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The Nature of Extraterrestrial Communication

By: Robert E. Kuttner

It is certain that many of the basic premises governing our understanding of the nature of communication will have to be modified if effective means of detecting extraterrestrial intelligence are to be developed. Only the first steps have been taken and these have been necessarily primitive. The immense distances separating stars and the many years a signal must travel have made it clear that ordinary give-and-take communication such as occurs between individuals is impossible. Life forms that live less than a century would regard the exchange of a single sentence in that interval as something different from personal or even non-personal conversation. It is evident that the content of any communication must be pertinent to the purposes of entire civilizations.



Our logic dictates that messages must be informative and convey useful facts. The initial goal would be to announce to postulated civilizations the fact of our existence. This purpose would not be very valid for older alien cultures long aware of each other. Once a critical technological barrier has been passed that includes the means of engaging in interstellar communication, it would be obvious that this development permits its masters to discover whatever they must know to control their space environment.

The inherent tendency to optimize technology almost automatically leads to convergent evolution and therefore to equivalent capabilities. Among peer cultures, little profit can be expected from contact designed to promote intellectual crossfertilization. An apt analogy is that of a long-married couple who have grown so close over the years that they anticipate each others' thoughts and make verbal comments solely as routine courtesies. When a teacup breaks, it is certain the

partner has heard it. When a supernova flares, it is safe to assume neighbor civilizations have spotted it also.

These comments do not exhaust every motive that might stimulate contact but they cover most of them. Transfer of information satisfies curiosity. But curiosity is like an itch: once it is scratched it ceases to excite attention. Peer civilizations may not have compelling reasons to be interested in alien industrial arts. We do not ask the Russians how to build steel mills. Our communications serve chiefly diplomatic purposes. Convergent technologies which have reached the peak of scientific attainment have no need to copy details. The engineering departments of Ford, Toyota, and Volkswagon can still learn from their competitors but not on any major feature of automobile construction.

The self-image of humans can generate a large list of reasons why alien contact is a natural if not inevitable future event. Without such conceits, however, these reasons are reduced to their proper and therefore very human proportions. Our society needs lawyers and diplomats to regulate internal and foreign relations. To extrapolate these encumbrances on advanced civilizations is surely unwarranted if by advanced we imply the ability to coexist with nuclear technology long enough to accomplish space travel.

Likewise, the aesthetic impulse we value so much may be merely a human peculiarity and even if shared it may be insufficient to foster extraterrestrial contact. When we claim art and music to be universal we are really saying we hope it is at least global. Emotional hunger for symbolic communication is quite restricted. Asiatic music has only recently arrived at our record shops and African sculpture has scarcely penetrated our department store galleries. Until Beethoven is welcomed by the bulk of the Hindu proletariat or the Eskimo hunters in the Canadian arctic, broadcasting symphonies to the galaxy can hardly be viewed as instinctive. The "Music of the Spheres" may remain electronic static forever.

Other points require examination. Our notions as to what constitutes intelligent life have to be redefined. This continues to be a vacillating concept. Inaccuracies on the matter can pose problems on what to look for and how to attempt communication. A few generations ago Man was considered to be the pinnacle of creation, a unique entity specially formed by a supernatural act. Following the Darwinian revolution, Man was demoted to "man" by establishing a link to the animal kingdom. The very

same school of anthropology that joined man to the primate family then separated him from his cousins by virtue of his superior brain and his supposedly unique language skills. The transformation of ape into Super-Ape did not endure for long. The psychological literature of the past decade is replete with articles of apes educated to communicate by keyboards, colored geometric tokens, and the standard deaf-and-dumb sign language. Man differs from ape only in degree according to the current consensus. Can a species which has redefined itself three times in less than two centuries be trusted to anticipate the form of alien life and the mode of its communication?

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The answer to this question appears to be an unflattering negative. Writers invoking the "Grand Analogy" concept accept the fact of human life on earth as validating the existence of other life on distant worlds. The framing of this concept is flawed from the very beginning in a highly revealing manner. There are two and not one "Grand Analogies" of intelligent life. The insect kingdom has provided excellent samples of urban civilizations that escape the attention of those versatile authors who are most anxious to depict favorable odds for the Cosmic Search. The difficulty resides in defining intelligence. Ants build cities, keep aphid herds, garden fungus, store food, fight wars, take slaves, have nurse, soldier, and worker castes, and communicate by odor. They do this by instinct, a kind of frozen intelligence. Ants have existed for scores of millions of years. They are so successful they have no reason to "think". Having found the best way to survive, there is no premium on innovation. Is this not an endpoint of biological evolution?

Ant society resembles the postulated high civilizations possessing self-repairing and therefore stagnant-technology. **Our world is dynamic because it is imperfect.** For us, change is progressive. But when maximum efficiency is approached, the demand for creative thinking which promotes more change is vastly diminished. Change can only be counter-productive. Those who climb beyond the mountain top are going downhill. Much the same applies to interrelationships between the individuals of a million year-old culture. Centralized and computerized behavior is

almost a certainty. To our eyes this would be robot automatism as in ant colonies. Yet the value of intelligence is that it allows flexible responses in a changing world. When the environment is exactly controlled and predictable, then intelligence may be sacrificed for the advantages of electronic computer instincts. There is ample space for philosophical argument on this issue but humans carry a full cargo of prejudices. Until insects can educate us to appreciate their viewpoint, we may waste our efforts searching for Oxford and Harvard professors in the galactic wilderness.

Communicating with ants is not the only barrier. We have difficulty in our first transmission with the Arecibo radio telescope. A coded message describing the location of earth and the state of technology of its dominant mammalian species may get safely across the void to the target star cluster, but it did not cross the Atlantic ocean successfully. The message was printed in reverse by NATURE (vol. 253, Jan. 24, 1975; page 230), the most widely-circulated British scientific journal. Whether this was an editorial oversight or a printed error is not pertinent. The crucial fact is the failure to get a symbolic cosmic pictogram correctly replicated by scholars who speak a mutually comprehensible language and who share our culture. If the best laid plans of mice and men go astray, can we expect more from aliens?

Our energies might be better employed in detecting alien messages than in sending out our own. Even this task does not warrant an optimistic appraisal. What constitutes a suitable medium for communication is a decision aliens might not share with us. And we should not suppose that sophisticated extraterrestrials have a consuming desire to educate or uplift backward planets. The zeal to study protonuclear planetary cultures would be eroded after possible thousands of similar contacts. When Columbus journeyed to this hemisphere, he was indeed eager to converse with the Carib Indians. However, this model historical encounter is a poor guide. Columbus suffered from the vain belief that he reached the Asian land mass and he hoped to learn the quickest road to the rich trade centers of Sind or Cathay. Even this special case teaches that 99 percent of communication was not directed at the inhabitants. The bulk of the letters and messages were aimed at Spanish, Portuguese, Italian and other European kings, diplomats, navigators, mapmakers, missionaries, and academics. A parallel should be expected. If aliens discover earth, it is overwhelmingly more likely that their messages to other aliens would fill the ether rather than our newspaper columns.

The realization that aliens have other priorities is a step forward. The escape from dogmatic passivity improves our chances of recognizing the evidences of alien activities pointed at other receiving stations. Driftwood containing iron nails washed ashore along the arctic coast long before the first Spanish ship sailed in search of the New World. A modern philosopher could have reconstructed many facets of European civilization from a single nail. We may ask ourselves if we too are blind to precious clues strewn like debris around our telescopes. Space civilizations radiate immense energies as a by product of their technologies. Computer-linked sensors must automatically monitor such emissions as a means of regulating the flow of activity. To us, the detection of these signals would represent static, electronic debris washed ashore from the cosmic ocean, and yet this noise itself could be a message. We must grow ears before we learn to speak.



Robert E. Kuttner is Chief of the Surgical Research Laboratory of the Veterans Administration Medical Center at North Chicago and Associate Professor of Surgery Research, University Health Sciences, Chicago Medical School. He is engaged in research on the body's response to shock and stress.

Born in Queens, New York, in 1927, he received his Ph.D. degree in zoology from the University of Connecticut in 1959. Prior to coming to Chicago he had extensive research experience at a number of medical schools. Dr. Kuttner has edited a book on anthropology and he has written about one hundred scientific articles. His special interests include linguistics, evolution, and human biology-psychology as related to "extraterrestrial behavior".

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