



# Manifest complexity: A foundational ethic for astrobiology?



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## ABSTRACT

This paper examines the age old question of the basis of moral value in the new context of astrobiology, which offers a fresh perspective. The goal is to offer the broad outline of a general theory of moral value that can accommodate the diversity of living entities we are likely to encounter beyond the confines of Earth. It begins with ratiocentrism, the view that the possession of reason is the primary means by which we differentiate entities having moral value in and of themselves from those having moral value merely by virtue of the uses to which they can be put. I broaden this basis to include sociality and culture, arguing that these three attributes tend evolve as a “package deal.” Because of this, it's really the sociality-reason-culture triad (SRCT) which should be the criterion for intrinsic moral value. If the SRCT linkage is sufficiently strong, it follows that this sort of moral valuation would be shared by any non-human entities capable of reflection on the nature of such things, granting it a curious kind of objectivity. I then suggest that the unfolding of complexity produced by SRCT species may be the best means to realize the manifest destiny (manifest complexity) of all life, which could provide an ultimate, metaphysical foundation for ethical value. Finally, I outline how this new theory can be applied to different types of entities that we may encounter beyond Earth.

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## 1. Overview

Thinking about ethics through the lens of astrobiology allows us to approach old problems in ethics from a new perspective. First, because humans are unique in possessing sophisticated rational capacity on Earth, even careful thinkers can come to view our special moral status as being due to our humanity rather than other ethically relevant attributes. Second, extraterrestrial life forms will inhabit a separate ecosystem, which fact allows us to fully disentangle different types of ethical justifications for respecting their ethical value: are non-human entities morally valuable in and of themselves or because they are an important part of the ecosystem we share? The time has come for ethicists to embrace the challenges offered by an astrobiological orientation in ethics.

To that end, this paper will trace the outlines of a system of ethical valuation, based on reimagined elements of traditional ethical theory, that may have truly universal application. The system begins with classical ratiocentrism, the view that the possession of reason is the primary means by which we differentiate entities having moral value in and of themselves from those having moral value merely by virtue of the uses to which they can be put. I then extend this position by arguing that reason alone is only part

of a larger ethical foundation in which sociality and culture are also essential. More precisely, since reason, sociality and culture all tend to arise in evolution as a co-evolutionary “package deal,” the sociality-reason-culture triad (SRCT) is the proper basis for intrinsic moral value. This suggests a number of interesting conclusions which I tentatively put forward. For one thing, since sociality and culture are properties of groups rather than individuals, so too is first order moral value a property of groups and only derivatively of individuals. For another, if the evolutionary linkage in the SRCT is as strong as I suspect, this theory of moral valuation would likely be shared by any non-human species capable of reflection concerning ethics, granting it a kind of “subjective objectivity.” Finally, I suggest a metaphysical basis that could underpin the entire system – the value of living complexity in a universe driven by entropy. In other words, life and its attendant properties of sociality, reason and culture may be the most efficient means of pursuing a universal esthetic of manifest complexity. Lastly, I outline how this new version of an old theory can be applied to different types of extraterrestrial entities we may one day encounter.

## 2. Ratiocentrism simpliciter

Let me begin with a brief discussion of the ratiocentric position I have developed for astrobiological contexts elsewhere [1,2]. There is a very long tradition in ethics, going back at least as far as the

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ancient Greeks, where reason is seen as the sine qua non of moral value. More precisely, reason is said to afford an entity moral value in and of itself (intrinsically) as opposed to in virtue of the uses to which it can be put (instrumentally). The classic statement of this position is from Immanuel Kant, who argues that intrinsic moral value accords to only those entities with the capacity to act on formal principles instead of mere emotion or inclination. Such ethical principles in turn require an ability to engage in abstract reasoning. Since it is literally not possible to think about ethics, as ethics, without reason, only rational creatures can be part of the conversation and thus only rational creatures possess intrinsic moral value. Of course, other entities may still have ethical value worthy of real respect, but ultimately only in virtue of their usefulness to those with intrinsic value:

*...every rational being, exists as an end in himself and not merely as a means to be arbitrarily used by this or that will ... Beings whose existence depends not on our will but on nature have, nevertheless, if they are not rational beings, only a relative value as means and are therefore called things. On the other hand, rational beings are called persons inasmuch as their nature already marks them out as ends in themselves [3].*

### 3. Evolution, sociality and culture

I adopt a thoroughly evolutionary perspective on ethics. Whatever ethical principles we subscribe to are inexorably influenced by the ways in which our brains have evolved. It is often thought that this move is inappropriate because it means that there is nothing more to ethical rules than historical contingency, but this is not the case. Part of the reason for the misconception is that we think of evolution as a purely random process, and thus of its products as entirely contingent. But evolution is not a random process in important ways – it's more accurate to think of it as a sorting process whose initial input is random, but whose end results are not. The more frequently particular patterns emerge in independent evolutionary processes, and the more these patterns seem to be driven by universal considerations like physical laws, the more confident we can be that they express underlying principles transcending the specific circumstances in which they evolved. For example, fish may share the same basic body shape not simply because of accident and shared ancestry, but in virtue of the optimality of this design for movement in a fluid medium.

What if the development of reason, sociality and culture is predictable in this way? What if they evolved on Earth not just because of a contingent set of initial conditions which may or may not be found on other planets, but because such a constellation of abilities is favored in general by evolutionary processes? If we are to take this possibility seriously, a central question is the extent to which these traits can evolve independently of each other. Below I examine each level of the relationship, giving both empirical and theoretical arguments for the tentative conclusion that they are essentially an evolutionary “package deal”.

It is clearly possible to have sociality in some sense without reason or culture, since we have social insects on Earth that possess the one but not the others. However, the type of sociality that social insects embody and the type I wish to discuss are very different. Social insects have a very special genetic system which allows them to collaborate with close relatives through hardwired behaviors. This restricts these organisms to a (relatively) small set of stereotypical interactions of the sort that is probably not conducive to the development of complex reasoning and culture. The development of a complex culture, on the other hand, requires adaptive sociality – that is, the ability to adopt a potentially infinite set of behaviors in

response to shifting conditions on very short time scales (including the development of ethical principles governing social interactions).

Based on the limited sample of organisms we have on Earth, there are grounds for thinking that reasoning and adaptive sociality co-evolve closely. Consider a few empirical findings from terrestrial evolution:

1. There is a long appreciated, roughly linear, relationship between brain:body ratio (considered the best measure for interspecific comparisons of rational ability) and adaptive sociality [4].
2. Animals which are best at problem solving (e.g., primates, corvids) tend to also live in social groups [5].
3. There are often temporal associations in evolutionary history that suggest a causal connection between adaptive sociality and reason – as with the observation that dolphins' brain:body ratio increased dramatically at about the same time they became social [6,7].
4. Terrestrial creatures we know of that possess reason but not adaptive sociality may well be in evolutionary transition. For example, recent work in octopuses, who are highly intelligent but haven't been classified previously as social, suggests that they possess the ability to recognize conspecifics and perhaps even form dominance hierarchies [8].

“Prosocial” instincts which set the stage for ethical thinking are probably part of the mix as well. In recent years, prosocial capacities have been discovered in a wide range of non-humans animals [9] and it is often difficult to describe these without resorting to ethical terms. For example, non-human primates seem to have a rudimentary sense of “fairness,” and react to “unfair” situations in much the same way humans do. This capacity doesn't (probably) rise to the level of principled ethical analysis, but manifests rather as a set of emotional responses which serve to bias behavior in socially desirable ways. The same could be said of other emotional responses that often factor strongly in human ethical reasoning – romantic love, for example, is presumably an adaptation for the promotion of pair bonding. This emotional substratum underlies the principled ethical systems that develop once sufficient rational ability is available.

Of course, a major recurrent problem in astrobiology is delimiting the bounds of evolutionary possibility on the basis of a strictly terrestrial dataset. It is certainly possible that the adaptive sociality-reason association reflects something more contingent than a universal law. But there is also a good theoretical case to be made for a strong association between adaptive sociality and reason. Consider that any non-social organism with the capacity to reason would be at an enormous disadvantage relative to other rational creatures who are both rational and social, since that combination allows them to coordinate the activities of multiple individuals towards a common goal. Similarly, an adaptively social group without reason would be at a severe disadvantage to another group with such capacity. Given this, what should we expect to see beyond the confines of Earth? First, it seems reasonable to suppose that we will rarely see adaptive sociality without reason. Second, since adaptive sociality and reason actively co-evolve, with flexible social systems providing fertile new ground for the exercise of reason and reason enriching the range and diversity of social interactions, it seems likely that we would not see the most complex realization of either in isolation.

Which brings us to culture. At its most basic, culture is a set of learned group behaviors. As with prosocial emotions, recent research has shown that culture is far more widespread than we had previously thought [10–12]. Since culture requires learning from others, anything more than extremely rudimentary culture will require rationality. But any group with the capacity to preserve

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