Our Shared Yearnings for a Greater Good

By JEFFREY SCHLOSS

If I am not for myself, who will be for me? But if I am only for myself, who am I?
—Hillel

Two principles in human nature reign;
Self-love, to urge, and reason, to restrain;
Self-love, the spring of motion, acts the soul;
Reason's comparing balance rules the whole.
—Alexander Pope, Essay on Man

In recent days, a number of friends have told me that they felt physically ill in light of national events. Not just out of anger, or self-concern, or even empathic regard for others. But from a general sense of "moral horror." One close friend shared with me, "We're obsessed with being great, but not good. Somehow I feel like a cell in a diseased body. But I guess one upside is that it reminds me I really am part of a social body. I'm part of a 'we,' even if the we is morally hypothermic."

I don't share the above to make a political statement. We may disagree about what constitutes the good, and even when we agree, there will be different understandings of how to balance competing goods and what the best strategies are for achieving them. But the anecdote involves a crucial existential and fascinating scientific question. To what extent, if at all, are we humans endowed to genuinely care about a "good" that is larger than ourselves—to be a "we" and not just a "me"? Does even the phrase itself reflect a naïve, romantic delusion? And does it make any sense—as my friend somehow felt—to view morality as an evolved adaptation for social function, much like the hypothalamus is for bodily homeostasis?[1]

Of course both cultures and individuals vary in the extent to which they value and experience "we-ness." Indeed, each of us experiences our own changes and inner ambivalences in seeking and yielding to what we take to be a greater good. Scientific understandings of living systems in general and human sociality in particular also reflect a profound ambivalence—and often very polarized disagreement—about the consonance between evolutionary processes and what we take to be goodness or beneficence. I want to explore two contested issues that reflect both ideological disagreement and intrinsic ambiguity, which are nevertheless moving toward hopeful clarity.

THE BIOTIC ARC OF "WE"

For millennia before Darwin, religious and philosophical traditions have held wildly differing views about goodness and the natural world. A decade before publication of *The Origin*, Tennyson epitomized rejection of Romanticism's sentimentalized view of nature's goodness in his influential *In Memoriam*:

Who trusted God was love indeed
And love Creation's final law
Tho' Nature, red in tooth and claw
With ravine, shriek'd against his creed

By the end of his sixteen-year pilgrimage writing the poem, Tennyson had worked out a more nuanced and hopeful view that recognized both the perils and promises of nature. But many of my colleagues in biology have not done so, emphasizing "selfishness" not just as an aspect of nature's dynamics, but as the ultimately essential and definitive meta-narrative of life.

Eminent evolutionary biologist George Williams regards "natural selection as a process for maximizing selfishness." David Barash claims "evolutionary biology is quite clear that 'What's in it for me?' is an ancient refrain for all life." Richard Dawkins simply asserts that "we are born selfish." And in an understandably famous passage, Michael Ghiselin claims, "Scratch an 'altruist,' and watch a 'hypocrite' bleed. No hint of genuine charity ameliorates our vision of society, once sentimentalism has been laid aside. What passes for cooperation turns out to be a mixture of opportunism and exploitation."[2]

These aren't straw-man representations of scientific outliers, but are prominently cited depictions of how the world fundamentally works. Although it's important not to sentimentalize living systems, it's equally important not to vilify them. The "all is selfish" attributions in the name of evolution are just wrong, for three reasons that combine to form a very different narrative of nature.

First, the very term "selfish" has moral and anthropomorphic implications that conflate motive with consequences. We all recognize that a person may behave with intentions focused genuinely and unselfishly on the welfare of another—say caring for your child or jumping into the river to save a friend—that nevertheless have consequences that directly or indirectly contribute to biological fitness. Such care for others is not "selfish" in any meaningful sense. But even in creatures without intentions, there is an important distinction between what we might consider selfishness and "selfness." In contrast to rocks, living systems have "ends": they develop, actively maintain internal order, and reproduce. Insofar as they are target-oriented in sustaining internal conditions and structure, we can view them as "autonomous agents able to act on their own behalf."[3] In some sense, they are "selves" with needs and responsive, goal-oriented behaviors as they work to preserve their selfhood. But the wondrous capacities of life for self-maintenance are not the same as being "selfish." The latter entails behaviors that target self-flourishing *in opposition* or consequential *indifference* to the flourishing of others.[4]

Self-maintenance needn't entail other-opposition. Indeed, many cases of mutualism and symbiosis exhibit the very opposite. In lichens, an organism I have studied with great delight in the boreal forest, there is actually a union of two species to form a new one. A fungus provides a water-holding substrate and an algae provides photosynthetic nourishment. Not only does this inextricably link self-flourishing to others, but it arguably erodes the demarcation of "other," creating a more expansive kind of functional "self" or organic individual.[5] A "greater good."[6]

However, maybe such cases of symbiotic flourishing are just outliers or unusual outcomes that have somehow overcome a more fundamental and intrinsic selfishness and competitiveness to nature? This is the second problem with the claim that all's selfish: it badly conflates the over-arching process of natural selection with the more limited and admittedly "selfish" phenomenon of competition.

Although he did not devise either phrase, Darwin did use both "struggle for existence" and "survival of the fittest."[7] But tooth-in-claw connotations notwithstanding, neither is necessarily competitive. Yes, creatures can struggle against each other for mates or food; but they can also simply wrestle against the physical environment, sometimes struggling not against but with each other, as in huddling together against the cold. Darwin himself claimed "I use the term Struggle for Existence in a large and metaphorical sense, including dependence of one being on another." And a century and a half later, Martin Nowak, who directs Harvard's Program for Evolutionary Dynamics, observes that it is not just mechanistically possible but actually necessary for evolutionary innovation (for reasons we'll discuss) that the struggle for existence be attended by what he playfully calls the "snuggle for existence."[8]

Neither does survival of the fittest intrinsically entail competition; it is just the successful reproduction of those best able to meet challenges in a given environment. More precisely, natural selection is simply "differential reproduction": some heritable variations increase more rapidly than others. On the other hand, competition is ecologically understood as mutually subversive impact on one another's reproduction. So, whereas competition requires your profit at my loss,

natural selection just means you make more profit than I do. Importantly, your presence in the marketplace doesn't necessarily hurt me. It could even help, or as is often the case, just be unrelated to my success. A bacterium with a mutation for antibiotic resistance or metabolizing a new nutrient can reproduce more rapidly than a strain that lacks these abilities, without exerting any negative impact on the other.

Finally, and most provocatively, the above two observations help give rise to a third. It turns out that the arc of evolution can be viewed not strictly as "maximizing selfishness" but even as generating we-ness. Or, perhaps, as facilitating the emergence of new, inclusive levels of self-ness. At face value that may sound flaky or obscure. But biologists now recognize a tangible series of "major evolutionary transitions" involving the sequential increase of cooperative interdependence.[9] Over evolutionary history:

Self-replicating molecules come together in proto-cells.

"Simple" bacterial (prokaryotic) cells come together to form complex eukaryotic cells with compartmentalized division of labor.

Single cells come together to form multicellular plants, fungi, and animals, with specialized cells and organs that diversify functions.

Solitary individuals come together to form colonies or eusocial animal groups with specified roles or castes.

Primate sociality gives rise to large, symbol-mediated, intensely cooperative human societies with linguistically negotiated division of labor between genetically unrelated individuals.

These transitions share thematic continuities that have fascinating relevance to the idea of "greater good." All involve the integration of previously separate individual entities into a larger-scale, functional cooperative. This requires not only cooperation, but a special kind of cooperation based on specialization, division of labor, and indispensable reliance on others. The transitions also involve the emergence of new kinds of information storage and transmission, with entities that could previously replicate on their own now requiring a larger unit. For all these reasons, previously autonomous "selves" now are obligately interdependent on each other at a higher level of organization. In fact, these stages are often referred to as "evolutionary transitions in individuality," or ETIs.[10] Maybe it's not a romantic delusion to think that a me really can also involve a we.

There is an irony here that I find sublime. While autonomy is relinquished at the "lower" level, it is actually enhanced at the higher. The capacity to sense the environment, to control internal conditions, to "act on one's own behalf" through a range of emerging capacities—the very qualities we associate with life itself—are elaborated across the series of ETIs. Indeed, fifty years ago in a prominent but at the time iconoclastically anti-reductionist essay, chemist-philosopher Michael Polanyi suggested evolution involves a "progressive intensification of the higher principles of life." Many now view ETIs as both yielding and requiring this serial emergence of biotic capacities for a "greater good." [12]

> "To what extent, if at all, are we humans endowed to genuinely care about a "good" that is larger than ourselves?

But it is important not to romanticize this pattern. While the simplistic nihilism of "all's selfish" is clearly wrong, it's equally unwarranted to slip into a schmaltzy "all's good" idealization of nature. Any understanding of greater good or collective flourishing must recognize the ambiguous interplay between supports and subversions of its attainment.

Although selfishness may not have the last word, it certainly retains a vote. At each emerging stage, there is possibility of conflict, now at two levels. The new "individuals" can compete with each other. And there can also be tension between the emerging higher-level entity and its previously autonomous constituents, which may defect on the collective. Any cooperative enterprise involves the opportunity for selfish gain through failure to do one's share or taking another's share. In social interactions between organisms we recognize many forms of free-riding or exploitation. And within animal bodies, individual cells may go rogue and insist on their reproductive autonomy to the detriment of the whole, in what we call cancers. Even in single bacterial cells, there are "selfish genetic elements." A stunning example is DNA that reproduces apart from chromosomes and that—like Mafia selling protection—secretes a toxin into the cell that kills any daughter cell that doesn't also contain the antidote it makes. [13]

So while not determinative, it remains the case that "selfishness is pervasive and manifests at all scales of biology, from societies, to individuals, to genetic elements within a genome." [14] The marvel of living systems and the evolutionary process by which they have

emerged is that they have developed strategies that expand and solutions that stabilize cooperative interdependence, not in the absence of, but in the continuing face of "selfish" challenges that stand to subvert biotic "greater good." [15]

This flourishing through escalating cooperative interdependence is wondrous, but it does not constitute an ethical trajectory or a moral arc. It involves cooperative dynamics that are extended and conflicts that are navigated by the distinctively human moral enterprise.

THE MORAL ARC

Human beings are the most intensively and extensively cooperative creatures on earth. Our division of labor, cooperation with unrelated individuals, and social interactions across large groups have been described as representing a "huge anomaly in the animal world."[16] But setting aside the debated question of just how much difference in degree is required to constitute a difference in kind, there is no disagreement that "human cooperation exceeds that of all other species with regard to scale and range."[17]

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In terms of intensiveness, we invest in long-term dyadic or small-group relationships—not just collaborations but "friendships"—that are based on neither kinship nor strict reciprocity. Indeed, the distinguishing, wonderful, and somewhat mystifying mark of being friends is that we do not vigilantly keep tabs on payback. The threshold of trust and ease, where a confederate ambles into my kitchen and forages in the fridge without asking, has always been precious to me. Evolutionary anthropologist Joan Silk refers to "cooperation without counting" as the puzzle of friendship.[18]

This is not to say there is no mutuality. Of course friends help—and rely on each other to help—in times of need. But this help is often (and most notably) extended when the other's need is so intense that compensatory return isn't guaranteed, or even likely. Or, through gifts or skills that others have but we lack, friends may aid us in ways we could never repay. Such enduring commitment may be especially crucial in a uniquely social species like humans, whose long life ranges across unpredictable periods of adequacy or deprivation.[19]

And beyond, or perhaps underlying, the provision of help, friends resonantly enter in to one another's joys, sorrows, and yearnings. Poignantly, Aristotle even referred to friends as a "second self." A profound we.

Importantly, friends constitute a we not merely in virtue of being attentive to each other's needs, but also through a shared gaze beyond those needs. A distinctive quality of human friendships is that they are often convened around mutual commitments that ostensibly have little directly to do with the material success, much less the evident reproductive interests, of the individuals. We jointly pursue and encourage one another in moral ends. And we may also cultivate non-moral goods: common interests in music, literature, an area of scientific inquiry, even a style of surfing, or—so I am told—obnoxious forms of humor pursued at puzzling investment of time and potential sacrifice of professional reputation.[20]

I must confess to being a little self-conscious about describing attributes of friendships that are so self-evident. But they are surely not self-explanatory, and at face value, may seem to "defy the logic of evolutionary theory," even to those who formally study it.[21] Although it turns out they do not, the shared ascription and pursuit of *value*, ostensibly independent of instrumental utility, is especially notable and is something I want to return to later.

The intensiveness of friendships with those we know is complemented by the extensiveness of cooperation with those we don't know. We cooperate with people we are not related to and have never met—on the basis of reputation, and even across large populations in the absence of reputational familiarity. This has been described as a "spectacular evolutionary anomaly" not only because the observable range of cooperation is so vast, but also because the means by which cooperation is stabilized and defection controlled is so novel. It entails symbolically encoded, culturally transmitted behavioral norms, or morality.[22]

While that observation is uncontroversial, it is by no means simple. There are manifold evolutionary accounts for how our moral capacities arose, how morality does its social work, and what it is ultimately capable of achieving in light of biotic constraints. Even superficially mapping the landscape of approaches to these questions is beyond my scope here. But I want to point out several serial installments of thinking.

In his seminal treatment, sometimes referred to as second generation sociobiology, Richard Alexander observed that human cooperation is extended beyond

kinship and reciprocal exchange by "indirect reciprocity" (IR)[23]: your good deed may not be paid back by the recipient, but may be compensated by earning the trust and cooperation of another who sees or even just hears of it. Humans can reward—and punish—by transmitting stories about each other. Thus it may be, as the Hebrew proverb goes, "a good name is to be chosen above riches." Or a bad name can subvert riches. And morality, according to Alexander, constitutes the rules that mediate accumulation of capital in one's reputational bank account. Conscience, then, can be viewed as an alarm that goes off when a behavior stands to erode reputational capital.

To whatever extent this view of conscience has some explanatory merit, it is straight-out incomplete in terms of our interior experience. Conscience "goes off" not only as we're about to do something, but after we have done it. Humans recall past actions, consider the counterfactual possibility that we could have chosen differently, and—in light of what we consider to be right—regret the choice we made. Darwin commented on this relationship between regret and conscience. Behavioral economist Herbert Gintis affirms something most of us (other than a few in public office) know by sad experience: we feel that "being dishonest dirties me." Conscience isn't just an alarm that warns us of an impending reputational crash, like a stall alarm in an airplane. It may sound years after a safe landing, via a route that we can't endorse, even if others do.

But setting aside feelings for a moment and focusing on behaviors, why would someone behave pro-socially if there is no reputational payoff? Why leave a tip in an out-of-town restaurant to which you'll never return, or refrain from cheating when unlikely to get busted?

Moving beyond IR and addressing both the feeling and behavioral aspects of pro-sociality, economist Robert Frank proposed that to the very extent social dispositions are *not* tied to projections of self-benefit, they may end up benefitting the actor.[24] Nobody wants to cooperate with someone whose commitment wavers with the rate of return. ("Honesty may be the best policy, but he who is honest only for that reason is not honest.") Reminiscent of virtue-theory, Frank points out that habits of unselfish behavior are not just motivated by, but also reinforce, pro-social dispositions or emotions. Here virtue theory becomes signaling theory. Since these dispositions can be conveyed by hard-to-fake non-verbal displays like facial expressions, they may serve as reliable signals to others of our cooperative commitment. Our past good deeds leave their trace on our bearing, which invites others to cooperate with us. And honest regret about our misdeeds—triggered by conscience—may also be an important signal. So a smile, generated by the legacy of genuine goodwill, really may be worth a thousand words. And a convincing counterfeit may too be hard to fake.

While this sounds highly speculative, several fascinating empirical studies have found that people can in fact detect cooperators apart from reputation or previous interaction. And such detection is even correlated with involuntary facial displays, like smile symmetry.[25] Spontaneous laughter has also been found to be hard to fake, and to effectively signal and generate trust. Perhaps shared humor, waywardly indifferent to reputation, isn't so puzzling after all!

Both the "moral rules" proposal of IR and the "virtue ethics" proposal of cooperative signaling offer plausible explanations of how human cooperation extends beyond kinship and reciprocity. And each is underwritten by empirical findings. Along with many others, my own view is that they are helpful, but incomplete. The first approach does not account for cooperation that exceeds reputational mediation. And while the second addresses this phenomenon, it does not account for why only humans systematically exhibit it. Other animals communicate social emotions and employ various hard-to fake-displays. Why have only we so significantly extended cooperation by signaling? Moreover, neither approach accounts for the origin of—in fact, each entails the largescale absence of—altruistic behaviors that benefit others at net expense to the actor.

Group selection is one of several attempts to deal with the question of ostensibly sacrificial or other-benefitting behaviors. Darwin himself observed that while "a high standard of morality" might not benefit an individual over others within a group, it will "give an immense advantage to one tribe over another." And this process is not limited to human morality. Group selection can occur whenever (*if* ever) the relinquishment of individual benefit relative to other group members is compensated by group success over other groups. "Selfishness beats altruism within groups. Altruistic groups beat selfish groups."[26] Some formulations of group selection go on to posit the emergence of groups as functional organisms—a greater good—and are even applied to some of the evolutionary transitions described earlier.

Another approach, which need not appeal to group selection, is gene-culture co-evolution. Co-evolutionary theory critiques the famous reductionist dictum of sociobiology that "genes hold culture on a leash" and that the only "demonstrable function" of morality is transmission of "human genetic material."[27] Philosopher Daniel Dennett, emphatic advocate of natural selection though he is, affirms "our ability to devote our lives to something we deem more important than our own personal welfare, or our own biological imperative to reproduce. . . we also have creeds, and the ability to transcend our genetic imperatives."[28] Indeed, some degree of cultural "transcendence" is virtually universally affirmed in contemporary evolutionary accounts of human behavior. But there are varied takes on its implications for beneficence and social function. "Altruism" could even be viewed as a biotic maladaptation, a mental parasite that is transmitted at the expense of both individual and group function.

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There are manifold and debated formulations of group selection and co-evolutionary theory. A promising approach that integrates both is "cultural group selection" (CGS). CGS posits that human social structure is not just a byproduct of individual competition, but is functionally organized by culturally constructed moral (and other) norms. Respecting the question posed at the beginning of this essay, in the view of CGS, morality may indeed be an evolved adaptation for social function, in some sense like a hypothalamus regulating organismic integration. Indeed, back to my friend's moral anguish, the emergence of "group-mindedness" in which "'We' are all in this together and are interdependent on one another," may give rise to (and be based on) our striking capacity to feel collective guilt and shame.[29] Thus groups may be organism-like, with individual members yearning for and contributing to the greater good. And groups that more successfully cultivate interdependent function may differentially succeed over other groups.[30]

A CGS perspective is consistent with the observation that human social structure has developed historically from small, highly interdependent foraging groups, to Neolithic agricultural societies, to immense cosmopolitan states. While these developments were facilitated by the emergence of novel technologies, they also required the development of new cultural norms that expanded and stabilized scale of cooperation.

One current and widely discussed proposal in CGS (in some ways a rehabilitation of earlier functionalist accounts from the sociology of religion) is that notions of "moralizing gods" are a cultural adaptation that enabled the emergence of cooperation in large, cosmopolitan groups several thousand years ago.[31] The idea posits that belief in moral deities, who punish and reward social behavior, not only reduces the social costs of policing defectors, but mitigates IR's problem of why a person should be good when no one is watching. (However, a society that leaves cheating control up to such gods—whether or not they exist—will be vulnerable to those individuals who don't believe.) A complementary take runs along the lines of Gintis's notions of internalization ("being dishonest dirties me"). It is not just cognitive belief in the existence of beings who reward and punish, but the affective apprehension of their numinous presence that underwrites being kind to others. Some religious believers claim to experience moral choices as either intrinsically celebrating or sullying commerce—"friendship"—with divine reality or sacred domains of compelling beauty.[32]

What do we make of this? Martin Luther King, quoting abolitionist clergyman Theodore Parker, claimed "the arc of the moral universe is long, but it bends toward justice." Does CGS, or perhaps even religion in all its ambiguous variability, trace that arc?

Unfortunately, things are not quite that simple. For there is a "dark side" to both group selection and religion. Insofar as they effectively establish group identity and facilitate group success, they may do so in contrast to the success of other groups. Altruist groups beat other groups. But this may entail anything from benevolent service to the disenfranchised, to martyrs in religious warfare.

Yes, there does appear to be a historical "moral arc" with respect to who is included in the group and therefore construed to be in the domain of ethical concern. The maxim "love your neighbor" thankfully involves a lot more neighbors than it did in the past. But it's not clear there's an ascending arc to how we treat those we refuse to view as neighbors. The maxim "love your enemy" seems to be an extraordinary, if resplendent, rarity. It is a "spectacular outlier," as elusive as it was when proposed millennia ago.

The trick, then, might be to cultivate ways of counting more folks as neighbors, by both honoring

and expanding our "neighborhoods." I want to close by commenting on two ostensible tensions that stand to both challenge and support this endeavor.

One is Dunbar's number. Evolutionary anthropologist Robin Dunbar posits that managing social relationships is cognitively demanding and therefore limited by the processing power of the brain's neocortex. Primates, in particular, have ongoing *bonded* relationships—"friendships"—that are especially demanding. Based on a correlation of neocortex to group size in primates, it appears as though the upper limit to bonded group size is about 150 for humans. And in fact this corresponds to the size of many intensely cooperative human groups across cultures, from foraging bands to military units to religious communes to personal Christmas card lists.[33]

Of course, this number scales up or down across concentric circles of attachment, from intimate friends to remote acquaintances. Moreover, investment of time varies across these circles. But the point is that there may be both a maximum and perhaps an optimum size of "neighborhood" that can be sustained by attachment mechanisms common to primates or even by reputational mechanisms unique to humans. What morality may do is enlarge the scale of cooperation beyond these mechanisms. Indeed, the history of this enlargement has been referred to as the "expanding circle" of human moral concern.[34] But at face value, these enterprises appear to be in tension with one another.

In one sense there indeed is tension. This is evident in perennial debates about obligations to the near and dear versus needs of the more distant but numerous. And this may be part of what is fueling current political debates.

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But I want to suggest that there is not an intrinsic functional incompatibility, and there may even be synergism. To whatever extent Dunbar's number is operative, it reflects quantitative scaling between primate social group and neocortex size, without qualitative sensitivity to unique aspects of human relationality. That is to say, human friendships are so very special compared to other primates in virtue of being attuned but not restricted to one another's needs. In the sublime intertwining of personal attachment with common absorptions, friends both share and in fact may mutually provoke commitment to moral and non-moral greater goods. This explicit encouragement toward valued ends has been recognized from Aristotle on. And recent empirical work has found that in simple interaction with friends or trusted others, or even in shared activities ranging from music to laughter, outgroup vigilance may be relaxed. The "second self" of friendship is both permeable and catalytic.

There is much wisdom to the strategic environmental aphorism "think globally, (so as to appropriately) act locally." But the relational converse is also true: in caring locally, face to face, we may be stimulated to think globally. Indeed, the ancient religious analogue of this notion is "whoever does not love their neighbor, whom they have seen, cannot love God, whom they have not seen."

Finally, the other area of tension involves the relationship of humans to major evolutionary transitions or ETIs. There is considerable debate about this, but I think the debate reflects not so much error on one side, as underlying ambiguity.

On the one hand, human societies manifest the obligate interdependence, specialized division of labor, emergent functional autonomy, and novel forms of information transmission characteristic of ETIs. In contrast to other primates, humans employ "a new way of thinking in which there is a 'we' that constitutes not just my current partners…but all of us in this society."[35] For these reasons some construe human groups as a genuinely new-level organism.[36] In this sense my friend may have been right in feeling like part of a social body or an organismic "we."

On the other hand—and this is an important other hand—human individuals do not evince the same relinquishment of reproductive or developmental autonomy that characterize members of the other ETIs. Organelles in cells, and cells in bodies, and eusocial insects in colonies all have surrendered themselves utterly to the collective in a way that human organisms have not. So my friend was not quite right in feeling like a "cell" in a body.

It's almost as if we're stuck between ETIs.[37] The biological predicament calls to mind Alexander Pope's famous "Place'd on this isthmus of a middle state, a being darkly wise and rudely great."

A generation ago, before the most recent formulations of ETIs, E.O. Wilson observed that humans have "achieved an extraordinary degree of cooperation with little or no sacrifice of personal survival and reproduction…how we alone [accomplish this] is the culminat-

ing mystery of all biology." We have come a long way in accounting for the uniqueness of human cooperation. But we still wrestle with understanding how to sustain and expand it, since neither biological nor cultural evolution has dissolved human selves (and not just in the obvious sense of conscious agency, but in the sense of organismic actors with individual ends) for the sake of attaining the collective function of our astonishing sociality.

This constitutes both a challenge and a precious opportunity. In his book *The Moral Arc*, Michael Shermer rightly points out that "making sacrifices for one's social group is not the same as being sacrificed for the group."[38] Indeed, on two counts. First, to the extent we have not been sacrificed, we have the chance to choose sacrifice. But second, given the social constitution of our selfhood—the embeddedness of our own flourishing in our embrace of we-ness or second selfhood—it is paradoxically the case that to the very extent we make sacrifices, we are not sacrificed.

There is no moral virtue in being a dutiful cell in a body. There can be no shared yearning for a "greater good" apart from recognition of our own individual good, which (ala Hillel) can be simultaneously invested and fulfilled in pursuit of the greater. The exquisite and anguishing reality of human sociality is that self-sacrifice is possible because we still have selves. But in this precarious isthmus of a middle state, we have selves only insofar as we nurture and are nurtured by other selves in our social body. And this nurture can be extended across the centuries. We return then to Pope's *Essay on Man*:

> Heav'n forming each on other to depend,
> A master, or a servant, or a friend,
> Bids each on other for assistance call,
> 'Till one man's weakness grows the strength of all.
> Wants, frailties, passions, closer still ally
> The common int'rest, or endear the tie:
> To these we owe true friendship, love sincere,
> Each home-felt joy that life inherits here.

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NOTES

1. For a helpful overview of this question, see R. Boyd and P. Richerson, "Solving the Puzzle of Human Cooperation," in S. Levinson, ed., Evolution and Culture (Cambridge MA: MIT Press, 2005), 105-132.
2. G.C. Williams, "Huxley's Evolution and Ethics in Sociobiological Perspective," Zygon 23, no. 2 (1988): 383-407, at 399; D.P. Barash, Sociobiology And Behavior (New York: Elsevier, 1977), 167; R. Dawkins, The Selfish Gene (Oxford University Press, 1990); M.T. Ghiselin, The Economy of Nature and the Evolution of Sex (Berkeley: University of California Press, 1974), 247.
3. S. Kauffman, Investigations (New York: Oxford University Press, 2000).
4. M. Zwick and J. Fletcher, "Levels of Altruism," Biological Theory 9 (2014):100-107.
5. E. Szathmary, "Toward Major Evolutionary Transitions Theory 2.0," Proceedings of the National Academy of Sciences 112, no. 33 (2015): 10104-10111. It's interesting to note that when the lichen symbiosis was first discovered, the competition-dominated interpretive milieu generated resistance to accepting such a relationship as possible. More recently it has not only been accepted, but we've found it is not limited to just two interacting species.
6. S.F. Gilbert, J. Sapp, and A.I. Tauber, "A Symbiotic View of Life: We Have Never Been Individuals," Quarterly Review of Biology 87, no. 4 (2012): 325-41.
7. Coined by Thomas Malthus and Herbert Spencer, respectively. Actually, Darwin modified Malthus's "struggle for existence" to "struggle for life" in the title of his Origin of the Species.
8. M. Nowak, SuperCooperators: Altruism, Evolution, and Why We Need Each Other to Succeed (New York: Free Press, 2012).
9. Szathmary, "Toward Major Evolutionary Transitions Theory 2.0"; see also J. Maynard Smith and E. Szathmary, The Major Transitions in Evolution (New York: Oxford University Press, 1998).
10. R. Michod, Darwinian Dynamics: Evolutionary Transitions in Fitness and Individuality (Princeton, NJ: Princeton University Press, 1999).
11. B. Rosslenbroich, On the Origin of Autonomy: A New Look at the Major Transitions in Evolution (New York: Springer, 2014).
12. Sigmund and Szathmary quote Michael Polanyi: "We can recognize a strictly defined progression, rising from the inanimate level to ever higher additional principles of life. . . . Evolution may be seen, then, as a progressive intensification of the higher principles of life." They then go on to say: "This 'progress', nowadays described as a series of major transitions in evolution, is often due to the emergence of new units." K. Sigmund and E. Szathmary, "Merging Lines and Emerging Levels." Nature 392 (1998): 439.
13. R.N. McLaughlin and H.S. Malik, "Genetic Conflicts: The Usual Suspects and Beyond," Journal of Experimental Biology 220, no. 1 (2017): 6-17.
14. Ibid, 6.
15. "Individuality requires more than just cooperation…individuality depends upon the emergence of higher level functions that restrict the opportunity for conflict within and ensure the continued cooperation of the lower level units." R.E. Michod and D. Roze, "Cooperation and Conflict in the Evolution of Multicellularity," Heredity 86 (2001): 1-7.
16. E. Fehr and U. Fishbacher, "The Nature of Human Altruism," Nature 425 (20b03): 785-91; R. Boyd and P.J. Richerson, The Origin and Evolution of Cultures (New York: Oxford University Press, 2005).
17. A.P. Melis and D. Semmann, "How Is Human Cooperation Different?" Philosophical Transactions of the Royal Society B 365 (2010): 2663-74.
18. J. Silk, "Cooperation without Counting: The Puzzle of Friendship," in P. Hammerstein, ed., Genetic and Cultural Evolution of Cooperation (Cambridge, MA: MIT Press, 2003).
19. Evolutionary psychologists John Tooby and Leda Cosmides have an elegant treatment of this, along with an account of the "deep engagement" of friendships. "Friendship and the Banker's Paradox: Other Pathways to the Evolution of Altruism," Proceedings of the British Academy 88 (1996): 119-43.
20. Personal communication from my department chair, Steven M. Julio.
21. Joan Silk research website at http://www.sscnet.ucla.edu/anthro/faculty/silk/research_page.htm; accessed May 7, 2017.
22. Boyd and Richerson, The Origin and Evolution of Cultures, 11; Fehr and Fischbacher, "The Nature of Human Altruism."
23. R. Alexander, The Biology of Moral Systems (Hawthorn, NY: Aldine de Gruyter, 1987).
24. R.H. Frank, Passions within Reason: The Strategic Role of the Emotions (New York: W.W. Norton, 1988).
25. R.H. Frank, T. Gilovich and D.T. Regan, "The Evolution of One-Shot Cooperation: An

Experiment," Ethology and Sociobiology 14 (1993): 247-56. W.M. Brown, B. Palameta, and C. Moore, "Are There Nonverbal Cues to Commitment? An Exploratory Study Using the Zero-Acquaintance Video Presentation Paradigm," Evolutionary Psychology 1 (2003): 42-69.
26. D.S. Wilson and E.O. Wilson, "Rethinking the Theoretical Foundation of Sociobiology," Quarterly Review of Biology 83, no. 4 (2007): 327-48.
27. E.O. Wilson, On Human Nature (Cambridge, MA: Harvard University Press, 2004), 167.
28. D. Dennett, Breaking the Spell: Religion as a Natural Phenomenon (New York: Penguin Books, 2006), 4.

29. M. Tomasello, A.P. Melis, C. Tennie, et al. "Two Key Steps in the Evolution of Human Cooperation," Current Anthropology 53, no. 6 (2012): 673-92.
30. However, there is nothing in the CGS model that excludes the above-mentioned (and other) processes working as well. In fact, it may be usefully combined with them. Boyd and Richerson, "The Origin and Evolution of Cultures. In fact, in Tomasello et al., "Two Key Steps in the Evolution of Human Cooperation," the authors make the case that fundamental cognitive and emotional capacities for "group-mindedness" were prerequisites for CGS. See also Tomasello's contribution to this online series, "Human Morality Begins with a 'We,'" at http://www.humansandnature.org/human-morality-begins-with-a-we; accessed May 7, 2017.
31. B.G. Purzycki, C. Apicella, Q.D. Atkinson, et al. "Moralistic Gods, Supernatural Punishment, and the Expansion of Human Sociality." Nature 530 (2016): 327-30; H.L. Lenfesty and J.P. Schloss, "Big Gods and the Greater Good," Religion, Brain and Behavior 5, no. 4 (2015): 305-313; A. Norenzayan, Big Gods: How Religion Transformed Cooperation and Conflict (Princeton, NJ: Princeton University Press, 2013).
32. J. Schloss, "He Who Laughs Last: Involuntary Religious Affect as a Solution to Recursive Cooperative Defection," pp. 205-215 in J. Bulbulia, R. Sosis, E. Harris, et al., eds., The Evolution of Religion: Studies, Theories, and Critiques (Santa Margarita, CA: Collins Foundation Press, 2008).
33. R. Dunbar, "Coevolution of Neocortical Size, Group Size, and Language in Humans," Behavioral and Brain Sciences 16 (1993): 681-735; R. Dunbar, "The Social Brain Hypothesis and Its Implications for Social Evolution," Annals of Human Biology 36, no. 5 (2009): 562-72. A nice popular account is Maria Konnikova's "The Limits of Friendship," The New Yorker, October 7, 2014, at http://www.newyorker.com/science/maria-konnikova/social-media-affect-math-dunbar-number-friendships.
34. P. Singer, The Expanding Circle: Ethics, Evolution, and Moral Progress (Princeton, NJ: Princeton University Press, 2011).
35. Tomasello et al. "Two Key Steps in the Evolution of Human Cooperation," 685.
36. E.O. Wilson, The Social Conquest of Earth (New York: Liveright Publishing, 2013).
37. We are not the only creatures thus judged. The lichen symbiosis that I mentioned earlier is also deemed by some to halt between an ETI. (See Szathmary, "Toward Major Evolutionary Transitions Theory 2.0.")
38. M. Shermer, The Moral Arc: How Science Makes Us Better People (New York: Henry Holt, 2015), 13.