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Does extraterrestrial life have intrinsic value? An exploration in responsibility ethics

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Research Article

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Abstract

If space explorers discover a biosphere supporting life on an off-Earth body, should they treat that life as possessing intrinsic value? This is an ethical quandary leading to a further question: how do we ground a universal moral norm to which the astroethicist can appeal? This article closely analyses various forms of responsibility ethics and finds them weak because they commit the naturalistic fallacy – that is, they ask nature to define *the good*. The good, however, is self-defining and not derivable from nature. Even so, a revised responsibility ethic could ground its universal norms on the fact that life and only life can experience and appreciate the good. Conclusion: living creatures possess intrinsic value both on Earth and elsewhere in the Universe.

Here is a moral quandary soon to be confronted by astrobiologists: how should we treat living creatures in an off-Earth biosphere? Do extraterrestrial life forms possess intrinsic value? If so, this would imply that we earthlings have a moral obligation to preserve if not enhance their life chances. If extraterrestrial life forms do not possess intrinsic value, then Earth's visitors to their habitats would be at liberty to exploit or destroy them at will. The alternative to intrinsic value is instrumental value, according to which we earthlings may use extraterrestrial life for our own profit. Some urgency exists, it seems, to provide ethical guidance prior to our first encounter with an off-Earth biosphere.

Astrobiologist Margaret Race and bioethicist Richard Randolph open up this quandary. Whenever a space explorer finds a biosphere off-Earth, here is what they say should obtain: 'Respect the extraterrestrial ecosystem and do not substantively or irreparably alter it (or its evolutionary trajectory' (Race & Randolph 2002). I concur. Yet, I ask: how can this be ethically justified?[1]

Whenever we approach an ethical quandary that could lead to the formulation of public policy, a preliminary question arises: on what basis do we ground our ethical point of departure? The scientific community finds itself in a dilemma here. On one horn of the dilemma, the pursuit of objective knowledge by the scientist is assumed to be value free. Science is amoral (not immoral but amoral). We cannot derive from objective knowledge what we need for ethics, namely, a ground for value or a guide for what we *ought* to do. On the other horn of the dilemma, we locate value and the moral ought in human subjectivity, in personal opinion or cultural tradition. The very idea of cultural relativity – context-specific values and morals – disallows ethical discourse from making pronouncements regarding what is universally right or good or normative. We would love to ground our ethical imperatives in what is objective and universal, but we can appeal only to what is subjective and perspectival. What is a scientist or public policy formulator to do?

In what follows I will examine proposals for *Responsibility Ethics*. I will examine the attempt to ground a moral imperative phenomenologically in the work of Emmanuel Levinas, Knud Løgstrup, and Hans Jonas. I will conclude that Chris McKay, NASA astrobiologist, provides the most workable point of departure for a responsibility ethic when he contends that *life is better than non-life* (McKay 2007, 2013).

The key to making such a responsibility ethic viable, I will argue, is the simple logic of the good. Because the good is self-defining and is presupposed in all moral discourse, and because living creatures can participate in the good and appreciate the good better than non-living things, it follows that life should be treated as possessing intrinsic value. We *Homo sapiens*, then, are morally responsible to respect, protect and even enhance life. If justification for human responsibility towards life wherever it is found becomes persuasive, perhaps we can provide a persuasive argument for the intrinsic value of life as we find it on Earth and elsewhere in the Milky Way.[2]

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[1]'The most likely type of life that we will find on other planetary bodies, if we find any at all, is microscopic life. Therefore, our treatment of microbial life on Earth and the ethics we apply to it is likely to be the strongest foundation for understanding how we should treat extraterrestrial life' (Persson 2012; Cockell 2016, p. 177; see: Lupisella 2016).

[2]'Our ethical sensibilities should be informed by our scientific understanding of the world' (Schwarz *et al.* 2016, p. 103). Yes, our ethics should be *informed* by science, but not grounded in science. Science is unable to ground itself. Astronomer Grace

The challenge we face: grounding ethics

Grounding an ethical imperative on a rocklike foundation is both necessary yet difficult. Whenever the ethicist says, 'should' or 'ought', we can easily ask, 'why?' Any moral prescription can appear to be only one person's opinion or one culture's contextualized value. To assert that a particular action would be universally normative regardless of personal opinion or cultural difference poses a challenge.

Yet, we must take up this challenge on two fronts, one terrestrial and the other extraterrestrial. The terrestrial front faces up to the threat to our planet's fecundity due to climate change and environmental deterioration. The extraterrestrial front raises the question: how should we earthlings treat living creatures in an off-Earth biosphere? Both of these call for moral guidance on a universal scale, that is, they call for an ethic that enjoins every pertinent moral actor (Peters 2013, 2014, 2017; Race 2013; Race & Randolph 2007). Marching forward on these two ethical fronts would be hindered by exclusive appeal to personal opinion or cultural relativity.

One of the current impediments to any universal moral norm is the split between objectivity and subjectivity which pervades the modern Western mind. We modern people assume without question that scientific knowledge should be objective, while moral value and personal meaning belong solely to the subjective domain; and because we allegedly have only one objective science but many human subjectivities, moral norms become ghettoized into the domain of our private perspective. Astrophysicist Neil DeGrasse Tyson articulates what many scientists assume: 'after the laws of physics, everything else is opinion' (Tyson 2017, p. 45). This assumed split between subjective opinion and object fact prevents us from formulating a universally applicable ethical imperative that is objectively grounded.

Gagging God

This problematic renders religious ethics mute. Religious devotees assume their moral norms are objective, because they come from God. What God has said in the Ten Commandments, Jesus' Sermon on the Mount, the Qu'ran, Confucius' *Analects* or the *Laws of Manu* provides a foundation for morality which transcends one's personal desire, opinion or preference.[3] The divine law trumps personal preference. In the modern West, however, all such religious beliefs have been ghettoized into subjectivity. To be religious, it is alleged, is to hold personal beliefs which are forbidden in the sphere of objective discourse. Objective discourse must exclude religious perspectives, we assume. In short, God's will has been gagged so that modern and emerging postmodern ears do not listen to it let alone respect it.

Hence, the challenge: how can we formulate an ethical imperative that is universally applicable both on Earth and beyond Earth? It appears that such an ethical imperative must be grounded in objectivity, not in someone's personal opinion, a single culture's perspective or a religious tradition. So, here we will ask: if not grounded in objectivity per se, might an ethical imperative be grounded in what is inter-subjective, in what is relational? The candidate I nominate here is responsibility ethics. Carl Mitcham forecasts that even religious ethicists will find responsibility ethics to their liking. Responding or answering, he says, belongs to the 'primordial experience of the Judeo-Christian-Islamic tradition: a call from God that human beings accept or reject' (Mitcham 2005, p. 1610). Ethical quandaries, which we confront daily, presuppose that we *H. sapiens* are morally responsible agents.

The warrant for a universal normative ethic

After gagging God, the scientist in search of a normative ethic might also want to muzzle cultural relativity, especially relativity as propounded by deconstructionist postmodernists. Today's scientists are understandably impatient with deconstructionist postmodernism, which consigns all moral value to contextualized group subjectivity.[4] The doctrine of cultural relativism aptly describes context-specific moral values, to be sure; but it overreaches when it *extrapolates this observation to the extent that it nullifies every norm* that is comprehensive and inclusive.

Some scientists fear that even commitment to truth is at stake in this acrimonious debate. 'The postmodern assault on science undermines the very notion of truth and robs scientists and scholars of their ability to speak truth to power', writes a columnist in *Astronomy* magazine (Hester 2017).

Can philosophy come to the scientist's rescue? Yes. German philosopher Otfried Höffe argues forcefully that a 'trans-human, and absolutely universal universalism is entirely reasonable… morality maintains that there are fundamental claims applicable to all physically conditioned, linguistic, and rational beings' (Höffe 2010, p. 128). Only an ethic with universal applicability could provide the scope we need to deal with planetary challenges such as climate change and extraterrestrial concerns such as dealing with off-Earth life forms. The ethical relativism of deconstructionist postmodernism relies too strictly on the Western consignment of moral value to subjectivity, to group subjectivity in this case. Höffe continues, 'At a global level, [ethical relativism can be] even deadly. Whoever declares all moral obligation to be only culturally relative takes all conversation about the foundations of a peaceful coexistence and interaction of cultures to be impossible' (Höffe 2010, p. 22).

In short, the universal cultural relativism propounded by deconstructionist postmodernists unnecessarily disowns the scientific pursuit of objective knowledge while it denies access to a foundation for a universal ethic. Might a responsibility ethic bypass deconstructionist postmodernism and provide the ontological bedrock we are looking for?

Responsibility in relationship

Space philosophers Carol Cleland and Elspeth Wilson tell us what the astroethicist should be doing. 'The job of ethics is to evaluate

Wolf-Chase puts it accurately. 'Although science can, and arguably should, inform ethics, science cannot dictate ethics' (Wolf-Chase 2012, p. 110).

[3]Buddhists are not likely to formulate the question of life's intrinsic value the way we do here, because ultimate emptiness generates no relevant ethical corollaries. Cho (2007), Associate Professor of Buddhist Studies at Georgetwon University. 'A Buddhist would apply neither an intrinsic nor instrumental value of life or nature to the question of terraforming Mars. The idea of an intrinsic value would go against the principle of emptiness. Instrumental value, on the other hand, would be problematic because one could not ensure that the instrumental objectives add the proper motivations….There is no intrinsic worth to nature but neither is there intrinsic worth to human beings….There is no option between them, so you have to transcend that framework all together' (Cho 2007, p. 212).

[4]There are least two types of postmodernism. The *deconstructionist postmodernists* are concerned about defending subjugated knowledges, those cultural specific understandings which are bull dozed over by the meta-narratives or universals belonging to politically or economically dominant centers of power. The *holistic postmodernists* seek to heal the subject–object split of Western thinking, reuniting fact with value. It is the former, the deconstructionists, which afflict today's scientists because they de-value objective truth.

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issues of right and wrong, or good and bad, directing our focus to normative questions of value' (Cleland & Wilson 2013, p. 29). Despite the work of existing space ethicists to date, *normative* responses have seldom been raised to address the quandaries flooding out of our growing capacity for becoming present in off-Earth locations.

Like a deep sea diver trying to touch bottom, let us ask whether a responsibility ethic can secure us to bedrock normative values. As the etymology of the Latin, *respondere* meaning *to answer*, suggests, a responsibility ethic relies upon a prior relationship, an inter-subjective relationship. Phenomenologically speaking, our human situation is fundamentally and unalterably relational. We cannot be who we are in our subjectivity apart from our relationships to one another or to our physical and cultural environments. Responsibility relies on relationality. When we become conscious as individual persons, we realize that we are already inextricably embedded in a network of relationships and, further, our relationships demand responsibility on our part. This is fundamentally human, universally human.

This observation about the human condition per se has led philosophers in the tradition of Martin Heidegger to ground ethics in the primal human relation: oneself in relation to another. One of Heidegger's students, French philosopher Emmanuel Levinas, for example, contends that the human subject is constructed within a primordial relationship to the *Other*. We cannot be our self except in relationship to the Other. 'I am 'in myself' through others' (Levinas 1998, p. 129).

Another of Heidegger's students is a Danish philosopher Knud E. Løgstrup. Phenomenologically, to be a human person is to be in a relationship with other persons such that they make a demand, the demand to serve them with unselfish love. This is the *ethical demand*, according to Løgstrup, a demand that belongs to our ontology as human beings. To be is to be a person-in-relationship, and this relationship entails the demand that we serve the wellbeing and even the flourishing of the other party in that relationship. When we wake up to find ourselves in being, we find that we are not individuals first who then add relationships. Rather, we find that whatever individuality we have derives from a prior world of concrete relationships. We are interdependent, and entailed in this interdependence is a silent yet potent command: love your neighbour!

Our responsibility is inescapable. 'By our very attitude to one another we help to shape one another's world. By our attitude to the other person we help to determine the scope and hue of his or her world, we make it large or small, bright or drab, rich or dull, threatening or secure' (Løgstrup 1997).[5] Because we are already inextricably nested in relationship, the moral imperative to love the other is ontologically primal.

The world (lifeworld, *Lebenswelt*) for this Danish philosopher is what is given to us. The world is the set of interpersonal relationships into which we have been thrown, to borrow the term *Geworfen* from Heidegger. Like Heidegger, *Dasein* (human being) cannot but be *In-der-Welt-Sein* (being-in-the-world), including *Miteinandersein* (being-with-others) and even *Miteinanderschaffen* (creating-with-others) (Heidegger 1962).

Bioethicist Svend Andersen (2007) concludes that, according to Løgstrup, 'ethics is a backlight flowing from the relations in which we find ourselves and from the basic conditions under which we exist. This is what he means by the *ontological foundation* of ethics' (Andersen 2007, p. 34). Responsibility ethics is founded ontologically on bedrock of relationships.

Our fundamental responsibility to love the neighbour need not be limited to neighbours such as ourselves, to other human persons. Without contradiction, we could find warrant to love all that has been gifted to us in creation. Roman Catholic theologian Elizabeth Johnson extends our responsibility to love to the entire creation. 'There is good warrant for extending the notion of neighbor beyond the human species to all other fellow creatures in the community of creation' (Johnson 2014, p. 281). A responsibility ethic supports a normative inter-species and even ecological ethic. Might it also support a normative extraterrestrial ethic?

Responsibility ethics derived from evolution

Evolution is universal. Every human being shares a common past with every other. We all share a common biological ancestry which stretches back perhaps 3.9 billion years. Today's generation was thrown into this history, to borrow Heidegger's idea. We simply wake up into consciousness and find ourselves here – in this time and this place – with a giant network of indissoluble relationships. Does this shared evolutionary history place upon the present generation's shoulders a moral responsibility?

Yes, answers another of Heidegger's students, philosopher of biology Hans Jonas. Jonas seeks an objective, universal foundation for ethics. He seeks an ontology to undergird ethics. He argues that existence itself provides the ontological ground for the moral imperative. What is that imperative? Here it is: live! Life not only lives, it ought to live. Jonas derives his *ought* from his observation of what *is*.

Jonas' philosophy of life (*Lebensphilosophie*) begins with 'an existential interpretation of biological facts' (Jonas 1966, xxiii). The fact is that as biological organisms we are indissolubly relational. Our metabolism, for example, requires a perpetual in-and-out interaction with our environment. Motherhood, to cite another example, requires nurturing relationships so that the next generation can survive if not thrive. Responsibly maintaining our network of relationships is utterly necessary to exist as a self. This applies to all life, including human life. Responsibility marks the tension between being and non-being, between existing and not-existing. 'The great contradictions which man discovers in himself – freedom and necessity, autonomy and dependence, self and world, relation and isolation, creativity and mortality – have their rudimentary traces in even the most primitive forms of life, each precariously balanced between being and non-being, and each already endowed with an internal horizon of transcendence' (Jonas 1966, p. xxiii).

Here is the fundamental axiom upon which Jonas constructs his responsibility ethic: 'Everything alive makes a claim to life, and perhaps this is a right to be respected' (Jonas 1984, pp. 38–39). Because life inherently makes a claim to life, we are morally obligated to respect that claim. We are responsible for the life of all that lives, says Jonas.

We need to watch carefully as Jonas ascends from description to prescription. According to Jonas, because mothers in so many

[5]Knud E. Løgstrup's grounding of ethics in the primal demand for love place him squarely within the Christian – specifically Lutheran – tradition. 'Løgstrup, in working out his ethics, shows himself to be a Lutheran philosopher' (Anderson, 51). Yet, by relying on phenomenology rather than scriptural authority, he appeals to an objective and universal foundation. 'I am convinced that his [Løgstrup's] philosophical argument can, in fact, stand on its own without any specifically Christian presuppositions' (Fink 2007, pp. 10–11).

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species dedicate themselves to nourishing their young we learn that the preservation of life provides a definitive value. Or, more fundamentally, because living creatures struggle to survive and thrive, they presuppose it is 'worth the effort'. If it is worth the effort, then this 'must mean that the object of the effort is *good*, independent of the verdict of my inclinations. Precisely this makes it the source of an 'ought' (Jonas 1984, p. 84, Jonas' italics). *De*scription has produced *pre*scription.

In nature, we can find 'a fundamental self-affirmation of being, which posits it *absolutely* as the better over against non-being' (Jonas 1984, p. 81). This is Jonas' observation, his ontology. The value – what is 'better' – exists objectively in life's being life. 'Nature harbors values because it harbors ends and is thus anything but value-free' (Jonas 1984, p. 81). Or, 'Only from the objectivity of value could an objective ought-to-be in itself be derived, and hence for us a binding *obligation* to the guarding of being, that is, a responsibility toward it' (Jonas 1984, p. 50, Jonas' italics).[6] Jonas' *ought* is founded on what *is* in the nature of life. The result is an ethic according to which we are responsible for preserving and promoting life.

In an allusion to Immanuel Kant's categorical imperative, Jonas applies his notion of responsibility to human–human ethics. 'Act so that the effects of your action are compatible with the permanence of genuine human life….we may risk our own life – but not that of humanity' (Jonas 1984, p. 11). Then, Jonas expands the scope to include 'not only the human good but also the good of things extrahuman, that is, to extend the recognition of ends in themselves beyond the sphere of man and make the human good include care for them' (Jonas 1984, p. 8). Might we find here in Jonas' responsibility ethics a foundation for terrestrial eco-ethics plus extraterrestrial life ethics?

No. What Jonas draws out of the theory of evolution is arbitrary. He is cherry picking. One could appeal to the same theory of evolution for a very different ethical programme. For example, Social Darwinism and Nazi racism (*Rassenhygiene*) nearly a century ago appealed to survival-of-the-fittest (natural selection) to justify eugenics and even genocide of persons whose 'lives were not worth living' (*Minderwertitg*). Jonas, whose family itself sought without complete success to escape Europe's holocaust, would share nothing with this alternative evolutionary ethic. Yet, both Nazi genocide and Jonas' philosophy of life are constructed on the same evolutionary foundation. Unfortunately, evolution is less like a rock and more like a cherry orchard; it is finally subjective preference which leads the ethicist to select one cherry over another.

The naturalistic fallacy?

Are the responsibility ethicists guilty of committing the naturalistic fallacy? Commonly, the naturalistic fallacy is thought to occur when one tries to draw an *ought* from what *is*, when one tries to draw a prescription from a description. What *is the case* cannot in itself yield a mandate to devote ourselves to what *ought to be the case*, because pursing the *ought* implies changing what *is*. An ethical imperative is oriented towards a future, a transformed future. An ethical imperative either confirms or repudiates the present status quo – what *is* – in light of a vision of a future that is better, a future that *ought* to be. It is fallacious to prescribe an *ought* on the basis of what already *is*. This is the simple rendering of the naturalistic fallacy.

A more refined understanding of the fallacy goes like this: one cannot ask nature to define what is good. The good is self-defining; it cannot be derived universally from a particular actualization such as the good of survival in evolutionary biology or even a mother's devotion to caring for her young.

Technically, the term *naturalistic fallacy* holds that it is a fallacy to explain the *good* by reference to some property; because the *good* is a simple notion not defined by something else such as evolutionary adaptation (Moore 1903). Be that as it may, the term *naturalistic fallacy* has in common parlance come to be identified with the *is-ought* derivation.

It appears that all the responsibility ethicists we have reviewed here commit the naturalistic fallacy. After describing being human, they derive an imperative to protect and enhance both human and extra-human life. On this basis, they hold that it is good to treat life with respect, to take responsibility for life's thriving. The astroethicist savours their destination, but their recommended road to get there is full of pot holes. Can we repair these pot holes and still drive forward?

Here I ask: might it be okay for the scientific community to drive gingerly around the naturalistic fallacy and proceed with Jonas' life philosophy? On the one hand, no. We must keep up the no trespassing sign and stay away from the is-ought fallacy. Otfried Höffe, for example, 'stands in opposition to the occasional imperialism of some technical scientists: one can never arrive an *ought* on the basis of only empirical observations (on the basis of *is* claims)' (Höffe 2010, p. 39). To derive an *ought* from an *is* risks falling into the naturalistic fallacy. A scientific description of what *is* does not by itself warrant a human prescription for what *ought* to be.

On the other hand, we should note that not everyone believes it to be fallacious to ground a moral *ought* in a natural *is*. Transhumanist Simon Young, for example, registers a complaint against the naturalistic fallacy. 'The Naturalistic Fallacy is itself a fallacy', he says. 'Ethics can be based only on nature because man is a *part* of nature. Yet, we do not need to base our ethics on *everything* nature does, but only on those aspects beneficial to human beings (*transnaturalism*). Evolution is the unfolding process of complexification in nature. Humankind is a conscious aspect of evolution; as such, it is instinctive of human beings to seek to enhance their condition in pursuit of ever-increasing survivability and well-being' (Young 2006, p. 200). Note the cherry that Young picks: what will 'enhance' the human condition gets picked off evolution's tree while the other buds get left. Here is the implication: what nature as nature 'is' does not actually ground ethics. Rather, we human beings select from nature what we deem to enhance our own privileged place within nature. In the final analysis, the *ought* is an instrument of human selectivity. Another pot hole?

Might we ask for help from a theologian? Roman Catholic bioethicist Stephen Pope tries to help by setting natural law above the laws of evolution. Even if evolution is driven by selfish genes, a higher natural law prescribes altruistic values. 'Evolutionary psychology and sociobiology give us no reason why we should be concerned for non-kin and non-reciprocators, but natural-law ethics argues that our human dignity grounds the virtues and duties of love, justice, and solidarity…we can transcend the evolutionists' blind spots, fatalism, and reductionism and develop a

[6]'Establishing the presence of intrinsic value in nature is a cornerstone of Jonas' argument for the existence of an imperative of responsibility based in being. The key to his argument lies in his understanding that the human is as much a part of nature as other natural entities, and the separation of value and nature is a confused understanding based primarily on our tendency to think in dualities [objective vs. subjective]' (Morris 2013, p. 8).

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more credible and morally appealing vision of humanity' (Pope 2007, pp. 290–291). For Pope, there exists a natural law that transcends and judges the laws of the evolutionary process. The pot hole here is that belief in this higher natural law is based upon medieval Roman Catholic doctrine, and in our modern world non-Catholics do not feel compelled to affirm natural law.

Alternatively, Lutheran theologian Philip Hefner grounds ethics in biological evolution itself, just as Jonas does. Hefner describes evolution as a deterministic process which has produced human beings with freedom. We humans are determined by our evolutionary inheritance to be free. When we humans project moral *oughts* as an exercise of our freedom to choose among alternatives, we are doing so on behalf of the natural processes which have birthed us. This is a brilliant move. According to Hefner, moral choice is itself objective nature speaking through human subjective preference.

We creative human beings add *oughts* to the more comprehensive evolutionary process of which we are a part. 'Humans experience freedom as *for the sake* of something, and that something is the best possible actualization of what they *ought* to become. Humans search the *is* of the determined context, in order to discover its *ought*; just as they probe the *ought* in order to discover its *is*' (Hefner 1993, p. 115, Hefner's italics). Like transhumanist Young, what we know as a moral *ought* is a product of human imagination that extends what humans value. Here is another pot hole: Hefner is providing a description of how the *ought* arises, not a prescription of how we ought to behave.

Larry Arnhart is more subtle yet quite forceful. He acknowledges that drawing an imperative *ought* out of a descriptive *is* is logically fallacious. However, adds Arnhart, the force of the naturalist's argument is not intended to be logical; rather, it is psychological. 'The move from facts to values is not logical but psychological. Because people have the human nature that they do, which includes propensities to moral emotions, they predictably react to certain facts with strong feelings of approval or disapproval, and the generalization of those feelings across a society constitute moral experience' (Arnhart 2005, p. 719). In addition to reason, moral judgements rely upon feelings. The move from description to prescription is a move from reason to emotion; and our emotions have been provided for us by our evolutionary history. Therefore, our ethics should be grounded in the emotions nature has provided us. Grounding an ethical norm in emotion amounts to one more pot hole, I think, because we know from daily experience how emotions can be conflictual or combative and, if not rationally controlled, lead to murder.

None of these defences of naturalistic ethics suffice, in my judgement. Critics of naturalistic ethics hold that the grounding for what we deem good or right must transcend our pre-human and human biology. This applies whether the moral sense is expressed in reason or emotion or both. If the thrust of moral direction is to change or alter the *status quo* in light of our vision of a future that should be better, then any vision of the new cannot be grounded in a description of the past or present. An ethical imperative prompts us to envision a future different from the present, better than the present. Such a futuristic vision is prompted by the good which stands in critical contrast to what *is*.

The simple logic of the good

The Good is self-defining. The good defines other things, but other things never define the good. This is the simple logic of the good. This is axiomatic.

Here is a corollary: life is better than non-life. Why? Because only living creatures can experience and appreciate the good.

The naturalistic fallacy is committed when we ask the history of evolving life on Earth to tell us what the good is. Only the reverse logic will suffice: we presuppose the good when we evaluate the evolution of life.

Despite this deference to the naturalistic fallacy, we may still benefit from Levinas', Løgstrup's and Jonas' valiant attempts to provide a universal normative ground for ethics based upon the phenomenon of life. Jonas may not have established the bedrock foundation for a responsibility ethic in evolution, but his philosophy of life is as close to bedrock as lichen is to granite. Here is my principal observation: life can experience the good when it survives and thrives, even life at its simplest single cell level. Life seeks not just the state being life; it also seeks to reproduce life, to spread. Experiencing the achievement of something good is better than lacking the capacity for such experience. Therefore, life ranks above non-life. With this as the first step, we can now climb Jonas' ladder.

This logic has been invoked already by NASA's Christopher McKay when developing an ethical mandate to seed life on Mars (McKay 2007). A fecund Mars with a self-sustaining biosphere would be, ethically speaking, better than Mars in its current lifeless or near-lifeless state. It follows, argues McKay, that earthlings have a moral mandate to transfer life from Earth to the red planet.

The essential point McKay makes is this: lifeless Mars has rocks and wonderful landscapes and is of scientific, educational and aesthetic value. Thus, right now it is of instrumental value for us earthlings. If one accepts that life has intrinsic value, then Mars with life would have intrinsic value in addition to instrumental value. McKay thinks it follows that Mars should be given life.

I am not here advocating terraforming Mars. Nevertheless, McKay's moral logic can be borrowed and applied to our quandary: does a biosphere we discover off-Earth possess intrinsic value?

In sum, perhaps the logic-of-the-good could provide a universal justification for treating life in off-Earth biospheres as possessing intrinsic value.

The intrinsic value of off-earth biospheres

Life is better than non-life. When our space explorers from Earth discover a biosphere with living creatures in an off-Earth site, our default disposition should be to show respect. Respect requires that we protect the integrity and sustainability of any biosphere. Respect implies responsibility.

Responsibility for life's intrinsic value does not require a total hands-off policy, to be sure. It does not require a total ban on killing individual creatures. Each day here on Earth we kill microbes by the millions when sanitizing our hands with an anti-biotic. Whenever we eat, we nourish ourselves from the death of other living things, plants in salads and animals in meat. We can respect the fact of life – the brute presence of life – while still discriminating between individuals and preserving the very existence of life per se.

What comes next? At the 2010 COSPAR conference held at Princeton, it was suggested by scientists in attendance that we turn off-Earth biospheres into parks (Conley & Rummel 2010; COSPAR 2010; Conley 2014). Parks would provide protection and management of life. Might this be a good idea?

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If we think of Earth's *H. sapiens* as guardians of life in the Milky Way and showing responsibility by employing off-Earth park services, Octavio Chon-Torries warns that

> …a couple of problems may arise. The first is that, if we are the guardians of life in the Universe then it is our right to propagate it. Second, if we do propagate it, we would be putting at risk other forms of life that we do not know, although this will be inevitable because sooner or later we will have to move to other celestial objects that can be inhabited. For this, the principle of precaution could be suggested, exhausting all the possibilities of finding life, for example, before sending people to Mars. A window of time may be proposed in order to be sure that there is nothing there, and if we are not totally sure, we can at least propose planetary parks where we might suspect that there may be life or remains of it (Chon-Torres 2017).

In short, before exporting terrestrial life to other planets, our space explorers should first determine whether or not extraterrestrial life already exists. Only if Mars is a vacant lot should we build a house for earthly life. This I take to be a proposed corollary.

Midwives at the birth of astroethics

The field of astroethics is being born. Methodist bioethicist Richard Randolph (2009) along with NASA astrobiologist Chris McKay aver, 'by ethics, we mean a system of values and commitments that guide the formation and implementation of policies for space exploration as well as the day to day operations of astrobiologists' (Randolph & McKay 2014). Our quandary in this article has been: how might astroethics get grounded?

One implication of searching for an ethical ground for a universally applicable moral norm is that we must think in terms of a global ethic embraced by a single planetary society on Earth. Sante Fe Institute bioinformaticist Stuart Kauffman stresses that 'We desperately need a global ethics that is richer than our mere concern about ourselves as consumers….We need a global ethic to undergird the global civilization that is emerging as our traditions evolve together' (Kauffman 2008, p. 9). When addressing the relationship between Earth and what is off-Earth, *H. sapiens* should, to the extent that it is possible, speak with one voice.

Neither our Solar ghetto nor the encompassing Milky Way are the private property of one nation. Nor do they belong to whichever team of astronauts arrives first on an alien site. The competition and rivalry that plague our everyday territorial claims must be superseded by a just and participatory global community about to enter the space environment which surrounds all of us.

Terrestrial ecoethicists have already confronted the mandate of thinking globally. 'No matter if one is Jewish, Christian, Muslim, Buddhist, African American, white, Hispanic, Marxist, or neoliberal, just to name a few, the rising tides of global warming will destroy property and people without mercy', writes theologian William Schweiker. 'We literally sink or swim together' (Schweiker 2016, p. 4). If we add to ecological consciousness the new awareness of Earth's place within the Solar system and the Milky Way, we cannot help but think of a single Earth community with a planetary morality.

Such a single Earth community does not actually exist, however, at least not yet. The United Nations has been working with a concept of a global *we* at least since 1967. The 1967 UN *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies* stipulated: '§1. The exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. §2. Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies' (UN 1967). In short, a universal and normative responsibility ethic applied off-Earth implies a trans-cultural global community here on Earth.

Conclusion

'Space ethics appear today as a new *terra incognita,* an unknown country', writes Jacques Arnould, astroethicist at France's *Centre National d'Etudes Spatiales* (CNES). For this reason, he likens space ethicists to pioneers. As pioneers, quandary ethicists should begin their journey with humility, seeking first to learn the new territory. 'That is the reason too why the first challenge is not to organize, to legalize and to reduce ethics to its repressive aspect. At the present time, we need to explore the field of space ethics. We need to determine the responsibilities; and to debate them. Major decisions about space cannot remain in the hands of individual leaders or the property of political, scientific or financial lobbies' (Arnould 2005, p. 252; see Arnould 2011). Arnould provides the challenge. Our quandary as been: how shall the astroethicist respond to the question of life's intrinsic value on Earth and elsewhere?

Our response to this quandary has been to hypothesize that a responsibility ethic comes closest to providing a point of departure. That point of departure is not in itself a rock solid foundation. Rather, it is the logic of the good which provides the bedrock for ethical construction. A slightly revised responsibility ethic provides the next step up: life is better than non-life. When we meet life off-Earth – even microbial life in its own ecosphere on another planetary body – our moral disposition should be this: respond to that life on the assumption that it possess intrinsic value.

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