjective capacities. If the body schema can extend to incorporate the other and their emotions (empathy) while also being able to enter states of joint attention that help one understand the other's sense-making and intentions of the world and objects within it, we might at least speculate that this creates a pathway for the body image to influence body schema. More importantly, at the mechanistic level, what will be central to this account is the sense in which one's bodily ownership at the level of the body image can be directed at the somatic information of the body schema, such that one can be disembodied in a unique way that requires a close interaction between body image and body schema.

Tanaka and Ataria consider this interaction of body image on the body schema in relation to racism. I will draw from this work to guide their analysis of fatphobia. Fat folk inhabit a hostile environment due to the pervasive exposure to weight stigma as discussed in the three mechanisms for disembodiment. This disembodiment is motivated by a conception of liminal fat where one is urged to disown the fat parts of the body, and thus disown somatic information about the fat body. Further, in the hypervisibility of the fat part of one's body in the objectification of fat in one's social world, the subject begins to live through the stigmatized narratives of the other and see the body as the object in the other's world. In this corporealization, and the narratives about one's body discussed in the work, one begins to see the body as an object and one that does not properly fit in and belong to the world, both socially, and in terms of motor affordance. Specifically, if we look at the material restrictions to fat bodies, the unfamiliarity and lack of social and physical know-how for the body to navigate the world become heightened. In this way, one's mode of sense-making in the world becomes that of restriction and the phenomenal 'I-can-not.' Thus, in the incorporation of stigmatized narratives into the body image, the disownment of somatic information about the fat body, and the general inability to operate with comfort and ease in a thin-centric world, the fat bodily subject is alienated from the world and must seek new modes for being-in-the-world, that is, (dis)embodiment. In explicitly enactivist terms, one's body image is dysfunctional and non-normative due to the disownership of the fat parts of the body. Further, one disowns somatic information of the body in disembodiment, creating an interesting overlap between body image and body schema due to socially influenced body-based trauma. Thus, one must attempt to adapt to the impairment of these systems.

What has yet to be made clear is why, given the multiple avenues of adaptation, those who experience *public* weight stigma adapt to the hostility through their mode of being in the world, and thus, experience disembodiment. As discussed, individuals at this level of complexity have several ways in which to adapt to the environment that involve different levels of normativity and agency. Thus, in the case of fatphobic oppression, one may adapt to the perturbations of their environment upon their well-being along biological, sensorimotor cognitive, or social means. However, it does not seem that adaptations at the biological or social levels are immediately available and as effective. I will consider each option in turn, considering the reality of each adaptation for, specifically, protecting the viability of the stigmatized individual in their embodied and embedded context.

In facing these non-normative functions of the body image, one may attempt to adapt in several ways. First, one may adapt biologically by muting the stigmatized characteristic. In so far as one's stigmatized characteristics are not immediately or entirely mutable, as is the case for weight, this is not a viable mode for adaptation. Thus, one will continue to be stigmatized by that characteristic and corporealized. Additionally, this adaptation of weight loss simply works to embody and act on the very oppressive narratives which have damaged the individual. One is thus actively working to erase the fat parts of their body, perpetuating the narrative that fat is unlivable and transitory, and perpetuating further fatphobic structures in the social world. This will be discussed further below. Additionally, if we conceive of one's leaving the hostile environment as a sort of biological and sensorimotor adaptation, this too is not viable. Hostile environments are systemic and pervasive, unable to be avoided, and are often inhabited out of necessity.<sup>213</sup> At strictly a sensorimotor level, the body schema may try to adapt to the alienated

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<sup>213</sup> Butnor and MacKenzie, 202-203.

and hostile world through an updated system of ‘know-how’ alluded to throughout the chapter. This, however, is not a viable option for the stigmatized body, whose know-how is restricted in a systemic way based on the difficult-to-mute characteristic of fat. This affordance structure of the world for the fat person is built to restrict and exclude fat bodies and becomes part of the sensorimotor loop, integrated by the body schema, thus infecting one’s familiarity or know-how structure pervasively and continuously. Finally, any attempt at social change in the form of changing social conceptions of fat or further structural changes tends to be slow-moving and does not help the stigmatized to regain comfort and functionality in their current hostile encounter with the world. Thus, the most effective adaptation is to alter one’s subjectivity and one’s being-in-the-world in a manner that considers the social affliction of stigma in this body-based trauma, where one’s body does not afford modes for adaption to the hostile environment. Thus, disembodiment works as a protection of one’s own bodily subjectivity.

## **8.0 Current Solutions and Future Directions**

In consideration of the analysis provided on fatphobia and the importance of taking an embodied and socially embedded perspective, it may also be useful to see how this can inform and shift the methods for solutions to mitigating fatphobia in the social world and healing the subject of a stigmatized body in a way that does not pathologize and treat the body as something ill to be cured. Current ‘solutions’ to improve fat people’s lives in oppressive environments are to remove the visible quality which has been “othered” and deemed problematic.<sup>214</sup> This erasure of the quality of one’s living body is proposed to be a solution not just for those who embody a fat body, but also for the thin who are haunted by the potentiality of fat (termed phantom fat in the literature).<sup>215</sup> This solution would be absurd and horrific in other contexts: bleaching non-

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<sup>214</sup> Kyrölä and Harjunen, 111.

<sup>215</sup> See Kyrölä and Harjunen.

white skin, gender reassignment in the case of sexism, or, in the case of homosexuality and queer folk, conversion therapy. The latter has been suggested in the past but is now regarded as horrific by mainstream culture. Further, it led to severe mental health consequences without availing any success. Thus, this solution of eradicating the quality of fat from those bodies that are lived should reach the same degree of rejection. Further, the claims which bolster the eradication solution are unfeasible. The eradication of fat often invokes the prescription of gym memberships and medical visits, two spaces notoriously unwelcoming to fat folk. The medicalization of the fat body reinforces an objectifying gaze, and the materiality and sociality of the gym or even active/exercise spaces are often not built for fat bodies and invoke stereotypes of fat individuals as being lazy, unhealthy, unfit, and thus othered in those spaces.

Similar to Butnor and MacKenzie, following Myers, I hope to add to the literature not simply pertaining to the social application of enactivist views on cognition, but to suggest that our social world has a fundamental role in shaping not simply our experiences as subjects, but our embodied livelihood and its livability *as* bodies – bodily subjects. This calls for embodied and socially embedded, or “corporeally attuned strategies,” for liberation and transformation.<sup>216</sup> This view makes salient how social practices and attitudes are embodied and “social meaning and values [get] encoded in the body.”<sup>217</sup> Understanding how the social world seeps into the body, and can even work to alter how subjects navigate the world, carry their bodies, and live comfortably or uncomfortably within them, calls for more embodied solutions to social issues. Sturgess and Stinson discuss several strategies for healing weight stigma by reconnecting with the body and embodying – living through – fat. The pair suggest embracing a fat-positive identity by embracing bodily needs through intuitive eating, joyful movement, and demanding

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<sup>216</sup> Butnor and MacKenzie, 204.

<sup>217</sup> Ibid., 205.

accommodations for fat bodies.<sup>218</sup> They further suggest embracing fat-positive community and scholarship by participating in fat liberation scholarship and activism, embracing media that is fat-positive, and communing with other fat folk.<sup>219</sup> All of these methods seek to shift the narrative of fat from liminal to livable and establish the subject in their full (fat) embodiment. These methods are at least a start for thinking about corporeally attuned methods of both healing and liberation.

### *8.1 Conclusion*

In this work, I have advocated for pluralist autonomy, following Barandiaran, within the autonomist enactivist approach to cognition. In doing so, a distinction can be made between biological normativity and sensorimotor (cognitive) normativity by establishing the body schema system as providing the individual with sensorimotor autonomy. This approach provides an interesting new merging between scholarship on embodied cognition and the social and psychological analyses of our lived experience through body schema and body image. In showing how the body schema is central for cognition in this embodied mode, conversations in the enactivist project can begin to expand into social considerations through the associated and interacting facet of the body image. Specifically, one future direction may be to consider the role of body image more fully in establishing a third form of autonomy, social autonomy, at the level of social normativity. This may involve further considerations of intersubjectivity. It may be beneficial to this project to pursue empirical work on how it is primary and secondary intersubjective capacities work to associate the body schema and body image through such specialized projects of joint attention on one's own body in triadic interaction with the other. While I have only provided a starting conversation in the merger between body schema and

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<sup>218</sup> Sturgess and Stinson, 55.

<sup>219</sup> *Ibid.*, 55.

enactivist conversations and provided another avenue by which to bring enactivist literature into the social world, there is much left to be explored.

Beyond the theoretical moves this project makes, it also serves to add to a novel and growing body of literature in feminist scholarship on fat embodiment and fatphobia (fat studies). Currently, there is still much to be said about the embodiment of fat and the stigmatization of large bodies. Little expansion has been made onto the concept of liminal fat, which predominantly affects fat bodies. Phantom fat, a concept in which fat haunts the bodies of all individuals in a fatphobic society, has received much attention, however, this does not work to actively address the body-based trauma and lived bodily experience of fat folk. Centering the conversation on fat as a phantom object, and not fat as it is “culturally amputated” from lived bodies seems to perpetuate the erasure of fat bodies. Future research should continue to approach fat as it is embodied and not merely as it is phantomized and turned into an abstract threat. Priority should be given to the lived body, the reclaiming of fat in embodiments, and strides taken to allow for comfort and belonging for those individuals both in their own embodiment and for being-in-the world. This requires corporeally attuned strategies and treatment of body-based trauma not as a disorder or pathology, but as an adaptation to a hostile world worth changing for the alienated to reinhabit.

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