

COOPERATING WITH EVOLUTION

© REV. DANA WORSNOP
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READINGS

from Charles Darwin's *The Descent of Man*

The following proposition seems to me in a high degree probable – namely, that any animal whatever, endowed with well-marked social instincts . . . would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well, or nearly as well developed, as in man. For, firstly, the social instincts lead an animal to take pleasure in the society of its fellows, to feel a certain amount of sympathy with them, and to perform various services for them. . . .

Secondly, as soon as the mental faculties had become highly developed, images of all past actions and motives would be incessantly passing through the brain . . . [A] feeling of dissatisfaction, or even misery [would then] . . . result . . . as often as it was perceived that the enduring and always present social instinct had yielded to some other instinct. [To an instinct] at the time stronger, but neither enduring in its nature, nor leaving behind it a very vivid impression. . . .

Thirdly, after the power of language had been acquired, and the wishes of the community could be expressed, the common opinion how each member ought to act for the public good, would naturally become in a paramount degree the guide to action. . . . It should be borne in mind that . . . our regard for the approbation and disapprobation of our fellows depends on sympathy, which . . . forms an essential part of the social instinct, and is indeed its foundation-stone.

Lastly, habit in the individual would ultimately play a very important part in guiding the conduct of each member. [This is so because] the social instinct, together with sympathy, is, like any other instinct, greatly strengthened by habit. . . . [C]onsequently . . . obedience to the wishes and judgment of the community [would be strengthened by habit].

from anarchist philosopher Peter Kropotkin

Man is appealed to be guided in his acts, not merely by love, which is always personal, or at the best tribal, but by the perception of his one-ness with each human being. In the practice of mutual aid, which we can retrace to the earliest beginnings of evolution, we find the positive and undoubted origin of our ethical conceptions; And we can affirm that in the ethical progress of man, mutual support – not mutual struggle – has had the leading part. In its wide extension, even at the present time, we also see the best guarantee of a still loftier evolution of our race.

SERMON

The three-toed sloth is a fascinating and odd animal. The word came first; sloth – meaning laziness, indolence, aversion to work – was one of the seven deadly sins long before it was applied to the slow-moving animal of the South American rainforest. The sloth's so-called laziness is an adaptation. Its diet, mostly of leaves, is not high in energy and so it has adapted ways of conserving heat and expending as little effort as possible. It spends most of its time high in the rainforest canopy hanging upside down. Sloths even have two extra vertebrae in their necks so they can turn their heads all the way around to look for predators on the ground without moving any other muscle. How lazy can you get?

I once proposed a math problem to students, If a sloth travels at .015 miles per hour, how long will it take for our sloth to travel from Rio de Janeiro to Sao Paolo? A perfectly preposterous question, but one that combines some biology, geography, research skills, and multiplication using decimals.

Indeed, the sloth moves so slowly that algae grows on its fur. By staying high in the canopy, sloths are safe from faster moving predators and are protected further by the camouflaging qualities of the algae. Sloths further reduce the need for

movement by becoming adapted to particular species of tree, so they don't have to move far for food. This also reduces the competition for habitat among other sloths who have who eat the leaves of a different kind of tree.

In addition to the algae, a sloth's coat can play host to as many as 900 different species of insect. It has a particular arrangement with what has become known as the sloth moth.

One of the more peculiar adaptive behaviors of the sloth is that about once a week it climbs down from its treetop home to defecate. Scientists are still uncertain as to why this is, for the sloth is far more vulnerable to predators on the ground, and it expends a great deal of its limited energy climbing down and then back up the tree.

At the base of the tree, the sloth digs a hole, does its business and then climbs back up. And here's the remarkable part. The sloth moth is just waiting for this moment. On the ground, the moths fly off the sloth and lay their eggs in the hole the sloth has conveniently dug and "fertilized." There the eggs have a wonderfully protected place, rich in nutrients, to hatch and grow. When they metamorphose from larvae to pupae to adult moth, they immediately fly to the top of the canopy and find a sloth to live on. Perhaps the very one their parents and grandparents lived upon. After all, the sloth's life cycle is measured in decades, and the moth's in weeks or months.

Biologists are unclear as to exactly what adaptive advantage this weekly trip to the ground gives the sloth. Certainly, it helps the tree thrive. Some speculate that the moth helps the sloth by eating some of the algae on its fur. The relationships between and among these various life forms have been well-observed, if still not well-understood.

Some of you already know that I am rather squeamish, so you also know that I would only tell the story of the sloth's hygiene habits advisedly. Indeed, nature really isn't for the squeamish. Not only is it, as Tennyson proclaimed, "red in tooth and claw," nature also wastes nothing. Life has a way of using every source of energy available in whatever form it arises. Indeed, Darwin showed us that some life form will take advantage of any source of energy and create its own niche out of it.

Central to Darwin's grand idea is the notion that species are competing with one another for such resources in those niches, and those who are best able to adapt to using those resources will succeed. Much of Darwin's thought is in terms of such competition for scarce resources, yet there is also much here to learn of sustainability and cooperation.

Darwin did not coin the phrase "survival of the fittest." The credit goes to Herbert Spencer in *Principles of Biology* published in 1864. It was Spencer's own term for what Darwin called natural selection. Darwin adopted the phrase for the 5th edition of *The Origin of Species*, and it has been misused and misunderstood ever since. Indeed, because it is a metaphor rather than a scientific description, most modern biologists stick to Darwin's original term natural selection.

The interpretation of natural selection meaning that only the fittest and best organisms will succeed, has a long and sad history and ultimately is not congruent with Darwin's ideas. Social Darwinism was used as a justification of all manner of racist and classist oppressions and social experiments.

In Darwin's conception, any individual organism which manages to reproduce itself has qualified as being fit because it has contributed to the survival of its species. "A more accurate characterization of evolution would be 'survival of the fit enough.'" In Darwin's time, the word "fittest" would have meant the most suitable or appropriate – one that fits well – not necessarily the one in the best physical shape.

I suspect that part of the reason we still frame Darwin's ideas of evolution mostly in the language and metaphor of competition is that he lived in the Victorian era when competition was the dominant paradigm of the day. In his book *The Great Turning*, David Korten calls this a worldview of Empire, one to which we are still in thrall. Power and domination are Empire's central concerns, yet they are human constructs.

Darwin speaks more of struggle than power. Nevertheless, he was a product of a time when Britain was expanding its Empire throughout the world. It makes sense that in his time as well as ours, the most prominent lens to view these ideas would be the lens of competition and power.

Because of this, I think, we often tend to overlook the many examples of cooperation in evolution, ways that species have adapted to niches together and “help” one another survive.

The sloth does not play host to 900 insect species out of an altruistic sense of hospitality. Surely, there are advantages to the arrangement. Indeed, the sloth moth would not survive without the “cooperation” of the sloth. The advantage to the moth is clear, the advantage to the sloth less so.

Yet the examples of cooperation among species, of their high level of interdependence, abound in Darwin’s work. In *The Origin of Species*, Darwin wrote, “I can understand how a flower and a bee might slowly become, either simultaneously or one after the other, modified and adapted in the most perfect manner to each other, by the continued preservation of individuals, presenting mutual and slight favourable deviations of structure.” (Chapter IV, Natural Selection)

While many have found in Darwin only evidence of competitive struggle, many have seen there the imperative for cooperation as well.

In *God After Darwin: A Theology of Evolution*, Catholic theologian John Haugt writes, “As contemporary evolutionary science is bringing out more clearly all the time, the story of life on Earth is less one of competition among species and more one of their cooperation and interdependence than we used to think. Generally, neo-Darwinian models have failed to give sufficient attention to the ecological richness of the life-process.” (p. 49)

In 1902, anarchist philosopher Peter Kropotkin reacted against Social Darwinism in *Mutual Aid: A Factor in Evolution*. He wrote:

In the animal world we have seen that the vast majority of species live in societies, and that they find in association the best arms for the struggle for life: understood, of course, in its wide Darwinian sense – not as a struggle for the sheer means of existence, but as a struggle against all natural conditions unfavourable to the species. The animal species, in which ... the practice of mutual aid has attained the greatest development, are invariably the most numerous, the most prosperous, and the most open to further progress. The mutual protection which is obtained in this case, the possibility of attaining old age and of accumulating experience, the higher intellectual development, and the further growth of sociable habits, secure the maintenance of the species ... and its further progressive evolution. The unsociable species, on the contrary, are doomed to decay.”

What meaning can we derive from evolution? Especially if it is, as I suggested last Sunday, our creation story – the grand narrative at the center of our faith? What can we learn about cooperating with each other and with the earth to live our lives more harmoniously, more peacefully, more fruitfully for all?

First, it is important to look as clearly as possible at what is, not what we want to be. Both competition and cooperation are at play in evolutionary forces and always will be. Yet evolution is not value-laden. We need to resist the pull to see it all as cutthroat competition, or to see it all as daisies and butterflies.

Yet if, as Kropotkin says, mutual aid and mutual protection “secure the maintenance of the species and its further progressive evolution” and that “unsociable species ... are doomed to decay,” then what direction should we be moving in?

In the *Descent of Man* Darwin wrote that our sense of community, our ethical development as humans were all evolved for our survival.

Korten writes, “Mutually empowering processes are the foundation of life’s struggle to create and maintain new potential against the constant pull of entropy. The cooperative imperative of this struggle explains why life exists only in relationship

to other life, that is, in community. The organizing principle of life is partnership, not domination. Indeed, partnership is one of life's imperatives." (p. 275)

Even if our capacity for cooperation, compassion and ethical behavior, our capacity for creating community are "only evolutionary adaptations, in those very qualities lie our future hope. In those qualities lies the possibility for redemption.

I hear voices from many quarters of society who are saying that we are on the brink of a new era, a new understanding of who we are and how we should be in the world. Korten calls this the Great Turning from Empire to Earth Community. Eckard Tolle calls it A New Earth.

A century ago, Kropotkin wrote, "In the practice of mutual aid, which we can retrace to the earliest beginnings of evolution, we thus find the positive and undoubted origin of our ethical conceptions; and we can affirm that in the ethical progress of man, mutual support not mutual struggle -- has had the leading part. In its wide extension, we also see the best guarantee of a still loftier evolution of our race."

Perhaps this is wishful thinking, but as we enter a time of financial and ecological crisis, it does seem that we have come to the brink of do-or-die choices. Perhaps we actually have the chance to become more aware of our place in this creation story. Perhaps we actually have a chance to do things differently and survive.

We have the capacity for cooperation, compassion, mutual aid. In it lies our very survival as a species. The way we are currently living is unsustainable. While I am confident that the earth will go on, I am far less sanguine that our species will survive.

As Darwin's idea helped Kropotkin understand a century ago, "man is appealed to be guided in his acts, not merely by love, which is always person, or at the best tribal, but by the perception of his oneness with each human being." And, I would add in his one-ness with all of creation.

The sloth moth may not be aware as we are that it needs the sloth to survive. Perhaps the sloth would founder as a species if something happened to the moth. We are not always clear about the mechanisms of cooperation at work in the world, but we are aware enough to know that such mechanisms exist.

Some have used Darwinism as a justification for competition and power in the world. Evolution need not take away the spiritual connections among us. I need not render our lives meaningless, even in the broad sweep of evolutionary history. Indeed it has lessons for evermore.

Yet let us now also take in the lessons of cooperation.

We are profoundly connected to each other, to all living creatures, and to the earth. We need one another.