

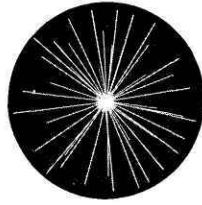
BOOKS OF THE CENTURY

Carl Sagan: **COSMOS** (1980)

Carl Sagan (1934-1996) was Director of the Laboratory for Planetary Studies, physicist and world-famous author. His best-known book, **COSMOS** about the universe we live in also was the 20th century's best-selling science book in the English language. **COSMOS** summarized the whole history and the future perspectives of mankind. James Prescott is the only living scientist whose work is presented in the final Thirteenth Chapter: "Who Speaks for Earth?" (pp. 316-345).

The neuropsychologist James W. Prescott has performed a startling cross-cultural statistical analysis of 400 preindustrial societies and found that lavish physical affection on infants tend to be disinclined to violence...Infants hunger for physical affection; adolescents are strongly driven to sexual activity. The percent likelihood of a society becoming physically violent if physically affectionate toward its infants and tolerant of premarital sexual behavior is **2 percent..** If Prescott is right, an age of nuclear weapons and effective contraceptives, **child abuse and severe sexual repression are crimes against humanity** (pp. 330-332).

Note: Subsequent to original publication of this material in *The Futurist* in April 1975, cultural anthropologists informed Prescott of errors in some of the original codings in the reference work on which the comparison was based. When these errors were corrected, no exceptions remained. The Pleasure/Violence Reciprocity Theory, applied to the cultures listed in that reference work, has a predictive validity of 100%. For details see the note to Table 3 here: http://www.violence.de/prescott/bulletin/article.html#TABLE_3



Chapter XIII

WHO SPEAKS FOR EARTH?

To what purpose should I trouble myself in searching out the secrets of the stars, having death or slavery continually before my eyes?

—A question put to Pythagoras by Anaximenes (c. 600 B.C.), according to Montaigne

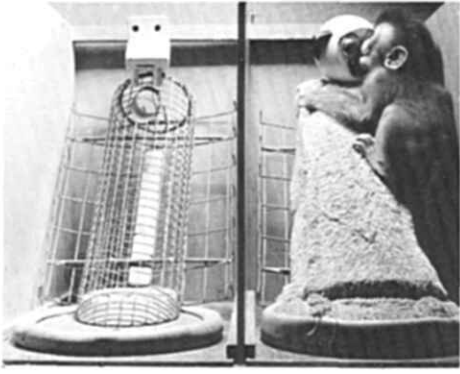
How vast those Orbs must be, and how inconsiderable this Earth, the Theatre upon which all our mighty Designs, all our Navigations, and all our Wars are transacted, is when compared to them. A very fit consideration, and matter of Reflection, for those Kings and Princes who sacrifice the Lives of so many People, only to flatter their Ambition in being Masters of some pitiful corner of this small Spot.

—Christiaan Huygens, *New Conjectures Concerning the Planetary Worlds, Their Inhabitants and Productions*, c. 1690

“To the entire world,” added our Father the Sun, “I give my light and my radiance; I give men warmth when they are cold; I cause their fields to fructify and their cattle to multiply; each day that passes I go around the world to secure a better knowledge of men’s needs and to satisfy those needs. *Follow my example.*”

—An Inca myth recorded in “The Royal Commentaries” of Garcilaso de la Vega, 1556

We look back through countless millions of years and see the great will to live struggling out of the intertidal slime, struggling from shape to shape and from power to power, crawling and then walking confidently upon the land, struggling generation after generation to master the air, creeping down into the darkness of the deep; we see it turn upon itself in rage and hunger and reshape itself anew, we watch it draw nearer and more akin to us, expanding, elaborating itself, pursuing its relentless inconceivable purpose, until at



Surrogate monkey mothers. Given a choice of two surrogate mothers—a wire structure equipped with a milk bottle, or the same structure covered with cloth and with a milk bottle—infant monkeys unhesitatingly choose the latter. Humans and other primates have genetically determined needs for social interaction and for physical affection and warmth. Courtesy, Harry F. Harlow, University of Wisconsin Primate Laboratory.

About two-thirds of the mass of the human brain is in the cerebral cortex, devoted to intuition and reason. Humans have evolved gregariously. We delight in each other's company; we care for one another. We cooperate. Altruism is built into us. We have brilliantly deciphered some of the patterns of Nature. We have sufficient motivation to work together and the ability to figure out how to do it. If we are willing to contemplate nuclear war and the wholesale destruction of our emerging global society, should we not also be willing to contemplate a wholesale restructuring of our societies? From an extraterrestrial perspective, our global civilization is clearly on the edge of failure in the most important task it faces: to preserve the lives and well-being of the citizens of the planet. Should we not then be willing to explore vigorously, in every nation, major changes in the traditional ways of doing things, a fundamental redesign of economic, political, social and religious institutions?

Faced with so disquieting an alternative, we are always tempted to minimize the seriousness of the problem, to argue that those who worry about doomsdays are alarmists; to hold that fundamental changes in our institutions are impractical or contrary to "human nature," as if nuclear war were practical, or as if there were only one human nature. Full-scale nuclear war has never happened. Somehow this is taken to imply that it never will. But we can experience it only once. By then it will be too late to reformulate the statistics.

The United States is one of the few governments that actually supports an agency devoted to reversing the arms race. But the comparative budgets of the Department of Defense (153 billion dollars per year in 1980) and of the Arms Control and Disarmament Agency (0.018 billion dollars per year) remind us of the relative importance we have assigned to the two activities. Would not a rational society spend more on understanding and preventing, than on preparing for, the next war? It is possible to study the causes of war. At present our understanding is meager—probably because disarmament budgets have, since the time of Sargon of Akkad, been somewhere between ineffective and nonexistent. Microbiologists and physicians study diseases mainly to cure people. Rarely are they rooting for the pathogen. Let us study war as if it were, as Einstein aptly called it, an illness of childhood. We have reached the point where proliferation of nuclear arms and resistance to nuclear disarmament threaten every person on the planet. There are no more special interests or special cases. Our survival depends on committing our intelligence and resources on a massive scale to take charge of our own destiny, to guarantee that Richardson's curve does not veer to the right.

We, the nuclear hostages—all the peoples of the Earth—must educate ourselves about conventional and nuclear warfare. Then we must educate our governments. We must learn the science

and technology that provide the only conceivable tools for our survival. We must be willing to challenge courageously the conventional social, political, economic and religious wisdom. We must make every effort to understand that our fellow humans, all over the world, *are* human. Of course, such steps are difficult. But as Einstein many times replied when his suggestions were rejected as impractical or as inconsistent with “human nature”: What is the alternative?

Mammals characteristically nuzzle, fondle, hug, caress, pet, groom and love their young, behavior essentially unknown among the reptiles. If it is really true that the R-complex and limbic systems live in an uneasy truce within our skulls and still partake of their ancient predilections, we might expect affectionate parental indulgence to encourage our mammalian natures, and the absence of physical affection to prod reptilian behavior. There is some evidence that this is the case. In laboratory experiments, Harry and Margaret Harlow found that monkeys raised in cages and physically isolated—even though they could see, hear and smell their simian fellows—developed a range of morose, withdrawn, self-destructive and otherwise abnormal characteristics. In humans the same is observed for children raised without physical affection—usually in institutions—where they are clearly in great pain.

The neuropsychologist James W. Prescott has performed a startling cross-cultural statistical analysis of 400 preindustrial societies and found that cultures that lavish physical affection on infants tend to be disinclined to violence. Even societies without notable fondling of infants develop nonviolent adults, provided sexual activity in adolescents is not repressed. Prescott believes that cultures with a predisposition for violence are composed of individuals who have been deprived—during at least one of two critical stages in life, infancy and adolescence—of the pleasures of the body. Where physical affection is encouraged, theft, organized religion and invidious displays of wealth are inconspicuous; where infants are physically punished, there tends to be slavery, frequent killing, torturing and mutilation of enemies, a devotion to the inferiority of women, and a belief in one or more supernatural beings who intervene in daily life.

We do not understand human behavior well enough to be sure of the mechanisms underlying these relationships, although we can conjecture. But the correlations are significant. Prescott writes: “The percent likelihood of a society becoming physically violent if it is physically affectionate toward its infants *and* tolerant of premarital sexual behavior is 2 percent. The probability of this relationship occurring by chance is 125,000 to one. I am not aware of any other developmental variable that has such a high degree of predictive validity.” Infants hunger for physical affection; adolescents are strongly driven to sexual activity. If young-

sters had their way, societies might develop in which adults have little tolerance for aggression, territoriality, ritual and social hierarchy (although in the course of growing up the children might well experience these reptilian behaviors). If Prescott is right, in an age of nuclear weapons and effective contraceptives, child abuse and severe sexual repression are crimes against humanity. More work on this provocative thesis is clearly needed. Meanwhile, we can each make a personal and noncontroversial contribution to the future of the world by hugging our infants tenderly.

If the inclinations toward slavery and racism, misogyny and violence are connected—as individual character and human history, as well as cross-cultural studies, suggest—then there is room for some optimism. We are surrounded by recent fundamental changes in society. In the last two centuries, abject slavery, with us for thousands of years or more, has been almost eliminated in a stirring planet-wide revolution. Women, patronized for millennia, traditionally denied real political and economic power, are gradually becoming, even in the most backward societies, equal partners with men. For the first time in modern history, major wars of aggression were stopped partly because of the revulsion felt by the citizens of the aggressor nations. The old exhortations to nationalist fervor and jingoist pride have begun to lose their appeal. Perhaps because of rising standards of living, children are being treated better worldwide. In only a few decades, sweeping global changes have begun to move in precisely the directions needed for human survival. A new consciousness is developing which recognizes that we are one species.

“Superstition [is] cowardice in the face of the Divine,” wrote Theophrastus, who lived during the founding of the Library of Alexandria. We inhabit a universe where atoms are made in the centers of stars; where each second a thousand suns are born; where life is sparked by sunlight and lightning in the airs and waters of youthful planets; where the raw material for biological evolution is sometimes made by the explosion of a star halfway across the Milky Way; where a thing as beautiful as a galaxy is formed a hundred billion times—a Cosmos of quasars and quarks, snowflakes and fireflies, where there may be black holes and other universes and extraterrestrial civilizations whose radio messages are at this moment reaching the Earth. How pallid by comparison are the pretensions of superstition and pseudoscience; how important it is for us to pursue and understand science, that characteristically human endeavor.

Every aspect of Nature reveals a deep mystery and touches our sense of wonder and awe. Theophrastus was right. Those afraid of the universe as it really is, those who pretend to nonexistent knowledge and envision a Cosmos centered on human beings will prefer the fleeting comforts of superstition. They avoid