

# **Autopoietic Enactivism, Phenomenology and the Deep Continuity Between Life and Mind**

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## **Abstract**

In their recent book *Radicalizing Enactivism. Basic minds without content*, Dan Hutto and Erik Myin (H&M) make two important criticisms of what they call autopoietic enactivism (AE). These two criticisms are that AE harbours tacit representationalists commitments and that it has too liberal a conception of cognition. Taking the latter claim as its main focus, this paper explores the theoretical underpinnings of AE in order to tease out how it might respond to H&M. In so doing it uncovers some reasons which not only appear to warrant H&M's initial claims but also seem to point to further uneasy tensions within the AE framework. The paper goes beyond H&M by tracing the roots of these criticisms and apparent tensions to phenomenology and the role it plays in AE's distinctive conception of strong life-mind continuity. It is highlighted that this phenomenological dimension of AE contains certain unexamined anthropomorphic and anthropogenic leanings which do not sit comfortably within its wider commitment to life-mind continuity. In light of this analysis it is suggested that AE will do well to rethink this role or ultimately run the risk of remaining theoretically unstable. The paper aims to contribute to the ongoing theoretical development of AE by highlighting potential internal tensions within its framework which need to be addressed in order for it to continue to evolve as a coherent paradigm.

**Key Words;** Anthropocentrism; anthropomorphism; anthropogenic stance; autopoietic enactivism; enactivism; Hans Jonas; phenomenology; radically enactive cognitive science; strong life-mind continuity thesis;

## Introduction

There is no abating the ever increasing popularity and influence of enactivism both in philosophy and cognitive science. With a steady flow of important publications and regular conferences it now deservingly demands serious attention as a theoretical alternative to mainstream cognitivist accounts of mind and cognition. It should then come as no surprise that with this increase in influence and popularity various distinct yet related takes on enactivism have emerged.

The “enactive approach” originally stems from the seminal work of Varela, Thompson and Rosch introduced in "The Embodied Mind" (1991). This work presented a rich synthesis of mutually complementing ideas with roots in a variety of disciplines such as early cybernetics, second-order cybernetics, biological autopoiesis, continental phenomenology and theoretical biology to name but a few. Over the ensuing decades, and with the concept of autopoiesis at its core, this synthesis has coalesced into *the* canonical position within the wider enactivist community. Daniel Hutto and Erik Myin have, perhaps misleadingly<sup>1</sup>, dubbed this variant of enactivism *Autopoietic Enactivism* (hence AE)

AE presents itself as a unified alternative framework for cognitive science which rejects internal mental representations and the various notions of computationalism/information-processing which come with it. In its place it proposes a strong life-mind continuity thesis (SLMCT) and argues that autonomous living organisms bring forth intrinsically meaningful worlds through processes of sense-making grounded in dynamic patterns of embodied coupling with the environment (cf. Di Paolo 2005; 2009, Froese & Di Paolo 2011; Thompson 2007; Stewart, Gapenne & Di Paolo 2011).

Over the past decade the enactive approach has become somewhat more fragmented as the term has been increasingly applied more liberally and co-opted into other areas of research. In parallel with the ongoing refinement of AE several other theoretical

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<sup>1</sup>The notion of autopoiesis has undoubtedly strongly influenced the development of AE. Nonetheless there is at least one sense in which "AE" is potentially misleading. Although the original formulation of autopoiesis has served as the main inspiration for AE, the theorists which heavily draw from it have gradually moved away from and continue to refine the original formulation (see Colombetti 2010; Di Paolo 2005; 2009; Thompson 2007; 2011a).

accounts inspired by the original proposal have emerged. These alternatives are marked out by the fact that they tend not to endorse or sometimes simply downplay the notion of autopoiesis. Nonetheless these accounts follow the original enactivist proposal in advocating situated embodied couplings with the environment and rejecting, in varying degrees, notions of internal mental representations and computation. The most prominent of these accounts being the *sensorimotor enactivism* (SE) account of visual perception developed by O'Regan & Noë (2001) and more recently *radical enactivism* (REC) as advocated by Hutto & Myin (2013).

This paper is situated in the context of these ongoing developments and aims to contribute to the theoretical discussions of enactivism by exploring some recent concerns raised against AE by H&M (2013, p. 34-36).<sup>2</sup> These concerns, I will attempt to show, raise important theoretical questions which AE cannot afford to ignore. Here I will take my cue from De Jesus (2014) who has tentatively suggested that these concerns can be traced back to a potential incompatibility between phenomenology and a SLMCT. Following this suggestion I will present a reading of the phenomenological dimension of AE which gives *prima facie* support to the concerns raised by H&M. This reading further highlights that this phenomenological dimension contains a number of conflicting intuitions which have been tacitly incorporated into the wider AE paradigm and are, so I shall argue, in need of further clarification.

The paper starts by briefly introducing AE and REC followed by the REC criticisms of AE. The following three sections delve deeper into the underlying theoretical tenets of AE in order to establish how and whether it is capable of answering the REC critique. What these sections end up unveiling is an uneasy tension between a commitment to certain phenomenological considerations on the one hand and the commitment to a SLMCT on the other. In the final analysis it is suggested that the commitment to the phenomenology of Hans Jonas not only leaves AE incapable of providing a satisfactory answer to the REC critique but, perhaps even more problematically, appears to lead to uneasy tensions within its wider theoretical framework. The paper concludes with a

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<sup>2</sup> Unless otherwise specified all reference to H&M refer to their (2013) book.

brief discussion on some of the possible implications this analysis has for future research.

### **Autopoietic Enactivism**

Central to AE and indeed most varieties of enactivism is the conviction that in order to fully understand cognition, at whatever level of complexity, it is required that one takes living organisms as active embodied subjects dynamically coupled to, and interacting with, their respective environments. Unlike cognitivism, which sees cognition as a form of detached contemplation grounded on the manipulation of abstract mental representation in the head, enactivists see cognition as essentially the spatial-temporal and extended self-organising activity of embodied situated living organisms. Activities which are fundamentally dynamic, non-linear and grounded on the interactions between the organism and its inherently meaningful environment.

Cognition can only be fully understood with reference to these ongoing interactions between organisms and their environment, interactions which importantly need not involve, nor require, mental representations. Enactivism explicitly rejects traditional cognitivist notions of mental representations and the passive computational input-output conceptions of cognitive processing so prevalent in cognitive science.

But how exactly does AE differ from this more "general" enactive stance? At the centre of the AE framework is a commitment to a *strong* continuity between life and mind developed around the notion of autopoiesis. AE proposes that cognition itself is a phenomenon which emerges from the embodied activities of all self-organising and self-creating/self-producing dynamics of *autonomous living* systems. It is from this key idea that the commitment to the SLMCT stems and whereby AE assumes that mind needs to be understood within the broader context of the conditions for *life* (cf Thompson 2007; 2011a; 2011b).

It is within the context of SLMCT that the notion of autopoiesis acquires its central importance. Thus the fundamental feature of AE, that which distinctly sets it apart from both SE and REC, is the central role that the notion of autopoiesis *and* adaptive

autonomy play within its framework. Autonomy was initially conceived as a generalisation of autopoiesis by Varela (1978) and subsequently developed and refined over the ensuing decades by AE (e.g. Di Paolo 2005; Thompson 2007).

Autopoietic theory was originally developed by Maturana & Varela and refers primarily to the *distinctive organisation of living systems*. Maturana & Varela (1980) coined the term "autopoiesis", which means self-production (or self-creation), so as to highlight the organisationally closed but structurally - materially and energetically - open organisation of a living system. Such systems consist of a network of components which produces the very network and a boundary which individuates it from its surrounding medium. As a consequence these systems are tightly *integrated systemic wholes* individuated from their environments by virtue of their internal organisational structure.

Further developing these ideas, AE proposes that organisms are not only autonomous, but *adaptively* autonomous by virtue of the fact that they need to actively strive to maintain systemic integrity. Thus organisational dynamics provide the system with systemic stability while the processes which result from it contribute to the maintenance and ongoing persistence of systemic unity. Such a system is said to be an autonomous self-preserving adaptive *agent* which actively strives to maintain its own structural stability and integrity. Organisms are accordingly conceived as agents which: "define themselves as individuals as an ongoing endeavour and through the actions they generate" and as a consequence "have goals or norms according to which they are acting" (Barandiaran et al., 2009, p. 3).

From this perspective, cognition is the direct result of an organism's adaptive interactions, referred to as the system's *sense-making* activities by AE, whereby it "enacts" or "brings forth" its own world of *meaning* and *significance*. These sense-making processes are further argued to be goal-directed and the product of an *intrinsic teleology* which, as we just saw, springs from the system's autonomous adaptive organisation. Organisms can thus be said to have a unique perspective, a *point of view*, on the environment. As alluded to above the most general purpose of such systems is

the strive to maintain systemic integrity and stability while more specific purposes are the result of structural and environmental differences.

To illustrate the general idea consider the difference between living systems and mechanical devices. According to AE, in machines “no intrinsic force or process is lumping the components together, nor has the system as a whole (independently of us) a specific way of functioning and demarcating itself from the rest” (Barandiaran et al., 2009). By contrast, neither the individuality nor the functionality of living systems is something projected by the observer, but recognised from their intrinsic systemic autonomous organisation. Living systems are self-referential agents which define their own systemic identities (from the inside out) and enact their own inherently meaningful environments through adaptive processes of sense-making.

Let us now turn our attention to a more recently developed variant of enactivism dubbed by its authors as “radical enactivism”.

### **Radically Enactive Cognitive Science**

As its title suggests, H&M develop a particular take on embodied cognition which has its closest affinities with enactivism. However, the authors are quick to distance themselves in certain key respects, from both AE and SE schools of enactivism. H&M argue that the latter assumes that one needs “knowledge” to experience the world. While the former claims that an organism's worldly engagements create and carry “meaning” (p. 34). For H&M the central problem for both these types of enactivism is that they are essentially just not *radical* enough. But how so?

H&M locate the source of this conservatism in a residual commitment to representationalism, of which they identify two variants, present in most current approaches in cognitive science. Proponents of “CIC” (“Cognition Necessarily Involves Content”) are committed to a form of hyper-intellectualism which maintains that representational content in the brain is a necessity for genuine cognition; while proponents of “CEC” (“Conservative Embodied/Enactive Cognition”) endorse embodiment but it is deemed conservative because it retains CIC’s commitment to the

idea that basic cognition is representational and as such involves (informational) content.<sup>3</sup> According to H&M, only creatures with fully developed conceptual abilities scaffolded by public language, can or need be, described in content-involving terms. Moreover, while significantly important, this is but the tip of the iceberg as far as the broad spectrum of cognitive abilities are concerned. The significant majority of cognitive activities are non-contentful and non-representational in character.

Not unlike the early (anti-representationalist) research on behaviour-based robotics epitomised by the work of Rodney Brooks (1991), H&M defend a conception of "basic minds" which serves as the grounds for their radicalisation of enactivism. The authors thus introduce "REC" (Radically Enactive (or Embodied) Cognition) as an alternative to representationalism. REC is proposed as a naturalist theory of mind which argues that basic minds<sup>4</sup> do not contain nor process informational content.

For REC, basic cognition is constituted by the concrete patterns of environmentally situated organismic activity that unfolds over real time. These interactions are essentially nonlinear and loopy, making it impossible to clearly demarcate an "inner" domain of mentality from an "outer" domain of environmental causal factors. Rather, basic cognition involves brain, body and environment tightly interconnected in a mutual and simultaneous dance of reciprocal influence. The phenomenal properties of experiences are similarly understood in terms of specific types of activities, "even if only neural activity" (p. 8). This further commits the authors to a "Developmental-Explanatory Thesis". The idea here is that "mentality-constituting interactions are grounded in, shaped by and explained by nothing more than the history of an organism's previous interactions" (p. 8).

With the articulation of these two theses H&M not only provide a straightforward foundation for thinking about basic forms of embodied/embedded cognition, but also grounds for outrightly rejecting CIC and indeed other approaches endorsing

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<sup>3</sup> Many thanks to a reviewer for helping clarify the distinction between CIC and CEC.

<sup>4</sup> H&M appear fairly happy to allow for "complex" human minds, at least certain aspects thereof, to contain and process informational content. The authors nonetheless leave it as an open question how we should best understand the use and interpretation of semantic information.

representationalism. Furthermore, the claim that content-based accounts of cognition are neither needed nor best placed to explain a wide range of cognitive capacities is strengthened by drawing from empirical research in dynamic modelling and Artificial Intelligence/robotics. Behaviour-based robots for example exhibit successful navigation because they interact with their environments directly and without the need for a mediating representation/mental model of the world. For H&M this and related work<sup>5</sup> provides strong *prima facie* support for the thesis that cognitive activity need not be described in representational terms.<sup>6</sup> Thus contrary to CIC, which assumes that *all* cognitive activity requires planning enabled by computations with representation, REC can provide a perfectly workable alternative account of intelligent action.

Somewhat surprising is the fact that, unlike the great majority of approaches in embodied cognition, H&M target not only proponents of traditional computational accounts of mind, but also more non-traditional accounts closer to their own, including enactivism. H&M argue that although proponents of what they deem to be "less radical" embodied views, including both SE and AE, share central themes and concerns which are broadly consonant with REC, such as the emphasis on the active and world-engaging nature of cognition and perception, it is nonetheless the case that these non-REC accounts remain tacitly committed to representationalist thinking. For this reason H&M maintain that only a thoroughly radical anti-representationalism can save enactivism. Indeed, if enactivism is pushed to its logical conclusion then REC is the outcome, therefore "the only good enactivism is a properly radical enactivism' (p. 5).

In the next section we will present a more in depth discussion of REC's criticisms of AE.

### **The H&M Challenge to Autopoietic Enactivism**

H&M have two related but somewhat distinct concerns about AE, taking these together I will collectively refer to them as the *H&M challenge*. The first concern as already

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<sup>5</sup> See (pp. 39-56) for discussion of the research H&M draw from.

<sup>6</sup> Note that here I put aside H&M's "master argument", what they call the "hard problem of content", against representationalism. Though this is a crucial argument for REC it is less relevant for the broader discussion of this paper.

noted above has to do with a tacit commitment to *mental representations* while the second relates to the *metaphysical/ontological nature of cognition* itself. In this section I will elaborate on and then attempt to clarify the H&M challenge.

Let us take the concern over representations first: how are we to make sense of the idea that AE harbours unexamined commitments to representationalism? This is a particularly striking claim since from the outset enactivism was forceful on its anti-representationalist underpinnings. For example, Varela et al (ibid, p. 9) maintain that: "We propose as a name enactive to emphasise the growing conviction that cognition is not the representation of a pregiven world by a pregiven mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs".

H&M argue that they take this directly to heart and indeed place it at the centre of their account but insist that AE does not. According to H&M this is particularly evident in the type of *language* AE uses to speak about basic minds, which they take to be an indication of underlying theoretical commitments. For H&M, claims made by Varela and colleagues that organisms "enact," "constitute" or "bring forth" a world as they perceive it, are at the root of the problem. Not only do they smack of idealism they are also only bound to lead to confusion. H&M are thus particularly uncomfortable with the vocabulary AE uses to describe basic minds because, disguised by these inappropriate linguistic notions, are the lingering, even if only tacit, affinities to representationalism. In H&M's assessment these are affinities which AE inherits from the original formulation of enactivism and has not shrugged off.

We can unpack this first part of the challenge into two related but distinct aspects; (1) notions of "meaning" are either A, left unexplained or B, imply content which in turn imply mental representations and (2) notions of meaning, sense-making, interpretation etc, are also all *phenomenological concepts* which *apply to human beings only* and thus should not be misapplied to nonhuman lifeforms or basic minds. These are all standardly content-involving activities and so, either these notions are taken at face value or they need explicating to explain how and why they don't have standard

implications.<sup>7</sup> According to H&M AE is guilty on both these counts and so needs *rectifying*.

The considerable ambiguity in the literature relating to the exact meaning of the phrases that H&M highlight are in no doubt to blame for giving rise to this sort of skepticism. Indeed a number of theorists (e.g. Di Paolo 2009; Oyama 2011; Wheeler 2010; 2011; Welton 2011) have pointed out that these claims are too closely aligned to internalism for comfort. Consequently there has been a push to steer AE away from such internalist trappings (see Di Paolo 2009 for a good account of this). Understood within the context of internalism the accusation of representationalism becomes immediately more understandable.

Here however I will not pursue this line of thought any further. Rather my strategy will be to focus mostly on the second part of the challenge in order to shed some light on the first. The second part of the concern relates to the ontological status of cognition and subsequently how best to conceive, explain and understand its true nature, Although directly connected to the first part of the challenge it will be helpful to take it as distinct.

Regarding the second part of the challenge the issue is best captured by H&M's own assessment of the difference between REC and AE. According to H&M: "REC ... goes further than Autopoietic Enactivism, for it rejects all remnants of the idea that organismic responses relevant to basic mentality are responses that create, carry, and consume meanings" (p. 34). It is on the basis of this claim that H&M go on to take issue with AE's "quite liberal understanding of the nature of cognition" (ibid. 35). H&M maintain that "Talk of "cognition," "interpretation," "sense-making," "understanding," and even "emoting," in describing the responses of simple living systems is misplaced and misleading" (ibid. 35). In contrast to AE, living systems with basic minds, "are capable of an intentionally directed responding of a kind that when suitably augmented provides a necessary platform for cognition, interpretation,

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<sup>7</sup> Many thanks to a reviewer, who's detailed comments on this issue have enabled me to make these points clearer.

understanding, sense-making and emotions; however, their activities do not, in and of themselves, qualify as these forms of mentality" (ibid. 36).

As with the first part of H&M's challenge the second part also has two distinct aspects one epistemic the other ontological; (1) epistemically speaking there is here again a general distrust for the vocabulary<sup>8</sup> used by AE to talk about basic minds and (2), ontologically speaking, according to H&M basic minds *lack* the sort of mentality (higher-level)<sup>9</sup> AE maintain such systems possess. H&M appear ready to accept that the activities of creatures with only basic minds are located somewhere between simple mechanism and full-blown planned action, but they are not prepared to go as low as AE does in claiming basic minds have the higher-level properties they do. From an ontological perspective H&M endorse the view that basic minds can only serve as the *basis for*, but are themselves *not* endowed with, more advanced types of content-involving cognition (see also Hutto 2013). The types of cognition the AE theorists argue *are* already evident in basic minds.

In most respects the ontological dimension of the second part of the H&M challenge can be understood to take centre stage. Once understood in this manner the fundamental question AE really needs to answer is; why should we accept that cognition (in the distinctive manner advocated by AE) goes all the way down the phylogenetic scale to single celled organisms? Indeed, we can then assume that if the AE theorist can provide a satisfactory answer to this question, he would have gone some way towards answering the broader H&M challenge. So, is AE in its current theoretical form, capable of adequately addressing the H&M challenge? Or is it truly the case that REC is the only viable variety of enactivism?

As the previous paragraph indicates, in order to answer this question I will frame the subsequent discussion around the ontological dimension of the second part of H&M's

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<sup>8</sup> Again, as noted above, this is due to the fact that H&M take this to be a clear indication of undesirable theoretical commitments.

<sup>9</sup> Note, as just highlighted in the previous paragraph, that unlike AE H&M take "interpretation", "sense-making", "understanding" and so on, to be "higher level" cognition.

challenge. To do this we will in the next section delve a bit deeper into AE's theoretical underpinnings.

### **The Phenomenological Dimension of Strong Life-Mind Continuity**

The H&M challenge is urging us to delve deeper into AE's theoretical underpinnings and this is what we will begin to do here. The key to understanding how AE could address this challenge rests on two of its core theoretical tenets. We thus need to understand the distinctive role of *phenomenology*<sup>10</sup> and the importance it has in relation to AE's *distinctive* conception of the SLMCT. This section explores these two notions at the heart of the AE paradigm.

#### *Life-Mind Continuity*

We noted above that one of the two central pillars of AE is a commitment to a *strong* life-mind continuity thesis. As Wheeler (2011) notes: "one of the ground-breaking themes in Evan Thompson's rich and thought-provoking book (...) is his distinctive development and defence of an idea that he calls the deep<sup>11</sup> continuity of life and mind". The idea of life mind continuity is succinctly articulated by Andy Clark as follows: "In more concrete terms, the thesis of strong continuity would be true if, for example, the basic concepts needed to understand the organization of life turned out to be self-organization, collective dynamics, circular causal processes, autopoiesis, etc., and if those very same concepts and constructs turned out to be central to a proper scientific understanding of mind" (Clark 2001, p. 118).

From the perspective of SLMC there is a shared basic set of organisational properties between life and mind and those organisational properties distinctive of mind are "an enriched version of those fundamental to life. Mind is life-like and life is mind-like" (Thompson 2007, p.128). A prerequisite for mind is life, just like life mind can

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<sup>10</sup> The term "phenomenology" has different meanings across different fields, here it is used in the sense originally proposed by Husserl and further refined and developed by the phenomenological tradition in philosophy, as the *systemic study of the structures of consciousness as experienced from the first-person perspective and their instantiation in the human body and social intuitions and objects* (for an excellent introduction to the field see Gallagher 2013). Here, unless otherwise specified, it will be primarily the phenomenology of Hans Jonas which will be of concern.

<sup>11</sup> In this paper I will use the word "strong" rather than deep as Thompson does in this quote. The two words are however synonymous in this context.

only emerge out of certain organisational structures, therefore life and mind are conceived as continuous. Accordingly the difference between mind and life is essentially one of degree and not in kind.

This conception of a SLMC has some ontological and methodologically interesting consequences which have been particularly appealing to embodied approaches to cognition. From an ontological perspective the most attractive being the potential for a unified theory of life *and* mind. As Clark (ibid) highlights, if the life-mind continuity thesis proves to be correct then it implies that its applicability will be wide ranging and provide the theoretical foundation not only for "lower-level" adaptive behaviour but also for the most sophisticated of human cognition. While methodologically this would imply that mind has to be studied in the broader context of living systems and not merely as dead abstract computational processes. AE theorists (e.g. Colombetti 2014; Froese 2011; Froese & Di Paolo 2009; Froese & Ziemke 2009; Di Paolo 2009; Di Paolo et al., 2010; Stewart 2010; Thompson 2007; 2011a,b; Weber & Varela 2002) fully embrace these ideas and give them one important further twist.

For the AE theorist, although this idea has much in common with what others (e.g. Godfrey-Smith 1994, Wheeler 1997; Maturana & Varela 1980) have also called the "strong continuity thesis of life and mind", the AE conception of the thesis goes much further in one important respect. According to Thompson, these theorists have tended to centre their focus exclusively on *organisational, functional/behavioural* properties, and as a consequence have overlooked the "phenomenological dimension" crucial to an adequate understanding of life-mind continuity. But what exactly does this mean? It is at this stage that, with the aid of certain phenomenological insights, AE gives its "further twist" to life-mind continuity. It is these insights that help AE account for the *neglected dimension of interiority and subjectivity* which it argues is pervasive across the phylogenetic scale.

Drawing primarily on the work of the existential bio-phenomenologist Hans Jonas, Thompson succinctly captures the idea when claiming that "certain basic concepts needed to understand human experience turn out to be applicable to life itself" (2007, p.

129). That is, some existential structures of human life are but enriched aspects constituting all life. The crucial move here is that AE goes beyond mere objectivist behavioural/functional continuity towards a richer and more radical *phenomenologically informed* (and endowed) continuity. In so doing AE goes beyond a mere SLMCT and adopts what we might call a *SLMCT+*.<sup>12</sup>

It is a phenomenological analysis of *life itself* which helps secure *intrinsic teleology* and with it cognition, meaning, sense-making, interpretation, or even non-reflective human forms of engagement. Thus phenomenology provides not only the grounds for what is truly radical about AE but also an answer to the H&M challenge. But how exactly does phenomenology, and indeed what type of phenomenology, guarantee these properties across the animal kingdom and so provide the grounding for a SLMCT+? The answer to this particular question is derived from the work of Jonas to which we now turn.

#### *Jonasian Phenomenology and SLMCT+*

To better understand how the phenomenology of Hans Jonas informs AE's particular conception of cognition, and indeed grounds the move from SLMC to SLMC+, it will be helpful to briefly put it in the context of Kant's conception of living organisms. Kant (2000) conceived of living systems in terms of a special kind of self-organising reciprocal causality. Peculiar to these systems is a distinctive type of organisation in which all relations of cause and effect within the system are also at the same time relations of means and purpose. That is, there is a reciprocal influence in which the parts of a system are dependent for their existence on their relation to the whole and the whole is possible only through its parts. Every part of the system exists both for every other part in the system and is also reciprocally produced by them. By virtue of this circular self-organisation Kant argued that cause-and-effect relations are also means-ends relations.

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<sup>12</sup> Note here that this move *does not* mean that AE forgoes the organisational/functional dimension of SLMC, only that this dimension is now endowed with an extra phenomenological dimension not appreciated by proponents of a mere SLMCT. My gratitude here to a reviewer for pressing me on this point.

Thus, unlike inanimate systems which can be fully explained and accounted for purely in terms of physical processes operating on mechanistic laws, living systems are altogether different in kind. Living systems, Kant maintained, are "organised beings" whose organisation cannot be accounted for simply in terms of mechanistic laws. It is as a means to understand living nature that we make use of *teleological judgement* rather than mechanical explanations. It is precisely because we are incapable of deriving the workings of living systems mechanistically, from the basic properties of unorganised matter, that according to Kant we are *forced to* explicate living systems teleologically in terms of *aims* and *purposes*.

Similarly to the notion of autopoiesis introduced above, Kant conceives of living systems as self-organising systems which are actively self-maintaining and so both cause and effect of itself. However, whereas AE maintains that this serves (together with adaptivity) as the grounds for intrinsic teleology, meaning and sense-making, Kant argues that this is merely a projection of an observer. For Kant, intrinsic teleology is "regulative and not constitutive" and as such is only a "guideline" that is "without harm to the mechanism of nature" (CPJ §67, 5:379). In other words, according to Kant there is no purpose or acting according to ends or goals in the domain of nonhuman living animate nature and intrinsic teleology is not an *ontological principle* but rather an *ascriptional epistemic* one. By contrast, as we already noted, AE stringently maintains that teleology of the living *is* a real ontological principle,

So now we need to ask what is it that tips the scales in favour of AE rather than Kant, why should one accept this ontological claim? What guarantees this intrinsic rather than ascriptional status of teleology to nonhuman lifeforms? As Thompson (*ibid*, p. 54) recognises: "How do we know our linguistic descriptions are not simply observer-relative, but rather correspond to symbolic structures that belong to the system itself and play a role in its operation?" The answer to this question according to the vast majority of AE theorists who draw their inspiration from Hans Jonas (cf, Froese 2011; Froese & Di Paolo 2009; Froese & Ziemke 2009; Di Paolo 2003, 2005; 2009; Thompson 2007, 2011a,b; Varela & Weber 2002) can be directly found in the *phenomenology of human experience itself*. But how exactly?

According to AE, the intrinsic teleology of the living is indeed a real ontological principle which can now be accounted for not only by developments in theories of self-organisation and autopoiesis, developments not available to Kant, but more importantly by introducing *phenomenological* considerations and argument. It is at this precise point that the phenomenological insights of Jonas become crucial for AE, enabling it to argue for the ontological reality of intrinsic meaning and teleology across the natural phylogenetic scale and so move from a mere SLMC to a more radical SLMC+. It is Jonas which provides the argumentative impetus for the claim that evolutionary speaking even the simplest of single celled organisms, *pace* H&M, *are in significant ways similar to us*.

For Jonas, the dimension of “inwardness” (a phenomenological inner dimension) and by implication teleology, has to begin with the emergence of life itself which has metabolism as its essential source. With this notion of metabolism at hand, Jonas goes on to draw from Darwinian evolution to argue that not only does it provide grounds for displacing the prevalence of anthropocentrism, it also grounds the inwardness of other living organisms. As a consequence, human beings do not lose their inwardness as materialism would have us believe, since this inner dimension would be hard to negate, but rather, it is other living creatures which acquire theirs. Thus for Jonas the continuity between human beings and other lifeforms can be seen to serve as a kind of basic methodological principle which informs his philosophy of nature and mind. Renaud Barbaras (2010, p. 91) succinctly captures the essence of Jonas’ views on life and mind when pointing out that this “description of life is situated at the point of convergence between a physcobiological approach to living organisms, which identifies them as forms of metabolism, and an anthropocentric approach, which we might also describe as a phenomenological approach, which makes it possible to specify the metabolism of living organisms by adding a dimension to which we have access only through our own embodied first-person experience”. By virtue of the move from

SLMC to SLMC+ it is this “phenomenological approach” which will be of central concern here.<sup>13</sup>

The reason we are justified in claiming nonhuman lifeforms possess an inwardness from which stems intrinsic teleology, meaning, sense-making and the like, rests in *our own undeniable embodied experience of teleology, meaning, sense-making* and the like. Our very own embodied experience of being purposeful agents provides us with undeniable evidence for the intrinsic teleology of other lifeforms. For this reason Jonas maintains that, "the teleological structure and behavior of an organism is not just an alternative choice of description: it is, on the evidence of each one's own organic awareness, the external manifestation of the inwardness of substance. To add the implications: there is no organism without teleology; there is no teleology without inwardness; and, life can only be known by life" (1966, p. 91).

It is Weber and Varela (2002) who first explicitly suggest that autopoiesis can productively be linked to Jonas' phenomenological approach to biology. In their seminal paper Weber & Varela (ibid. p 110) take Jonas' insight as their point of departure and state that; "It is actually by experience of *our* teleology – *our* wish to exist further on as a subject, not our imputation of purposes on objects – that teleology becomes a real rather than an intellectual principle (...) In observing other creatures struggling to continue their existence – starting from simple bacteria that actively swim away from a chemical repellent – we can, by *our own evidence*, understand teleology as the governing force of the realm of the living (Weber & Varela ibid, p. 110 *emphasis added*).

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<sup>13</sup> Note here, as the Barbaras' quote also nicely highlights, that there are *two* interconnected demissions to Jonas' conception of life and mind. The metabolic dimension which can be considered to roughly correspond to the organisational/operational (autopoietic) side of the system and the phenomenological dimension which corresponds to its inner/subjective (teleological) side. In what follows I will have nothing much to say on Jonas' views on the metabolic side of living systems. This is not because I don't take them to be important or informative, but rather, because I take them to be subsumed (at least in the context of SLMC+) by the phenomenological dimension. The introduction of Kant, and indeed the H&M challenge, is meant to illustrate this point. Recall that what is at stake between Kant and AE is the intrinsic status of teleology. Recall moreover that all parties appear to agree that living systems have a distinctive type of organisation. The fact that it is the inner dimension of nonhuman living systems which is in dispute here, manifested in the move from SLMCT to SLMCT+, is ultimately what motivates my decision.

Thus consider the description of a wave in terms of a pattern of oscillating particles in a continuum. Jonas notes that once we know the relevant properties of each particle we would also know all there is to know about the wave and so for this reason though the wave can now be understood and so described as an independent entity, this would merely be a useful, though fictitious, way of seeing the phenomenon of oscillating particles. Similarly, one could epistemically describe an organism as the locus of material and energetic flux, in terms of its form. And indeed, for Jonas this will be how a disembodied mathematician intellect would see life, simply as a "lifeless" system constituted by fleeting objective physicochemical events. From the perspective of such an intellect there would be no inherent difference between a wave and a living organism.

However, we can do much better than a disembodied intellect. In the words of Ezequiel Di Paolo who here is expounding on Jonas' account, "We can ascertain beyond any shadow of a doubt that organisms have an identity beyond the epistemological convenience of detached description. The way we know this for certain is simply that *we are organisms*. We know by the *direct availability* of our bodies and by our struggles that we are indeed one of these entities (...) We have, as Jonas puts it, *inside knowledge* – a knowledge that is not available to a disembodied and mathematical mind" (2003, p. 25. *Emphasis added*). Ultimately, for Jonas what characterises life itself can only be revealed to me in the *phenomenological experiential domain*, through the experience that I have of my own lived existence. It is on "the strength of the immediate testimony of our bodies that we are able to say what no disembodied onlooker would have a cause for saying" (Jonas 1966, p. 79).

Similarly according to AE, we are capable of recognising intrinsic teleology because it resembles what Thompson (2007, p. 163) calls: "the form of our own bodily selfhood, which we know first-hand". Which according to Thompson (ibid, p. 164) amounts to a transcendental, in the phenomenological sense of the word, argument. It provides the *conditions of the possibility* for knowing life because we have this biological knowledge first hand. Thompson goes on to reformulate the general transcendental line of thought as follows: Firstly, certain observable phenomena can only be adequately

accounted for, and so require the concepts of, organism as a self-organising unity and autopoiesis. Secondly, the source of meaning of both these concepts *stem from our lived body*, that is our phenomenological first-person experience of our lived bodily experience. Thirdly, these concepts and the respective biological framework in which they are embedded, are not derivable from an observe-independent, non indexical, objective, physico-functional description.

It is for these reasons that AE can confidently endorse the view that cognition, in the very distinctive manner it proclaims, *pace* H&M *can* be found in the most simple of lifeforms. By bringing these two strands together, objective self-organisation and autopoiesis on the one hand and the interior phenomenology of the living gleaned from the first-person perspective on the other, AE argues that we can equally correct and so move beyond both the regulative and ascriptional teleology of Kant and H&M's challenge, in the process guaranteeing the intrinsic *ontological* teleology and immanent purposive sense-making of nonhuman lifeforms.

In sum, according to AE we are justified in assuming teleology and purposeful sense-making in nonhuman lifeforms because of our own firsthand embodied experiences. It is first and foremost because we are embodied living beings with a first-person perspective which allows us to *judge* other autopoietic organisms as intrinsically teleological. As Jonas notes "Life can only be known by life". It is in this distinctive manner that phenomenological considerations ground the SLMCT+ and provide an answer to the ontological dimension of H&M's challenge. In the next section we will assess these claims.

### **Jonas, the Ontology of Intrinsic Teleology and the Argument from Analogy**

In the previous section we explored how AE moves from a SLMCT towards a more radical SLMCT+ and in the process answers to H&M's challenge. But how persuasive is this move? In this section I will discuss two closely related potential difficulties for AE's response. Firstly, the possibility that the phenomenological arguments are incapable of grounding the ontological status of teleology and secondly, the possibility

that the phenomenological arguments could be understood to involve an argument akin to an “argument from analogy”.

### *Phenomenology and Intrinsic Teleology*

Evan Thompson emphasises that the main point of the phenomenological considerations is to make the case that *experience itself* (with regards to both human and nonhuman lifeforms) cannot and should not be neglected. A point well taken in my view but one which sidesteps a deeper issue. What remains an open question is whether Jonas' phenomenological insights can provide the *ontological* grounding for intrinsic teleology and sense-making in other lifeforms? Or to put the issue in different terms, but which essentially boils down to the same question, does it provide a sound theoretical grounding for AE's SLMCT+?

Recall that while the AE theorist argues that certain phenomenological insights derived from the human condition give us good enough reason to secure the ontological validity of intrinsic teleology in nonhuman lifeforms, Kant maintains it to be only an *analogy*. At first glance it would appear that there are good reasons to be cautious of the AE claim. The central problem here is that the phenomenological considerations can at best only explain why we are able to develop the *concept* of intrinsic teleology,<sup>14</sup> but these cannot guarantee its ontological objectivity. The fact that I experience myself as a teleological being does not and cannot by itself guarantee the ontological validity of such experiences in other nonhuman lifeforms.

Curiously there already appears to be an implicit recognition of this point in the AE literature. Thus consider Froese & Di Paolo (2009) claim that: "Of course, strictly speaking phenomenology is concerned with one's own lived experience, so it might appear strange that we want to generalize some of its insights to life as such. It is beyond the scope of this paper to argue for this claim more fully, except to point out that we do have second-person access to the experience of others (...), and that this can evidently include some other forms of life. Moreover, we can correlate our experience

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<sup>14</sup> Indeed, as a reviewer of this paper pointed out, even if this much were to be granted, how would this secure sense-making, subjectivity and the like?

with our biological conditions and this enables us to justify from the third-person perspective that other organisms are likely to undergo similar experiences". These are fair points, but far from clear how they move AE beyond the Kantian objection.

The AE theorist would certainly evoke the operational notion of autonomy at this point and insist that it needs to be taken into account here. The problem however is that there are good reasons for thinking, as Thompson himself seems to recognise, that autonomy itself is an *epistemic principle* rather than an ontological one. Indeed, at one point Thompson does characterise autonomy as a "heuristic" principle, a "cognitive aid" which can guide in our "scientific investigation" (Thompson 2007, p. 50).<sup>15</sup> Here autonomy is contrasted with heteronomy and argued to be explanatory more valuable. But while one can arguably make a convincing case that *epistemically speaking* the concept of autonomy is necessary in order to capture aspects of certain systems which other concepts cannot, it is substantially more difficult to convincingly argue that epistemic value amounts to ontological validity. The two notions appear to get misleadingly conflated at this point.

Moreover, freely admitting as Thompson does, or tacitly recognising as Froese & Di Paolo do, that autonomy is merely a heuristic device, in itself undermines the claim for the ontological status of teleology in nonhuman organisms, and with it the SLMCT+ so fundamental to AE's conception of cognition. It simply concedes to Kant's view that intrinsic teleology is merely an *ascription* of the observer and therefore not intrinsic to the system itself. If this is correct, then it would also give further support to H&M's point that notions of meaning, sense-making, interpretation etc are all concepts which are being *misapplied* to basic minds.

Insofar as this is the case, the AE theorist could be seen to be merely ascribing, by analogy and inference, cognitive properties to systems where these distinctive properties do not apply. The reference to analogy and inference here should give reason for

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<sup>15</sup> Indeed, this also seems to be an inevitable implication of the "transcendental argument" presented above. After all, "our experience of our own bodily being is a condition of possibility for our comprehension of autopoietic selfhood" (Thompson *ibid*, 164).

further concern. Particularly since Jonas' central claims could also very easily be read as involving a tacit commitment to an argument from analogy.

### *An Argument from Analogy?*

There is a clear sense in which Jonas' central argument for the phenomenological "inner dimension" of nonhuman lifeforms, as introduced above, could very easily be dismissed by critics like H&M on the grounds that it relies on an *argument from analogy*. The sort of argument more commonly used to deal with the so-called "problem of other minds". Following the basic structure of this familiar line of argument, I am justified in attributing "unobservable" mentality to another person by virtue of the fact that I have direct first person introspective access to my own mind. From this I go on to make a *analogical inference* to the putative presence of other minds. Thus, given that the other person's bodily behaviour resembles my own in significant respects, I can securely attribute to him mentality just like mine. Is Jonas and as a direct consequence AE using a similar line of argument when drawing from phenomenological insights to account for the inwardness of other living creatures?

When considering this question one needs to, as Zaner (1978) points out, take seriously Jonas' claim, a claim also defended by AE, that what he has maintained stems from "the evidence of each one's own organic awareness," which "evidence we find in ourselves is an integral part of evidence concerning life which experience puts at our disposal" (Jonas 1966, p. 91). On the face of it, it would appear that Jonas' reasoning here is structurally not that different from that of the argument from analogy. Thus, we are justified in attributing teleology to another living creature by virtue of the fact that I have direct access to my own teleological nature. Given that other lifeforms display embodied behaviours which resembles my own in significant respects I can be assured they are teleological as I am. On the Jonas-AE account, it is my embodied experience that justifies my attribution, by way of inference and analogy, of teleology to nonhuman lifeforms other than myself.

But as the phenomenologist Renaud Barbaras, who has recognised this analogical dimension in Jonas' thought points out, "like all theories of projection, this solution

raises the following problem: what is it, in the domain of exteriority, that will motivate my interpolation? Why will I attribute this active dimension of perpetuation of self to a plant, but not to a wave?" (Ibid. 95). The difficulties with this line of argument, particularly with regards to other minds, are plentiful and should by now be very familiar to most and so need not be rehearse any further.<sup>16</sup> Here I merely want to point out that AE, in following Jonas, could also (not totally unwarranted) be understood to be implicitly committed to this line of argument. Importantly, the claim is not that the argument is being explicitly advanced *as* an argument from analogy, this is clearly not the case. The point is simply that there is a danger that AE's more radical claims could be dismissed by critics on the grounds that it implicitly traffics in this line of reasoning.

The AE theorist will be quick to point out that anyone familiar with the phenomenological tradition will justifiably dismiss this possibility. After all phenomenologists have by and large taken great issue with such arguments from analogy. I think this is a fair point, but one which is less clearcut in the case of Jonas. And here it will be important to take into consideration that although Jonas is generally regarded as part of the phenomenological tradition he does also explicitly criticise it. Maintaining that due to the excessive attention it payed to "pure consciousness" it ended up driving a wedge between man and the rest of the animal kingdom. For these reasons Jonas in fact attempts to distance himself from phenomenology, or perhaps more accurately, from his own particularly "narrow" conception of phenomenology.<sup>17</sup>

As we can see from these brief considerations the issues involved here are far from clearcut and require greater attention than this paper can provide. Nonetheless, a cursory reading of the Jonas-AE arguments, provide a critic with plenty of reason for arguing that something *akin* to an argument from analogy is tacitly used to secure the

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<sup>16</sup> For those not familiar with this line of argument see Gallagher & Zahavi (2008, p. 181-184) for a discussion and phenomenological critique.

<sup>17</sup> Jonas (1996, p. 43) considers phenomenology to be "a program of self-examination of consciousness as the site of the appearance of all things possibly present to thought", that is, consciousness without "the adventitious nature of all factual and individual elements". Jonas's phenomenological origins notwithstanding, this general distrust for phenomenology can also be witnessed in the manner he thinks in terms of teleology rather than intentionality, freedom and necessity rather than of possibility and impossibility, and perhaps closer to traditional phenomenology, he maintains notions of interiority and exteriority.

ontological status of intrinsic teleology and SLMCT+. Indeed, in the following section, we will see that another facet of this analogical reasoning manifests itself in Jonas' anthropomorphism. If this is the case then it appears that these arguments do not get us much further from Kant's original skepticism and H&M's criticisms. Understood in this manner these arguments appear to simply be a questionable *ontological reformulation* of Kant's original proposal.

In the following section we will explore some further potential consequences of Jonas' phenomenological insights. Besides an inability to ontologically ground teleology, reliance on Jonasian phenomenology can also be read as fundamentally *undermining* rather than supporting the SLMCT+ due to underlying anthropocentric and anthropomorphic bias. It is precisely at this point that our exposition takes us beyond H&M's initial assessment.

### **Anthropocentrism, Anthropomorphism and the Anthropogenic Stance**

Despite both Jonas' and AE's commitment to a strong biotic continuity among living systems there is a sense in which some of the claims made for this position appear to directly undermine it. Here we will explore how notions of anthropocentrism, anthropomorphism and an anthropogenic stance appear to underlie Jonas' conception of life and mind, concepts which are deeply at odds with the SLMCT+.

#### *Anthropocentrism*

As further support that AE cannot justifiably be accused of using arguments from analogy one could be directed to recent work in social cognition. AE as applied to and developed within social cognition (e.g. De Jaegher & Di Paolo 2007; De Jaegher & Froese 2009; Fuchs & De Jaegher 2009; Gallagher & Zahavi 2008; Gallagher, 2012; Torrance & Froese 2011) explicitly rejects the fundamental premises behind the problem of other minds and the assumption that it can be resolved with an argument from analogy.

In light of this, it might be thought that AE could perhaps draw on *other* (existential) phenomenological work, as it does with regards to social cognition, in defence of

SLMC+. And in so doing avoid the kind of difficulties it potentially faces when drawing on Jonas. Jonas however gives us reason for concern here. The basic problem, as Jonas noted, is that phenomenology has traditionally focused too narrowly on (disembodied) human consciousness and has thus been too restrictive in its scope of application (see Jonas 1996). While Jonas' own understanding of phenomenology as a discipline which is *only* concerned with disembodied consciousness could be contested, might he have a point regarding its narrow focus?

As already briefly noted above, what particular troubled Jonas was that phenomenology centred its focus exclusively on human forms of mentality and paid little to no attention to other lifeforms. In Jonas' view one cannot sever human mentality from the rest of the animal kingdom. Jonas thus recognises a certain latent *anthropocentrism*,<sup>18</sup> within traditional (existential) phenomenology which prevents it from fully appreciating the deep continuity between life and mind (ibid, p. ix).

Whether Jonas is correct on this assessment of phenomenology is something which is beyond the scope of this paper to address. Nonetheless, it is worth noting that Jonas is certainly not alone in this assessment, nor indeed should it surprise us. After all, crucial phenomenological concepts such as “world” and “embodiment” have always referred to *human* worlds and *human* bodies. Some commentators (e.g Agamben 2004; Buchanan 2008; Calarco 2008; Mazis 2008; Tonner 2011) go further by insisting that, insofar as the nonhuman animal has been considered by the likes of Heidegger and Merleau-Ponty, this has been done primarily for the sake of further understanding the human condition. Animal experiences *as such* are never engaged as a primary area of interest in its own right.<sup>19</sup> This is echoed by Painter & Lotzs (2007, p. 5) who note in a recent volume which aims to rectify this neglect, that the phenomenological contributions to the study of nonhuman animals are still “lagging behind other traditions.” If this

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<sup>18</sup> Anthropocentrism is a general tendency to take human beings as the central or most significant entities in the world (see Boddice 2011 and essays therein).

<sup>19</sup> It is for this reason in particular that Mathew Calarco (2008) argues that Heidegger is committed to a “metaphysical anthropocentrism” Heidegger (1929) for example, criticises the western philosophical tradition for being too anthropocentric, nonetheless regards animals as “poor in world”, without history, without dwelling, without space (see Tonner 2011). All properties which he grants to human but not to animals.

analysis is correct than we can see why drawing from other phenomenologists might prove problematic.

### *Anthropomorphism*

Clearly anthropocentric is not something you want to be if you are interested in deeply grounding mind *in* life. However, while Jonas admirably seeks to overcome this anthropocentrism and to some extent succeeds (but see below), other difficulties begin to crop up at this point. In this and the following subsections I will show that Jonas' "existential interpretation of biological facts" treads too closely to *anthropomorphic* and *anthropogenic* (see Lyons 2006) conceptions of mind and life which warrants further investigating by proponents of AE.

Let us take anthropomorphism first. Anthropomorphism, from the greek *anthropos* and *morphe* meaning 'human' and 'form' respectively, is the tendency to attribute human characteristics to nonhuman animals or inanimate objects (see Kennedy 1992). In what sense then are we justified in claiming that the Jonasian conceptions of life and mind is "too close" to anthropomorphism and why is it particularly problematic for AE?

Recall that for Jonas the continuity between humans and other lifeforms serves as a basic methodological principle which informs his philosophy of nature. However, because this methodological principal is fundamentally shaped by a phenomenological commitment to *human* experience (the existential interpretation of biological facts), this continuity takes on a problematic anthropocentric and anthropomorphic bias. This is succinctly encapsulated in Jonas' (ibid, p. 23) surprising claim that, "man is after all the measure of all things – not indeed through the legislation of his reason but through the exemplar of his psychophysical totality which represents the maximum of concrete ontological completeness known to us". As we have already seen, the implication of this is that we can now "take the presence of purposive inwardness in one part of the physical order, viz., in man, as a valid testimony to the nature of that wider reality that

lets it emerge” (ibid, p. 37).”<sup>20</sup> So it is that *man*, from his own inner experience, bears testament to the inner experiences of the rest of organic nature. But note what has happened here, Jonas *starts* from the experiences of man (anthropocentrism) then *proceeds down the phylogenetic scale* (anthropomorphism).

Three points need highlighting here. Firstly, Jonas’ anthropomorphism is a result of thinking man and his experiences *first*. (see Tyler 2009).<sup>21</sup> Secondly, this anthropomorphism is by its very nature anthropocentric (Sheets-Johnstone 2009). And thirdly, this anthropomorphism can now be read to imply that other lifeforms have mentality which is more or less *just like ours* (see Yolton 1967). Note here that accusations of anthropomorphism have traditionally carried the implicit assumption that *only human* have mentality and so claims which suggest otherwise are automatically considered anthropomorphic (see Kennedy 1992).<sup>22</sup> The accusation of anthropomorphism made here are *not* based on this assumption, but rather on the fact that it is a commitment to the *phenomenology of human experiences* which informs Jonas’ conception of life-mind continuity. As Yolton (1967, p. 256) notes, while knowledge of the physical structures of various lifeforms *may* give us ground for “conjecturing about the experiences some animals may have”, in the examples used by Jonas “nothing but behaviour and anthropomorphism are at work”. We will return to this point in the next subsection.

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<sup>20</sup> As this quote already indicate Jonas was keenly aware of his own anthropocentrism/anthropomorphism but justified it on ethical grounds. For Jonas the placing of the human being at the centre of the living world, whom he endowed with a certain “nobility”, merely implied that we have an inherent ethical responsibility towards the rest of nature. See the Epilogue in Jonas (1966) and Jonas (1996). This view is at once biocentric and anthropocentric, for we should care about preserving the integrity of the life-world, but primarily because we are the highest expression of life’s purposiveness.

<sup>21</sup> As already mentioned above, a central motivation for Jonas is to overcome the sort of anthropocentrism which sees humans above all else in nature, as somewhat superior to all other creatures. However, at the same time Jonas is also clear that “man is the measure of all things”. There is a tension here which also appears to mirror the tension with regards to anthropomorphism.

<sup>22</sup> Jonas (ibid, pp. 7-58) traces this sort of anthropomorphism to Descartes dualistic partitioning of the world into *res extensa* and *res cogitans*. With this distinction all value, purpose and subjectivity was striped from nature and become sole properties of human minds leaving the rest of nature effectively dead. But this notion of anthropomorphism unquestionably stipulates that animals have no mentality whatsoever and so makes it difficult to understand how humans themselves acquired these properties. In my opinion Jonas is correct in criticising this particular conception of anthropomorphism, nonetheless as this subsection will attempt to show, the “positive anthropomorphism” which he is amenable to remains equally problematic.

There is then a clear tension within Jonas' approach, on the one hand mentality is not simply exclusively human but something found across nature, while on the other hand, due to an anthropocentric bias this mentality is anthropomorphically conceived through the lens of human phenomenology. Thompson reiterates this tension and its anthropomorphic connotations with the claim that "certain basic concepts needed to understand human experience turn out to be applicable to life itself" (2007, p. 129).

Insofar as AE follows Jonas in taking the first-person embodied experience *as the basis for* attributing teleology, meaning and sense-making to nonhuman lifeforms, it becomes difficult to see this other than an *anthropomorphic projection* on the part of an external observer. An observer attributing phenomenological grounded *human like* experiential/cognitive characteristics to nonhuman lifeforms. And here again we see the analogical reasoning coming to the fore. The fundamental problem here is that, with regards to life-mind continuity, a commitment to the phenomenology of human embodied experience necessarily clouds how the experiences of other lifeforms are conceived and so cast an illegitimate human stain all the way down to the single called organism.

Claims such as, "our own embodied experience does not withdraw, but trickles onto the natural world across the bridges provided by Darwin" (Di Paolo 2005, p. 431), encapsulate this clearly. Note that it is *our* embodied experiences which trickle down. It is one thing to conceive of other lifeforms as experiencing agents, quite another to seemingly imply that this agency is in some sense just like ours. There is a danger here that AE could be read as precisely making this sort of claim when arguing for a SLMCT+. And thus leading to an anthropomorphism which follows directly from drawing too close an analogy with *our* embodied experience. But is this really a problem, after all the main goal is to guarantee that all living creatures have an inwardness of some kind.

If this (my own embodied experience) is the starting position, will it not lead to a rather impoverished, biased evolutionary view which suggests that other lifeforms' cognitive abilities only represent some or other variant of our own cognition and experiences? The AE theorist will surely protest and insist that it does recognise that other lifeforms do have experiences in their own right. It is certainly true that it argues for this point,

however, the inherent anthropocentrism of its anthropomorphic starting position could inevitably *undermine* and ultimately *negate* the existence of these very experiences it sets out to account for. If human experiences form the (only) rubric from which to understand the inwardness of the rest of nature then it becomes unclear how, other than human variants, these experiences could be investigated *in their own terms* (see next subsection for more on this point).

Thus although AE presents itself as staunchly anti-anthropocentric/anti-anthropomorphic by virtue of advocating a strong life-mind continuity, using Jonasian phenomenology as the very basis for grounding this type of continuity appears on closer inspection to directly undermine it. Our analysis thus far suggests that, not only does Jonas fail in his promise of a non-anthropocentric conception of life and mind, he also more problematically imbues his philosophy of nature with an anthropomorphic caste. Similarly, insofar as AE adopts this Jonasian conception of life and mind, it runs the danger of encountering similar difficulties. In the following subsection we present one further facet of these views which crystallises the potential tension facing AE.

#### *The Anthropogenic Stance*

At the convergence between anthropocentrism and anthropomorphism lies what Lyons (2006) calls an *anthropogenic stance*. Pamela Lyons (2006) makes a distinction between two general ways researchers can approach cognition. These “approaches are defined by a methodological assumption relating to the starting point of inquiry that is rarely explicit and is sometimes denied. Do we start from the human case and work our way ‘down’ to a more general explanatory concept, or do we start from the facts of biology and work our way ‘up’ to the human case? I call the tradition that takes the human case as its starting point for the study of cognition the anthropogenic approach (from the Greek; literally, human + birth, origin). The tradition that starts with the principles of biology is the biogenic (life + birth, origin) approach” (ibid, p. 11).

It seems to me that if one is committed to both anthropocentrism and anthropomorphism then this anthropogenic stance is an inevitable consequence. In light of our discussion thus far would we be accurate in claiming that the Jonas-AE approach is anthropogenic?

To the AE theorist this question will seem almost unthinkable, after all AE appears to be the very epitome of a biogenic stance. However, our above discussion now gives the question some legitimacy.

It is true that on the one hand, AE, like Jonas, rejects anthropocentrism and argues for a biotic continuity among living creatures. It puts autopoiesis at the core of its framework, draws from the advances in the theories of self-organisation and cutting-edge complexity science, all in aid of developing operational concepts which can account for life-mind continuity so as to preserve the uniqueness of all living organisms. From this perspective it is the biological principles of autopoiesis and adaptivity which are the starting point for cognition and *not* higher-level human cognitive traits. Understood in this manner, AE clearly does fall under the biogenic rubric.

Nonetheless as we saw above, it is equally true that on the other hand to ground SLMC+ AE follows Jonas in tacitly taking features of human cognition and experience as derived from first-person experience, as its starting point. The cognitive dimension of other lifeforms is only known to me through inference and analogy of my experience as an embodied being. Here AE *starts* from the human case - my own lived experience - and can be understood to generalise this all the way down to the single celled organism. Only because of my direct access to my own embodied experience am I justified in granting other nonhuman lifeforms similar properties. Understood in this manner AE would fall under the anthropogenic rubric.

Expressed in this polarised manner we seem to get back to the question, what has priority in this case: is it the biological (biogenic) or the phenomenological (anthropogenic) dimension? The considerations presented above appear to suggest that it is the phenomenological dimension which subsumes the biological. After all what is radical about AE is that it argues for a SLMCT+ over a mere SLMCT. Moreover as Thompson (*ibid*, 164) makes clear, "our experience of our own bodily being is a condition of possibility for our comprehension of autopoietic selfhood".<sup>23</sup> By following

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<sup>23</sup> Note that this in turn rises the further question, one which we cannot address here, of how exactly (if at all) these stances relate? Here it suffices to highlight how they lead to an uneasy tension pulling at opposite directions which threaten to undermine each other.

Jonas, AE moves further away from a biogenic and gets closer to a somewhat problematic, in the context of SLMC, anthropogenic stance. Why problematic?

Consider that despite the fact that Jonas' starts from the premise that "the organic even in its lowest forms prefigures mind, and that mind even on its highest reaches remains part of the organic" (ibid, p, 1), the minds of other creatures are never really considered in their own right. The biogenic stance, as introduced above, provides a methodological prescription which entails that one needs to consider the living organism - all organism - in *their own terms*. Herein lies the difficulty for an anthropogenic stance. The problem with the Jonas-AE approach is that, despite the commitment to a biotic continuity and despite the reliance on relevant biological theory/data, it does not and *cannot* consider the organism in its own terms. An indication of this lies in the fact that it considers *E.coli* bacteria partially on its own terms<sup>24</sup> then skips the entire phylogenetic scale and concerns itself with human beings. Due to the tacit anthropogenic constraints brought about by the phenomenological commitments, the living "organism" threatens to, at best, collapse into a mere ahistorical abstraction conceived through the lens of phenomenological human experience of little value for understanding life-mind continuity<sup>25</sup> and, at worst, simply disappear.

To conclude, in its starkest form this would present the AE theorist with something of an unattractive dilemma. Reject Jonasian phenomenology and forget about SLMC+ or be saddled with an anthropocentric/anthropomorphic and consequently anthropogenic conception of life and mind. AE thus needs to avoid anthropocentrism and anthropomorphism so as not to fall into an anthropogenic trap which effectively renders

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<sup>24</sup> On the one hand, as Fred Cummings (2014) points out, bacteria are vastly more complex and more deeply embedded in their environment than the AE theorist recognises. AE never considers *E.coli* as a social creature and so ignores its relation to other bacteria and to its broader environment. This is a particularly striking omission since bacteria are amongst the most social creatures on earth (see Lyons 2007; Shapiro 2007). AE thus needs to reconsider its ahistorical, individualist conception of bacteria as solitary creatures acting alone. On the other hand, considered operationally (see Egbert et al 2010) a bacterium reduces to a mere *mechanism* in the true sense of the word, requiring a single sensor capable of detecting glucose, a locomotion capacity with a direct and indirect mode of locomotion and a probabilistic link between the slope of a glucose gradient and the likelihood of switching between the two modes.

<sup>25</sup> See footnote 21 for further support of this point.

it incapable of accounting for life-mind continuity. In the following section we revisit the H&M challenge.

### **The H&M Challenge Revisited**

Let us now reconsider the H&M challenge in the context of our analysis. AE uses Jonasian phenomenology to theoretically ground the notion of strong continuity between life and mind and in the process addresses the challenge posed by H&M. That is, it provides an answer as to why we should accept singled celled organisms as intrinsically teleological cognitive creatures which find their world inherently meaningful.

Our discussion above however suggests that AE, in its current theoretical guise, cannot fully make good on this claim. As H&M alluded to and our analysis bore out, the central problem for AE has to do with the fact that due to the phenomenological underpinnings, it appears to simply be *projecting* teleology and *other forms of human experience* unto nonhuman lifeforms. Ultimately AE has not convincingly accounted for its *ontological* conception of cognition. We traced the roots of the conclusion to the idiosyncratic existential bio-phenomenology of Hans Jonas.

H&M are thus justified in questioning the argument, based on phenomenology, that adaptive autopoiesis grounds intrinsic teleology/meaning/sense-making etc, in nonhuman lifeforms. If this is correct, then H&M are also justified in claiming that AE is "too liberal" with their application of cognition, especially as we have now seen that these can be understood in analogy to human types of cognition. And so REC waits with arms wide open.

These considerations should now also enables us to get a better handle on the intuition guiding the first part of the H&M challenge which suggested that AE is implicitly committed to representationalism. Naturally if we take AE to be committed to an anthropomorphic projection of human characteristics onto lower nonhuman animals and assume these characteristics to be paradigmatic conceptual/linguistic in nature then they

would appear to also involve internal representations of some kind.<sup>26</sup> It is precisely to avoid such conclusions that H&M argue that cognition is "intentionally directed" but has no content. For H&M basic cognition is nothing more than a dynamic, world-involving activity, so there is no need to ascribe representations or meanings of any kind. REC *prima facie* appears to provide the firmer foundational ground for enactivism. We will in the concluding section return to this claim.

Finally, our analysis also strongly suggested that Jonasian phenomenology is problematic for grounding the SLMCT+ so central to the entire AE edifice. This is because it is tacitly anthropocentric, appears to smuggle in notion of anthropomorphism and as a consequence borders on assuming an anthropogenic perspective which is at odds with the very idea of a strong life-mind continuity. Accepting this type of phenomenology as the grounding basis for strong continuity appears to lead to uneasy tensions which threaten to undermine the broader AE framework. Consequently rendering AE incapable of not only adequately accounting for life-mind continuity but also perhaps, in the context of enactivism more broadly, leaving REC as the most serious candidate for providing its soundest theoretical grounding.

## **Discussion**

Let me begin this final section by making the primary intentions of this paper very clear. Upon first reading the above one might be, probably will be, left with the sense that this is a critique of AE. However, our analysis must be understood in a fully constructive spirit. That is, this should not be considered as a critique of AE but as a constructive deconstruction of one of its central theoretical pillars whereby conflicting intuitions, potentially problematic claims and unresolved tensions have been highlighted not in order to undermine AE, but ultimately to strengthen it by urging that these *need to* be appropriately addressed. With this in mind we can now proceed to our final discussion.

As we have seen, our above discussion presents AE with something of an unattractive dilemma, a dilemma which *prima facie* at least, appears to play straight into the hands

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<sup>26</sup> Note that AE conceives of human cognition as non-representationalist in nature and so it is this conception of cognition which gets projected down.

of REC. Either AE forgoes its phenomenological commitments or it could be saddled with the difficulties highlighted above. That is, in the first instance AE can either embrace REC but forgo any ambition of theoretically grounding sense-making across the animal kingdom, or retain the phenomenological commitments but be saddled with the difficulties we have highlighted. It is from the first horn of the dilemma that REC would appear to benefit. How so?

Well, if one is sympathetic to the enactive ideals, and one is equally persuaded by H&M's arguments against SE & AE, then it would seem that the only alternative left is REC. So, somewhat by default, REC appears to cement its place firmly within the enactivist landscape. But what would follow from this and more precisely what would the implications be for AE? We might however first want to question whether REC really should be the "default" position for enactivism.

Indeed, one would imagine that the AE theorist would want to resist this scenario by any means possible. After all, although REC's conception of basic cognition is thoroughly anti-representationalist and non-anthropocentric/non-anthropomorphic, it is nonetheless a somewhat "narrower" (at least phenomenologically speaking) conception of cognition. One which most importantly for the AE theorists, has no place for overtly "liberal" conceptions of meaning or sense-making at the level of life that AE requires. For these reasons it would seem that AE's only hope of not being impaled on the horn of the first dilemma is to present an alternative to phenomenology. This I think might be a rather difficult ask since phenomenology forms a central part of the AE paradigm - but it needs to be done.<sup>27</sup>

This alternative to phenomenology will have to be one which can fully accommodate the intuitions guiding AE's SLMCT+ without lapsing into an anthropocentric bias and avoiding anthropic analogy and inference to ground meaning and sense-making in other nonhuman lifeforms. De Jesus (2014) makes the slightest allusions to one such possible alternative. The author suggests that the nascent field of Biosemiotics (see Hoffmeyer

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<sup>27</sup> Alternatively, AE could re-conceptualise phenomenology itself so that it can accommodate its requirements. This would be a rather difficult ask but not impossible.

2008) could possibly fit the bill. I think that this suggestion has plenty of promise, but needless to say, it is a suggestion which still requires further work to establish its true potential. Equally there might be other viable means of grounding the SLMCT+ and hopefully this paper will have served its purpose if it stimulates further work towards this end.

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