

Research Article

On the subject part I: what is the subject?

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The aim of this article is to provide a rigorous scientific and philosophical foundation for the analysis of what subjective being does in the objective world. It analyzes subjectivity as the awareness and agency of animated organisms. Wherever an organism has awareness and agency objectively, it is argued, this is experienced subjectively also following a natural law of emergence of subjectivity from the object or physical world. Performing work on the object to sustain their ongoing emergence, individual organisms scaffold themselves into structures that can emerge “super-agents” of further increased subjectivity. An increase of subjective awareness and agency, this article thus concludes, is real in the world. Without claiming that there is anything mystical like a “life force” or that there is a universal increase, it is argued that subjectivity must thus be taken seriously as a force for change in the objective world. The subject performs work on the object, which is an undeniable real-world impact. This awareness turned into agency, it is argued, is always experienced internally by the organisms that perform this work as an urge to perform this work. Subjectivity, hence, cannot be reduced to an epiphenomenon, even if fully accounted for and determined by natural laws.

Introduction

One thing that can be observed without doubt is that subjective awareness of the objective world is a “looking glass.” Through its emergence, the object builds a “reflection” of itself in the subject. There is a world “out there” and there is my internal representation of it. In its subjective experience, any organism merely moves through the world of its own subjectivity. What is actually “happening out there” could be entirely different. Somewhat echoing Plato’s allegory of the cave, Immanuel Kant’s “critical philosophy” caused a revolution in thinking by displaying this insurmountable barrier between the “phenomenon,” which is our subjective experience, and the “noumenon” or “thing in itself,” which is objective reality (Kant, 1998).¹ A more recent way of interpreting biology displays the

same distinction. According to biosemiotics, organisms navigate the world by moving through their “Umwelt,” which is their internal semiotic representation of their environment or, in simpler language, their subjective experience (Frauen, 2021b; Hoffmeyer, 1996, 2004, 2009).² One could thus say that an organism’s “environment” is what is actually “out there” and identify its subjective “Umwelt” with the Kantian “phenomenon,” with the outer world or object as it appears to the observer or subject. Accordingly, one can identify the actual “environment” of the organism with the Kantian “noumenon,” with the “thing in itself” as it actually is beyond appearance. Many biosemioticians, however, are unaware of the fact that when they interpret animals’ behavior in their “environment” by analyzing what animals experience in their “Umwelt,” this “environment” is merely our “Umwelt.” What is actually “out there” could be entirely different yet.

In Kantian philosophy, the subject is stuck forever in its “Umwelt” or phenomenal experience with no way to break through into noumenal reality. While this is certainly true for the individual, one must likewise note that evolution builds “Umwelten” of steadily increasing complexity and accuracy. Kant, in his pious pre-Darwin mindset, could not see it like this, but from what we know scientifically today, it seems that the phenomenon is *evolving*. Accuracy gets selected naturally as it increases the utility of actions in the feedback loop from object (“outer world”) to subject (“self”). Complex information processing systems like multicellular organisms are aware of more than single cells. The multicellular organism is aware of much more, in fact, than the combined experience of all of its lower-level constituents, which makes the increased awareness of a “super-agent” “strong emergence.”³ Subjective experience of the outer world in animation “moves towards” more encompassing semiotic representations of the elements that surround the organism in its environment. Thereby, subjectivity extends gradually further into the spatiotemporal realm to encompass more of the object in the subject. The surplus of semiotically represented features of the environment in the subject’s “Umwelt” enables the subject to increase its understanding of the object by the use of theoretical reason. Then, the subject is free to establish increased control over the object in agency through the employment of this increased awareness of pattern causality in practical reason. Knowledge, as the old saying goes, is power, at least potentially. Increased control of an organism over its environment, also, is an evolutionary advantage that eventually gets selected by natural selection. Naturally, practical control is likewise a feedback loop on the ability to produce knowledge in theory. The “compatible freedom”⁴ of the subject grows towards the “transcendental ideal” of freedom beyond compatible freedom: an absolute freedom in a final future when the subject breaks through the

phenomenal wall and sees the object as it actually is, not merely as it appears subjectively. This, however, does not mean that this ideal is achievable. As will be shown in another article building up upon this article, it may well be, and indeed must be, an “inevitable illusion” of animation and practical reason in analogy to Kant’s “antinomy of pure reason.”

The present article, however, will merely lay the groundwork for a trilogy of articles that analyze awareness and agency as a cybernetic process driven by animation’s urge towards this “transcendental ideal.” Its aim is to provide a rigorous theoretical foundation of what subjectivity and the subject essentially are based on elementary and undisputable scientific and philosophical principles upon which the following two articles can stand firmly. To establish this foundation, it will look at what constitutes subjectivity and at what constitutes the emergence of subjectivity.

1. Collectivity

The emergence of intersubjective human awareness and agency are called science and technology. The difference to less collectivized species is noteworthy. Humanity, to a unique extent among all known species for all we know, “knows” things about the object that are far beyond what individual specimens experience in their subjective “Umwelt.” This is possible through the use of collective learning and intersubjective knowledge production in science, made possible in turn by the essentially intersubjective nature of linguistic rationality. Humanity utilizes and acts upon the object in ways that go far beyond what the individual specimen or even a group of specimens could do. This is possible by the employment of our theoretical knowledge in technology, made possible in turn by a sophisticated apparatus of collective rule administration based on contracting and social institutions. In his subjective experience, a drunk may bump into a wall restricting his movement away from a street on his inevitable way to stagger into the gutter. In reality, there is no such thing as a “wall.” According to both Kant’s transcendental philosophy and quantum mechanics, there is not even time or space. Obviously, we are far removed from reality in our subjective experience, even when we are not intoxicated. And yet, we do not only know about quantum mechanics. Increasingly, we are learning how to utilize this knowledge. One must marvel at this discrepancy. Let us inquire into where it stems from.

For all mortal beings, a child is a step to longevity; in its most literal form in a genetic sense of prolonged or ongoing survival, of passing on what one is into eternity and of uniting one’s self with what one is not into entity. The latter, of course, is literally what the creation of a child from two

separate parents does. More remarkable even might be how humankind, in a peculiar way in its evolutionary development, has found ways to give birth to other children. Not merely my genes, also my thoughts are my children, metaphorically but in very much the same way, all coming from former, separate forms of being, all originating in my mind's unique composition of what I have been endowed with by my manifold creators. The creator of my "self," therefore, is not merely the genetic code I inherit from my biological ancestors. Equally, it is the patterns of sense-making that are imbedded in "collective learning" through "symbolic communication." A human being is a hybrid of the nature and nurture sides of being human, of the biological and the social, to a unique extend among animation for all we know. In a dynamic relationship, every "idea," the simplest of which is a single syntactical connection established between a subject and an object or attribute,⁵ has "reality" only through the people who believe in it.⁶ However, every one of these persons is likewise constructed by the many "ideas" or "collectives" that shape their unique epistemic lenses, their individual ways of looking into the outside. Ideas have people and people have ideas. Many individuals make a collective but many collectives make an individual, as figure one displays.

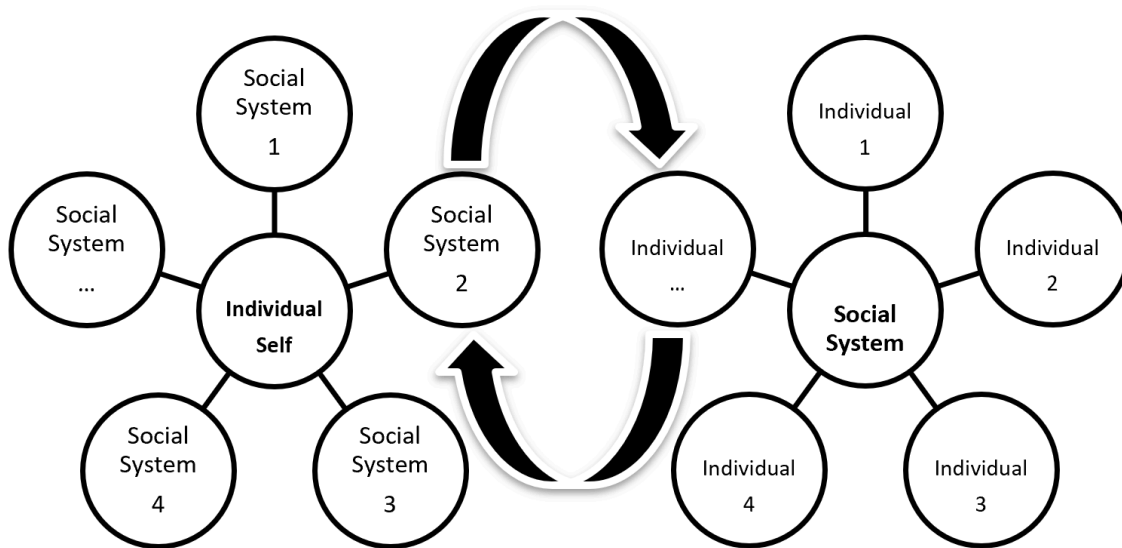


Figure 1.

"Ideas" create the epistemic lens through which I perceive the outer world and react to it. They determine my perceptions, my attitudes and my reactions as much as my biological ancestry does. They make "me" as much as my genome does. In anthropology, this is the old picture displayed by

Maurice Halbwachs a century ago in *On Collective Memory* (1925) (Halbwachs and Coser, 2020). According to Halbwachs, individuals construct their identities through the various social “collectives” they are part of. A mere ten years later in 1935, Ludwik Fleck proposed a similar theory that highlights that objective observing, and thus objective science, is impossible due to the collectives that constitute the by needs always subjective human outlook into the empirical (Fleck, 1980). Fleck, in turn, was an influence on the famous later works by Thomas Kuhn and Michel Foucault (Foucault, 2005; Kuhn, 1996).

However, there undoubtedly is progress, as well. An attempt to connect the sociological theories of ideas and collectives to the theory of evolution came from Niklas Luhmann, who claimed that “social systems” are evolutionary actors (Lenartowicz, 2017; Luhmann, 1987; Moeller, 2011). In a more simplistic notion, this picture was also put forward by Richard Dawkins in the final chapter of *The Selfish Gene* (1976). However, one should not overstate the importance of what he termed “memes” in Dawkins’ scheme. He writes in the notes to the 40th anniversary edition of the book: “The first ten chapters of *The Selfish Gene* had concentrated exclusively on one kind of replicator, the gene. In discussing memes in the final chapter, I was making a point for replicators in general, and to show that genes were not the only members of that important class. Whether the milieu of human culture really does have what it takes to get some form of Darwinism going, I am not sure. But in any case that question is subsidiary to my concern” (Dawkins, 2016, p. 424). Is Dawkins underestimating the importance of the nurture, social or collective side of being human, perhaps even knowingly and intentionally?

Arguably the most important forerunner of Dawkins’ gene-based reductionism, beside George C. Williams, was his Oxford colleague W.D. Hamilton, as Dawkins admits in *The Selfish Gene*. Hamilton’s close scientific collaborator George R. Price, however, had abandoned gene-based reductionism and converted to a view of Christianity that gradually turned into radical altruism and self-starvation (Harman, 2011). Price had given all of his possessions to the poor and committed suicide in December 1974 when *The Selfish Gene* was published in early 1976. The demise of Price, accordingly, coincides with the composition of *The Selfish Gene*. Possibly then, Price’s turn to a self-destructive form of radical Christianity initiated, or at least radicalized, Dawkins’ anti-theism, which at its core is an attempt to nullify the role of ideas in human agency by reducing human beings to mechanical “automata” driven entirely by their genes’ “desire” to replicate (Frauen, 2022b). Price, certainly, was a daunting example for what religious delusions can do to people and an increasingly sorry sight from

June 1970 onwards, when his descent into altruistic madness began (Harman, 2011). It is perhaps also for this reason that Dawkins violently rejects Price's modification of Hamilton's altruism rule⁷ with group selection dynamics, which triggered the onset of Price's delusions (Harman, 2011; Price, 1970). The Price equation is the only point on which Dawkins disagrees with his "hero" Hamilton, who admired the improved equation. It seems that, at least partly, Price's fall followed from his ideas, albeit in combination, certainly, with a genetic predisposition to mental illness (Harman, 2011). After all, every human being is always a combination of the two sides of being human. An explanation for his fate, however, is nowhere to be found in gene-based reductionism alone, which regards human beings as mere "survival machines [...] guided by selfish genes" (Dawkins, 2016, p. 144). Ironically, Dawkins' crusade against religion itself is a battle of ideas, not of genes. The social, semiotic side of being human, this article claims, must be taken seriously to understand the human condition and future human evolution. Consequently, subjectivity must be taken seriously.

Regarding ideas to be evolutionary units like genes, however, they are the more successful the more functional they are in analogy to the biological gene. In their environment, the sphere of symbolic communication acts that is turning into a world-wide web with globalization, they compete with each other over the "resource" human hosts, sort of speak. Humankind's evolutionary journey is thus best understood as a steady increase in connectivity, as all ideas or collectives long to connect to as many people as possible as tightly as possible (Frauen, 2020, 2021b). However, the more functional ones will likely win out in the end, as for instance the transition from the geocentric worldview to the heliocentric worldview displays: what enables individuals to control their environment more efficiently will eventually get selected. An idea's and thus a social system's "fitness" is measured, ultimately, by its congruency with the world, by how "true" it is.

It is for this reason that science has turned out to be one of the biggest ideas in human history. Indeed, one could argue that science was always there, that it predates Francis Bacon's "scientific method:" we endlessly test our theoretical knowledge on the outer world in practical application and revise if the results do not match the expected outcome. This, of course, is a cybernetic process. Overall, this process seems to work towards what was declared impossible by Fleck, Kuhn and Foucault: seeing the object, the outer world, as it is, not merely as it appears through the ideas or social systems and genes that make subjectivity. This cybernetic process, consequently, is fundamentally linked to the observer, the subject, and thus to consciousness.

2. Consciousness

Consciousness, seen as the infamous “hard problem” referring to the undeniable fact of subjective being in a certain state of being, can generally be defined as a state of awareness (Chalmers, 1995). As such, it signifies all that appears to an observer as it appears to this observer. This, unsurprisingly, might be quite different for a plant or a bat than it is for a human being (Calvo, 2017; Nagel, 1980). However, it might be misleading to reduce consciousness as such to being in a certain state of being, as this creates the impression that all creatures that are “conscious” are conscious to the same degree, though not in the same way. It seems, after all, justified to argue that a very simple semiotic process of an internal representation of the outside world extends all the way down to the eukaryotic cell, which, beside organelles, has a double cell membrane that sends signals to an internal nucleus. Here, these signals are internally “represented” and trigger output reactions.

The rationale for going down the “evolutionary ladder” so far is that we have no established theory of when an organism ceases to be an “automaton” without subjective experience. For centuries, Cartesian dualism and Christian theology have taught that only human beings have subjective experience because only human beings have souls. Ironically, many scientists still cling to this utterly unscientific picture. But if we accept that evolution is real, we also have to accept that there is no a priori binary within animation. Instead of “conscious” (human beings) versus “automaton” (everything that is not human), then, we need to think of a continuum of gradual degrees of conscious experience. Accordingly, it seems sensible to employ internal representation and output reactions based on the processing of these signals or “signs” that need to be “understood” by the internal mechanism as a measure for where to start.

Stuart A. Kauffman argues that even a “bacterium must sense its world and act to avoid toxins and to obtain food” (Kauffman, 2013, p. 169). This is a “semiotic evaluation of ‘good’ versus ‘bad.’” Accordingly, a “first sense” enters the world. Interestingly, Kauffman argues that “agency” predates this ability to make a “discrimination.” However, as the “first sense” or “semiotic evaluation” obviously benefits the fitness of the cell through the ability to avoid toxins, it got selected by evolution. This definition of “agency” is interesting as it seems to open up a way to think about “proto-subjectivity” predating experience, unguided urge without awareness. However, Kauffman sees the beginning of biosemiosis in “intracellular signaling” that evolved from transmembrane proteins binding to molecules in the environment (Kauffman, 2013, p. 172). The inside thus “knows”

of the outside, “evaluates changes” and acts accordingly. Kauffman argues that this semiosis does not entail “consciousness.” But where does “subjective experience” or “awareness” start then?

The problem is that one can *always* argue that semiotic processes happen *without* such a thing as subjectivity because subjective experience is nowhere to be found in the objective world. But in the case of at least (one) human being in the world this claim is obviously false. So why would one assume that an organism’s “awareness” of its environment and “evaluation” of these semiotic signals does *not* come in the form of subjectively experienced awareness? If something on the inside has a “knowledge” of the outside by biosemiosis, would it not seem logical to assume that “awareness” and thus “subjectivity” is just that? Objectively measured by intracellular signaling, evaluation and output reaction, we know that the cell has awareness of the outside. So why would this awareness *not* be there subjectively as experience also, though its scope is strictly limited and its agency thus strongly determined? Of course, it is inconceivable what this subjectivity would “be like.” However, it is not a stretch of the imagination to say that where there is awareness of the outside in animation there is subjective awareness in the universe. This, after all, is literally the only thing that we *do* know with absolute certainty from direct experience.

On the other hand, this may be taken as an “epiphenomenal interpretation” of consciousness. But it is not. The difference between awareness causing the semiosis, signaling and output reaction of the organism and awareness being caused by the semiosis, signaling and output reaction is a merely linguistic distinction because the two are *essentially the same*. If there is no difference between the two, one cannot separate them and it becomes meaningless to ask what causes what. The freedom of organisms to act upon their environment increases with increasing awareness, understanding and agency to the same degree as it does with increasing subjectivity or “consciousness.” This is unsurprising because the former, in a post-Cartesian view, is just the definition of the latter. In cases where we have *both* internal sign processing and animation, then, we probably have *some* degree of subjectivity as well. The bacterial “knowledge” and “first sense” described by Kauffman is far simpler than what happens in the eukaryote. But even if we disregard the “awareness” and “agency” of bacteria as in-between subjective experience and being part of the environment, internal experience undoubtedly happens in the eukaryotic cell, which is separated from the outside to a degree that one can clearly distinguish between an “inner life” and an “outer life.” It seems sensible to assume that this very limited degree of internal experience is actually experienced to this very limited degree. An increase of subjectivity, then, is real in the universe.

3. Complexity

Interestingly, all of the eukaryote's constituents developed from separate procaryotic cells that lost their individuality. This is one example for evolutionary progress from separate organisms to a highly scaffolded structure of trans-individual knowledge production and output actions administered by a "super-agent" that emerges from connectivity. The same could be said for multicellularity with the notable difference that cells do not fully lose their individuality here. And, of course, for humanity's global network of communication acts with the notable difference that individual organisms sustain a high degree of individuality here, at least as of today. Most likely, multicellularity emerged from colonies of eukaryotic cells that started to specialize, to "divide labor" for mutual benefit.⁸ It seems that at present humankind's connectivity is still at this stage and thus as of yet well short of "strong emergence." But even disregarding human collectivity, a pattern is clearly recognizable, as figure two illustrates.

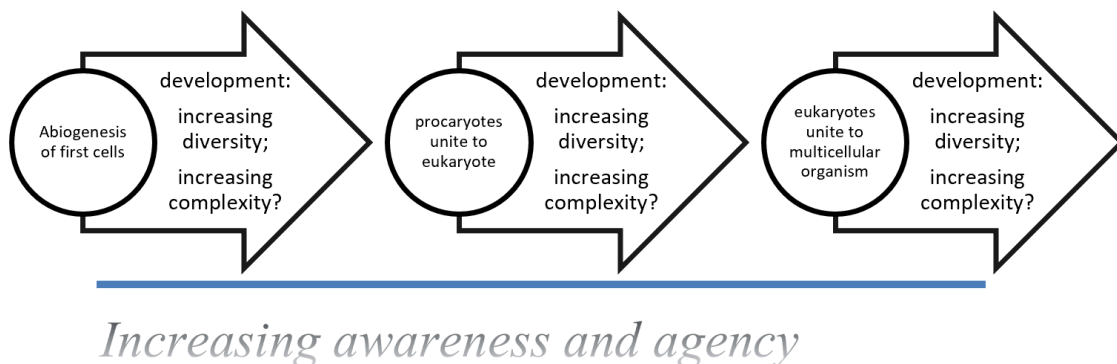


Figure 2.

The pattern shows that long phases of evolutionary development within current constraints occasionally lead to the crossing of thresholds by "biosemiotic scaffolding" of individual organisms into a trans-individual "super-agent" in "biosemiotic emergence," traditionally also called a "transition in Darwinian individuality," "major transition" or "meta-system transition" to a new "Kantian whole" (Hoffmeyer, 2008, 2015; Kauffman, 2013, pp. 168–169; Sharov, 2010; Sharov et al., 2016; Turchin, 1977; Veit, 2019). It should be noted here, of course, that there is no overall development within the current constraints toward crossing the next threshold. However, it must

happen eventually because it is possible. The familiar metaphor here is the drunk falling into the gutter. He is not aiming for the gutter, but staggering home along a lane, with his movement away from the street restricted by a wall, he will fall into the gutter eventually. When it happens, the evolutionary advantages that come with increased awareness and agency lead to the spreading of a “super-agent” throughout the biosphere: there are few places on earth where we do *not* find eukaryotic cells and multicellular life today. It should be mentioned, also, that there are various ways to cross a threshold: while the eukaryotic cell likely developed only once, multicellular life emerged some seventeen times, though only four taxa have survived: algae, plants, fungi and animals (Hoffmeyer, 2015, p. 163).⁹

4. Urge

To analyze how “ideas” and the “social systems” build upon them create dynamics in the evolutionary process is a valid description. However, the ultimate driver of the process is the “*urge*” of the individual organisms that scaffold themselves into collectivity (Frauen, 2021b). In analogy to “selfish genes,” one can see ideas, semiotic or social systems as evolutionary agents. However, agency is driven ultimately by the internal urge of individual organisms, and be it only in order to spread an idea or gene. Human beings may be constructed by the nature and nurture sides of being human in what they want. However, it always remains the organism that wants. Neither gene nor idea are internally driven to do anything objectively. They do not have an experience of what it is like to want something subjectively. The organism acts with or by the internal urge it feels and both ideas and genes merely “ride on” this urge, even if they shape its content. As has been pointed out, it is a mere linguistic distinction whether awareness and agency cause urge or urge causes awareness and agency because the two are essentially the same.¹⁰ This does not imply spirits or metaphysics: the statement that genes and ideas, other than organisms, are not internally driven to do anything is true no matter which interpretation of animation and consciousness one favors. In any case, it is subjectivity, the awareness and agency of organisms, that drives evolution. In fact, genes and ideas do not merely lack subjective urge. Objectively, it is obvious that they, other than cells, are not doing anything by themselves. Encoded in a book read by no one, an idea is dead. DNA molecules stored in a forgotten place are dead. Information without animation has neither subjective nor objective reality.¹¹

That it is ultimately the internal urge of organisms that causes evolutionary progress can be observed in the endosymbiosis characterized by mutualism, by mutual benefit, that led to procaryotic cells

turning themselves into organelles in the emerging superstructure of complex cells (Duve, 2007; Vellai and Vida, 1999). Also, it can be observed in the first colonies of specialized cellular life, which scaffolded themselves into multicellularity for their own benefit until they lost the ability to survive independently outside of the collective body (Libby and Rainey, 2013). Equally, it can be seen in the increasing inability of human individuals to prosper and indeed even to sustain their living without being connected. Since the most connected prosper the most, this creates a competition toward connectivity (Frauen, 2019a). In a feedback loop, this is joined and accelerated by “downward causation” through an environment that becomes increasingly alienated from the outside or “natural” world, not leaving the individual much of a choice but to connect (Frauen, 2021b).

To mention just one example of the institutions that scaffold human individuals into the emerging superstructure of human collectivity, let us consider schooling (Frauen, 2019b, 2021b). The human infant does not have a choice but to attend the institution. The first thing it learns there is that its natural behavior to move and communicate is restricted by the superstructure: sit down and listen. Chaotic or “entropic” behavior is being scaffolded by external constraints. Furthermore, the natural reflex of the organism to escape from pressure situations by fight or flight, by physical combat or running away, is severely sanctioned by the superstructure. Thus, learning histories are created that make it cognitively inconceivable to escape, even after sanctioning forces are removed (Frauen, 2019a). Concurringly, the organism is provided with the knowledge required to function in its designated position after release from the institution. Today, this position often involves operating a computing machine, which is a skill entirely detached from sustaining one’s living individually in a state of nature. As a result, few humans today could survive in the environments they inhabit without what is administered to them by the superstructure in exchange for their work for the superstructure. Like in the multicellular organism, the two are entirely detached from one another. Like the cells of the multicellular organism cannot survive outside of the collective body for long, many human individuals today are dependent on drugs administered to them by the superstructure to the degree that they lost the ability to survive outside of the collective body.

The urge of all of “my” constituent organisms combines into the urge that I experience as “being me.” One tends to think that one is one. In reality, this experience emerges from trillions of organisms that are tightly scaffolded into a strictly organized structure. While in an early stage as of yet, an analogous structure is clearly emerging in human collectivity (Frauen, 2019a, 2019b, 2020, 2021a, 2021b). In either case, one has to note that the engine that drives higher-level emergence is the

“urge” experienced by the lower-level organisms that constitute it: parents do not send their children to school to scaffold them into the collective, they send them to school so that they can prosper in society in later life (and to get rid of them for a couple of hours, of course). I do not have an email account and a research gate account to increase overall connectivity in the emerging superstructure of human collectivity, I have email and a research gate account because everyone else does and I am falling behind and cannot do my job if I don’t.

Taking a step back from the major transitions in evolution, there is progress within the limits of current constraints as well. Though subjectivity is hard to compare, there is arguably a point to be made that primitive vertebrates have *less*, not merely different, “consciousness” than a human being. After all, the number of neurons in the human brain outnumbers theirs by far, leading to rather obvious surplus in information processing capability.¹² In any case, the subjectivity of an emergent, trans-individual agent is certainly more encompassing than the subjectivity of its constituent microorganisms. Nobody would argue that the “consciousness” of the eukaryote is equal in degree to that of a human being, which emerges from a “body swarm” of trillions of these “consciousnesses.” Of course, it seems awkward to speak of the “consciousness” of single cells, even if they be eukaryotes that emerged from hundreds of primitive procaryotic cells. Perhaps, it would be best to reserve the problematic term “consciousness” for the ideal of seeing the world as it is and use “awareness” of the outside, or object, for subjective experience, which eukaryotes somewhat undoubtedly possess, albeit to a very limited degree.

However, the basic fact of the faculty, termed awareness, consciousness or subjectivity all alike, is defined by, for instance, Morin in the following way: “when awake and ‘conscious,’ one will process information in the environment and respond to stimuli” (Morin, 2006, p. 359). Obviously, one can argue that *much* of this happens “sub-personally” in the multicellular organism (Metzinger, 2015). One popular theory in post-reductionist approaches about the “personal” and “sub-personal” divide is that conscious attention is given to problems that may be in need of evaluation or deliberation. The vast majority of functions and responses of the organism, however, can be handled by the “consciousnesses” of its lower-order constituents, which, it has to be kept in mind, are itself animated organisms that are “scaffolded” into the larger organism. Higher-order emergence, after all, does not substitute lower-level life, but integrates it. Indeed, the multicellular body is a “society” of all kinds of lower-level life with only about ten percent of cells in the human body actually being “human” cells in the sense that they are eukaryotic cells that carry the human genome (Hoffmeyer,

2015, p. 169). With the emergence of higher-level subjectivity, the subjectivities that constitute this emergence do not disappear. Biosemiotics theory teaches that higher-level signs “constitute a higher, sophisticated class of signs, made possible only by the integration of simple lower-level signs” (Hoffmeyer and Stjernfelt, 2016, p. 10). However, one crucial point seems to be that even in its most basic and sub-personal form, there is always animation; i.e., internal *urge*. Without *urge* in a most fundamental and thus mostly in a “sub-personal” way, there would neither be “processing of information” nor “response to stimuli.” Without *urge*, the “swarm” that makes me would do nothing, be it with or without “my” knowledge, and I would not emerge from their interplay. I would not look into the outer world, and I could not be aware of myself as there would be nothing to be aware of. Photons hitting the eyes of corpses do not translate into internal representations of their environments.

Repeating a point put forward originally by Jean-Jacques Rousseau that was hugely influential on Immanuel Kant, Johann-Gottlieb Fichte observed that “we couldn’t see without eyes; but we shouldn’t claim that it is the eye that sees either [Wir sollen nicht ohne Auge sehen wollen; aber sollen auch nicht behaupten, dass das Auge sehe]” (Fichte, 2017, p. 148).¹³ Fichte, following Kant, derives an ontology from this observation that oscillates between subject and object. So did astrophysicist John Archibald Wheeler, who writes in his autobiography that “when a photon is absorbed, and thereby ‘measured’ – until its absorption, it had no true reality – an unsplittable [sic] bit of information is added to what we know about the world, *and*, at the same time, that bit of information determines the structure of one small part of the world. It *creates* the reality of the time and place of that photons interaction” (Wheeler and Ford, 2000, §15). The final third article of this series will come back to this claim, which was put forward independently by both Fichte and Wheeler. But first, it must be investigated what the relationship is between information as “what we know about the world” and information as the “reality of time and place.”

Most fundamentally, there seems to be a dichotomy. This twofold structure makes “phenomenal” reality; i.e., reality as a spatiotemporal block, the object, that appears subjectively to an observer, the subject, in a non-spatiotemporal point of awareness or “consciousness.” *Urge* seems to be the essence and origin of the split, of all stages of consciousness; it is the purest and most immediate form of awareness and subjectivity. To have any kind of awareness of the physical world, there must be the emergence of an *urge* towards awareness. I cannot choose not to see when my eyes are open. But the emergent observer, oddly, is not actually in the object. It is a “singularity:” a nowhere-place that has

fallen out of time and space (Frauen, 2021a, 2022a).¹⁴ And yet, the subject is linked immediately, as has been displayed, to a part of the spatiotemporal realm that physically separates itself from its surroundings by locally defying the second law of thermodynamics through organization into a self-sustaining, self-replicating “far-from-equilibrium” structure (Dawkins, 2015, pp. 16–17; Kaila and Annala, 2008; Russell et al., 2013).¹⁵ Urge, therefore, first springs from the antagonism of the subject-object split. Subjectivity is where this split is and a “singularity,” the subject, emerges that is internally urged to prolong its existence, which is essentially an urge toward awareness and agency.

This split, it will be displayed in the second article following this article, leads into a fundamental inconsistency in the mind’s construction of reality, a theoretical crack in the structure of being. Practically, this crack nullifies life’s intrinsic urge to live by mortality. Urge and animation, therefore, is an empty mirage individually. The subject, however, can also be regarded as a natural law of emergence beyond its local manifestations, as this article has shown. The second article of this trilogy will analyze this cybernetic process in detail. It will be displayed that the urge of the individual constituents of emergence and the resulting increase of subjectivity strive towards a “transcendental ideal” of survival, consciousness and freedom beyond the antinomy of fragmented being and fading away in the world. However, the second article will conclude in analogy to the Kantian “antinomy of pure reason [Antinomie der reinen Vernunft]” that this “transcendental ideal,” also, is an empty mirage of the mind that perceives. It is derived from the dichotomous structure of phenomenal reality as subjective being in the objective world alone. Thus, it is an “inevitable illusion” of animation and practical reason without scientific foundation.

Conclusion

This article, the first of three, has provided a groundwork for those to follow by outlining arguments for four interrelated claims in its respective four chapters. Firstly, it has put forward arguments against the “gene’s eye” or “gene-centered” view of interpreting human being. Human beings, it claimed, are constructed by ideas as much as they are constructed by genes. A human being, therefore, is a hybrid of the nature and the nurture sides of being human. Disregarding the collective or social side of the divide, one will not be able to explain human behavior and one will not be able to analyze future human evolution accurately. In analogy to the gene, it has been displayed that natural selection of ideas seen as evolutionary actors is not completely random, but in the long run follows an idea’s “fitness” as measured by its congruency with the objective world or by how “true” it is. One may

argue that due to this feature and the limited resource human “hosts,” ideas may eventually self-organize into a hierarchical structure with scientific inquiry probably occupying the top spot in knowledge production. This is not to say that ideological or religious belief structures will disappear. However, they may in the long run be forced to evolve into ontologies that have to be compatible with the scientific world view. The “othering” processes that are essential in the evolutionary struggle of ideas and social systems to establish internal unity in collectives may get externalized to cosmic challenges to this unified structure.¹⁶ As congruency with causal patterns in the object or outer world is the ultimate measure for the fitness of ideas, and in extension for the fitness of the social systems and collectives build upon these, the final aim of this process seems to be for the subject to see the object or outer world as it actually is beyond our subjective epistemic lens. The process of sociocultural evolution is hence linked fundamentally to the subject, to the observer, and to an increase in awareness and agency.

In its second chapter, this article has thus sought to define where subjectivity made of awareness and agency starts. It has been displayed that in a Darwinian and post-Cartesian framework one must abandon the traditional dichotomy of conscious (human) versus automata (anything else) and instead regard “consciousness” to be a continuum among species, which varies greatly in both extent and kind. It has been argued that wherever there is objectively a process of semiosis in animation, i.e., semiotic signals representing the outside internally, internal evaluation of these signs and output action following this evaluation, it is consequent to assume that this objectively measured awareness is subjectively experienced also. Subjectivity, then, is essentially this process of an “inner life” made of internal awareness of the outside and agency following from evaluations based on this awareness. The “freedom” of organisms to act upon their environment, accordingly, increases with increasing awareness, understanding and agency. It has been pointed out that this is not an epiphenomenal interpretation of consciousness because this awareness and agency undoubtedly does something: it performs work on the object following the subject’s urge to maintain its ongoing emergence from the object. On the other hand, assuming that awareness in animation which is objectively there is also subjectively experienced does not require a mystical “life force.” All of the processes underlying it are physically determined. However, it must be a natural law of the object that subjectivity emerges from these processes. Otherwise, it would not be there, which is non-sensical to assume due to our immediate awareness of ourselves as subjects. As separation from the outside world and an internal representation of aspects of the object in animation can be traced to at least the eukaryotic cell, it has

been suggested that one should use the term “awareness” for subjective knowledge of the object and reserve the problematic term “consciousness” for the ideal of subjective-objective knowledge: for subjectively seeing the object or outer world objectively as it actually is, not merely as it appears to us subjectively. Human beings, accordingly, can be said to have more awareness than a eukaryote but are yet way short of being conscious.

Our surplus in awareness compared to the eukaryote, as chapter three has displayed, is unsurprising because the human organism is made of trillions of separate microorganisms, which means that my higher-order subjectivity emerges from trillions of lower-order subjectivities. The interplay of rapid information transmission between the eukaryotic human cells of the central nervous system and the tightly scaffolded structure of all other cells in the multicellular human body leads to the strong emergence of human subjectivity from this “swarm” of lower-order subjectivities. The natural law of emerging subjectivity is thus not restricted to procaryotic cells uniting to complex cells and separating themselves from their environment. Likewise, the “singularity” of a single subjective point of awareness emerging from rapid information transmissions between animated beings happens in the multicellular organism when the semiotic scaffolding of individual microorganisms reaches a certain, very high level of order and organization. Without claiming that there is a universal movement towards increasing complexity, it is noteworthy that “super-agents” spread throughout the biosphere once they have emerged due to their increased capabilities to understand and control their environment.

Without claiming that it will lead to strong emergence, it has been argued in chapter four that a “scaffolding” process analogous to the emergence of complex cells and multicellularity can be clearly observed in the increase of connectivity and specialization among human beings and species directly dependent on human beings. It has been displayed that the driving force behind emergence is always the self-interest, or internal urge that is experienced, of the individual organisms that constitute the process. It is a valid description to say that genes and ideas, and the collectives and social systems build upon them, are evolutionary actors in the sense that they shape the urge of individual organisms in order to replicate or spread. However, it is likewise obvious that they merely “ride on” urge that is subjectively experienced. The driver of emergence, accordingly, is the subject. It is the subject seen as the individual subjects that scaffold themselves into a complex organism until this “super-agent” takes over by downward causation. However, it is likewise the subject seen as the emergence of increasing subjectivity as a natural law of the object itself. Subjectivity, then, is a real and active force

in the object and it naturally emerges from the laws of the object. It performs work on the object that leads to the emergence of “more” subjectivity.

Footnotes

¹ Arthur Schopenhauer made this connection more explicitly in his lecture notes when he was a student at Göttingen university: “the Platonic ‘eidos’ is the Kantian ‘thing-in-itself!’” he wrote. See Safranski (2001).

² Originally, the term was coined by Jakob von Uexküll.

³ The awareness of all single cells of your body added up could arguably amount to the same awareness of their internal and external environment. Without you, however, they could not comprehend the implications of quantum mechanics.

⁴ The term used in philosophy to describe the “freedom” of an organism to perform causally determined actions. In biosemiotics, “compatible freedom” is termed “semiotic freedom” as it depends directly on the awareness and agency of an organism.

⁵ As David Hume highlighted, causal connections are nowhere to be found in the outer world but established by the mind, which means that they are “ideas” of how to connect separate experiences. For Kant, this insight was one of two enlightening moments upon which he eventually built his transcendental philosophy.

⁶ An “idea” as the term is used here is thus very different to the Platonic “eidos;” the idealist essence of an object that enables us to perceive things “as something” phenomenally. A syntactical “idea” or “collective” build from complexes of these “ideas” is a theory about a connection or a complex of connections in the outer world. It does shape perception like the Platonic “eidos” but can be inaccurate since, contrary to the Platonic picture, the outer world is final reality.

⁷ The equation states that an organism will act altruistically if the benefit for the other(s) multiplied by a kinship factor between zero and one outweighs individual benefit ($r \times B > C$). See Hamilton (1964a, 1964b).

⁸ As Michael Ruse points out, “division of labor” was Darwin’s “criterion of sophistication, of complexity.” See Ruse (2013, p. 285).

⁹“Swarm agents” or “superorganisms” of other species (e.g., the ant hill or bee hive) are made of individuals that have lost their individuality to much higher degrees than human individuals without systems of semiotic communication allowing for the emergence of “collectives” or “ideas” as evolutionary actors. See Turner (2016).

¹⁰ Hoffmeyer and Stjernfelt claim that “agency as such is co-existent with life and semiosis.” See Hoffmeyer and Stjernfelt (2016, p. 11). As has been said, it is argued here that this constitutes subjective experience. Therefore, life, semiosis and agency are constituted by subjectivity.

¹¹ The equivalence of cultural and genetic information is displayed by the fact that DNA can be used to store cultural information. Potentially, it is one of the most promising cold-storage solutions for the world’s exponentially growing data. See Ionkov and Settlemyer (2021).

¹² What really matters, of course, is not total numbers but brain-body mass ratio.

¹³ We tend to say that photons or electromagnetic waves of the visible spectrum are “light” but this only explains what happens up to our eyes. It is meaningless as an explanation for the light that we actually see in subjectivity. Ironically, the electromagnetic signals transmitted between neurons in the brain are not in the visible spectrum. The light of apperception emerges out of the darkness inside of our skulls in mysterious ways, which have been dealt with extensively by John A. Wheeler’s Ph.D. student Peter Putnam. Like Wheeler, I cannot pretend to understand Putnam’s ideas, which can be found in the excellent online collection of his work at <https://www.peterputnam.org/>.

¹⁴ Meant is the collapse of information transmissions between lower-order parts into a single non-spatiotemporal point of awareness in analogy to the gravitational collapse of matter into a single non-spatiotemporal point in the black hole. It should thus not be confused with the phenomenological “singularity” of experiences described by Husserl. However, it is a noteworthy coincidence that the grammatical “singularity” of the first person singular describes the same phenomenon by the same word.

¹⁵ It should be noted here that this local entropy reduction does not contradict the second law of thermodynamics. Like a refrigerator, a local entropy reduction by life is perfectly permitted by the second law if it leads to an overall increase in entropy. To explain *how* a local reduction of entropy in a refrigerator is possible, however, “is not enough to explain *why* refrigerators were invented,” as Eric Smith observes. See Smith (2013, p. 203). I have elaborated on this fundamental difference between

the “why” of theoretical reason that can be reduced to “how” and the irreducible “why” of practical reason in detail in Frauen (2022b).

¹⁶ Nietzschean philosophy attempts to unify the struggle of competing collectives by a common “purpose of earth” that externalizes “othering” to cosmic challenges to all humankind. Nietzsche’s ideal turns the theological “why” question around from past to future: we are not here because we were created by a God, we are here because we must create a “super-human” entity through progress.

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Declarations

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.