

# BETWEEN THE SPECIES

## Subjects-of-a-Life, Entelechy, and Intrinsic Teleology

### ABSTRACT

This article explores the question of what is a “subject-of-a-life,” Tom Regan’s celebrated term for a living entity to whom, he argued, we humans owe ethical duty. I return to ancient concepts of entelechy and teleological organization, arguing that, stripped of theological implications, they provide a usable basis for modern theorizing about organism and an ethical foundation for condemning such practices as transgenic engineering. Every creature, it is argued, has its own inherited formal identity, which it strives to sustain. This reality is ethically pertinent knowledge which humans are obliged to respect and honor.

JOSEPHINE DONOVAN  
University of Maine

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There is at root no physical reason for individuality to be self-identical from one day to the next. . . the self abides within and despite constant flux.

—Marilynne Robinson  
*The Givenness of Things* (2015)

Every being is its own grand narrative.

—Andreas Weber  
*Biopoetics* (2016)

This article is an attempt at definition, providing a survey of non-theological ideas about what is a “subject-of-a-life.”

In his groundbreaking *The Case for Animal Rights* (1983), Tom Regan articulated what has become a critical touchstone in animal ethics: that all subjects-of-a-life merit ethical status.

To be the subject-of-a-life involves more than merely being alive and more than merely being conscious. . . . Individuals are subjects-of-a-life if they have beliefs and desires; perception, memory, and a sense of the future . . . an emotional life together with feelings of pleasure and pain; preference-and welfare-interests; the ability to initiate action in pursuit of their desires and goals; a psychophysical identity over time .(Regan 1983, 243)

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To such individuals ethical respect is owed; for they “have a distinctive kind of value—inherent value—and are not to be treated as mere receptacles” (243), that is, instrumentally.

“Not all living things,” he specifies, in critiquing Albert Schweitzer’s “reverence for [all] life” ethic, “are subjects of a life” and thus do not have “the same moral status” (245). Only to such subjects do we humans have “direct duties” (245). He concludes by enumerating this summary principle: “*We are to treat those individuals who have inherent value in ways that respect their inherent value*” (245, italics his).

In his Preface to the Second Edition of *The Case for Animal Rights* (2004) Regan clarifies that he restricts the idea of “subjects-of-a-life” to “mentally normal mammals of a year or more” (Regan 2004, xvi), thus severely restricting and, in my view, compromising the concept. While perhaps understandable as an ethical or political maneuver (to avoid having to include bacteria, for example, as subjects-of-a-life), this stipulation is untenable, given his aforementioned definition of “subjects-of-a-life.” For it is incontrovertible that a bacterium has desires, goals, perceptions, a sense of preference as to what is good or bad for it (and in this regard some sort of feeling or emotion), as well as the ability to initiate action and make decisions—an evaluating consciousness; in short, a “psychophysical identity over time” (see, for example, Adler and Tso 1974; Margulis 2001).

Acknowledging that bacteria are in fact subjects-of-a-life need not, however, leave us in an irresolvable ethical impasse; but it does require further theoretical refinement of what constitutes human ethical obligation toward animals and other living entities. In order to begin to do so, it seems useful to review

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the various pertinent theories from antiquity to the present that have been proposed over time to characterize living individuals or what Regan has called “subjects-of-a-life.” It will be my contention that one can discern common features—a common definition even—in the models proposed by many of the major theorists of organism from Aristotle to Kant to certain contemporary biologists. This general paradigm conceives the living organism as physical matter (atoms) that is organized according to a formal purposive design (*telos*) that is nonphysical, non-material, independent of material determinism (physical laws), organized thusly into a self-contained and self-motivated unit or individual, who has a continuing inner identity and subjective point of view (subjectivity). Such an individual is separate from its surrounding environment (*Umwelt*) but in dialectical or dialogical meaningful relationship with it, and it has the capacity to override the physical laws governing matter—entropy—the freedom to act otherwise than in accordance with the laws of physics (gravity, for example).

Many of these ideas are already clearly and well developed in Aristotle’s writings, notably in *De Anima*, *Metaphysics*, and *Physics*. Underlying Aristotle’s conception of the living organism is the idea of *entelechy*, which means formal purposive design, deriving from the Greek *enteles echein*, “to have completeness.” This formal cause Aristotle terms “soul” (*psyche*). “The soul is the cause or source of the living body” (*De Anima* II.415b, in McKeon 1941, 561). (*Esti dè ἡ psyche tou zoontos somatos aitia kai arche* [*Peri Psyches* 415b].) The Greek term *psyche*, while often translated as “soul” literally means “breath as the sign of life; life; spirit” (Liddell and Scott 1996, 798). It is best to keep these connotations in mind in order to avoid the theological accretions attached to the English word “soul.”

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Fortuitously, the idea of *breath* opens into the concept of metabolism, which is essential to modern understandings of organismic identity (see further discussion below). And indeed Aristotle himself addresses the identity problem (highlighted in the Marilynne Robinson epigraph) as follows: Every object is held together as a unit identity by an “indwelling form”: “The substance is the indwelling form, from which the matter . . . is derived” (*Metaphysics* VII.1036, in McKeon 1941, 802). In the case of living organisms the “indwelling form” or *psyche* is *entelechy*. “The actuality of whatever is potential [*entelecheia*] is identical with its formulable essence” (*De Anima* II.425b, McKeon 1941, 562) (*Ἐπι τοῦ δυνάμει ὄντος λόγος ἡ ἐντελεχεια* [*Peri Psyche* 415b].) The term “*ontos logos*” forms the basis of the English *ontology*, and it means the “form of being” or, as here translated, “formulable essence.” Thus, *entelecheia* means the underlying final design or essential form that shapes or causes the identity and character of an individual organism. That is its “soul,” a nonmaterial form-al, cause-al essence; it is intrinsic and teleological. Aristotle: the soul or *psyche* is “a) the source of origin of movement . . . b) the end [*autes telos*] . . . [and] c) the essence [*auton tropon*] of the whole living body” (*De Anima* II.415b, in McKeon 1941, 561) (*Peri Psyches* 415b); in other words, the defining ontological essence of an organism.

Writing in a vastly different intellectual environment, many centuries later, Immanuel Kant likewise concluded that living entities appear to operate in accordance with teleological principles. In his “Critique of the Teleological Judgement” (1790), observing “the purposiveness [*Zweckmässigkeit*] of nature” (Kant 1957, 448), Kant wrote, “nature specifies its universal laws according to principles of purposiveness for our cognitive

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faculty” (Kant 1957, 460), adding “the laws of simply mechanical causality do not suffice” (460).

Kant held, however, that our knowledge of nature must always be limited by our cognitive faculties and while mathematical laws, known through the analytic judgment, offer a high order of certainty, they do not adequately explain the processes of nature, which can better be understood through the teleological judgment, which is nevertheless a human construct and therefore less irrefutable than analytic reasoning. “It is quite certain that we cannot adequately cognise, much less explain, organized beings and their internal possibility, according to mere mechanical principles of nature” (Kant 1957, 484). But “a determinate knowledge of the intelligible substrate of nature . . . quite surpasses our faculties” (Kant 1957, 486).

Given these qualifications, however, Kant proceeds to analyze the “intelligible substrate” that underlies and determines natural creatures in Aristotelian teleological terms. “A thing exists as a natural purpose, if it is . . . both *cause and effect of itself*” (Kant 1957, 465). “A tree produces itself as an *individual*. . . . The matter that the tree incorporates it previously works up into a specifically peculiar quality, which natural mechanism external to it cannot supply” (Kant 1957, 466). “An organized being is not a mere machine . . . but it possesses in itself *formative* power of a self-propagating kind which it communicates to its materials though they may have it not of themselves; it organizes them” (Kant 1957, 469). In an (acorn) nutshell, that is the gist of Kant’s position; namely, that there is a non-physical, non-material organizing force or spirit (entelechy) intrinsic to each individual living organism. This “soul” or *psyche* cannot be explained by the laws that govern physical matter. So that while the organism is constituted of physical matter (atoms),

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that matter is qualitatively changed as it is incorporated into a living organism. “The organisation of nature has in it nothing analogous to any causality we know” (Kant 1957, 469). But that causality, he specifies, insofar as we can understand it, appears to be teleological. “The cause which brings together the required matter [in the organism], modifies it, forms it, and puts it in its appropriate place, must always be judged teleological” (Kant 1957, 472).

Unfortunately, Kant ends his discussion on an anthropocentric and theistic note, but his characterization of the teleological processes of nature remain pertinent today and has been picked up by biology theorists such as Andreas Weber and Francisco J. Varela in the twenty-first century (see further discussion below).

Kant’s rejection of mechanistic conceptions of nature clearly is a refutation of Descartes’ and his followers’ characterization of natural entities as machines, a paradigm that came to dominate early modern science and which persists today, justifying such ethically condemnable practices as transgenic engineering of animals. A counter tradition continued in Germany, however, through the eighteenth and nineteenth centuries, culminating perhaps (or reemerging) in the theories of biologist Hans Driesch in the early twentieth century. Though these German biologists largely adhered to Kant’s teleological theory, as scientists they formulated their theories on the basis of material evidence. As Kant wrote to one of the earliest of these biologists, Johann Friedrich Blumenbach, in August 1790 (at the time he was publishing his “Critique of the Teleological Judgement”) “Your recent unification of the two principles, namely the physio-chemical and the teleological . . . has a very close relation to the ideas that currently occupy me but which

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require just the sort of factual basis that you provide” (Lenoir 1982, 24).

These theorists, whom Timothy Lenoir labels “teleomechanists” in his book on the subject (Lenoir 1982, 24), rejected theistic teleology and are not to be confused with the German *Naturphilosophen*, who spiritualized nature. But they also rejected Cartesian and ultimately Darwinian mechanistic views of nature, contending that “the laws of chemistry and physics [are not] able to account for the obvious ‘*Zweckmässigkeit*,’ the teleonomy built into biological systems” (Lenoir 1982, 235).

Biologist Ernst von Baer, perhaps the most important teleomechanist in the middle decades of the nineteenth century, used an embryological paradigm to characterize his view, claiming that there is a prior informational pattern that shapes the resulting unfolding of the individual through the embryonic process. He called this a “*Gestaltungskraft*” (Lenoir 1982, 125)—a “shaping power—and he posited that it exists in the ovum before fertilization (Lenoir 1982, 81). This “*Trieb* [drive] is of a completely different character from its constituents. . . . The laws it obeys are *teleonomic* rather than strictly mechanical” (Lenoir 1982, 125). And he held that “the whole is *ontologically* prior to and determinative of its parts, that the whole *directs* the organization of its parts” (Lenoir 1982, 128).

Von Baer’s term *teleonomic* has been picked up by some modern biologists in preference to *teleological* with its theistic accretions. For example, one biologist explains, “the decoding of the DNA programs of information can properly be said to be a teleological—or *teleonomic* process” (Ayala 1998, 42). As this statement suggests, current usage derives in part from cybernetic and information theory, which emerged in the 1940s.



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The term *teleonomia* stems from the Greek *telos* (goal) and *nomos* (custom, law); the latter term also entails “musical strain” or “song” (Liddell and Scott 1996, 467). Ernst Mayr, a leading biological theorist of the concept, proposed this definition: “*A teleonomic process or behavior is one which owes its goal-directedness to a program*” (Mayr 1974, 98). A program, he explains, acknowledging its derivation from information theory, is “*coded or prearranged information that controls a process (or behavior) leading it toward a given end*” (Mayr 1974, 102). Examples include computer software programs or DNA in living organisms. The program thus is a kind of informational blueprint that includes algorithmic instructions as to how the information is to manifest itself. It is a virtual form whose potentiality is realized in the enactment of an actual real phenomenon. We are thus not far removed from Aristotle’s entelechy, which, recall, was defined as “the actuality of what is potential” (McKeon 1941, 562). As Rupert Sheldrake has proposed, the modern notion of a teleonomic program is indeed largely entelechy redux. Genetic programs, he notes, “are inherited, purposive, holistic organizing principles; they do everything entelechies were supposed to do. They do not consist of matter per se, but of information. And information is what puts form into things, it in-forms; it plays the same role as entelechy, but it sounds more scientific” (Sheldrake 1991, 106).

In a series of lectures delivered at the University of Aberdeen in 1907-8 and published as *The Science and Philosophy of the Organism* (1908), Hans Driesch presented the most substantial pre-contemporary theory about the teleonomic character of living matter. Driesch revived Aristotle’s entelechy and substantiated his claims with extensive examples gleaned from his own scientific practice and knowledge, particularly in the field of regeneration and embryology. (He is known for his

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1892 experiments with sea urchin embryos in which he showed that you can divide its blastomere down to one surviving cell that will nevertheless grow into a complete sea urchin, proving that there is a teleological or teleonomic formative force or entelechy at work in the basic unit of living matter.) Continuing in the Kantian tradition and bolstered by his own experiments, Driesch rejected mechanistic theories of organism. “No kinds of causality based upon the constellations of simple physical and chemical acts can account for organic individual development” (Driesch 1908, 142). Something else is at play and that something else is entelechy: Aristotle’s teleological idea that “there is at work a something in life phenomena ‘which bears the end in itself,’ *ô echei én éaton tò télos*” (quoting from Aristotle) (Driesch 1908, 144). “Entelechy . . . rule[s] the individual morphogenesis” (Driesch 1908, 227). “Entelechy means the faculty of achieving a ‘forma essentialis’; being and becoming are united” (Driesch 1908, 149).

Driesch points out that in addition to embryogenesis many other life processes, such as metabolism, immunity, and the regeneration of tissue cannot be explained mechanistically. Some nonmaterial directive organizes the process. Driesch therefore seems to be working toward a more general ontological theory, which establishes entelechy as the defining ontological character of living beings, differentiating them thus from inorganic matter (Driesch 1908, 205). “Entelechy [is] an elemental ontological entity” (Driesch 1908, 328). Ernst Mayr, decades later, concurred (without using the term *entelechy*): “The occurrence of goal-directed processes is perhaps the most characteristic feature of the world of living organisms” (Mayr 1974, 98).

Driesch seems, however, to realize that the concept of entelechy, while it may well characterize various natural processes

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and is itself non-material, still functions in a fairly mechanical way (as in embryogenesis) and thus doesn't adequately explain conscious mental decision-making, which also has physical results. In addition, therefore, to *entelechy*, the "natural agent which *forms* the body," Driesch posits a similar "elemental agent which *directs*" the body (Driesch 1908, 82). To the latter he gives the unfortunate term *psychoid*. Derived from the Greek word *psyche* and the suffix *-oeide*, which stems from *eidōs* ("shape" or "form"), the concept *psychoid* thus implies the "manifest shape or form of the spirit, soul or mind" (Addison 2009, 126). By *psychoid* Driesch thus seems to mean the mental agent that directs the arm to lift when "I" will it to do so. In a later work *Mind and Body* (1916) Driesch adds a third mental agent, the *mind*, which is the locus of subjectivity: "*My self* in its discontinuous existence in continuous time has a continuous basis, and I name this *my mind*" (Driesch 1927, 126).

The *mind*, *psychoid*, and *entelechy* appear to be of the same ontological substance, operating on a continuum. "My mind . . . is metaphysically at the same time something which enters non-mechanically into nature as a natural factor called 'entelechy' or 'psychoid'" (Driesch 1927, 135). All of these forces are purposive or teleological in character and all are non-physical motivating forces. While Driesch's theories in the latter work seem inadequate and underdeveloped, they point by their very inadequacy to the developments in recent theorizing about organism that emphasize and explore the question of subjectivity and consciousness, which the concept of *entelechy* elides and the concept of *psychoid* doesn't adequately address.

Interest in questions about the subjectivity that accompanies teleological organization has drawn the attention of prominent theorists of biology in the latter twentieth and early twenty-first

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centuries. Perhaps the most important of these is Hans Jonas, whose *The Phenomenon of Life* (1966) and *The Imperative of Responsibility* (1984) remain critical sources in the endeavor. Following Jonas (and Kant) German philosopher Andreas Weber and Chilean biologist Francisco J. Varela developed the concept of *autopoiesis* to characterize living organisms, an idea further developed by Canadian philosopher Evan Thompson in *Mind in Life* (2007). These theorists begin with ideas that are not far removed from earlier theories about entelechy but end up by emphasizing the subjective reality that is inherent in any organized living entity and the attendant emotional character inherent in that subjectivity, which itself establishes a foundation for meaning and value.

For Jonas, as Weber and Varela point out (2002, 112): “metabolism [is] the core of the organism’s ontology.” For in metabolism one sees that there is a non-physical “form” that directs the process of “the exchange of matter with its surroundings” (Jonas 1966, 75). Such a form constitutes a separate, autonomous identity. The “passing contents” processed by metabolism “enter and leave” but the core identity is sustained apart from the “foreign matter passing through” by the “living *form*. It is never the same materially and yet persists as its same self” (Jonas 1966, 76). As Weber and Varela amplify, for Jonas a living organism is “an ontological center . . . that is not explainable by the features of the underlying matter” (2002, 119). “Form arranged by metabolic processes . . . is constant, whereas substance, the mere molecules, rather are an accidental agglomeration of matter” (Weber 2002, 185). “For Jonas,” Weber notes, “the organism’s identity is very different from its material composition.” What is involved in the metabolic process is “an eternal real transubstantiation” (Weber 2016, 37).

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Ninety-eight per cent of the atoms in one's body are in fact replaced every year, Evan Thompson points out (2007, 151), yet one's core identity persists. Physicist Richard Feynman put the same fact more poetically: atoms in the brain, he remarked "can remember what was going on in my mind a year ago—a mind that has long since been [physically] replaced . . . there are always new atoms, but always doing the same dance, remembering what the dance was yesterday" (Feynman 2001, 244, as cited in Robinson 2015, 262). Who or what is choreographing the dance remains the unanswered question.

Jonas and other more recent theorists, under the influence of phenomenology, go beyond their Aristotelian predecessors to emphasize the "inner horizon" (Jonas 1966, 211) or subjectivity of the directive teleological choreographer of living matter. "Organisms," Jonas specifies, "are obviously *organized* for inwardness, for internal identity, for individuality" (1966, 90). "Inwardness," indeed, he maintains, "is coextensive with life" (1966, 58). This "internal identity" Jonas terms a "self" (1966, 82-3).

And that inner self or psyche is purposive, i.e., teleologically focused. In a reprise of Aristotle, who wrote, "in everything the essence is identical with the ground of its being, and . . . in the case of living beings, their being is to live, and of their living the soul in them is the cause or source" (*De Anima* II.415, in McKeon 1941, 561), Jonas emphasizes that the goal or telos of any living organism is to live, to survive. "There is always the purposiveness of organism as such and its concern is living" (1966, 90). Jonas sees this purposive subjectivity as embedded in all living forms as well possibly in "inanimate nature. . . . The 'soul' and . . . the 'will' is . . . a principle . . . of nature" (1984, 65). (In *The Imperative of Responsibility* Jonas veers to-

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ward a kind of panpsychism, positing that some sort of “subjective striving” must have propelled primordial amino acids to form cells [1984, 73].)

In any event, such purposive intentionality is apparent in all living forms, including plants and the most primitive animalcules such as amoebae:

effective already in all vegetative tendency, awakening in primordial awareness in the dim reflexes, the responding irritability of lowly organisms; more so in the urge and effort and anguish of animal life endowed with motility and sense-organs; reaching self-transparency in consciousness, will and thought of man [sic]; all of these being inward aspects of the teleological side in the nature of “matter” (1966, 91).

In short, “there is no organism without teleology; there is no teleology without inwardness” (1966, 91).

Unlike inorganic matter, however (and here Jonas veers away from panpsychism), “living things are creatures of need. Only living things have needs and act on needs” (1966, 126). They are motivated “by continuous emotional intent” to reach a goal, such as food, to fuel the metabolic process (1966, 101). Such “intentional action is directed toward a good” (1966, 127), that is, what is good for the organism and its survival. Thus even “the dimmest ‘feeling’ of the amoeba” is a reflection of the “‘mental’ realm [which] comprise[s] *all* forms and grades of subjective being” (1966, 89n).

Metabolism is thus, as Evan Thompson points out, “immanently teleological,” in that it reflects an “immanent purposiveness” which operates according to “internal norms that deter-

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mine whether otherwise neutral events are good or bad for the continuation of the organism” (2007, 152). Thus, a bacterium moves toward sucrose, because it “knows” that substance will benefit it. Sucrose thus acquires *meaning* for the bacterium. It is not just its physio-chemical make-up but *food* (2007, 157-8). Biologist Francisco Varela, relying on Jakob von Uexküll’s notion of the “*Umwelt*” (as does Thompson) (Von Uexküll 2010), similarly observes how the sucrose molecules obtain meaning and value from the subjective point of view of the bacterium. “There is no food significance in sucrose except when a bacterium swims up gradient and its metabolism uses the molecule in a way that allows its identity to continue” (Varela 1991, 86). The organism’s *telos* is thus *subjectively* sustained by an inner decision-making “self.” The decision to choose *this* or *that* or to move *here* or *there* cannot be explained by physio-chemical mechanism. Something else is at play. There is an “I” there. Varela explains, “whatever is encountered,” by the organism, “must be valued one way or another—like, dislike, ignore—and acted on one way or another—attraction, rejection, neutrality . . . which gives rise to an *intention* (I am tempted to say ‘desire’), that unique quality of living cognition” (Varela 1991, 97).

Varela and his Chilean associates developed the term *autopoiesis* to characterize the living organism. The term means literally “self-making” from the Greek *autos* and *poiein*. As Thompson explains, it means “an autonomous . . . self-determining system” (2007, 37). “An autopoietic system is thus an individual that begins to be worthy of the term *self*” (2007, 75). Unlike pre-twentieth-century theorists of organism, Weber and Varela emphasize that subjectivity is inherent in the autopoietic process. There is in “the radical transition [of matter] to the existence of an individual . . . the origin of ‘concern’ based on

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its ongoing self-produced identity . . . the instauration of a *point of view* provided by the self-construction” (Weber and Varela 2002, 116). Thus mechanistic theories of metabolism and entelechy or algorithmic theories about genetic programming are inadequate because they ignore the directive feeling self within the organism.

By “accept[ing] autopoiesis as embodied teleology, we reintroduce the subject into biology” (Weber and Varela 2002, 117). “Organisms,” thus “can be said to transcend the neutrality of pure physics and to create their own concern” (Weber and Varela 2002, 118). “Subjectivity,” in short, “is the absolute interest the organism takes in his continued existence’ (Weber and Varela 2002, 119).

Not only then do these theorists reintroduce the subject into biology, they also reintroduce feeling and emotion. As Jonas notes, organisms in their desire to survive are motivated by “continuous emotional intent” (1966, 101). Weber notes (2016, 40-41) that Jonas has in effect substituted “Sentio” for the Cartesian *cogito*: “I feel, therefore, I am.” “I feel” should be understood broadly to mean “I need, I have concerns, I care.” Such a determination therefore locates care at the ontological center of the organism: “I care, therefore, I am.” The organism exercises care in its discrimination between what is positive or life-affirming and what is negative or life-threatening. It thus organizes and sees its *Umwelt* in accordance with these qualitative evaluations. In this way the environment is identified and selected—gains meaning—in accordance with values that are immanent to the organism. The *Umwelt* is not neutral physiochemical matter. I am not indifferent to the passing world. I have preferences. Things have meaning and value for me. I care what happens. As Weber explains, in this view life is not a



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“neutral, value free process but rather illuminates reality with its sharp light of felt values, of existential meaning, and thus of an emotive rather than rational foundation” (2016, 41).

Jonas therefore establishes that “the capacity to feel is the mother-value of all values” (1992, 88, as cited in Weber 2016, 41). I might amend that to claim that the ability to care is the mother-value of all values, for caring about what surrounds one and how it impacts one establishes meaning and value even in the most primordial of one-celled organisms. Such care in more complex organisms goes well beyond survival, extended to caring that what is cared-for or beloved—whether it be other organisms or other life-enhancing phenomena—survive. Caring may thus be seen as ontologically definitive of life—of all life forms.

In *The Imperative of Responsibility* (1984) Jonas argues that what one might call caring purposiveness, which every organism exhibits, establishes the basis for an ethic.

In purposiveness . . . we can see a fundamental self-affirmation of being, which posits it *absolutely* as the battle over against nonbeing. . . . The mere fact that being is not indifferent toward itself makes its difference from nonbeing the basic value of all values, the first “yes” in general. (81)

Thus affirmation of life by the individual organism can be seen as the basis for a life-affirmative ethic embraced by all and for all.

Such indiscriminate generalizations recall, however, Schweizer’s expansive “reverence for life” ethic, which Regan rightly criticized as too broad to be meaningful as a practical

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ethic. So, while in general, one can embrace the general thrust of Jonas' theory—that one should respect the life-affirmative desires of all living organisms and should, wherever possible, support them in their struggle against non-being—and thus avoid harming or killing them—further discriminations are needed for when the interests and desires of various life-forms conflict, as they inevitably will.

Here I will only briefly point to a few possible further discriminations. One is that the criterion of feeling and emotionality establishes an ontologically significant and ethically actionable distinction between animals and plants. Another distinction between animals and plants is motility. (Aristotle posited that animals have sensory and locomotive “souls,” which plants lack, having only nutritive “souls.” [*De Anima* II.412b-413b, in McKeon 1941, 557-60].) Bodily movement requires decision-making and therefore some sort of decision-maker within, and thus a conscious core within. It may well be that motility and consciousness are conjoined, that the one requires the other. (Varela suggests as much [1991, 89].) Such a conscious core—a subject-of-a-life—which is indubitably present in animals, mandates ethical status, as Regan noted. But acknowledging such status does not determine what is or should be ethical action toward other subjects-of-a-life; it only opens up the process of judging what that action should be.

One has to posit, for example, that one has oneself a right to exist and survive and therefore a right to self-defense (see Donovan and Adams 2007, 4). This need not imply a “selfish gene” ethic, which, as Sheldrake has pointed out, reflects the ideology of capitalism, where “individualist, selfish, and competitive characteristics . . . taken for granted by free-enterprise economic theories are then projected onto genes” (1991, 100).

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But it does establish the desire for survival of oneself and what one values as a primary ethical principle. Nor does it mean a return to neo-Darwinian or Hobbesian notions of a struggle of all against all, for the inherent capacity to care, which is here posited as the ontological essence of all beings, provides the basis for an ethic that respects and sympathizes with others' desire to survive. I have advocated elsewhere that such sympathy should form the basis for ethical treatment of animals (see especially 1990, 1996, 2006, 2013), and that one has an especial ethical obligation toward living entities with whom one can communicate to the extent of understanding their desires and needs (2017 and 2018).

But a stipulation of the right of self-defense establishes a basis for the treatment of, for example, bacteria. Where they are harmful to one's survival they may be destroyed. But it is now becoming apparent that many bacteria are not harmful but beneficial, indeed symbiotically essential to the functioning of many if not most organisms (see Yong 2016). Thus it is not a matter of simplistically claiming that bacteria as autopoietic organisms have "rights" too, as some have perhaps facetiously claimed (see Weisberg 2014, 106-9, for a critique of this notion). It is a rather matter of respecting bacteria's teleological role in the biosphere and leaving it alone where it is not harming other subjects.

An ethic of respect for the biological integrity of living forms, such as adumbrated here, seems essential to counter current techno-scientific enthusiasm for transgenic manipulation of animals, which as Zipporah Weisberg and others have pointed out, causes "unfathomable suffering and humiliation" to animals thus manipulated (2014, 102. See also Donovan 2017b for a critique of specious justifications for transgenic

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engineering). Such invasive interventions also cause countless animal deaths, the “collateral damage” of failed experiments. (In creating a transgenic rabbit, for example, the mother rabbit is killed, as well as 97% of the offspring who are not transgenic. [Youngs 2002, 72].)

Weisberg proposes, in a vein consonant with the aims of this article, that respect for animals’ “ontological unity and entelechy . . . the recognition that all beings possess a trajectory of possibilities that are meaningful for them” (2014, 102) must form the ethical basis for objecting to transgenic engineering and other invasive technologies that tamper with the organism’s teleological identity.

In a recent article Weisberg locates human ethical responsibility in knowledge therefore of an organism’s “*phenomenological entelechy*” (2015, 11, emphasis added). In the vein of von Uexküll and French phenomenologist Merleau-Ponty, Weisberg stresses that our ethical obligations should be rooted in our knowledge of an organism’s essential *telos*, giving as example a cow’s metabolic process. “A cow munching on grass is not just realizing her store of energy. . . . Rather she is becoming who she is and ought to be” (2015, 13). It is a matter of a cow being the cow she is, for “every being is its own grand narrative,” as Andreas Weber remarked (2016, 4). In short, in the concept of entelechy, as Driesch maintained, “being and becoming are united” (1908, 149).

The apparent division between the two aspects of the formal directive entity that governs organismic activity—which Driesch divided into “entelechy” and “psychoid”—the former governing more or less autonomic activities like metabolism; the latter making decisions regarding an organism’s movement—

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are likewise seen to be teleologically united. A subject or self makes decisions in accordance with the teleological design of the organism, which it knows implicitly. The *subject* (of-a-life) makes decisions in accordance with the teleologically-defined *life* of which it is a subject. The cow as subject seeks out grass, chews her cud, and knows to chew it, because she knows implicitly that that metabolic process will enable her teleologically-determined identity as cow to continue. It enables her both to *become*—in the sense that the incoming physical matter will become—that is, be transubstantiated into—the living material of her body—and it enables her to thus *be* a cow.

There is therefore, in short, a compelling teleological order in nature that humans, as part of that order, should honor and respect. Much modern scientific and cultural practice obscures and/or overrides the fact that all living creatures exhibit an ontological integrity that is essential to their identity and well-being. Those practices that violate that integrity, it is here proposed, are ethically indefensible.

In summary, then, major thinkers about the question of what constitutes a “subject-of-a-life” have concluded that there is a mysterious and not-yet-understood designing force that is ontologically definitional to living organisms; it is made up of, on the one hand, an intrinsic teleological choreographic program—whatever one may call it (entelechy, psyche, soul, or DNA code)—and, on the other, a caring purposive subject, a “psychoid.” While many of the teleologically-organized processes in the former category are largely prescribed, there is as well in animals consciously-directed motility, which establishes the existence of a decision-maker within who is aware of the teleologically prescribed identity of the organism and makes decisions in accordance with its needs, and whose chief

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value is the maintenance and survival and well-being of that organism's identity, its "phenomenological entelechy" (Weisberg 2015, 11).

We have seen characterized as *emotional* this dimension of the organism, in that creatures as subjects, as purposive selves, *care* in accordance with their goal-directed ontological essence, which adumbrates their basic goals, needs, and interests. By their behavior and other semiotic signals living entities communicate these "desires" to other subjects. As I have argued elsewhere (most recently 2017a), humans in receipt of these communications, which are readily understandable, have an ethical obligation to pay them attention and to respect them, where such accommodation will not do harm. We share with other organisms this basic caring attribute. Perhaps indeed as Weber suggests, caring is definitional to the nonphysical communicative substrate of the "biosphere," which, he proposes "is built on existential concern. We are part of it, and we can feel it, too. Indeed, the ability to feel our own and others' existential needs is our most fundamental biological power" (2016, 41). For, as ecofeminist Marty Kheel once noted, "our capacity for empathy and care [remain] our most important human connection with the natural world" (2008, 251). Such caring mandates that we treat as inviolable the "phenomenological entelechy" of other "subjects-of-a-life" and abjure modern scientific practices that mutilate and betray naturally-endowed "soul."

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