

The Incipient Mind Argument

The Persistence of Absolutist Thinking in Biological Philosophy of Mind

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Abstract— *The incipient mind argument is the central argument of Evan Thompson’s solution to the so-called mind-body problem. This paper challenges Evan Thompson’s (and Francisco Varela’s) assumption of a pristine form of subjectivity, as well as of interiority in unicellular life forms. I claim that this assumption makes sense only as a useful strategy for an absolutist account of mind. In this paper, I argue that Thompson’s thesis is erroneous at the object-level, as well as at the meta-level of his argumentation. By paying greater attention to the meta-level of his exposition, I show that Thompson’s assumption of an “incipient mind” obeys an absolutist, two-sided pattern of thinking and, therefore, that his argumentation fails to give an accurate account of the systemic generation and development of mind. After demonstrating this, I suggest an innovative action-based approach to mind in order to accurately give an account of its real-constructive development.*

Keywords— *enarrativity, historico-genetic theory, emergence of mind, process philosophy, processual form of thinking, evolution of thought*

I. INTRODUCTION

THE actual formulation of the mind-body problem is the following: How does mind come to be in the natural organism? Evan Thompson’s answer to the question of generation and development of mind is that there is no generation of mind at all. Mind has always been there, namely in life. From a naturalistic point of view, one cannot disagree with Evan Thompson, when he claims that “there is a deep continuity between life and mind” ([1], pp. ix and 222). That is because many cognitive theorists share the same general goal: to give an account of how the mind arises out of its physical and biological conditions, and how the intrinsic connections work with its biotic milieu. Correspondingly, the shared assumption for this enterprise is that there must be a significant continuity between life and mind. There are many perspectives from which scientists, physicists and philosophers join efforts to explain the development of human mind. The philosophical problem that I want to stress here is rather this: which argumentative tool is more suitable for such an enterprise?

The most general and indispensable argumentative tool for this philosophical project is the way we think about the

phenomenon in question. By formulating the problem in this manner, I am framing and setting it at the meta-level. There are, in fact, two major forms or patterns of thinking which we can identify in the *enarrative* practice of arguing throughout human cultural history (cf. [2], pp. 91-151). In this context, *enarrativity* consists in the use of ontogenetically, reflectively acquired cognitive structures and relations in an explanative fashion [3]. The two patterns of thinking we find in history are the *linear form of thinking* (subsequently abbreviated as LFT) and the *processual form of thinking* (subsequently abbreviated as PFT) [3]. Consequently, these are the two alternatives available to adopt, in order to give a developmental account of human mind. Depending on the general understanding of mind adopted, one can then judge the form of thinking employed in the argumentation as accurate or not.

Mind, in its most general understanding, is a complex open unity of interactions that emerges from biotic as well as cultural conditions. This means that mind is a constructive product of a complex concatenation of multivariate processes. If this general understanding of mind is correct or, at least plausible, a tool able to give an account of mind’s dynamics would hold for more appropriate than any other means that does not acknowledge the essential characteristics of mind, i.e. complexity, constructiveness, and emergence or novelty. In accordance with this, PFT seems to be an adequate *enarrative* tool for reconstructing the development of human mind, as well as its relational features because it is able to give an account of mind by means of tracing it back to its multivariate real conditions. I shall defend the explanatory superiority of PFT over LFT by showing the contrast between them. In opposition to my claim, Thompson employs LFT to sustain his thesis. If the explanatory superiority of PFT over LFT holds, then Thompson does not accomplish an adequate connection between the meta- and the object-level of his exposition. Thompson’s thesis also reveals itself to be deficient in at least two argumentative factors: (1) an *unfolding* understanding of development, and (2) an insufficient operative concept of emergence. Both factors are direct consequences of the form of thinking he embraces in his argumentation.

As early as in the first pages of his book *Mind in Life* (2007), Thompson makes clear his expositional logic, i.e. the form of thinking he adopted, when he states the following:

Where there is life there is mind, and mind in its most articulated forms belongs to life. [...] The self-producing or “autopoietic” organization of biological life already implies cognition, and this incipient mind finds sentient expression in the self-organizing dynamics of action, perception, and emotion, as well as in the self-moving flow of time-consciousness. ([1], p. ix)

Here we already see that for Thompson cognition implies mind from the beginning. As I will show, this implication is based upon a fallacy, which consists in using an incongruent expositional tool at the meta-level with respect to the phenomenon in question at the object-level. To prove that Thompson’s line of reasoning, as employed in *Mind in Life*, is inadequate for a sound account of the human mind, I will show that his argumentation obeys an absolutist and subjectivist form of thinking. The problem is not grounded in absolutism or subjectivism as such. As already said, the inconsistency is rather based on the use of an absolutist and subjectivist thinking to explain a contingent and emergent complex phenomenon. In other words, explaining human subjective forms or the human mind by presupposing a germinal form of mind and subjectivity in basic biological formations seems to be—to some extent—tautological and circular, because the explanandum is already contained in the explanans in some germinal form. This kind of argumentation is completely normal in derivative thinking and is regarded as sound and valid from an absolutist and subjectivist point of view. Therefore, if mind is to be understood as an absolute in the biological stratum of all living beings, Thompson cannot be wrong in devolving human mind from the “sense-making” feature of unicellular autopoietic organisms in an unfolding fashion.

In contrast to an absolutist understanding of mind, I propose to think of mind as an evolutionary, developmental, and, therefore, contingent phenomenon. I work with an understanding of mind that denotes a specific cognitive skill. That skill is a phylogenetic as well as an ontogenetic constructively acquired competence. As discussed by the German social philosopher Günter Dux, this cognitive skill also constructively operates in the sense of a constructive realism, understood as the competence of forming constructs like *substance*, *causality* or *time*. These constructs are “neither random nor arbitrary inventions, but the result of processing experience in dealing with the environment” ([4], p. 83; see also [2], pp. 147–151). This cognitive skill operates by means of thought and language in order to provide knowledge and insights from and into the world in which the human organism is embedded (cf. [4], pp. 78–94). Mind, in this sense, is not already delivered in the simplest autopoietic formation just as if were part of a general definition of life. Mind is rather the specific cognitive skill of a highly developed organism—in our case humans—, through which it acquires knowledge in the world and constructs, reconstructs as well as keeps on constructing its

world in a symbolically mediated way. If Thompson’s understanding of mind has something—even in some “incipient” way—to do with this complex one, then his exposition necessarily points to grave argumentative difficulties, which I summarize here as the *incipient mind argument*. There are, in fact, indicators that suggest associations and connections between Thompson’s understanding of mind and ours.

Although the first impression seems to be a matter of radically different concepts of mind, a more precise insight will uncover conclusive similarities, which in turn point to fundamental inconsistencies in Thompson’s line of reasoning. Thompson, in fact, ascribes notions and skills to unicellular organisms that are only to be found in humans or at least in higher nonhuman animals. In Section II, I demonstrate to what extent this conception of an incipient mind is consequently derived from our understanding of mind. Section III concisely outlines the two major concepts I employ as criteria in my criticism of Thompson’s meta-level line of reasoning, namely PFT and LFT. In Section IV, I describe the circular rationality implied in Thompson’s argumentation in accordance with LFT and its consequences in his understanding of *development* and *emergence*. In the concluding Section V, I summarize my criticism, showing that Thompson’s line of reasoning is fallacious from its meta-level outset. Subsequently, I end by suggesting an alternative approach to mind grounded in (inter)action and—what is most important—embedded in the rational framework of PFT.

II. THE INCIPIENT MIND

In Chapter six of his book *Mind in Life*, Thompson establishes his assumption of an incipient mind and subsequently elaborates it in chapter eight. The main confusion there consists in anthropologizing associations concerning “sentience” or “organic consciousness”. To borrow an illustration from Dux’ discussion of organic consciousness, he writes: “A toothache does not require any reflection; one has it when one has it” ([2], p. 78). Although the term “organic consciousness” can lead to misconceptions as Thompson’s assumptions reveal, paradoxically it is Thompson—using a less ambiguous term—who keeps attributing the reflective-intentional structure of consciousness to the phenomenon he calls sentience. In contrast to Thompson and in agreement with Dux, sentience or organic consciousness does not have the structure human subjectivity has (cf. [5], pp. 124–182). Furthermore, here we are simply discussing a somatic affectivity of living. It implies the coupling process of sensory powers and the operational closure of the living organism within its actual environment. This concept does not necessarily imply any inner state or even an incipient consciousness at all. It is, above all, a matter of *sensuous awareness*.

Again, Thompson's rationale operates differently. He is willing to see more than just sensuous awareness in the phenomenon of sentience. Consequently, he posits a subjective interiority in pristine forms of life in a clearly extrapolative fashion with respect to human mind. The following quote shows this paradigmatically.

This kind of in-being, that of autopoietic interiority, is not a matter of material boundedness. [...] The interiority of life is the interiority of self-hood and sense-making, which is a precursor to the interiority of consciousness. A living being enacts a milieu marked by significance and valance. Exteriority is surmounted by an internal relation of meaning and normativity between the two poles of organism and milieu. There is thus an inwardness of life that escapes a purely external conception. This inwardness underlies the deep continuity of life and mind, and is the context in which the emergence of consciousness must be understood. ([1], p. 225)

From the linguistic point of view, the English term "sense-making" is a linguistic construction derived from the locution "to make sense of", which refers to the complex cognitive process of producing a meaning or achieving a coherence of a certain state of affairs. Doubtless there are highly developed animals, like mammals, that are able to achieve and develop coherence within their environment and societal milieu. Doubtless, we observe the behavior of unicellular organisms that we might describe as "intentional" or even "intelligent" in the absence of more suitable terms. One can observe, for example, how E-coli bacteria can sense where to find the "best" sugar.¹ These behaviors,

¹ For an account of interesting experiments about E-coli's behaviors concerning their awareness of the environment and the concept of cellular memory, see [6]. This is not about "sense-making", but about reactions to impulses coupled with the so-called "cellular memory".

Shapiro discusses memory as the maintenance of structural and reactive (behavioral in the sense of "logical" circuits) changes as a result of past interactions. Consequently, cellular memory consists in the cellular mechanism by which structural changes are maintained. This mechanism rests upon complex senso-chemical processes (e.g. sensing, transport, catalysis, etc.).

In this sense, concepts like "sense-making", "cellular memory", "unicellular representations", "intracellular recognition", and other similar termini are honest attempts in understanding these highly complex dynamics from the point of view of the observer. Such technical terms are, nevertheless, anthropomorphic and, in consequence, misleading for an accurate philosophical analysis. What is happening in these cases is that the observer project himself onto his observations. Due to lack of conceptual procedures, the observer attributes mental-like powers to non-mental processes. In case of phrases like "information is transferred", for instance, the use of the term "information" is also misleading to the point that there is even the case of a discourse of such processes as if they were semiotic and linguistic processes ([7], [8], both also referred in [6], p. 10).

To continue, cellular memory denotes the structural somatic "marks" or "inscriptions" the cellular interactions left behind in the cell. These "inscriptions" affect the behavior of the life unit (cell). One can refer to the association of the new behavior due to those ontogenetic marks or inscriptions as cellular memory. It seems unnecessary to distinguish between cellular memory and cellular "learning", because of the implied

nevertheless, come about by means of moment-to-moment sensing. Moment-to-moment sensing is about life arrangement and life organization through non-mental interaction with the environment. Note that for Thompson the skill of "sense-making" implies "a kind of interiority". He associates that kind of interiority with some mental states or a sphere that goes beyond the mere material distinction between internal and external spatial aspects of the body.

In the following passage, Thompson gives more evidence of extrapolating connections between his positing of an incipient mind and mind as such, which do not follow from the biophysical facts available.

A living being is not sheer exteriority (*partes extra partes*) but instead embodies a kind of interiority, that of its own immanent purposiveness. This interiority, as we have seen, comprises the self-production of an inside that specifies an outside to which that inside is constitutively and normatively related. ([1], p. 225)

As one might notice, Thompson goes here so far that he even incurs *metaphysical costs*, to borrow an expression from Peter McLaughlin [10].² Once again, he assumes an "inside" that has a specific structure. Thompson describes this structure as "immanent purposiveness". This means that beyond any biophysical "boundedness" there—somewhere—is a sort of to-be-targeted-at-something or some sort of inner teleological attitude that the organism produces. I do not see any problem in observing a sort of purposiveness in the behavior of bacteria, insofar we are able to recognize that the assessment of purposiveness belongs to our judgment as observers. The problem lies rather in ascribing that purposiveness to the organism as such and in locating it as structure somewhere "inside" but beyond the biophysical stratum of the organism. We know a similar structure of an "inside" produced by the human mind from the works of Brentano and Husserl, which we can trace back to the Middle Ages and even to Aristotle's teleology. That is the basic structure of consciousness, namely intentionality. Recapitulating, we have in the quoted passage two essential aspects of a complex consciousness. The author mentions the

change in behavior. Shapiro treats this topic under the rubric of "cell's genomic memory" ([6], p. xvii). His suggestion is to review the genome as a RW (read-write) memory system (ibid.: 1, see also the concluding Chapter). He also accentuates the fact that intracellular sensory processes "are a key to both complementary aspects of genome maintenance", namely, conservation and restructuring.

Although Shapiro works consciously with the metaphor "engineering" and "invention", he is not completely aware of his inadequate usage of the term "information". In this last case, he is unaware of his *encodingism*. For an extensive criticism of encodingism in the nativist-empiricist debate, see [9].

² McLaughlin introduced the term *metaphysical costs* in the philosophy of biology to designate functional explanations that bind their argumentations to metaphysical assumptions. Those assumptions imply in turn subjective presuppositions that make them, to some extent, unsound. See [10], p. 137, passim. I am using this expression to signal the recourse to metaphysical assumptions where systemic evidence and secular arguments are expected.

inner or the mental sphere on the one hand, and intentionality or “immanent purposiveness” on the other. The third aspect we find in the citation above is the constitutive relation between the incipient mind and its environment, namely a sort of constructivism. The attribution of these three aspects as an inner (mental) sphere to unicellular organisms seems to be an extrapolation from human mind’s capacities. Therefore, if my argument is correct, we are dealing here with an anthropologizing *modus operandi*.

By contrast, I am suggesting in this paper that there, in any kind of animalcules, is no such inner “sense-making” at all. As an adequate understanding of sensuous awareness points out, those creatures *just* live and organize themselves through—*nota bene*—plain sensing and biochemical energy exchange like catabolism and anabolism. Although those processes are per se complex enough, there is nothing more to be found.

Even in humans there is no absolute given mind at birth. The first signs of a subjective interiority we can clearly identify are observable around the seventh and ninth month of age [5]. In order to reach that stage of development, the infant has to develop not just biophysically in the sense of maturation, but also in terms of the interactive construction of the world. The constructive processes involved in the early ontogenesis include the construction of the inner world as an essential aspect for the social interaction. In this context, I support the thesis that the mental, that psychological interiority, is rather a pragmatic construct of a sufficiently developed cognitive skill-apparatus. Two of the indispensable capabilities of such a complex cognitive skill-apparatus are perceptual rehearsal (e.g. visuo-spatial, audio-spatial or phonological) in working memory and episodic memory—just to mention the most relevant ([11]; [12]).³ The development of those cognitive skills and capabilities requires a supporting biological stratum, for example, a sensorial complex, a central nerve system, and a prompting specific social milieu as in the case of hominids. Even though one restricts the necessary requirements to the minimal biophysical conditions for the support of a mental sphere, there must be at least a set of neuronal circuits capable of establishing basic patterns which in turn enable experiential rehearsal and, eventually, (mental) modeling rehearsal of any kind.

Following these basic facts, it seems to have no empirical support ascribing a representational system or some kind of interiority to unicellular living beings like bacteria. An inner sense-making system requires a biological stratum that goes far beyond what unicellular living beings actually have. Such empirically unsustainable asseverations are not only to be found by Thompson, but also in the early work of Maturana and Varela [15] and in the discourse of the so-called biosemantics [16]. While Maturana and Varela

attribute linguistic domains to animals with no language (even though animals can communicate perfectly), Millikan ascribes a representational system to bacteria. Following this line of thought, the manner these thinkers reflect upon the behavior of unicellular organisms compares with the results of a study conducted by Heider and Simmel in the mid-forties, where the majority of the test persons tended to ascribe intentions and even emotions to the geometric figures represented in a picture-film [17].⁴

Thompson himself offers an example that contradicts his own assumptions concerning an incipient mind. He describes the purely physical phenomenon of the formation of the so-called *Bénard cells*.⁵ The Bénard cells example (also known as the Rayleigh-Bénard convection) consists of the geometrically organized formation of bubbles in heated cooking oil. In this example, Thompson is willing to see the phenomenon of “emergence” of a “new self-organizing behavior”, but astonishingly he does not see any sense-making within the oil’s self-organizing properties. “Nor is there any homunculus or program inside the system determining those patterns” ([1], p. 61). Thompson has no need to posit here any kind of interiority. The interesting question that arises at this point is the following: Why then is Thompson obliged to assume an incipient mind in the case of autopoietic formations like unicellular living beings? I see the answer to this question in the form of thinking Thompson embraces in his argumentation.

III. META-LEVEL PATTERNS OF ARGUMENTATION: PFT VS. LFT

The assumption of an incipient mind structurally follows from the meta-level framework Thompson employs through his argumentation. It is in fact a direct consequence of the two-sided rationality of LFT. In order to show that Thompson works with LFT, instead with PFT, it is necessary to briefly clarify what is LFT in contrast to PFT. In his book *Historico-genetic Theory of Culture* (2011), Dux uncovers and extensively analyzes these two forms of thinking as distinct logics. Enarrativity, as already mentioned, is a constructively acquired disposition to reconstruct states of affairs in the field of objects and happenings. LFT and PFT are the two patterns that enarrativity, i.e. the enarrative practice, has consisted of throughout our history.⁶ Chronologically, LFT was first developed, and secondly PFT. I will start, however, by highlighting the essential

⁴ For a recent replication of this study in Germany, see [18]. For a quick reference, see some versions of the film available on the Internet.

⁵ For a recent study of the Rayleigh-Bénard convection, see [19]. For a quick reference, see some of the audiovisual materials available on the Internet.

⁶ The following discussion is based on [2], pp. 91–116. For a broader exposition of Dux’ structural-logical analysis of these forms of thinking and for a historical discussion of the emergence of PFT in relation with early formulations of some of its conceptual aspects by Whitehead, see also [3].

³ For a discussion on episodic memory or long-term memory in general in infants and preschoolers, see [13]; [14].

characteristics of PFT and then turn to a summarized description of LFT.

A. *PFT: constructively and reflectively developed*

Historically, one can identify PFT mostly in scientific narrations, accounts and explanations. PFT is a symbolically mediated structure that develops from scientific reflections and engagements with the natural and social world. In this sense, PFT's context of development is everything, but the everyday and ordinary life. Therefore, it might seem contra intuitive at first impression, without ceasing to be a reflective pragmatic construct. The basic idea of PFT is the following proposition at the meta-level of exposition: *any phenomenon can only be clarified or made accountable by relationally subsuming it into the concatenated multivariate processes and multidirectional conditions from which and within it occurs. Taken this seriously in all its consequences, this means that also new, as well as singular, phenomena find their systemic account by means of an adequate reconstruction from its conditions, where (in the antecedents) the phenomena themselves (the consequents) are neither in any form nor by any means hitherto laid out.* This last (genetic) aspect is the crucial point of PFT. With this basic description of PFT in mind, we can discuss now its four central characteristics:

- (1) the dynamic-systemic structure,
- (2) the potentiality of expounding novelty,
- (3) a specific epistemic contingency, and
- (4) the applicability to different types of processualities.

In respect of the dynamic structure of PFT, there are two major aspects worthy of mention. Firstly, the dynamic consists of the multi-relational processuality as found in the historical and factual world. This means that, due to the dynamics and processes of our reflectively as well as empirically accessible universe, PFT translates and adopts a systemic structure that molds itself accordingly to the plurality of reference points as well as of levels of relations, processes and interactions in all relevant directions. The dynamic structure of PFT is, hence, polydimensional and multivariate and can contain as many reference points and include as many processes as necessary. Thus, PFT is not confined in the two-sided structure that characterizes LFT. The second aspect concerning the dynamic-systemic structure is a direct consequence of the first. This structure makes obsolete any possible posit that proclaims an absolute validity, since any reference point, any process involved and any established relation is, as a structural consequence, always circumventable.

The second central characteristic of PFT, namely the potentiality of expounding novelty, is also intrinsically related to its dynamic-systemic structure. It has to do with the structural placement of phenomena origins. In contrast to LFT, in PFT the necessity of identifying the beginning of a

process with the origin of a particular phenomenon does not exist. In this line of thinking, one can also say, for instance, that there is no structural necessity of positing a form of germinal or incipient mind at the beginning of life or, equivalently, in the simplest autopoietic formation. This meta-theoretic feature of PFT allows for thinking novelty. With respect to some specific framing point of reference, the formations of new structures or relations never seen before make themselves accessible to the theoretical observer by means of PFT. While predictability is related to extrapolations or gradual variations of the same phenomenon already known, unpredictability is intrinsically related to novelty and the possibility of singular occurrences. Radically qualitative changes that take place are well accountable by means of PFT, without reducing them to well-formed metaphysical principles. It is not at all surprising that the historical development of PFT correlates with the systematic removal of all kind of absolutist thinking from the scientific practice.⁷

The specific epistemic contingency of PFT, its third essential characteristic, strongly relies on the concept of process itself. Processes are thought of as contingent and, therefore, causal. Even in theoretical formulations of processes for the modeling of mechanisms that are not empirically accessible, processes are still thought of as contingent and embedded in causal relations. In accordance with this, causality is correspondingly conceived—*nota bene*—as multidirectional (e.g. top-down, bottom-up, etc.). In this sense, the ancient aphorism “*ex nihilo nihil fit*”⁸ (nothing comes from nothing) upholds its validity here in a radical way.

Finally, the fourth key characteristic of PFT is that it enables the connection between the pure biophysical and the symbolic-mediated processuality, while keeping the differences between them in sight. The same logic at the meta-level, that is PFT, makes it viable to think of the universe and the mind in accordance with their own specific dynamics. While the processuality of the universe operates in terms of physical quantities and their fundamental units (e.g. mass and energy, time, length, thermodynamic temperature, etc.), mind's processuality effectuates its dynamic by noetic-symbolic means (e.g. cognitive operations, categories, thought and language). This connection is possible because of the structure of PFT and, above all, because both mind and the universe are simply part of the same and only one reality. Nevertheless, the processuality of mind continues to generate problems of understanding for us, so that natural scientists and philosophers usually tend to explain the processuality of mind in terms of the processuality of nature which ignores the means of mind as such. But getting round the mediality of mind signifies, in effect, avoiding the necessity of explaining what mind itself is. Nevertheless,

⁷ For a very concise historical account, see [3], pp. 45–46.

⁸ This aphorism can be traced back to Lucretius and is usually attributed to Melissus of Samos as well as to Parmenides.

understanding PFT is, then, an important step towards an accurate elucidation of mind's dynamic complexity. PFT seems to provide a suitable framework to investigate the processuality of mind confined in the one and the same reality our universe is part of.

B. LFT: ontogenetically developed and abstractly varied

Thompson's theoretical argumentation adheres, however, to LFT. Since humans give explanative accounts of states of affairs and of things, they have been using the logic implied in LFT, at least at first. In this sense, Thompson's argument does not represent an exception. LFT is the oldest pattern of thinking in the history of culture and the initial one to arise in the ontogenetic development of mind. These are two strong reasons that explain why LFT is deeply acquainted in and intuitive for us, and why Thompson himself remains unaware of it.

Since the ontogenetic turn, we know, however, that action (*Handlung*) molds its structure in the infant operational cognition during early ontogenetic development ([20]; [21], cf. [2], pp. 155–197; cf. [22], pp. 122–145; cf. [23], pp. 122–155). This is the so-called logic of action (*Handlungslogik*). The consciousness is usually unaware of this molding process due to its ontogenetic origins. The structure of action is very simple and tends to be repetitive. During the early ontogenesis, the caregiver is the most relevant object for the infant in its environment. Consequently, this object is also the one which decidedly imprints upon the infant. This scenario is the place where the translation of action occurs as a pattern of thinking. Yet, the most existentially important object in the infant's environment is in fact a person, a subject, and most important, an agent of actions. The ontogenetic translation or molding process of the action structure in human cognitive development has, indeed, its own complexity. The reference to this evidence should be sufficient for the present discussion.⁹ Starting from this development, the thinking subject perceives and organizes the field of objects and occurrences by means of the action logic. Since all phenomena of experience seem to be caused or driven by an acting agent, we call this assimilative cognitive mechanism subjectivist pattern or form of thinking. The structure of action imprints itself as a subjectivist form of thinking.

In the course of the cognitive, social, and, in general, cultural development of an individual, the subjectivist form of thinking suffers many restrictions and abstractive modifications. For example, the child progresses beyond the so-called animist stage and develops many other symbolically mediated skills that work parallel to cope with and within the world. Relevant for the present discussion is noticing that the core structure of the presented subjectivist form of thinking is not confined to infantile development or

childhood. It develops in adult life to some abstractive variations in a formal fashion. From a formal perspective, the subjectivist form of thinking has a two-sided structure that can be grasped as linear, namely as LFT.

In the cultural history of LFT, one finds a number of abstractive developments that can be considered as variations of one and the same pattern. In early mythical thought, for example, LFT has its expression in terms of deities and their will. Yet, not only gods and their will or powers were postulated as the (subjective) reason for occurrences and the existence of objects at the beginning of the enarrative descriptions of the world, but also the beginning itself. The beginning, whatever it might be, undertakes the role of the agent in the subjectivist, two-sided structure, whenever it is postulated as absolute and unconditioned. This explains why in the past the origin, as the absolute beginning of things and events, was valid as sufficient reason for accounts and understanding. Behind this understanding is the logic of action, through which the subject thinks the action before the action itself takes place. The explanandum is, hence, already thought in the origin. The origin, as the absolutely posited beginning, is validated as an account or an explanation.¹⁰ Thompson follows precisely this line of reasoning when he affirms that “the guiding issue is to understand the emergence of living subjectivity from living being, where living being is understood as already possessed of an interiority that escapes the objectivist picture of nature” ([1], p. 236), letting us know that that interiority is, in fact, an incipient form of mind.

IV. CIRCULAR RATIONALITY AND ITS UNFOLDING DYNAMICS:
FOR THE SAKE OF INTUITIVE ASSOCIATIONS

Assuming that mind is already contained in life, there is nothing really left to be explained. All one must do is to find more or less good associations that support the already posited “explanation”. From the metaphorical and associative standpoint, Thompson seems to be intuitively right once his affirmation—that life implies mind—is likewise intuitively embraced, i.e. in a subjectivist thought pattern. In other words, one needs not an explanation of this in order to associatively agree with him, after his premise is accepted. Yet, making patent the form of thinking to which Thompson's argumentation adheres, the misleading and inaccurate character of his account seems to be both scientifically, as well as philosophically, less acceptable for a systemic and secular understanding of the world.

Although Thompson's line of reasoning is vulnerable in many aspects, we shall not ignore its merits. Apart from John Searle's hard criticism of some discourses in philosophy of

⁹ From the vast work of Jean Piaget, see, for example, [20] and [21]. For recent developments of Piaget's seminal work on cognitive development, see [5], as well as [9].

¹⁰ Dux depicts extensively a number of variations in the historical development of PFT ([2], pp. 91–116). They go from the Greek teleology in metaphysics over the transcendentalism in modern philosophy and the absolutism of the linguistic turn up to the contemporary sociological system theory. For a philosophical discussion of Dux' account, see [3].

mind, the work of Thompson and his collaborators greatly contributed in bringing central debates in philosophy of mind, in theory of knowledge, as well as in the philosophical branch of cognitive sciences, to a much more realistic and productive level. With patience and tact, he discusses and establishes a dialogue with famous, as well as amusing, approaches and debates that are in their core quite ludicrous and trivial from a real-constructivist point of view. The work of Thompson and his colleagues has impacted upon philosophy of mind and the cognitive sciences in a manner comparable to which Edmund Gettier's famous paper [24] did in analytic epistemology.¹¹ Nevertheless, there is still much to be done. In his book *Mind in Life*, Thompson offers extensive biological data and philosophical reviews around his general thesis with the purpose of backing up his main asseveration, namely that biological nature or life implies mind. In my view, none of this really helps to give an accurate account of the development of mind out of its natural preconditions, because he is still dodging the question of the processuality of mind as such.

Getting round the mind by implying it at the beginning of life has its argumentative consequences. The most noticeable consequence is that there is nothing left to account for after an absolutist assumption such as 'if life, then mind' ($p \rightarrow q$). In this section I restrict my criticism to two outcomes of LFT in Thompson's argumentation. As already mentioned in advance, these are:

- (1) an unfolding understanding of development, and
- (2) an insufficient operative concept of emergence.

Unfolding development and trivial emergence

Thompson's supposition of an incipient mind in the simplest living beings is based upon a profound confusion about autopoietic feedback or looping-coupling processes on one hand, and about sentience or organic consciousness on the other. While he interprets the former as "selfhood" and the latter as the fundament of "sense-making" ([1], pp. 128–165), both together imply "a kind of interiority" that is not equivalent to the spatio-temporal dimensions of the physical world. In Thompson's word: "Life realizes a kind of interiority, the interiority of selfhood and sense-making" ([1], p. 238). I agree with Thompson when he said that one should not understand biology in mechanical terms, yet it seems to me as if he were willing to re-spiritualize biology in the wrong context, namely in a secular understanding of the world.¹² However, what Thompson is actually suggesting is to adopt nearly the same conception of biological matter that Burnyeat defends in his interpretation of Aristotle's *De Anima* [26]. According to Scaltas [27], Burnyeat claims in an

early and quite different version of his revised article *Is an Aristotelian Philosophy of Mind Still Credible?* (1992) that Aristotle principally conceives biological matter as animate, and that both perception *and* intellection are thought of as pristine properties of biological matter.

The general claim is that Aristotle did not conceive of biological matter as being inanimate, by contrast to our own conception of matter [...]. Rather, the claim continues, for Aristotle, *perceptual powers*, as well as other mental powers, are *primitive properties* of biological matter. Perceptual powers [as well as mental powers] are as primitive as the weight or the warmth of biological matter. ([27], p. 25)

Whether Burnyeat's reading really fits to Aristotle's *De Anima* is a very contentious matter among Aristotelian academics. On the other hand, Burnyeat's reading seems to better fit to Thompson's approach to the autopoietic formations. Notwithstanding the above more hermeneutical discussion on Aristotle,¹³ Thompson's sense-making fallacy relies rather on the form of thinking he employs, namely LFT. LFT hinders Thompson from thinking of real emergence and development in a non-derivative way. In other words, LFT forces Thompson to posit an incipient mind with selfhood, sense-making and subjective interiority in the basis of life, because this two-sided rationality has explicative validity within LFT's framework. Although this form of thinking belongs to the metaphysical past, one finds it from time to time even in scientific reflections, possibly because the meta-level of those reflections remain often unreflected. Thompson's argumentation qualifies as a remarkable example.

To illustrate this, let us examine Thompson's use of the term *development*. He uses it mostly in the sense of unfolding, i.e. a kind of unrolling of what is already there. This understanding of development as unfolding is also related with his conception of process. In Thompson's words: "Objects persist and undergo change and transformation; *processes unfold and develop in time*; and events arise, endure, and cease" ([1], p. 317, my emphasis). Processes are therefore conceived and described in terms of unfolding phenomena through time. Regardless of Thompson's efforts in connecting this concept of unfolding development with dialectic notions of interactions or with developmental systemic approaches, all these attempts remain at the metaphorical and associative level. They fail to give an accurate reconstruction of the phenomena in question, not because these approaches are unable to achieve an adequate explanation per se, but rather because they are subsumed in a logical framework that does not need it. For instance his concept of emergence, namely "dynamic co-emergence", only serves to state two trivial asseverations: (1) that an organism is an organic unity not to be reducible into

¹¹ For a very brief appreciation of Gettier's influence in contemporary epistemology, see [25], pp. 3–6.

¹² In this sense, Thompson enables his readers to make associations with metaphysical and religious worldviews. For example, one could think of a modern version of the Buddhist school of Vijñānavāda system, which proposed in its origins around the figure of Vasubandhu that all experienceable reality is but mind or *citta*.

¹³ For a logico-structural analysis of Aristotle's understanding of causation, see [28].

its parts or elements, and (2) that whole and parts are codependent. Thompson formulates this as follows:

Dynamic co-emergence best describes the sort of emergence we see in autonomy. In an autonomous system, the whole not only arises from the (organizational closure of) the parts, but the parts also arise from the whole. ([1], p. 65)

The problem with making trivial asseverations is not the triviality as such, but rather that they neither offer any new knowledge on the matter nor help to clarify how mind comes about from non-minded nature. To put it more simply, I would like to illustrate the scenario in the following way: It is fine to know that organisms are organic unities irreducible to their elements and that they are, to some extent, codependent in all scales of the system. However, one may also ask how this general worldview—available since the late 1930's and early 1940's through Bertalanffy's works¹⁴—can help to give a more concrete account that transcends the mere metaphor and intuition of *circles*, *cycles*, *spheres* or *systems*. Correspondently, there is no a single instance in Thompson's argumentation where he gives an account of how mind is generated from the real biophysical conditions of life. That is because Thompson does not conceive mind as a novelty in the world. As a consequence of this, his concept of emergence is merely a summative, instead of a generative one.

In order to solve the problem of an insufficient understanding of emergence in this context, we need to realize that mind is a systemic phenomenon that has to be grasped by means of a systemic logic. As a systemic phenomenon, mind is a real novelty in the evolution of life. Yet, within the framework of a two-sided form of thinking like LFT, a derivative thinking is considerable promoted. Due to its derivative character, this kind of thinking seems to be foredoomed to theoretical closure. As a consequence in such a meta-level framework, novelty turns out to be quite unthinkable. There only remains room for gradual augmentation, accidental variations and additive formations, but not for structurally new arrangements or novelty as such. In derivative thinking the explanandum must be derived, that is to say, extracted from its own postulation. For this reason, it is necessary to posit an absolute, a subjectivist beginning within the logical parameters of LFT. This is precisely the case of Thompson's argumentation pleading in favor of a biological matter "that escapes the objectivist picture of nature" ([1], p. 236). In this context, it is evidently Thompson's expectation to get the acceptance of this lax understanding of autopoietic basal formations within the academic community. The following passage plausibly sustains this reading:

Suppose at some point in the future, physicists felt compelled to include mental properties (*qua* mental) as fundamental properties of physical theory. Given that we cannot accurately predict the future course of physics, we have to at least allow for this possibility. In fact, some physicists and philosophers already believe such inclusion to be necessary to account for both mental and physical phenomena. But in that case, the closure of physics would include the mental *qua* mental (as opposed to the mental *qua* reduced to the physical). ([1], p. 439)

The postulation of a biological stratum as already comprising of incipient minds appears to be critically unsound within the framework of PFT, which has no metaphysical character in the subjectivist and absolutist sense here explained. According to LFT, on the contrary, it is completely natural and valid to argue in this way. A germinal form of mind is posited at the beginning of the exposition in order to let it unfold up to a richer form, i.e. to the human mind, at the end of the argumentation. Thompson pursues nothing more, nothing less than that. Hence, it is in this fashion that the human mind *develops*, *unfolds*, and *emerges* after Thompson's account of it. This explains also why he does not see at all the necessity of giving an account of a real, i.e. generative, emergence of mind. After LFT, there simply does not exist such a problem to be formulated at all.

V. CONCLUSIONS AND DISCUSSION

At the beginning of the present paper, in Section II, I showed that Thompson's understanding of mind, formulated as "incipient mind", is not a radically different concept of mind as the operative concept I sketched in the introductory Section I. In Section II, I identified and described the conclusive similarities Thompson's concept of an incipient mind shares with the notion of mind as a symbolically mediated cognitive skill. These convergent aspects are the inner sphere of the mental and the intentionality or, as Thompson calls it, the "immanent purposiveness". Connecting to this analysis, I demonstrated that the assumptions Thompson makes in his concept of an incipient mind and the corresponding mental attributions to unicellular organisms do not follow from any basic biological facts (object-level).

From these opening arguments arose the question of why then Thompson, despite these basic empirical facts, fell into the incipient mind fallacy. After briefly describing and contrasting the two forms which can be postulated for the enarrative practice in the broader context of Section III, I made clear that Thompson's argumentation is de facto subordinated to LFT. This was the first step in answering our question.

Besides the purpose of briefly introducing the concepts of PFT and LFT, the description of PFT in Part A of Section III was also intended to make clear that its central

¹⁴ Ludwig von Bertalanffy tracks his system-theoretical work back to 1937. See [29], p. 90.

characteristics, namely its dynamic-systemic structure, the potentiality of expounding novelty, its specific epistemic contingency, and its applicability to different types of processualities qualify PFT as the most suitable enarrative structure in term of which mind can find a sound explanation. Conversely, LFT showed itself as an inappropriate meta-level framework of exposition. Accordingly, LFT and mind are in their theoretical and empirical character completely incompatible.

In Part B of Section III, I concisely described how LFT comes about in early ontogenesis and why it has the two-sided structure it has. I also explained why LFT can properly be grasped as a subjectivist and an absolutist, as well as a linear, thinking pattern. In connection with these characteristics, I discussed in Section IV how the linear structure of LFT can also be shaped circularly. Comparing LFT's structure with Thompson's argumentative exposition, I demonstrated that he works *de facto* within the framework of LFT at the meta-level. As a result of this *modus operandi*, he develops an unfolding understanding of development and an insufficient operative concept of emergence. Thereby, we have seen why these two working concepts do not really work for a sound explanation of human mind. While the first remains confined in the two-sided and derivative structure of LFT, the second shows itself unable to give an accurate account of novelty *per se*.

Altogether, we have seen that Thompson structurally works with LFT, although the language he uses in his argumentation belongs, to some extent, to the enarrative praxis of PFT. In uncovering these differences, I have suggested that, from a processual vantage point, Thompson's assumption of an incipient mind is based on the fallacy of presupposing it from the beginning of the argumentation in a subtle and absolutist fashion.

After revealing the structural unsoundness of Thompson's incipient mind argument, I now suggest an alternative to the enterprise of explaining how mind generates and develops. The first prerequisite in order to give a developmental account of mind is a deep understanding of how it works at all. As already anticipated in the introductory section, mind is a complex of skills that operates constructively by means of thought and language. It is in constantly development since the birth of the individual and at the same time in relation with the historical development of social worlds. In this line of thought, the mental must be understood as a pragmatic construct of a developing mind that is to come to terms with the world. The construct of the mental is one of a multiple spectrum of constructs that are necessary in order to efficiently live in the changing natural and social world already found by the individual. In the case of humans, the mental is therefore a construct built by means of thought and language.

In order to tackle the task of a systemic understanding of human mind, we must focus on its mediality, as well as on its

symbolically mediated processuality. How the operability of thinking develops from the interactions with and within the world and how categories are built by an individual (organism) in order to find an orientation and a possibility of (re)organization in a cultural milieu, are the guiding questions for a fruitful beginning of research. This research is to be based upon action-based theories, as well as upon real-constructivist approaches.¹⁵ Based on the real biophysical conditions, the great research challenge actually lies on the transition of the cognitive means: *from* high developed moment-to-moment sensing *to* thought and language. An accurate account of such a complex and concatenated phenomenon like mind has to be conceived in terms of PFT at the meta-level of exposition, if there is the intention of explanatory success and factual adequacy at all.

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REFERENCES

- [1] E. Thompson, *Mind in Life. Biology, Phenomenology, and the Science of Mind*. Cambridge, Mass.: Belknap Press, 2007.
- [2] G. Dux, *Historico-genetic Theory of Culture. On the Processual Logic of Cultural Change*. Trans. by Neil Solomon. Bielefeld: Transcript, 2011.
- [3] J. Y. Álvarez-Vázquez, "The Processual Form of Thinking. A New Perspective from Developmental Philosophy," *GSTF International Journal of General Philosophy (JPhilo)*, vol. 1, pp. 40–49, March 2014.
- [4] G. Dux, *Die Moral in der prozessualen Logik der Moderne. Warum wir sollen, was wir sollen?* Weilerswist: Velbrück Wissenschaft, 2004.
- [5] D. N. Stern, *The Interpersonal World of the Infant*. New York: Basic Books, 2000.
- [6] J. A. Shapiro, *Evolution: A View from the 21st Century*. New Jersey: FT Press Science, 2011.
- [7] J. Collado-Vides, "A linguistic representation of the regulation of transcription initiation. II. Distinctive features of sigma 70 promoters and their regulatory binding sites". *Biosystems*, vol. 29, pp. 105–128, 1993.
- [8] M. Barbieri, "Biosemantics: a new understanding of life". *Naturwissenschaften*, vol. 56, pp. 577–599, 2008.
- [9] J. W. P. Allen and M. H. Bickhard, "Stepping off the pendulum: Why only an action-based approach can transcend the nativist-empiricist debate," *Cognitive Development*, vol. 28, pp. 96–133, April/June 2013.
- [10] P. McLaughlin, *What Functions Explain. Functional Explanation and Self-Reproducing Systems*. Cambridge: Cambridge University Press, 2001.
- [11] E. Tulving, *Elements of episodic memory*. Oxford/New York: Oxford University Press, 2007.

¹⁵ Unfortunately, a number of great action-based efforts have been systematically attacked during the last forty years (cf. [9]).

- [12] D. L. Schacter and D. A. Wagner “Learning and Memory”. In Eric R. Kandel et al. (eds.), *Principles of Neural Science* (New York: McGraw-Hill), pp. 1441–1460, 2013.
- [13] K. Nelson and G. Ross, “The Generalities and Specifics of Long-Term Memory in Infants and Young Children”. *New Directions of Child Development*, vol. 10, pp. 87–101, 1980.
- [14] D. H. Ashmead and M. Perlmutter, “Infant Memory in Every Day Life”. *New Directions for Child Development*, vol. 10, pp. 1–16, 1980.
- [15] H. R. Maturana and F. J. Varela, *The Tree of Knowledge. The Biological Roots of Human Understanding*. Boston: Shambhala, 1998.
- [16] R. G. Millikan, “Biosemantics”. *The Journal of Philosophy*, vol. 86, pp. 281–297, 1989.
- [17] F. Heider and M. Simmel, “An Experimental Study of Apparent Behavior”. *The American Journal of Psychology*, vol. 57, pp. 243–259.
- [18] H. E. Lück, Helmut, “Die Heider-Simmel-Studie (1944) in neueren Replikationen”. *Gruppendynamik und Organisationsberatung*, vol. 37, pp.185–196, 2006.
- [19] A. V. Getling and O. Brausch, “Cellular flow patterns and their evolutionary scenarios in three-dimensional Rayleigh-Bénard convection”. *Physical Review E*, vol. 67, 2003. doi: 10.1103/PhysRevE.67.046313.
- [20] J. Piaget, *Einführung in die genetische Erkenntnistheorie*. Trans. by Eleanor Duckworth. Frankfurt a.M.: Suhrkamp, 1973.
- [21] J. Piaget and B. Inhelder, *Die Psychologie des Kindes*. Trans. by Lorenz Häfliger. Stuttgart: Klett-Cotta, 2009.
- [22] C. R. Hallpike, *The Principles of Social Evolution*. Oxford: Clarendon Press, 1986.
- [23] C. R. Hallpike, *How We Got Here. From Bows and Arrows to the Space Age*. Bloomington, Indiana/Milton Keynes: AuthorHouse, 2008.
- [24] E. Gettier, “Is Justified True Belief Knowledge?” *Analysis*, vol. 23, pp. 121–123, 1963.
- [25] S. Bernecker and F. Dretske (eds.), *Knowledge. Readings in Contemporary Epistemology*. Oxford: Oxford University Press, 2009.
- [26] M. F. Burnyeat, “Is an Aristotelian Philosophy of Mind Still Credible? A Draft”. In Martha C. Nussbaum and Amélie O. Rorty (eds.), *Essays on Aristotle’s De Anima*. Oxford: Oxford University Press, pp. 15–26, 1992.
- [27] T. Scaltas, “Biological Matter and Perceptual Powers in Aristotle’s De Anima”. *Topoi*, vol. 15, pp. 25–37, 1996.
- [28] U. Wenzel, *Vom Ursprung zum Prozess. Zur Rekonstruktion des Aristotelischen Kausalitätsverständnisses und seiner Wandlungen bis zur Neuzeit*. Opladen: Leske + Budrich, 2000.
- [29] L. von Bertalanffy, *General System Theory. Foundations, Development, Applications*. New York: George Braziller, 1984.

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