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COMMENT

The Metaphysics of Living Consciousness: Metabolism, Agency and Purposiveness

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Abstract
Life has evolved; and so must have consciousness, or subjective experience, as found in living beings, Eva Jablonka and Simona Ginsburg contend. In their target article, which summarises the main theses of their seminal book *The Evolution of the Sensitive Soul*, the authors put forward an evolutionary account of consciousness that builds upon the intimate connection between consciousness and life without, however, equating the two. Instead, according to Jablonka & Ginsburg, there was life before there was consciousness, and there are still living beings without consciousness. Here I offer some metaphysical considerations in favour of a more inclusive notion of consciousness than Jablonka & Ginsburg's. These considerations turn on the role played by metabolism and agency in the processual constitution of living beings as well as on the continuum between sensation and perception. Rather than postulating a mindless inwardness in presumably non-conscious organisms, we ought to recognise the constitutive experiential nature of life, rooted in its intrinsic purposiveness.

Keywords Consciousness · Subjective experience · Metabolism · Agency · Purposiveness · Perception

Three Kinds of Soul: Aristotle Revived

Aristotle famously regarded living beings as ensouled, with the soul being the principle or source of living movement. Thanks to their soul, living beings move, rather than just being moved like non-living things; and they can be ranked according to the

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kinds of living movement[1] they are capable of: plants, by possessing no more than the psychic faculties of nutrition and reproduction, are at the bottom of the hierarchy; followed by animals, which in addition to nutrition/reproduction are capable of perception; and finally there are humans, who have rationality on top of both nutrition/reproduction and perception. Eva Jablonka and Simona Ginsburg translate this static scheme into evolutionary time. As explained in detail in their seminal book *The Evolution of the Sensitive Soul* (2019) and neatly summarised in their target article (2022), the first act of evolution was to bring forth life in the first place: non-conscious living beings. Only in a second step, conscious animal life evolved, namely facilitated by unlimited associative learning (UAL). The occurrence of unlimited symbolising eventually enabled the evolutionary transition towards the reflective life form of humans.

Jablonka & Ginsburg's main interest lies with the intermediate transition: "How did minimal consciousness originate during animal evolution?" (Ginsburg & Jablonka, 2019: 1). To answer this question, one of course needs to know what is required for an organism to qualify as *minimally* conscious. According to Jablonka & Ginsburg, this is actually quite a lot. Summarising their detailed 'consensus list' (Jablonka & Ginsburg, 2022: 412 f. and Table 1), we can say that a minimally conscious organism in Jablonka & Ginsburg's sense needs to have complex perceptual abilities, including the capacity to perceive objects as wholes made of parts and to integrate multisensory inputs with evaluative information and memory; memory skills sophisticated enough to learn from video-sequences; value-constitutive affective states including some kind of affective control; selective attention with the possibility to switch between vigilant and habituated 'autopilot' behaviour; intentionality; agency; and a sense of self. Unsurprisingly, only a limited number of organisms are found to satisfy these criteria, namely "most vertebrates, some arthropods and one group of mollusks, the coleoid cephalopods (the squid, the cuttlefish and the octopus)" (Jablonka & Ginsburg, 2022: 420). All others – animals of other phyla as well as plants, fungi, protists, bacteria and archaea – are deemed non-conscious (Ginsburg & Jablonka, 2021: 26), i.e., to lack any subjective experience.[2] Despite the rather high standards set for minimal consciousness, there is no *even more minimal* minimal consciousness for Jablonka & Ginsburg. Or is there?

Primitive Souls: Neither Minds nor Machines

Jablonka & Ginsburg firmly reject biopsychism, the view that life and consciousness are coterminous, as defended, for instance, by Margulis & Sagan (1995), Reber (2018) and Baluška & Reber (2019). The authors seem willing to concede to the biopsychists that organisms as simple as single cells have cognition – something famously argued by Humberto Maturana and Francisco Varela as part of their auto-

[1] Movement, for Aristotle, is not confined to locomotion but comprises other types of change, including those mentioned in the following.

[2] Jablonka and Ginsburg use the terms 'consciousness' and 'subjective experience', or 'subjective experiencing', interchangeably (see, Jablonka & Ginsburg, 2022: 402, and Ginsburg & Jablonka, 2019: 6).

poiesis theory of life (Maturana & Varela, 1980); but they insist that cognition need not be accompanied by consciousness. Just as humans sometimes engage in "non-conscious decision making", so can "[a]ll the capacities attributed to cell cognition […] be accounted for without assuming that cells feel and perceive" (Ginsburg & Jablonka, 2021: 20). The – admittedly – impressive adaptive plasticity of primitive organisms does not require or imply sentience.

Yet, Jablonka & Ginsburg, at the same time, explicitly distance themselves from a mechanistic understanding of organisms, whether conscious or non-conscious, as machines: "A functional and structural coupling of adaptive biochemical processes, which is sufficient for the description of machines, fails to fully capture the dynamics of living organisms" (Jablonka & Ginsburg, 2022: 410). There is something about their dynamic organisation that sets organisms apart fundamentally from machines: their "adaptive plasticity", which the biopsychists mistakenly "identify […] with phenomenal consciousness" (ibid.). More precisely, organisms, unlike machines, are characterised by "agential plasticity" (Jablonka & Ginsburg, 2022: 409), i.e., by the "intrinsic spontaneous activity of plasticity default networks" (Jablonka & Ginsburg, 2022: 410), the latter being defined as "the biochemical, neural, and cultural networks that are the preconditions for any developmental adjustments" (Jablonka & Ginsburg, 2022: 409). "[M]achines", the authors write, "are usually not seen to be endowed with such restless inwardness" (Jablonka & Ginsburg, 2022: 410).

The generic attribution of 'inwardness' to organisms is baffling because it implies that also supposedly non-conscious organisms possess inwardness. A non-conscious inwardness – isn't this an oxymoron? Jablonka & Ginsburg think not. They are happy to acknowledge that "[t]he turbulent inwardness of organisms is intuitively related to what we call subjectivity"; moreover, they even assert that "the inner, restless, turbulent state that is the condition for all modes of living […] can be described in terms of a non-conscious, dynamic internal nascent 'ego'" (ibid.). So, according to Jablonka & Ginsburg, all organisms, by virtue of their inwardness, are subjects – 'ego's; but only for some of them it feels like something to be what they are. The vast majority of organisms on Earth display subjectivity without any subjective experiences. Given the conceptual ties between subjectivity and subjective experience, this claim is no less puzzling. Subjectivity entails a point of view, a perspective from which reality is experienced. 'Subjects' have as their counterparts 'objects' they perceive, interact with or experience in some sense, however minimal. How can a being be a subject without having any objects?

Vivaciousness: Mindless Inwardness of Matter?

As far as I can see, Jablonka & Ginsburg do not address this question. They seem content with the idea that living organisation brings with it a kind of default inner state lacked by machines, an inner state they also call *vivaciousness*, contrasting it with the default inner states of neural organisms and humans: consciousness and reflectiveness (Jablonka & Ginsburg, 2022: 410). While these latter two clearly correspond with Aristotle's characteristics of the animal and the human soul: perception and rationality, the relationship between Jablonka & Ginsburg's vivaciousness and

Aristotle's equivalent – nutrition/reproduction – is less straightforward. Jablonka & Ginsburg (2022: 407) name "self-maintenance (through nutrition at the individual level and through reproduction at the lineage level)" as "the sole goal" of Aristotle's nutritive plant soul. Vivaciousness, on the other hand, refers to the "inner, dynamic default state of the living, water-based 'wetware' of living beings […], which is necessary for their self-maintenance during ontogeny and which enables their reproduction" (Jablonka & Ginsburg, 2022: 410).

My hypothesis is that what links vivaciousness to Aristotle's nutrition is the "internal endless flux of material and energy" (Jablonka & Ginsburg, 2022: 409) entailed, according to Jablonka & Ginsburg, by the vivacious inner state, which they think is a state of matter, not of mind: *metabolism* brings about the nourishment of an organism and thereby keeps the organism (and, ultimately, the lineage) in existence. The question we need to ask then is whether the 'restless turbulence' of metabolism is suited to support Jablonka & Ginsburg's idea of a mindless, purely material form of inwardness: the inwardness of a subject without experience, of an organism that is *merely* alive without having any feeling thereof.

Internal Identity: Metabolism as the Origin of Subjective Experience

Hans Jonas, in his 1966 monograph *The Phenomenon of Life*, has argued forcefully that this is not the case. On the contrary, for him metabolism is precisely what gives rise to mind in nature. Jonas's argument is based on the observation that metabolism introduces a different kind of identity in the realm of nature: a dynamic identity that, unlike the static identity of inanimate material things which consists in the sameness of material components, is constituted by the continuous change of material components. The organism "is never the same materially and yet persists as its same self, *by* not remaining the same matter" (Jonas, 2001: 76). Indeed, should the organism fail to maintain the change of matter it ceases to exist; a breakdown of metabolism amounts to a breakdown of life to the extent that the dynamic sameness of "living form" collapses into the static sameness of matter (see ibid.). For the organism, "[s]ameness, while it lasts […], is perpetual self-renewal through process, borne on the shift of otherness" (Jonas, 2001: 79; see Meincke, 2018b and 2022, for more details).

The basic situation of life is thus characterised by a peculiar dialectic: on the one hand, the living form displays a certain independence from matter, by being able to change its matter for the sake of self-perpetuation; on the other hand, the change of matter is a necessity for the organism because its self-perpetuation depends on it (Jonas, 2001: 83). This relationship of "needful freedom" (Jonas, 2001: 80), according to Jonas, is the birthplace of subjectivity, by opening up a fundamental "polarity of self and world" (Jonas, 2001: 83). In order to satisfy its need for matter, the organism turns outward, 'transcends' itself towards the world by wanting this and that out there; at the same time, the satisfaction of its needs serves for the organism the purpose of demarcating or 'isolating' itself from the world so as to maintain its "internal identity" (Jonas, 2001: 82), "defying the equalizing forces of physical sameness all around" (Jonas, 2001: 83). This, after all, is "the point of life itself: its being self-centered individuality, being for itself and in contraposition to all the rest of the

world, with an essential boundary dividing inside and outside – notwithstanding, nay, on the very basis of the actual exchange" (Jonas, 2001: 79; see also Meincke, 2022).[3]

Jonas leaves no doubt about the phenomenal quality of even the most basal form of organic subjectivity. Being affectable by objects in the world, "the affected feels itself, its selfhood excited, or illuminated as it were, against the otherness without" (Jonas, 2001: 85). The "inwardness or subjectivity involved in […] transcendence […] imbu[es] all the encounters occasioned in its horizon with the quality of felt selfhood, however faint its voice" (Jonas, 2001: 84). And he adds: "It must be there for satisfaction or frustration to make a difference" (ibid.). This is an important point. If the organism were indifferent against the fulfilment of its needs, why would it make any efforts towards their fulfilment? In fact, we could not even consistently attribute any 'needs' then to the organism. A being that does not feel itself does not have needs – something we find in the "self-sufficiency of mere matter" (Jonas, 2001: 84). In other words, there is no such thing as a mindless inwardness because there is no such thing as a living being that does not care about itself, that does not want to survive and does not work towards its survival.[4] The teleological structure of living organisation entails some degree of subjective experience, however minimal it may be (see Jonas, 2001: 91), revealing consciousness to be an essentially affective, not cognitive, phenomenon.

Goal-directed Behaviour: Agency Without Consciousness?

Recapitulating their arguments, Ginsburg and Jablonka (2022: 431) declare: "The hiatus between vivacious living organisms and non-vivacious machines is as large as that between conscious and non-conscious living organisms." This is a strong claim – too strong, to my mind, at least with respect to the second part of this analogy.[5] If 'vivaciousness' refers to the metabolic condition and, that is, to the profoundly processual organisation of life, we ought to question the existence of (literally) non-conscious organisms. A being that only continues to exist thanks to its own efforts of performing the right kind of interactions with a – hopefully favourable – environment, a being that is nothing beyond this precarious process of autopoiesis (see Maturana & Varela, 1980, and Meincke, 2019) or, as I like to say, of interactive self-stabilisation (see Meincke, 2018b, 2021, 2022), such a being, in virtue of its very constitution, takes a stand on reality, it has a perspective and is open towards the

[3] On the role of boundaries and their connection with organisational closure see also Meincke, 2019, and 2020.

[4] "Whether we call this inwardness feeling, sensitivity and response to stimulus, appetition or nisus – in some (even infinitesimal) degree of 'awareness' it harbors the supreme concern of organism with its own being and continuation in being – that is, it is self-centered […]" (Jonas, 2001: 84).

[5] As far as the first part of the analogy is concerned, I agree that there is a difference in kind between living beings and machines (for reasons to do with the specific processual organisation of organisms and its implications as indicated above and in the following; for details see Meincke (2018b) and Jonas (2001): esp. 76 and Chap. 5; though I think that proponents of biological conceptions of agency tend to overemphasise the difference with respect to the (conceptual) possibility of non-biological agency, see Meincke (2018a).

world[6] precisely because the world is for it not a neutral place but a site of values and affordances for action (Meincke, 2022).[7]

Of course, one can cast doubts on the assumption that organisms, at least the more primitive ones, actually do make efforts towards their own persistence. Is not the behaviour of, say, an amoeba just the automatic running of mechanisms? If so, why would these mechanisms need to be accompanied by consciousness given that they appear to do the necessary work all by themselves?

Recall Jablonka & Ginsburg's belief that cognitive processes found in cells can be fully accounted for without invoking feeling and perception (2021: 20). In their commentary article, Reber et al. (2022: 448) accordingly write: "J&G treat these unicellular behaviors as being governed by robotic, non-conscious operators." I surmise that Jablonka & Ginsburg will not be entirely happy with this description of their position, given their rejection of the "machine metaphor" as applied to organisms (Jablonka & Ginsburg, 2022: 431). Qua vivacious, organisms, even if non-conscious, are not 'robots' or 'operators'. Instead, Jablonka & Ginsburg consider them 'agents', an agent being defined as "a dynamic system displaying unified, adaptive, *goal-directed*, plastic (flexible) internal organization and behaviors" (Jablonka & Ginsburg, 2022: 402 (box 1)).

Agency, for Jablonka & Ginsburg, does not require consciousness. The authors acknowledge the existence of "goal-directed behaviour that is based on intentions and beliefs", thus involving "a representation of the instrumental contingency between the action and the outcome and a representation of the outcome as a goal for the agent" (Jablonka & Ginsburg, 2022: 403 (box 1)). But this is just a special case within a broader category of goal-directed behaviour, generically defined as "behavior that lead [sic] to the attainment of *goal/s*" (ibid.), goals, however, which "satisf[y] an intrinsic *value* that guides a system's behavior" (ibid.). The required intrinsicness of the values satisfied by actions excludes from the class of agents machines like thermostats or torpedoes, whose behaviours satisfy goals that, set by the constructor and/or operator, are extrinsic to them. Yet, it is not clear in what sense the behaviours of systems which, while alive, are (supposedly) as non-conscious as thermostats or torpedoes could be guided by *intrinsic* goals, given that there is no sense in which such systems can be considered as themselves setting these goals.[8] If the intrinsic goals in question are meant to be goals of *action* and, that is, are supposed to be *pursued* instead of being merely *served*, how can we imagine a system pursuing such goals without any awareness of, and any interest in, what it is doing?

[6] As Jonas (2001: 84) puts it: "Thus 'world' is there from the earliest beginning, the basic setting for experience – a horizon of co-reality thrown open by the mere transcendence of want which widens the seclusion of internal identity into a correlative circumference of vital relationship."

[7] Thompson (2022: 240) accuses Jonas of having failed to answer the question: "Why should being directed towards values entail sentience of value? […] Why can't there be intrinsically purposive, autopoietic agents that respond to values as norms of flourishing but without feeling hedonic value or affective valence?" This question misrepresents Jonas's position by putting the cart before the horse: according to Jonas, there are values in the sense of intrinsic purposes only for a sentient being that is concerned with its own being.

[8] Note that the intrinsic goals at issue here are not generic goals, such as survival or well-being, which no organism can choose (setting aside the special case of suicidal humans), but specific goals of particular actions, such as swimming up the attractant nutrient gradient or hunting that antelope over there.

The answer is: we can't imagine this. To repeat Jonas's point explained above: a being that does not feel itself does not have needs – and, hence, no goals either. Such a being, then, is no agent.[9] Talk of supposedly non-conscious "action selection" (Ginsburg & Jablonka, 2021: 20) is deceptive because it suggests agency where there is none and, in fact, need not be any, given that things, as it were, happen by itself, thanks to the smooth running of mechanisms. The whole point of agency is to do something that does not happen anyway, but happens only following a choice between different possibilities. This choice is informed by the situation in which the organism finds itself in the course of its continuous interaction with the world, as opposed to behaviours being caused directly by sensory input. It is exactly this decoupling of input and output and their mediation through a self-interested will that marks the breaking free of agency from mechanism.[10]

Natura Non Facit Saltus: the Continuum between Sensation and Perception and the Tribunal of Consciousness

The question of why primitive organisms such as an amoeba would need consciousness, given that their behaviour can be fully explained in mechanistic terms without it, becomes obsolete once we realise that organisms in fact cannot be thus explained, at least not completely, because the mechanistic explanation modus systematically ignores what is distinctive about life: that it is inwardness driven by needs.[11] For the same reason agency, too, remains systematically invisible to the mechanistic mode of explanation. To act is to make an effort and, as Jonas puts it, "[t]he mere element of effort lifts bodily activity out of the class of mechanical performance" (Jonas, 2001: 126). This effort did not only start with the movements of animals towards goals in space designated by emotions and based on perceptions, but is present already in "the primeval restlessness of metabolizing substance" (Jonas, 2001: 99).

Jablonka & Ginsburg follow Aristotle in linking perception with desire and reserving it to higher organisms, i.e., (certain) animals. Only organisms that perceive can be conscious, they think; mere sensation is not enough. It won't come as a surprise that I do not find this plausible. Sensory stimuli are world-disclosing for an organism,[12] and the more so, the more the organism is capable of reacting to them in a controlled manner, by performing actions. This 'the more so' needs to be taken seriously. It points to the fact that, far from there being a 'hiatus' between organisms that sense and

[9] Or at least it is not an agent as we know it, see Meincke (2018a).

[10] "The feedback combination of a receptor-effector system (which an organism indeed is among other things) lends itself to purposive action precisely if and when it is *not* a mere feedback *mechanism* – that is, if the two elements are not coupled directly, but if interposed between them there is will or interest or concern. This amounts precisely to saying that purposive behavior requires the presence of purpose" (Jonas, 2001: 119 f.).

[11] Compare Jonas's imaginary mathematician God, to whom "the organism must appear as a function of metabolism rather than metabolism as a function of the organism" (Jonas, 2001: 78).

[12] "Openness toward the world is basic to life. Its elementary evidence is the mere irritability, the sensitiveness to stimuli, which the simple cell displays as an integral aspect of its aliveness. Irritability is the germ […] of having a world" (Jonas, 2001: 99).

organisms that also perceive, there is a continuum between sensation and perception, reflecting an increasing ability to integrate impulses into a unified and homogeneous impression,[13] accompanied by a continuum of ever more intensified, i.e., individualised[14] subjective experience. Thus, we can concede to Jablonka & Ginsburg that the evolution of the nervous system has facilitated subjective experience or 'consciousness' in a more robust sense, while insisting that there were precursors.[15] Indeed, this is what we ought to expect given how evolution works.

Speaking of evolution, Jablonka & Ginsburg's contention that there was life before there was consciousness, and that there are still living beings without consciousness, prompts a question perhaps even harder than the one the authors have set out to answer: the question of not only how consciousness evolved but why it evolved at all. If life need not be conscious, why has it not remained non-conscious?[16] Was the evolution of living consciousness, as a new 'mode of being' (Ginsburg & Jablonka, 2020), just an accident? I hope to have shown that there are some fundamental metaphysical reasons to believe that the mystery of the emergence of subjective experience on Earth is identical to the mystery of emergence of life on Earth. To be sure, I cannot prove that this view is correct. However, I tend to agree with Jonas that we should not dismiss the evidence presented to us by our own embodied living existence. If "life can be known only by life" (Jonas, 2001: 91), our default assumption should not be that non-human organisms are non-conscious, which looks like a problematic relic of Cartesianism anyway. Instead, we should assume that they are – at

[13] Mere sensation – most primitively per touch or collision – is the limiting case of perception, see Jonas (2001: 29). Similarly, Henri Bergson argues that the range of perception is a measure of the degree of indeterminacy of action: "the more immediate the reaction is compelled to be, the more must perception resemble a mere contact; and the complete process of perception and of reaction can then hardly be distinguished from a mechanical impulsion followed by a necessary movement. But in the measure that the reaction becomes more uncertain, and allows more room for suspense, does the distance increase at which the animal is sensible of the action of that which interests it" (Bergson, 2004: 22).

[14] "The emergence of perception and motility opens a major chapter in the history of freedom that began with organic being as such and was adumbrated in the primeval restlessness of metabolizing substance. Their progressive elaboration in evolution means increasing disclosure of world and increasing individuation of self" (Jonas, 2001: 99). See also Jonas (2001): 100.

[15] "[T]here is always the purposiveness of organism as such and its concern in living: effective already in all vegetative tendency, awakening to primordial awareness in the dim reflexes, the corresponding irritability of lowly organisms; more so in urge and effort and anguish of animal life endowed with motility and sense-organs; reaching self-transparency in consciousness, will and thought of man: all these being inward aspects of the teleological side in the nature of 'matter'" (Jonas, 2001: 90).

[16] Ginsburg & Jablonka (2021: 21) have replied to a similar objection by Reber (2018) and Baluška & Reber (2019) that biopsychism in turn faces a "far more difficult" "emergence problem": "how does the brain-based sentience of dogs or humans emerge from the tiny sentiences of the cells that make up the multicellular body?" They add the complaint that biopsychism "makes nonsense of the distinction between conscious and unconscious states. The living liver cells of a person in deep coma are presumably still conscious but the person is not. Why do the consciousnesses of living cells fail to combine?" (ibid.). It is not clear to me why Ginsburg & Jablonka presuppose that the consciousness of a whole organism should come about through a combination or summation of the consciousnesses of its parts. This could only appear to be plausible if an organism were not more than the sum of its parts. But this is not the case. An organism is a higher-order entity, whose properties, while dependent on the properties of its lower-level constituents, are distinct from these – something that follows from its processual organisation, as I have argued elsewhere (Meincke, 2018b, 2019). This is in line with what emergentists standardly argue, see Meincke (forthcoming).

least minimally – conscious and demand it be proven that they actually are not. *In dubio pro conscientia*.

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