

Collective Intelligence and Human Culture

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Examples of selfless behavior abound in nature. Cells within an organization sacrifice themselves to prevent spread of infections, worker bees in hives sacrifice their right to reproduce, many female mammals will suckle one another's offspring. Human cooperation and collaboration cover vast areas of activity and behavior, often placing their own reproductive success on the line for the benefit of another individual.

Since the publication of Darwin's *Origin of Species*, biologists have struggled to reconcile evolution's "selfishness" with the clear evidence of cooperation in nature. The dominant view of evolution followed Tennyson's description of nature as "red in tooth and claw." Charles Darwin proposed evolution by natural selection in which individuals with desirable traits reproduce more than their peers and contribute more to the next generation. He called this competition the "struggle for life most severe." Evolution was commonly called "survival of the fittest." It appeared logical that one should not help a rival and should even cheat to win. Winning the game would be all that counts.

Any observation of the many species of animals reveals a social nature. Indeed, it is unusual to see many animals apart from their group unless they are lost, injured, or ill. We have many English words to describe the grouping of animals; a covey of quail, a pod of whales, a herd of sheep, a pride of lions, a pack of wolves, an

exaltation of larks. It is a fundamental part of animal nature to be connected, to live in relationship. Researchers are continuously finding more evidence of social networks in what would have been considered unlikely species. Sharks have a reputation for being ruthless solitary predators, but a new study published in *Animal Behavior*¹ documents how one population of blacktip reef sharks is actually organized into four communities and two sub-communities. The research shows for the first time that adults of a reef-associated shark species form stable, long-term social bonds. Another study of timber rattlesnakes, long thought to be solitary creatures, has suggested that they may live a more complex social life. For instance, rattlesnakes in captivity preferentially associate with relatives and use the sense of their kin to guide them on where to forage and dwell.² It seems likely that we shall find more instances of kinship among other species as research continues.

Over the past three decades researchers have developed a growing body of theory and evidence that cooperation has been a powerful force in evolution. Martin A. Nowak in an article entitled, "Why We Help" in *Scientific American* writes, "my work indicates that instead of opposing competition, cooperation has operated alongside it from the get-go to shape the evolution of life on earth, from the first cells to Homo sapiens. Life is therefore not just a struggle for survival--it is also, one might say, a snuggle for survival. And in no case has the evolutionary influence of cooperation been more profoundly felt than in humans."³

The common understanding among laypeople is that genes are responsible for evolution, for specific biological conditions, and for behaviors. Some individual

genes do control physical conditions, such as the gene for eye color. However, it is the genome that directs evolution, not individual genes. The genome is the entirety of an organism's hereditary information encoded in DNA. Genomes are more than the sum of the genes and inherited traits. Evolution occurs as the genetic pressure in the genome interacts with environmental influences. The process of evolutionary change is slow and occurs over long periods of time. It is probable that this explains the extinction of many species as they were faced with rapidly changing environmental factors, such as ice ages. Human beings, with their highly evolved brains, faced their own environmental challenges and adapted to them.

E. O. Wilson in his book "*The Social Conquest of Earth*" traces the rise of Homo sapiens from its infancy to its most creative achievements. He says that modern human beings are "eusocial," a biological term meaning that group memberships contain multiple generations and perform altruistic acts as part of their division of labor. The most basic unit is the nuclear family with infants, siblings, parents, and grandparents living in close proximity and sharing the work of the family.⁴ Peter Singer in *The Expanding Circle* describes this cooperation as kin altruism, the genetically based tendency to help one's relatives.⁵ Wilson describes human groups as consisting of highly flexible alliances, not just among family members but between families, genders, classes, and tribes. The bonding that occurs in these groups is based on cooperation among the individuals and groups.

Wilson proposes that our pre-human ancestors had to achieve eusociality in a different way from the instinct-driven species. This need led to an evolutionary result in which the human brain was changed by pressure from the environment. He writes,

To play the game the human way, it was necessary for the evolving populations to acquire an ever higher degree of intelligence. They had to feel empathy for others, to measure the motions of friend and enemy alike, to judge the intentions of all of them, to plan a strategy for personal social interactions. As a result, the human brain became simultaneously highly intelligent, and intensely social. It had to build mental scenarios of personal relationships rapidly, both short-term and long-term. Its memories had to travel far into the past to summon old scenarios and far into the future to imagine the consequences of every relationship. Ruling on the alternative plans of action were the amygdala and other emotion-controlling centers of the brain and autonomic nervous system.⁶

Merlin Donald develops a similar idea to explain the human mind. He writes,

This book proposes that the human mind is unlike any other on this planet, not because of its biology, which is not qualitatively unique, but because of its ability to generate and assimilate culture. The human mind is thus a "hybrid" product of biology and culture. It is important to realize that I am referring to the mind itself, not merely particular experiences. Human mind cannot come into existence on its own. It is wedded to a collective process, and the very sources of its experiences are filtered through culture. The generation of culture is thus a key question in human evolution.⁷

The word "culture" as used by Wilson and Donald has a restricted meaning.

In common usage, culture refers to a set of shared habits, languages, and customs common to a population of people. It is these things. However, on a deeper level, any given culture is a gigantic cognitive web. This web defines and constrains both individual and group memory, knowledge and thoughts. Our genetic and cultural evolution together set the rules for how we perceive the world, how we symbolically represent the world, and the responses that are easiest and most rewarding to us as we interact with the world.

According to Donald, individual human minds did not evolve apart from the group. He writes,

we have evolved into "hybrid" minds, quite unlike any others, and the reason for our uniqueness does not lie in our brains, which are unexceptional in their basic design. It lies in the fact that we have evolved such a deep dependency on our collective storage systems, which hold the key to self-assembly. The ultimate irony of human existence is that we are supreme individualists, whose individualism depends almost entirely on culture for its realization. It came at the price of giving up the isolation, or collective solipsism, of all other species and entering into a collectivity of mind.⁸

Our consciousness, our self-awareness, our sense of self, our sense of other selves, our sense of the world, and our place in it are all mediated by the cultural constructs and constraints we inhabit. The poet John Donne recognized this when he wrote, "No man is an island, Entire of itself. Each is a piece of the continent, a part of the main."

E.O. Wilson adds, "Human beings are enmeshed in social networks. Like the proverbial fish in the sea, we find it difficult to conceive of any place different from this mental environment we have evolved. From infancy we are predisposed to read the intention of others, and quick to cooperate if there is even a trace of shared interest."⁹ Wilson attributes our success as a species to our social nature, saying, "Humans, it appears, are successful not because of an elevated general intelligence that addresses all challenges but because they are born to be specialists in social skills. By cooperating through the communication and the reading of intention, groups accomplish far more than the effort of any one solitary person."¹⁰ Wilson notes that the primary and crucial difference between human cognition and that of other animal species is our ability to collaborate to achieve shared goals and

intentions. Our need to collaborate is an imperative for our species. Wilson writes, "the human specialty is intentionality, fashioned from an extremely large working memory. We have become the experts at mind reading, and the world champions at inventing culture. We not only interact intensely with one another, as do other animals with advanced social organizations, but to a unique degree we have added the urge to collaborate."¹¹

We who live in Western civilization, especially in the United States of America, have a strong tradition of individualism. We speak admiringly of the "self-made man," and at times seem to emulate a cult of the individual. However, we did not make ourselves, and even the mind which thinks such thoughts originates and exists in a collective. Recognition of and integration of that concept into our individual and collective psyches will have a profound influence on the human condition.

¹ Mourier, J., Vercelloni, J., Planes, S. 2012. Evidence of social communities in a spatially structured network of a free-ranging shark species. *Animal Behavior*, 83, 389-401

² Clark, R., Brown, W., Stechert, R., Greene, H. 2013. Cryptic sociality in rattlesnakes detected by kinship analysis. *Biology Letters*, 2012 8 4 523-525doi/rsbl. 2011.1217

³ Nowak, M.A. 2012. Why We Help. *Scientific American*. 307. 34-39

⁴ Wilson, E.O. 2012. *The Social Conquest of Earth*. New York: W.W. Norton & Company, Inc. p.16

⁵ Singer, P. 1981. *The Expanding Circle: Ethics, Evolution, and Moral Progress*. Princeton: Princeton University Press. p. 14

⁶ Wilson, E.O. *op. cit.* p.17

⁷ Donald, M. 2001. *A Mind So Rare: The Evolution of Human Consciousness*. New York: W.W. Norton & Company, Inc. p. xiii

⁸ Donald, *ibid.* p. 12

⁹ Wilson, *op. cit.* p. 227

¹⁰ Wilson, *ibid* p. 227

¹¹ Wilson, *ibid* p. 226