

Chapter 8



Cosmocultural Evolution

The Coevolution of Culture and Cosmos and the Creation of Cosmic Value

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1. Introduction

Culture is something special. It has helped life on Earth, particularly *Homo sapiens*, survive and thrive in ways that sometimes defies belief. What human beings have created, what we are becoming, is utterly remarkable, inspiring, mind-blowing. But is it an illusion of sorts? Is culture merely an increasingly complex result of biologically driven self-interest, arising from the happenstance of life? Is it merely a blind walk (or run?) of replicating memes—the cultural equivalent of natural selection?¹

While it may be true that much, if not all, culture might ultimately be explained directly and indirectly by Darwinian explanations of one sort or another, it may also be true that cultural evolution is beginning to break free of our biological heritage. Natural selection has been working on the experiment of life for close to 4 billion years on Earth, and what we witness now with human culture is so rich, so complex, so uncertain, that we have to wonder how it will evolve, and how it may be evolving elsewhere in the universe.

Other species on Earth arguably exhibit basic forms of culture, but those instances appear to be far less complex, and perhaps far less meaningful than what human beings experience. Our technology, art, and what we know of our world, is unspeakably exhilarating and terrifyingly dangerous. We are

capable of powerful creations and complete annihilation. Our consciousness is uncontainable—to the point of agonizing awareness. *Homo sapiens sapiens* has a power unlike Earth has ever seen.

To some, this anthropocentric cheerleading will seem the worst sort of “speciesism”—a kind of blind, unethical delusion engendered by biologically driven affinities for one’s own likeness. But exaltation of humanity in no way justifies unchecked devotion at the expense of others who inhabit our world and perhaps worlds beyond. Nevertheless, the evidence seems clear: human beings are running away with culture. And it may be running away with us. We get the prize—the Culture Prize. We deserve it. We’ve worked hard, made untold sacrifices. We are smart in a way no other animal is. And through us, if not others, the Culture Prize is bestowed upon the Cosmos.

It is in this context that I hope to 1) provide a basic framework for thinking about how culture and cosmos might relate—the primary notion being “cosmocultural evolution” and/or the Cosmocultural Principle; 2) briefly develop the notion of “bootstrapped cosmocultural evolution,” including practical near- and longer-term implications; 3) suggest a long-term worldview, consistent with 1 and 2, that can be characterized as a morally creative cultural cosmos—a post-intelligent, post-technological universe that enters the realm of conscious evolution driven largely by moral and creative pursuits

1.1 Characterizing Culture

For the purposes of this essay, it will be helpful to think about culture as the *collective manifestation of value*—where value is that which is valuable to “sufficiently complex” agents, from which meaning, purpose, ethics, and aesthetics can be derived.² Culture manifests value in many varied forms, from thoughts and knowledge to symbolic abstractions to social norms to mass movements to large-scale physical creations. “Collective” is that which is shared, which suggests a) at least some degree of common interests, pursuits, or purposes among multiple agents, including future generations; and b) the transmission of information in space and time, including across generations—what might be thought of as a kind of collective memory (Bloom 2009, this volume). “Manifestation” suggests instantiation in the world—e.g., thoughts, behavior, and objects (including purely aesthetic objects) that are predominantly (but not exclusively) driven by some usefulness to agents—e.g., to perform a function, adapt, anticipate, and modify memory, information, and knowledge in order to more effectively pursue interests. “Sufficiently complex agents” implies beings with interests that are capable of complex autonomous

behavior to pursue those interests. With this characterization of culture in mind, “cultural evolution” then is the variance of culture (as characterized above) over time.

There is much wiggle room in this characterization to accommodate a variety of perspectives about culture. For example, memetic perspectives of evolution may see mere replication as a manifested “value,” but memes (“replicating cultural units” such as ideas, art, ways of doing things, etc.) would not necessarily be thought of as having autonomy in the sense of being able to consciously “choose” a behavior to ensure their replication, nor do memes have to be seen necessarily as providing usefulness to agents. “Sufficiently complex beings” also offers wiggle room in that it could include, for example, bacterial colony behavior (Bloom 2009, this volume). But if collective bacterial behavior were not thought to be sufficiently complex and/or sufficiently autonomous, it would not count as culture—whereas collective human behavior would seem to be far more complex and autonomous, and would hence be considered culture. However, it may not be important to make this a hard distinction. It may only be important to think of degrees of culture with bacterial colonies perhaps being examples of a basic form of culture. Human culture would be an example of what might be considered robust culture. It is primarily robust culture that is of interest for this essay.

2. Cosmic-Cultural Relationships and Cosmocultural Evolution

Here I hope to lay out a basic framework to help think about cultural evolution in a cosmic context. As shown in Figure 1, the relationships between culture and cosmos can be categorized as one-way and two-way relationships, where one-way relationships suggest that the cosmos is important for culture, but culture is not important for cosmos; and two-way relationships suggest that culture and cosmos are important for each other.

In one-way, or “unidirectional,” relationships, the significance of culture for the universe is either none, negligible, minimal, and/or fundamentally limited—essentially a one-way street—the cosmos is important for culture, but not the reverse. The universe gives rise to and influences culture, but culture has little or no significance for the universe at large. In two-way relationships, the cosmos is important for culture, and culture is important for the

cosmos. Culture having importance for the universe might be called “cosmocultural evolution,” or the Cosmocultural Principle, suggesting that perhaps a sufficiently different kind of evolution is emerging—the coevolution of cosmos and culture, where culture plays an important and perhaps critical role. Strong versions of cosmocultural evolution could be interpreted to suggest that cultural evolution is in some sense “on par” with physical cosmic evolution. Stronger forms of cosmocultural evolution might imply that cultural evolution has unlimited potential and may ultimately be more important than physical cosmic evolution as it we’ve understood it so far.

I do not wish to make such a strong distinction between cosmic evolution and cultural evolution that they are thought of as so separate—cultural evolution is ultimately a part of cosmic evolution in the broad sense that culture has emerged as part of the physical evolution of the universe. But I do wish to make a distinction to the extent that it suggests culture is a different enough phenomenon from the rest of physical cosmic evolution and to the extent that it can help address the interesting question of how significant cultural evolution may be in a cosmic context.

The intent of the next section is not to define life or intelligence, nor to rigorously analyze and defend philosophies and worldviews. It is not intended to provide complete and definitive distinctions in all cases, but instead to broadly characterize potentially relevant perspectives and worldviews to help further convey the ways in which cosmos and culture can be seen to relate and to help form a framework for thinking about the significance of cultural evolution in a cosmic context. Many of the categorizations overlap and interrelate—some of which is explicitly noted, some of which is implied, but most of which is left to the reader to navigate with the help of what are hopefully useful guideposts.

2.1 Unidirectional Cosmic-Cultural Relationships

In unidirectional relationships, the cosmos is a source and driver of culture, but culture has little or no influence on, or importance for, the universe at large. Culture is strongly influenced by the universe in that it is informed, and ultimately limited, by physical laws and cosmological perceptions and realities. Human culture is imbued with a wide variety of imaginative and influential worldviews, literature, music, and other forms of culture that are directly and often profoundly influenced by cosmological perspectives—as explored by authors in this volume (Chaisson 2009; Palmeri 2009; Christian 2009; Vakoch 2009).

As shown in Figure 1, other broad characterizations of cosmic worldviews that would reflect unidirectional cosmic-cultural relationships might be

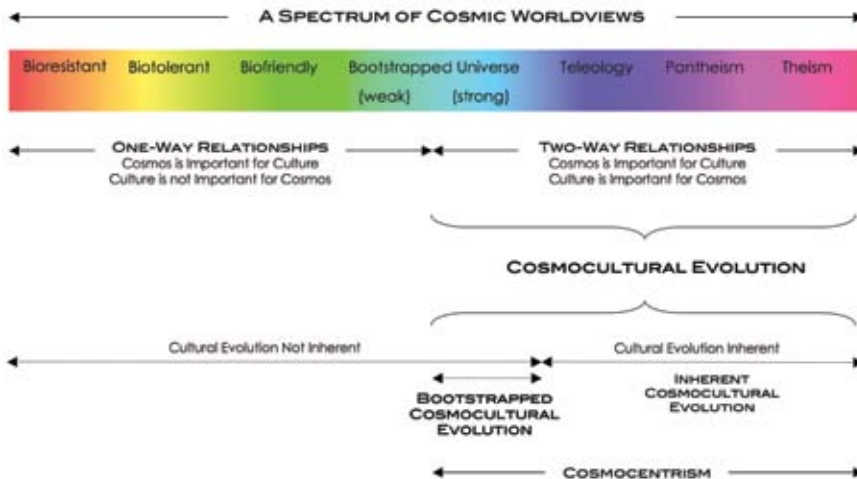


Figure 1. Relationships between cosmos and culture. (Credit: Author)

a bioresistant universe, a biotolerant universe, a biofriendly universe, and a weak bootstrapped universe.

2.1.1 Bioresistant Universe

A “bioresistant universe” worldview would suggest that life emerged against substantial odds in a hostile environment. Such a view implies the origin of life, and all that derives from it, is purely random and unlikely given the nature of the universe, and could imply very little or no cosmic significance for culture. A broadened version of this kind of worldview might also hold that the origin of the universe itself was essentially random, and that randomness is an important factor in the origin of the universe and for cosmic evolution in general. But even this kind of “accidental universe” worldview can’t escape the fact that cosmology influences culture in an important way by influencing worldviews and constituting important pillars of scientific culture and all that implies for our broader culture. As shown in Figure 1, this bioresistant accidental universe may be seen to occupy one end of a spectrum of how culture can be viewed in the context of cosmic worldviews.

2.1.2 Biotolerant Universe

A “biotolerant universe” worldview would suggest that life is highly contingent in that laws of the universe are such that life, and perhaps eventually intelligence and culture, *may* originate under the proper, perhaps narrow, set of circumstances—e.g., the presence of liquid water, dynamic environment driving evolution, etc. The characteristics of the universe allow life to emerge,

and perhaps intelligence to follow, but the universe's laws and constants are not such that life is an expected phenomenon. Life may arise periodically, and intelligence and culture may then arise from time to time (and perhaps even be numerous given the large number of potential environments for life and intelligence to evolve), but without any particular significance for the universe as a whole.

2.1.3 Biofriendly Universe

A "biofriendly universe" worldview suggests that the nature of the universe tends to produce life. Replication, self-organization, and life, arise easily as a result of the universe's laws and physical constants. An example of this kind of worldview might also be called a "biophysical cosmology" or "biological universe" worldview—a popular view based on both philosophical and scientific grounds that has been explored by a wide variety of philosophers and scientists (Dick 1996; Dick and Strick 2004). However, regardless of how predisposed the universe may be to produce life, a biofriendly universe need not necessarily produce culture. But because a biofriendly universe worldview would imply the ubiquity of life throughout the universe, advocates would also acknowledge that many instances of culture could also arise. Such instances might even be likely given the number of chances for life to arise throughout the universe, the variety of phenomena natural selection can produce over time, and the usefulness of intelligence and culture for survival (Dawkins 1986; Dennett 1995). But in such a view, the ubiquity of intelligence and culture, while noteworthy as a prevalent phenomenon, would not necessarily imply any particular cosmic significance for culture. Culture would be seen merely as a derivative of biological systems (or any agents with sufficient interests to create "culture") that are consequences of natural laws and physical constants—none of which has any particular significance, direction, or broader purpose for the universe as a whole. Indeed, while life may originate frequently throughout the universe, some views suggest that complex life and the origin of intelligence and culture could be so highly historically contingent as to be exceedingly rare (Gould 1989; Ward and Brownlee 2000).

2.1.4 Weak Bootstrapped Universe

A "weak bootstrapped" worldview would suggest that a) the universe has in some sense "bootstrapped" itself into the realm of value—meaning, purpose, ethics, aesthetics, etc.—via the emergence of life, intelligence, and culture; but that b) there is no broader significance of culture for the universe as a

whole beyond having those “properties” emerge in the universe as a product of cosmic and biological evolution—however intellectually interesting that may be. The implications for such properties in the universe are primarily confined to cultural beings and perhaps valuing agents more generally. Figure 1 shows the weak bootstrapped universe worldview on the “one-way relationship” side of the spectrum. Nevertheless, as Figure 1 shows, the weak bootstrapped universe moves us closer to cosmocultural evolution.

2.2 Bidirectional Cosmic-Cultural Relationships: “Cosmocultural Evolution”

As noted previously, unidirectional cosmic-cultural relationships assume little or no significance for culture in a cosmic context. Bi-directional cosmic-cultural relationships suggest that cultural evolution could be important for the cosmos, have unlimited potential, be “on par” with, and perhaps ultimately be more important than, the rest of cosmic evolution—what might be called “cosmocultural evolution” and/or the Cosmocultural Principle. As shown in Figure 1, some broad categories of views that can be characterized in this context of cosmocultural evolution are a strong bootstrapped universe, teleology, pantheism, and theism.

2.2.1 Strong Bootstrapped Universe

The notion of a universe that bootstraps itself into the realm of value via cultural beings such as ourselves—however random its emergence may be—need not be confined to having minimal significance for the universe as suggested by a weak bootstrapped universe worldview. Not only can we assert that the mere presence of value in the universe via cultural beings has noteworthy significance—in part because the universe now has important properties it might not have otherwise have had—but that the potential of those properties for the universe is essentially unlimited. This may mean that the value that emerges in the universe via cultural beings would not only be an important force for how intelligent beings act in and upon the universe, but also for how intelligence and culture may ultimately significantly influence the evolution of the whole of the universe itself. However, while a strong bootstrapped universe worldview would allow for culture to be a potentially important aspect of the universe, it would not be for any particular deep reason other than the fact that culture arose via physical evolution and now has the power to be an important force in the universe.

This is a universe that has bootstrapped itself into the realm of value via its own otherwise non-teleological, or non-purposeful, physical evolution—but

that nevertheless may be entering a qualitatively different, and perhaps fundamentally new and unlimited kind of evolution—via the emergence of cultural beings, namely, cosmocultural evolution.

2.2.2 Teleology

Teleology has traditionally been used to suggest design, purpose, or “final causes” in both biology and cosmology and has often been associated with (although by no means exclusively) metaphysical and/or supernatural explanations. There are many ways to think about teleology, and the term has largely fallen out of favor among many scientists for a variety of reasons (Mayr 1992; Davies 2007³), but still receives attention from scientists and philosophers (Manson 2003). I wish to highlight here what may be thought of as a weaker form of teleology that is more akin to suggesting the existence of fundamental cosmological trends, natural directionality or directive principles, loosely defined notions of “progress” or “purpose,” or perhaps cosmic “imperatives”—all of which are contained within, and caused by, the nature of the universe. This is to be distinguished from pantheism and theism that contain the additional features of divinity and transcendence, respectively. This weaker form of teleology has been implicitly or explicitly suggested by a number of scientists ranging from a) suggestions of trends toward increasing self-organization and complexity (Kauffman 2000; Chaisson 2005), to b) life and intelligence as “cosmic imperatives” or inevitable cosmic phenomena (De Duve 1995; Lloyd 2006; Davies 2007), to c) “multiverse” and/or “anthropic” worldviews that suggest our particular universe is made for life (Smolin 1997⁴; Rees 1997; Carr 2007), to d) more explicit eschatological treatments (Teilhard 1955; Tipler 1994) that have stronger pantheistic and theistic themes.

In this kind of “naturally deliberate” universe, intelligence and culture are not only just manifestations of sociobiological selective processes, but are also at least partially (if not completely in some interpretations) created and driven by other deeper teleological natural law-based factors. In this view, culture can be seen as a robust manifestation of the nature of the universe and of cosmic evolution.⁵

2.2.3 Pantheism

Pantheism generally equates God with the universe and tends to reject the notion of a personal and/or transcendent God (although some religions—especially eastern traditions—tend to be pantheistic while retaining a “personal” nature for God).⁶ Unlike most of the teleological views noted above,

pantheism is more akin to a metaphysical and religious position where unity, reverence, sacredness, and divinity play important roles (MacIntyre 1967; Levine 1994; Harrison 1999). There are many conceptions of pantheism, ranging from eastern religions such as Taoism, to mystical versions of western religions, to purely naturalistic views based on biology and cosmology that focus on the realities of our natural world and the universe at large.⁷

The significance of culture in pantheistic worldviews could be interpreted in a number of ways. Many thinkers who revere the universe might be dissatisfied with implications of cultural evolution that result in the blind consumption and destruction of our natural world.⁸ However, much of culture could be viewed with reverence since culture is a part of the sacred divine whole that is the universe. While including culture as a part of the universe, and hence as part of “God,” it can be seen to imply noteworthy significance for culture. But culture may also be seen in such a way as to be ultimately-undifferentiated from all other phenomena in the universe, suggesting that culture is not necessarily more significant than other “divine” manifestations of cosmic evolution. Other pantheistic views may ascribe more significance to culture by claiming that cultural evolution is a way for the universe to become self-aware, in some sense to know itself, and perhaps ultimately to become more beautiful, more divine. Such interpretations would imply that cultural evolution occupies a special place in cosmic evolution.

2.2.4 Theism

Theism generally claims the existence of a transcendent, personal, supernatural God who is omnipotent, omniscient, creator of and active in our universe, and generally immutable.⁹ However, there are noteworthy exceptions to almost all of these characteristics, of which immutability is of particular relevance for this book. Theistic views that promote the idea of mutability tend to incorporate evolutionary concepts and cosmic evolution to understand the nature of God. “Process theology” (Whitehead 1929), “evolutionary theism,”¹⁰ (Haught 2008), and what might be called “eschatological cosmic evolution”—which envisions an essentially theistic “God” primarily at the end of cosmic evolution which results from the evolution of intelligence within the universe (Teilhard 1955; Tipler 1994)—are all categories of theistic thought that involve deep evolutionary processes. The role of cultural evolution in such worldviews is arguably strong, at least conceptually, in the sense that intelligent beings and their behavior are often thought to reflect, and/or in some way be directly or indirectly connected to, the transcendent God. Such views would imply a significant role for culture in

Table 1.1. Distinguishing Features of some Cosmocultural Perspectives. (Credit: Author)

	Strong Bootstrapped Universe	Teleology	Pantheism	Theism
Directionality	Possibly	Yes	Possibly	Possibly, perhaps likely
Mutability	Yes	Yes	Generally yes	Yes and no
Transcendence	No	No	No	Yes
Role of Culture	Likely very strong	Strong, possibly very strong	Strong on some views—but primarily conceptually	Strong—mostly conceptually, but physically for some views (i.e., some eschatological views)

the cosmos as robust manifestations of the processes of cosmic evolution and/or perhaps as “cocreators” of reality.

As Table 1.1 shows, the important distinctions for the purposes of this paper of the views noted above are that 1) a strong bootstrapped universe does not have teleology, divinity, or transcendence, 2) teleology is directionality without divinity, 3) pantheism is divinity without requiring directionality, and 4) theism is transcendent divinity that may or may not involve directionality, but perhaps does for many theistic views.

2.3 Implications of Cosmic-Cultural Relationships and Cosmocultural Evolution

This section will a) briefly consider some implications of unidirectional cosmic-cultural relationships, then b) touch on two further concepts—inherent cultural evolution and cosmocentrism—to help make distinctions within the broader analytical framework, and c) introduce a particular view within the framework, namely “bootstrapped cosmocultural evolution.”

2.3.1 Unidirectional Cosmic-Cultural Relationships

Unidirectional formulations of cosmic-cultural relationships suggest that the cosmos is significant for culture in that culture arises from cosmic evolution, and through physical reality and cosmologically related worldviews, the cosmos informs and influences culture in critical ways; however, cultural evolution has no particular significance for the universe at large. Such unidirectional formulations may be uninteresting and trivially true to some, in part perhaps because it is largely consistent with common sense minimalist views

of cosmic evolution as we understand it today. But such views may have interesting implications. At minimum, there may be an implication that one of the great challenges for intelligent cultural beings may be to learn to cope with, and perhaps finally accept, a profound and deep sense of uncertainty regarding any larger cosmic sense of meaning and purpose—that such an uncertainty may have to be treated as a kind of empirical question to be possibly addressed over very long time periods as evidence is accumulated, but perhaps without ever obtaining a satisfactory answer. Coping with the uncertainty of larger cosmic objective meaning may be one of the most profound challenges sufficiently aware beings have to face, and this could have profound implications for cultural evolution—as it arguably already has. Indeed, human beings might be further along in this regard than may be commonly thought—much of the human population seems to be able to cope without religion and without a larger sense of cosmic meaning and purpose.

In addition to the uncertainty of broader cosmic significance, it may be that intelligent beings might have to learn to cope with a *known* cosmic insignificance, leading for some perhaps to a kind of nihilistic worldview. For others, something short of nihilism might suggest instead a kind of “cosmically local” relativism where value, meaning, purpose, ethics, and aesthetics derive solely from the affairs of cultural beings who think, behave, and perhaps freely choose in such ways as to sometimes, but often not, establish widely accepted norms and standards to help “local” beings coexist.

Even if a single instance of intelligence and the associated emergence of cultural evolution were to eventually spread throughout the universe, unidirectional cosmic-cultural views would still suggest there is ultimately no particularly deep cosmic significance for the emergence and long-term implications of cultural evolution. Also, in the same way that Jungian archetypes may be thought to reflect deeper “collective” realities of human experience and possibly deeper realities more generally, many separate instances of cultural beings throughout the cosmos independently coming to similar conceptions of value may also imply a deeper cosmic reality and significance for cultural evolution. However, unidirectional worldviews would still suggest that such appearances of “cosmic cultural convergence” are probably not necessarily reflective of deeper cosmic realities—they may instead merely reflect the realities and implications of biological and cultural selective processes—and that the significance of such cultural convergence is fundamentally limited for the universe at large—both conceptually and physically. Claims that such cosmic cultural convergence would reflect a deeper cosmic reality would fit more into bidirectional cosmic-cultural worldviews—i.e., cosmocultural evolution.

2.3.2 Inherent Cultural Evolution and Cosmocentrism

A potentially helpful distinction in many of these brands of cosmic worldviews is whether culture is in some sense “built-in,” or inherent in the universe, as part of the nature of the universe. On the spectrum shown in Figure 1, the bioreistant, biotolerant, biofriendly, and both weak and strong bootstrapped views would suggest that cultural evolution is not inherent in the nature of the universe, certainly that it is not an inevitable “cosmic imperative.” However, views characterized as teleological, pantheistic, and theistic would likely claim that culture is indeed part of the nature of the universe (i.e., perhaps as part of a trend of evolving self-organizing complex systems) and/or as part of a deeper conceptual metaphysical significance (e.g., spiritual or divine). This distinction is potentially important in that if culture is seen to be a deep manifestation and expected outcome of cosmic evolution, this would engender worldviews in which we are seen to be at home in the universe, to belong to the universe, to be an important part of its fundamental nature. This is a friendly universe, a cosmos in which many will feel a deep sense of comfort and belonging and perhaps a larger sense of objective meaning and purpose—which in turn can have an impact on how intelligent beings think and act in the world and if/how intelligent beings may ultimately influence the evolution of the universe itself.

Another way of thinking about some of the noted cosmic worldviews above is to consider the broad notion of “cosmocentrism,” which places the universe at the center of a worldview and makes it the priority in a value system (Lupisella and Logsdon 1997). As Figure 1 shows, the notion of cosmocentrism is consistent with a strong bootstrapped universe, teleology, and pantheism. Cosmocentrism is a general notion that need not ascribe spiritual or divine significance to the universe (although pantheistic formulations would tend to do so), but can still nevertheless view the universe as the ultimate source of meaning, purpose, and value, and make it the central priority in a worldview.

2.3.3 Bootstrapped Cosmocultural Evolution

As Figure 1 shows, looking at the various cosmic worldviews and the above noted perspectives (Inherent Cultural Evolution and Cosmocentrism) reveals a noteworthy intersection at the strong bootstrapped universe worldview. This is where cosmocultural evolution intersects with “non-inherent” cultural evolution and with cosmocentrism—call it “bootstrapped cosmocultural evolution.” This is a worldview that a) makes few assumptions about the nature of the universe, while b) advocating that the universe has bootstrapped itself into the realm of value, and c) allows for the possibility of unlimited significance and unlimited potential for cultural evolution in the universe.

While *bootstrapped cosmocultural evolution* is consistent with the broader notion of cosmocentrism, one could still advocate for a bootstrapped cosmo-cultural evolutionary view without necessarily making the universe the central priority or source of value. One could believe that it is significant that the universe has bootstrapped itself into the realm of value via cultural agents such as ourselves and still also maintain an anthropocentric or “ratio-centric” (Kelley Smith, in press) worldview in which intelligent beings are still the ultimate priority.

3. Bootstrapped Cosmocultural Evolution

Here I would like to expand on the idea of bootstrapped cosmocultural evolution and then suggest a more specific worldview consistent with the notion of a bootstrapped cosmocultural perspective—namely, a morally creative cultural cosmos.

As noted previously, a bootstrapped cosmocultural perspective suggests not only that the universe has bootstrapped itself into the realm of value and culture via valuing cultural agents such as ourselves, but that the significance and potential for cultural evolution is unlimited. To some, these may seem like trivial claims, to others they may seem unduly speculative and perhaps even extraordinary, but these two suggestions arguably make minimal assumptions—especially compared to many other worldviews—and are arguably consistent with the evidence we have (albeit perhaps limited) for both the nature of the universe and cultural evolution. The notion of bootstrapped cosmocultural evolution relies on minimal claims about the nature of the universe in the sense that it stresses the observation that “properties” such as value, meaning, purpose, and culture have appeared in the universe ultimately as a result of the appearance of replicating molecules (which may have occurred only by chance), and results of natural selection operating on replicating systems over long time periods leading to intelligence and culture. The appearance of basic culture (e.g., mechanisms of transferring knowledge) would not necessarily be so surprising in this worldview.

3.1 The Surprise of Life? Or the Surprise of Intelligence?

What might be more surprising than the emergence of basic culture is the origin and evolution of life itself—that is, the emergence of replicators that

appear to work in opposition to the second law of thermodynamics creating local spatial-temporal negentropy. This is arguably a quite different kind of evolution than the rest of cosmic evolution that has come prior. However, much progress has been made in understanding replicating systems and there appear to be sufficiently plausible explanations that could account for the origin of molecular replicators (Fry 2000). Indeed, claims are often made, if not implied, that the universe is teeming with life. And many scientists point out that the biofriendliness of the universe's "fine-tuning" of physical laws and constants is compelling and needs to be explained (Barrow and Tipler 1986; Davies 2007). However, one reading of the evidence—namely the lack of life and intelligence beyond Earth even after searching for many decades—is simply that the universe is perhaps not that biofriendly.

It may turn out to be true that the universe is teeming with life and perhaps intelligent life. But it seems premature to jump to such a conclusion in the absence of sufficient evidence. Of course, as Carl Sagan often cautioned, "absence of evidence is not evidence of absence," so we must simply do the experiment and keep searching—perhaps for a very long time.

Indeed, an obvious counter to the concern that we haven't yet found life is that we have only begun the search, and in such a large universe it will take time to find life. But the Fermi challenge is less easy to dismiss—despite many creative responses (Webb 2002)—if life is ubiquitous and intelligence and technology follow, then "where are they"? Intelligent life, and/or signs thereof, should arguably be easier to find than primitive life—if they're not hiding. Perhaps the nature of the universe lends itself to producing life (e.g., replicating systems), but not necessarily to producing intelligence and culture as is often suggested.

But if mere replication is the key, we can imagine that it could happen under many physical circumstances.¹¹ We can also imagine that once replication is underway in a dynamic environment, the emergence of increasingly diverse, and perhaps eventually quite complex strategies for replication (e.g., sociality and culture) would not be so surprising given enough time and given the very simple and compelling mechanism that is natural selection.

3.2 The Complexity and Power of Human Culture

While basic culture may not be surprising given replication and natural selection acting over long timescales, what is noteworthy is the level of sophistication of human culture, the depth of our awareness, and the extent and speed that culture has evolved and influenced an entire world. What human beings are doing with culture, what culture is doing with us, what culture is doing

to our world and beginning to do to worlds beyond, and its apparent unlimited potential—are all noteworthy to say the least. It isn't at all clear whether the level of sophistication we see with human culture should somehow be an expected outcome of cosmic or biological evolution—nevertheless, culture has been born; it is here, and it is powerful.

Irrespective of whether the emergence of life, intelligence, and culture is a low probability, it need only happen once. Surprising things happen all the time—especially given enough time and space. It may also be that the universe possesses value completely independent of valuing agents (Rolston 1990; Lupisella 2009, in press), but what we can claim with confidence today, what we know about the universe today, is that the cosmos now has the properties of value—meaning, purpose, and culture—at least through us. The universe literally has those properties within it, where it otherwise would not without the emergence of valuing cultural beings such as *Homo sapiens* and other forms of life that have similar characteristics. So even with this “minimalist” bootstrapped cosmocultural perspective, we can assert that the universe has now become a different kind of entity, an entity that contains culture, manifesting value to extreme degrees. Those qualities are at least in us—in our evolutionarily driven predispositions, in our interests, in our worldviews, in our culture—and hence in the universe. Regardless of origin and form, value is indisputably manifested in the universe through us. What isn't so obvious is how significant that really is.

3.3 Implications for Bootstrapped Cosmocultural Evolution

This section will explore some implications and significance of bootstrapped cosmocultural evolution under the broad categories of a) limited ontological significance, b) practical cultural significance, and c) unlimited significance.

3.3.1 Limited Ontological Significance

The use of “ontological” in what follows is meant partly in the traditional philosophical sense of having to do with that which exists, or with “being,” but is also meant to emphasize a narrower sense than that broader use sometimes implies—namely “*physical* being” or “*physical* existence,” with the caveat that “physical” is used in a fairly broad and admittedly loose sense, implying, among other things, that it is not necessarily limited to our formulations of physical reality as we understand it today.¹²

The emergence in the universe of properties such as value and meaning is noteworthy in that the universe has produced something different, and has perhaps *become* something different to the extent that it has evolved in what is arguably an interesting and important way by creating value, meaning,

purpose, and culture. This may be seen as a form of limited ontological significance in that a) emergent properties such as value are primarily physical manifestations—albeit unique and complex—within cultural beings (e.g., brains) who have evolved with sufficiently complex interests, and b) while the universe may be changing in an important yet limited physical sense (although perhaps in a physical *qualitative* sense) via the emergence of value, the broader significance beyond that is minimal or negligible. Nevertheless, culture is significantly ontologically relevant for the cosmos as the vehicle of that change—what may be a kind of limited physical qualitative change. That is, a new kind of qualitatively different physical manifestation has emerged—namely value, along with culture as a way of further manifesting and operationalizing value. We may think of this limited ontological significance as corresponding to a weak form of bootstrapped cosmocultural evolution.

However, as sources and arbiters of value, cultural beings cannot only recognize this ontological significance, but in some sense deepen it by merely emphasizing it. Simply choosing to adopt and emphasize this ontological significance for ourselves and for the universe makes that significance more significant—in part because it can become more deeply meaningful to human beings, and because as sources of value, we confer that deepening upon the cosmos. This limited ontological significance, however, is akin to having a kind of “benign” worldview that doesn’t have much, if any, practical consequence, but which might otherwise offer helpful and/or comforting worldviews and perhaps ultimately form a foundation for more practical implications.

3.3.2 Practical Cultural Significance

A lack of “external” objective meaning may be unsatisfying to many—caught forever in endless cycles of relativism, a morass of unbearable responsibility for our own meaning and purpose, and perhaps ultimately for that of the universe. But it looks like choice is inescapable.¹³ And while choice can sometimes be oppressive and debilitating, it is also liberating and empowering—so much so that freedom forms a critical pillar of many human societies. What then are we to do with the destructive and constructive power of culture? What kind of “cosmic” beings should we strive to be? Or, perhaps a more immediate challenge: Why should we worry about such long-term questions at all? Why should we contemplate our role in the universe when it seems so distant, so far in the future, so uncertain? Such considerations may not be as distant as first glances might suggest. There are a number of relatively near-term practical challenges that could have consequences for human behavior that relate to these broader longer-term cosmic perspectives, among them:

globalization, biospheric stewardship, space ecology, search for extraterrestrial intelligence, off-Earth migration, and long-term survival and development.

Globalization—Transcending Tribalism. While “localism” is an important and often healthy counterbalance to the forces of globalization, it is important to strike balances between the two. Knowing how our evolutionary heritage can blind us to longer-term implications, and more specifically, how it can drive blind group identity—and how that can ultimately lead to unduly nationalistic tendencies—can help us be more careful about such proclivities. Seeing ourselves in a cosmic context that suggests our selfish biological evolution is not necessarily part of a deep cosmic design can help motivate us to take better control of our local and collective global behavior as a species. It can help sensitize us to some of the blinding adverse effects of cultural forces such as dogmatic ideologies that too often lead to unnecessary conflict. Seeing ourselves in a longer-term cosmic context can help us envision a healthier, more united human species, creating recognition of value for global engagement and collective global pursuits as opposed to pursuing strictly group or national interests. Seeing ourselves as a special fragile species that may be “on our own,” with potential cosmic significance, can indeed help us act as a global species—and the need to come together better as a species is evident on many fronts—some of them noted in what follows.

Biospheric Stewardship. While most people today would easily acknowledge the importance of preserving and improving our environmental quality—certainly at least for the sake of human survival and quality of life—it is perhaps surprising that we don’t do better. Or is it? As noted above, biological evolution doesn’t quite program us to be sensitive to longer-term, broader implications, and non-obvious implications—and perhaps for good reason—at least from a “selfish gene” perspective. Near-term higher probability consequences would be expected to drive animal behavior given how natural selection is slave to what appears to be essentially blind gene replication. Indeed, despite our awareness of long time scales, extinction, and our own power to potentially mitigate catastrophic and extinction level threats, it is noteworthy that we humans are still primarily reactive near-term creatures—especially in many western cultures. But it is changing. What we’ve learned about our planet, about our biosphere—much of which is a result of human instinct for looking up and out into the cosmos—has led us to see ourselves as a “pale blue dot”¹⁴ in a vast cosmic ocean. The way in which we appreciate and deal with that fragility, the way we have begun to see ourselves as biospheric stewards in the context of cosmic evolution, has and should continue to influence how we care for our world and how we value life—whether here on Earth, or elsewhere in the universe.

Space Ecology. Humanity is beginning to have a direct impact on our space environment—however small that impact may be for now. We have created much debris in low-Earth orbit—including remains from weapons shooting down satellites. We have crashed, landed, lived, and played on the Moon.¹⁵ We have sent robotic spacecraft near and far. We have leaked, and intentionally sent, radio waves into space. We are living in near-Earth orbit. And we are now planning to permanently live on the Moon, Mars, and beyond. These developments raise a range of environmental questions, from if and how we should preserve certain space environments (Almar 2002; Williamson 2006), to how we can be more responsible, eco-friendly explorers (Cockell 2007), to how we might deal with the prospects of extraterrestrial life (Lupisella 1999, 2009, in press). How we deal with such questions will be informed, in part, by our own cultural evolution, by how we see ourselves in the universe, and by what we see as our responsibilities. Space agencies around the world take substantial measures to avoid contamination of certain space environments, but it is primarily for scientific reasons. What about other perspectives, including broader cosmic and philosophical perspectives, which might inform such policies? (Bertka, in press).

The Search for Extraterrestrial Intelligence. Our longer-term cosmic considerations should inform how we think about other intelligent beings in the universe, and if/how they may communicate and act throughout the cosmos. Such considerations may inform if and how we communicate and perhaps ultimately interact with other intelligent beings. Indeed, we have intentionally and unintentionally sent communications into space. It is unlikely that our transmissions have been detected by other civilizations for a number of reasons, but nevertheless, our communications are both leaking out into space, and on occasion, being sent intentionally. Perhaps more importantly, there has been serious consideration to the idea of a more systematic attempt to send communications from Earth to potential extraterrestrial civilizations (Vakoch 2004, 2008, 2009, this volume). What would we communicate in such attempts? How would we decide what to say? Our considerations about cultural evolution in a cosmic context, our own specific cosmic perspectives, and the plurality of our views, will at least inform such decisions, if not be explicitly articulated in communications with extraterrestrial beings.¹⁶

Off-Earth Migration. While the preservation and enhancement of planet Earth needs to be a central organizing priority for humanity, we also need to attempt migration beyond our home world. Humanity needs to do the difficult experiment of migrating off Earth to assess if and how we can effectively and sustainably survive and thrive outside the comforts of our natural biosphere. If

we don't, we run the risk of extinction (Shostak 2009, this volume). It is this kind of "experimental ethos" and experimental migration narrative that should be a significant justification for space activities. But there are other benefits to migrating off Earth. Human beings have slowly, and perhaps sometimes too painfully, benefited from social experimentation that has often been driven and accelerated by migrating to new environments, with new challenges, and new freedoms. Experimenting with new forms of social organization and new means of governance can benefit from the challenges of migration—especially to challenging environments. Migrating into the wider universe can serve that purpose and help unite all countries of the world in a common, perhaps critical, long-term endeavor of human expansion and social experimentation.

But there is also a less practical, and perhaps equally important, consequence of migrating off Earth—the creation of cultural diversity. Finding better ways to live is clearly important. But finding *different* ways to live is culturally enriching both to the human experience and perhaps to the "nonhuman" experience. New branches of cultural evolution can enhance the human condition and enrich our lives by giving us more to take note of, more to study, more to choose from, more to appreciate, more to take joy in, more to be inspired by, and more to be in awe of. Cultural diversity, and perhaps diversity in general, may have practical benefits (i.e., having a wide variety to choose from as needed),¹⁷ but diversity may be a value in its own right, an end unto itself, and worth pursuing for its own sake.¹⁸ Given the potential for quite diverse life-forms throughout the universe, diversity may have broad cosmic significance beyond our own aesthetic appreciation. And so our motivations for extraterrestrial migration, and the associated new branches of human cultural evolution, can and should be informed by broader long-term cosmic perspectives.

Long-Term Survival and Development: All of the above relatively near-term issues have long-term trajectories, potentially of cosmic significance—why not treat them that way—at least in part? Why not take a truly long view, a cosmic view? If we look long-term, what might we see? What visions might we pursue? Let us have the courage to face the uncertainties of such contemplations. Let us not shrink in the face of complex threats, or be passive about presently unknown threats. Let us seek them out, as no other species has ever been able to do. Let us rally our political institutions and global resources to become a truly long-lived species (Tough 1991; Lupisella et al. 2003; Smith 2007). Now is the time to be proactive about our long-term survival and development—whether by protecting our planet from asteroid impacts and gamma ray bursts or by migrating off-Earth to reduce our chance of extinction and to create new branches of human civilization. Understanding

ourselves in a cosmic context can help motivate and inform such endeavors including, perhaps ultimately—as fanciful as it may sound—surviving the “end” of the universe.

3.3.3 Unlimited Significance: Cosmic Demotion to Cosmic Promotion?

We don’t know for sure of course whether there will be, or are presently, deep or large-scale physical or nonphysical consequences of culture for the universe at large, but a cosmocultural perspective suggests it is a plausible enough possibility to take seriously. This is where the unlimited potential of cosmocultural evolution becomes particularly compelling. Cultural evolution is ultimately manifested as behaviors at what are often large-scale social actions; so if we envision cultural evolution acting over long time scales, especially cosmic timescales, we can imagine potential impacts for the universe as a whole.

A Cosmocultural Evolution Scale. In 1963, Nikolai Kardashev proposed three types of civilizations categorized by the amount of energy that is harnessed: a Type 1 civilization harnesses roughly the energy associated with a planet; Type II, a star; Type III, a galaxy. Carl Sagan calculated Earth to be something like a .7 civilization (not quite Type I) and further suggested the additional categorizing criterion of information available to the civilization (Sagan 1973). Milan Ćirković (2004) suggests that Type IV should be used to designate a civilization that can harness the power of its supercluster; Michio Kaku (2005) suggests a Type IV civilization could harness extragalactic energy sources such as dark energy; and Zoltan Galantai (2004) has suggested a Type IV level which harnesses the energy of the visible universe. I would like to suggest a somewhat different scale that overlaps with what’s been proposed prior, but has a different emphasis, goes quite a bit further, and is admittedly more speculative and more qualitative. The scale I explore emphasizes the *kind* of impact and influence a culture exerts on its environment and the universe.

Type I Influence: *Planetary*. Planetary influence would include the ability to influence a planet and solar system bodies (e.g., biospheric control, defense from astronomical impacts such as asteroids, etc.). Humanity is close to this now in some respects, but far in other respects—i.e., despite our global climate impacts, we are probably far from effective planetary climate control. We should also consider the possibility that life may not originate and/or evolve on planetary bodies.¹⁹ This would suggest a more general category title such as “localized,” where the environmental influence and control of the species is confined to a “local” scale—e.g., solar systems.

Type II Influence: *Astrophysical*. Astrophysical influence would imply a capacity for using, controlling and modifying astrophysical objects on small and large scales—e.g., stars and galaxies, superclusters, possibly black holes, etc. Examples would be the ability to harness most if not all of a star's energy, control the energy output of a star, extend the lifetime of stars, modify the composition of stars, control the energy of galaxies and superclusters, possibly create black holes, and harness unusual forms of energy such as “dark energy.”²⁰

Type III Influence: *Cosmological*. Cosmological influence implies an ability to influence and control phenomenon on cosmological scales, i.e., the large-scale behavior of the universe, but within the constraints of physical laws and constants. An example might be extending the lifetime of the universe (perhaps by slowing or accelerating expansions or contractions) possibly transmitting something like information through a big crunch, creating baby universes, or creating an information processing universe and/or a kind of cosmic mind.

Type IV Influence: *Ontological*. As noted previously, “ontological” is perhaps used slightly differently than some traditional uses in that ontological influence applies an ability to control and modify the physical nature of the universe itself—truly “mind over matter.” As an example, this would amount to an ability to change physical constants and perhaps laws. This might apply to the Selfish Biocosm hypothesis proffered by James Gardner (2003, and highlighted in this volume), and could also be consistent with views that suggest that life and mind are key creative drivers of a “self-synthesizing” and/or participatory universe (Davies 2007; Wheeler 1988, 1989) whereby observers participate in shaping all of physical reality, particularly as mind and cosmos eventually merge.²¹

Type V Consequence: *Metaphysical*. At the risk of treading into even deeper waters, but for the sake of completeness, I would like to suggest the possibility of another category, one that is perhaps more a matter of consequence than influence (although influence wouldn't necessarily be ruled out)—namely, metaphysical. Here, too, “metaphysical” may be used in a somewhat nontraditional philosophical sense. It is intended here primarily to capture that which may be considered to be beyond physical reality—an often-popular use of the word—to the understandable chagrin of many scientists and philosophers. One way to think about metaphysics in this context is that while ontology is concerned with what actually exists (primarily physically), metaphysics is more concerned with what may exist—or theoretical possibilities, including that which is “nonphysical.” This may include considerations such as God or a kind of Platonic realm in which there are theoretical properties (e.g., “universals” such as mathematical constructs, logic,

redness, etc. [Armstrong 1989]) or theoretical possibilities for the universe and reality. The realm of metaphysics might be thought of as the largest possibility space for “ultimate reality,”²² a subset of which is the actual and/or temporary state of reality. On some interpretations, this metaphysical possibility space could include things like value, meaning, purpose, divinity, “spirit,” etc. So metaphysics then can be seen to be a very broad (perhaps the broadest) category of investigation that would include, for example, ontology and theology as subsets.

If one thinks of value and cultural evolution as somehow transcending physical reality, if even only partially,²³ then cultural beings are partly metaphysical beings and are arguably beginning to have metaphysical significance for the universe by manifesting value, and perhaps by bringing value and culture to the universe altogether. Whether a bootstrapped cosmocultural perspective can be interpreted to go so far as to imply metaphysical significance is highly speculative of course—in part because of the speculative nature of metaphysical considerations in general. But if there is any metaphysical significance to consider, some interpretations of bootstrapped cosmocultural could be consistent with suggesting there may be partially metaphysical relevance for cultural evolution to the extent that emergent phenomena (ultimately rooted in physical reality—e.g., things like value and cultural evolution) sufficiently transcend physical reality nonetheless.²⁴ However, bootstrapped cosmocultural evolution would in no way be committed to such a view, and in fact, is more consistent with no such transcendence because bootstrapped cosmocultural evolution emphasizes that cultural evolution is bootstrapped from the physical universe we see and does not require an appeal to “nonphysical” reality.

In the context of the proposed cosmocultural evolution scale, one way of interpreting bootstrapped cosmocultural evolution (especially stronger versions that emphasize unlimited potential) is that we are beginning to have *planetary* (or localized) influence, we are studying for *astrophysical* influence, we are contemplating *cosmological* influence, we are speculating about *ontological* influence, and we may have a kind of *metaphysical* consequence if value and cultural evolution somehow transcend physical reality. A weak version of bootstrapped cosmocultural evolution would be associated with the largely nonpractical limited ontological implications noted previously. Stronger versions of bootstrapped cosmocultural evolution would be associated with the practical cultural implications noted previously as well as all of the levels of the civilization control scale with the possible exception of metaphysical consequence.

A Cosmic Promotion? Scientists and thinkers have been fond of pointing out humanity's "great demotions." From Copernicus to modern day cosmology (perhaps with the exception of "anthropic principles" and associated observations of "fine tuning"), humanity has been displaced and demoted from privileged positions in the cosmos. Perhaps it's time for a promotion—one that goes beyond the confusion of anthropic principles, one that does not rely on teleological assumptions and assertions about the ultimate nature of the universe.²⁵ Bootstrapped cosmocultural evolution allows for the possibility that life, intelligence, and culture could have arisen by chance, while at the same time asserting that such phenomena are cosmically significant. Stronger versions suggest that cultural evolution may have unlimited significance for the cosmos. Our cosmic location and means of origin should not be confused with our cosmic potential.

As valuing agents, we cannot only claim, but can perhaps, to some extent, create a more meaningful universe. For some, this may mean the creation of, or at least recognition of, a more evolved, more significant, more complex and diverse universe. This may strike some as anthropocentrically superficial, but the value we humans bring to the universe is at least noteworthy. In the same way that intelligence and culture is impacting planet Earth, we may also ultimately have so much freedom and power as to impact the universe itself. And in the same way we seek to strike balances between individual freedom and collective well-being, we may also ultimately wish to seek such balances for beings everywhere and for the whole of the universe as we become an increasingly cosmic species.

4. A Morally Creative Cultural Cosmos

With great potential, comes great responsibility. So what do we do with the potential of cultural evolution? Culture can have insidious negative effects of course—a kind of "culture curse"—especially on nonhuman life and the environment. As we increasingly wrap ourselves in culture, our basic humanity, our common humanity, our connection to each other and our broader environment—especially the global environment—is often masked, if not effectively lost. Indeed, human beings can lose themselves in culture. But culture can also uplift and inspire. Culture has produced large-scale devastation as well as magnificent human achievement. A critical challenge we face is coping with

the dramatic variances for what is thought to be justified destruction and laudable human activity.

How much can we control cultural evolution anyway? Susan Blackmore warns of what might be called “runaway memetic evolution,” whereby replicating memes blindly go about their replicating business—unchecked and unfettered—resulting in massive, often unforeseen destruction (Blackmore 2009, this volume). But it does appear that human beings can indeed control cultural evolution to some extent, perhaps to a sufficient extent that we should take responsibility for it, for its products, and for its results. After all, we are certainly in part, if not in totality, creators of culture.

Steve Dick (2003) has proffered the “Intelligence Principle,” *“The maintenance, improvement and perpetuation of knowledge and intelligence is the central driving force of cultural evolution, and that to the extent intelligence can be improved, it will be improved.”* He goes on to write: “The Intelligence Principle implies that, given the opportunity to increase intelligence (and thereby knowledge), whether through biotechnology, genetic engineering or AI, any society would do so, or fail to do so at its own peril.” Indeed, we see the evidence for the dominant role of intelligence and technology in improving the human condition, in furthering human evolution, leading to what Dick calls the “postbiological universe.”

But is that enough? Perhaps cultural evolution will, and should, lead us to a kind of “post-intelligent,” “post-technological” universe—a universe that isn’t predominantly ruled only by the forces of intelligence and technology, but also by the forces of morality and creativity. Should it? Why not? We see evidence for the forces of morality and creativity all around us.

4.1 A Moral Universe

For small creatures such as we, the vastness is bearable only
through love.

—Carl Sagan, *Contact*

As a result of our interests, we have emerged in the universe as valuing agents with meaning, purpose, and morality as cultural derivatives of value. If the universe did not have morality prior, it does now. We, in some nontrivial sense, make the universe a moral entity, however limited the degree of that contribution may appear. We may indeed be just a very small part of the universe that arose by chance, but nevertheless, strictly speaking, the universe now contains morality. The cosmos now has agents caring about other agents and

about nonagents as well, and in some cases, about the whole of the universe. This caring, even if solely a product of biological evolution—as either direct or indirect results of natural selection—need not necessarily be constrained to that narrow heritage—however strong the force of selfishness may be. Indeed, much human behavior reflects an expanding circle of moral consideration (Singer 1981; Sober and Wilson 1998).

We now have an awareness of our capacity to care, and perhaps the sources of such capacity. We are aware in a way no other animal is. This awareness, our knowledge, can help mind trump biology. And it does appear to be happening. One often hears the refrain that social ills are inevitable, that they will always be with us. But why should that be? Can we really be so confident that intelligent long-lived species, perhaps ones like ours that exhibit great moral potential, have neither the will nor capacity to eradicate most, if not all social ills? Such certainty appears to be misplaced.

It may be difficult, if not impossible, to ultimately wind our way out of what might be thought of as a “selfishness trap”—a trap that prevents us from giving up, or significantly moderating, our selfishness even if we have compelling reasons and opportunities to do so (Lupisella 2001).²⁶ It may be difficult, if not impossible to render the implications of the competition for resources and the second law of thermodynamics negligible (these are certainly deep challenges), but perhaps it will eventually be possible. As intelligence and technology carries beings to ever-increasing degrees of well-being and comfort, the cost of caring for others can decrease, helping to make it easier to care for others, resulting in more caring acts and an increase our overall “caring capacity.”

As the cost of caring for others is reduced, we may be able to better pursue the well-being of *all* as a critical organizing principle for cultural evolution, including perhaps ultimately, the whole of the universe.²⁷ Indeed, this points to the possibility of a nearer-term cultural goal: reducing the cost of caring, which is happening to some extent intentionally and incidentally as part of our social pursuits and technological innovation. But perhaps reducing the cost of caring, as well as increasing its benefits, can serve more explicitly as a formal organizing principle of cultural endeavors.

It may be that there is a creator, a designer, and a source of external meaning and purpose, in which case, it is perhaps a matter of speculation and maybe eventually, discovery; it is only then that we may know details. But if not, if we're on our own, if there is no larger source of value and meaning, we may then see ourselves simultaneously in opposition to a meaningless and hostile universe (i.e., in opposition to the second law of thermodynamics),

and also as a kind of transformative force for creating a meaningful and moral universe. In the same way that religions motivate human beings to care in a way they might not otherwise, so too can certain cosmic worldviews.

4.2 A Creative Cosmos

And if, or when, our “caring capacity” has been reached, if the well-being of all has been sufficiently achieved, what then? Perhaps it is premature to think beyond that, but in some parts of the world we are increasingly able to achieve the well-being of many members of society—although admittedly falling well short of overall global caring capacities. Nevertheless, we see signs of cultural evolution that may point us in directions we may ultimately wish to go, as we are increasingly able to care for all.

Increasing creativity may be one of those directions. Creativity is a significant, if not critical part of human culture. The universe itself seems to be creative. Even if creativity isn’t a deeply cosmic phenomenon, it is nevertheless something that human culture (and perhaps other cultures) brings to the universe. Perhaps creativity for the sake of increasing diversity in the universe is a pursuit worthy in and of itself—being mindful that the often advocated notion of “creative destruction” may need to be more carefully considered in light of how much *net* well-being and diversity is gained, as opposed to the blind justification that sometimes results from its invocation.

4.3 A Morally Creative Cosmos—A Busy Utopia

But equally it appeared to us as unreasoning Creativity, at once blind and subtle, tender and cruel, caring only to spawn and spawn the infinite variety of beings, conceiving here and there among a thousand inanities a fragile loveliness.

—Olaf Stapledon, *Star Maker*

It may seem fanciful or gratuitous to think so long-term and so speculatively about the future. But if we consider long-term questions now, it may inform nearer-term pursuits. If our thoughts about long-term norms reveal desirable directions to head in, why not start now? To a significant extent, human beings already do that of course—mostly on shorter timescales. But if we value certain things in the very long-term, we presumably value them now. Indeed, many human beings deeply value morality and creativity, which are often magnificently manifested in human culture. These behaviors, in most cases, are presumably not motivated by long-term cosmic perspectives. But

perhaps long-term cosmic perspectives can increasingly motivate morally creative pursuits, in part by providing other compelling contexts for those who seek them, including extraterrestrial beings (if they're out there). If they are out there, pursuing a morally creative cosmos may be something we have in common. If it isn't, maybe it should be.²⁸

If cultural evolution becomes a major force of cosmic evolution, that is, if the universe undergoes cosmocultural evolution and becomes a deeply “cultural cosmos”, then there will be compelling implications for cultural beings. There will be profound choices to make. Perhaps we will want to move beyond biology, beyond intelligence, beyond technology, to a universe that is a moral universe, a creative universe—a morally creative cosmos where what matters is not whether cultural beings live effectively, but whether we live ethically and creatively.

5. Summary

One way to think about the relationships of cosmos and culture is to explore whether each is important for the other, and if so, how. Unidirectional relationships suggest that the universe is important for culture, but not the reverse. This could be consistent with many worldviews such as a bioresistant, biotolerant, and biofriendly universe, as well as a “weak bootstrapped universe” worldview which suggests the universe has bootstrapped itself into the realm of value, but without any particular significance for the universe at large. Bi-directional relationships suggest that the universe is important for culture and that culture is important for the universe. This could include worldviews that can be characterized as a “strong bootstrapped universe,” teleological, pantheistic, and theistic—all of which could be consistent with *cosmocultural evolution* and/or *the Cosmocultural Principle* which suggests that cultural evolution is significant enough for the cosmos that it implies a kind of coevolution of cosmos and culture that should be considered in totality and holistically as single integrated evolution.

The new quality of *value* that has emerged in the minds of beings with interests, along with the phenomenon of culture that operationalizes value, has added a significant and arguably qualitatively different kind of evolution to the cosmic landscape. *Bootstrapped cosmocultural evolution* suggests that the universe has “bootstrapped” itself into the realm of value via physical

processes that created replicators leading eventually to intelligence, mind, and culture—none of which were necessarily inherent in the universe per se (e.g., as a “cosmic imperative”)—but which now have a limited kind cosmic ontological significance, practical cultural relevance, and the perhaps unlimited potential to eventually transform the whole of the universe itself. This emergence of a new kind of cosmic property, *value*, along with cultural evolution that instantiates value and creates derivatives such as meaning, purpose, and other endless forms of value, has given rise to a qualitatively different kind of cosmic phenomenon that may have unlimited potential.

What we do with the potentially unlimited power of cultural evolution is a profound challenge—one that we face day-to-day on many levels, but that will increasingly be relevant on ever-widening scales as we begin to see ourselves in a long-term cosmic context and as cultural evolution begins to become a more cosmically relevant phenomenon. The forces of morality and creativity can give rise to a morally creative cosmos, a universe that goes beyond intelligence and technology, a universe that is deeply driven by the caring capacity of valuing agents and ultimately by a pervasive cosmic force of moral creativity—something to which all cultural beings might aspire.

Whether one thinks life and culture arose by chance or are instead a part of cosmic design, an argument can be made either way for the value of life, intelligence, and culture. Whether we are a kind of rare cosmic gem, part of a “cosmic fugue,” or perhaps a part of cosmic destiny, there is arguably some form of noteworthy significance we can claim for life, mind, and culture. Either way, we can see ourselves as precious and meaningful, worth preserving, and worth developing to the greatest potential—for ourselves and the whole of the universe.

Regardless of what the deep cosmic truth may be, we must still carefully exercise the power of culture. We don’t know where it’s all heading, and we may not quite know how it works, but culture is carrying us—we are carrying ourselves—on what may be the leading edge of cosmic evolution. And we may be more in control than we think. It’s a wave we at least have some hand in creating. It’s an evolution we are partly, if not entirely, responsible for. Let us then play a worthy role in cosmocultural evolution—a role worthy of cultural beings, a role worthy of the cosmos.

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Endnotes

1. See Dawkins (1976) for an introduction to the notion of "memes" that are suggested to be a kind of cultural replicating unit (e.g., an idea, song, social norm, etc.), and Blackmore (1999) for an expanded treatment.
2. Value theory is one of four primary areas of philosophy—along with metaphysics, epistemology, and logic.
3. In his book, *Cosmic Jackpot*, Paul Davies devotes several sections to teleology and indicates its controversial nature by titling the first of those

sections, “Tackling the T-Word” (p. 233). Davies provides a brief but helpful contemporary treatment of teleology.

4. Lee Smolin’s proposal is interesting as it relates to this weak form of teleology because he suggests a cosmic selection mechanism (much like natural selection) that essentially “selects” for universe’s like ours – or at least universes that have characteristics for being relatively stable and long-lived – arguably allowing for an interpretation that our universe arises from a somewhat directional selection mechanism (e.g. for “stable” long-lived universes), that once selected, may have directionality toward life.
5. Some interpretations of quantum mechanics (e.g. the Copenhagen Interpretation and Many Worlds Interpretation) suggest a central role for observers because the act of observation contributes to physical reality, or at least the physical state of the universe.
6. Taoism, certain forms of Buddhism and Hinduism, and some mystical strands of monotheism have pantheistic features (Stanford Encyclopedia of Philosophy <http://plato.stanford.edu/entries/pantheism/>).
7. Steve Dick (2000) emphasizes the need for “cosmotheology,” and the prospects for a purely “Natural God,” to help better account for the physical realities of cosmic evolution in theological worldviews.
8. Brian Swimme is an example of many writers with backgrounds in cosmology who express deep reverence for the universe and our natural world based on views of physical cosmological evolution (*The Universe Story* 1992 and *The Hidden Heart of the Cosmos* 1995), but he is critical about human impacts on the Earth’s environment.
9. “Deism” is distinguished from theism in that deism tends to see God as not being active in or “interfering” with the world. Panentheism (with an “en” in the middle) sees God as imbued and active within the world as part of the nature of the universe (as in pantheism), but also as transcendent, essentially making the universe a subset of a larger God. Deism and panentheism are considered subsets of theism for the purposes of this essay, in part because they advocate a key distinguishing feature of transcendence.

10. "Theistic evolution" or "evolutionary creationism" can be seen as a more narrow pursuit that attempts primarily to integrate *biological* evolution with traditional religion.
11. Replication may also be a limited characteristic for what counts as life (Lupisella, 2004).
12. This narrower use of "ontological" that stresses physical existence is arguably consistent with the definitions of some philosophers. For example, Mario Bunge (1999) defines ontology as "the serious secular version of metaphysics. The branch of philosophy that studies the most pervasive features of reality, such as real existence, change, time, chance, mind, and life. Ontology does not study constructs, i.e., ideas in themselves." He goes on to write: "General ontology studies all existents, whereas each special Ontology studies one genus of thing or process—physical, chemical, biological, social, etc. Thus, whereas general ontology studies the concepts of space, time, and event, the ontology of the social investigates such general sociological concepts as those of social system, social structure, and social change. Whether general or special, ontology can be cultivated in either of two manners: speculative or scientific."
13. Even if free will may be a kind of an illusion in a "deterministic" universe, the way most of us experience and act in the world, individually and collectively, is through intentional choices with consequences. Robert Wright writes: "History, even if its basic direction is set, can proceed at massive, wrenching human cost. Or it can proceed more smoothly—with costs, to be sure, but with more tolerable costs. It is the destiny of our species—and this time I mean the inescapable destiny, not just the high likelihood—to choose." (*Nonzero*, p. 10).
14. Carl Sagan wrote eloquently in *Pale Blue Dot* (1994) about Earth and humanity occupying such a small part of a vast cosmos. A NASA Voyager image, looking back at our solar system, shows Earth as a very small light blue dot "suspended" in a sunbeam.
15. For a video of Alan Shepard golfing on the Moon, see: <http://www.youtube.com/watch?v=AdqBL5pdRT8>.

16. For an engaging interdisciplinary look at “Cultures of the Imagination,” see <http://www.contact-conference.org/index.html>.
17. In *Global Brain* (2000), Howard Bloom stresses the importance of “diversity generators.”
18. Personal communication with Jill Tarter, October 1997. Also, Freeman Dyson has written: “Diversity is the great gift which life has brought to our planet and may one day bring to the rest of the Universe. The preservation and fostering of diversity is the great goal which I would like to see embodied in our ethical principles and in our political actions.” (1988).
19. For example, life may originate and/or evolve in interstellar clouds or possibly even in “free space”—perhaps near a star or other astrophysical energy sources.
20. David Deutsch (1997) has suggested that knowledge is a kind of fundamental physical quantity, and as an example, he uses the intentional modification of stellar evolution (to prolong the lifetime of a planet’s sun) as a way to illustrate how intelligent beings might use their knowledge to alter large-scale cosmic phenomenon and as a result affect the “knowledge” of observers of that star when they observe that it doesn’t fit their standard models. This, and even more physically transformative examples, would be cases where knowledge transforms physical reality on cosmic scales.
21. In this volume, Paul Davies is explicit about life, mind, and culture being fundamental properties of the universe.
22. Peter van Inwagen (1998) suggests that metaphysics is an attempt to sufficiently generally describe “ultimate reality.” William Alson (1998) also examines the notion of ultimate reality and considers the relevance of “possibilities” with respect to the notion of ultimate reality.
23. “Dualism,” in the philosophy of mind, claims that in some respects, mental phenomena are nonphysical (Hart 1996).

24. It is not clear if/how “emergence” from physical systems gives rise to anything that transcends physical reality—what might be called a kind of “nonphysical emergence.”
25. We may in fact someday discover a deep compelling purposeful cosmic order that is sufficiently evidence-based to convince a sufficient number of intelligent beings—a cosmic order that might guide cultural evolution. But such a purposeful cosmic order appears to elude us for now, and may in fact not exist.
26. It is conceivable that we will be able to genetically or cognitively moderate internal selfish predispositions on large scales sooner than we think. If so, humanity will be faced with difficult questions regarding whether such an endeavor should be tried, and if so, how we should do it. Our strongly selfish natures may in fact prevent us from ever seriously moderating or abandoning our selfish motivations—in part because selfishness is important for individual survival, and also because genetically or cognitively moderating our selfishness may have to be an “all-or-nothing” social action to avoid undue advantage for those who choose not to. A noteworthy implication however is that a sufficiently small and relatively isolated space community may be able to conduct such an experiment.
27. This would be consistent with James Gardner’s suggestion that highly advanced intelligence might be guided by a kind of moral cultural attractor that preserves humanity and that might ultimately help the universe as a whole to survive and replicate.
28. It is often assumed, perhaps naively, that extraterrestrial intelligence will have a kind of moral advancement that accompanies their technological advancement. But this assumption may be misguided—there are many uncertainties. Indeed, we may not have to look further than our own species to call this assumption into question. See Michaud (2006) for a careful consideration of this and related issues.