

# Scientist, Heal Thyself

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**When the best physical scientists study the physical universe, they report it as it is, not as they wish it would be. Yet some do not observe that standard when they predict the nature of an extraterrestrial civilization, or the consequences of our contact with such an alien society. Too often, we get opinions instead of systematic analyses based on the only data base we have – human history and behavior. Social scientists can make a useful contribution to this debate – but only if they observe the standards of the best physical science, reporting the behavior of human beings as it is.**

## I. The Physical Science Perspective

**S**CIENCE is a way of looking at the universe in which we live, of trying to understand what happens and why. To be credible, all sciences, whether physical, biological, or social, must rest on data observed in nature, including human societies.

Physical scientists have made many fine contributions to our understanding of the universe. Yet, when they discuss what extraterrestrial societies will be like and how they will interact with us, many have deviated from the objective observational standard. We often get opinions rather than analyses based on data.

Admittedly, we have a problem in predicting the behavior of intelligent extraterrestrials: we have no data about their existence or their natures. Until we do, we have only two methods of analysis: probability based on our own example, and analogy with ourselves.

Many scientists have applied probability to the likelihood of our detecting evidence of extraterrestrial intelligence, in effect inserting their preferred numbers into the Drake Equation. We may disagree about what those numbers should be, but the method at least attempts to base conclusions on those facts we can observe. (We now have real comparative data on two elements of the Drake equation – stars and planets.)

Unfortunately, some physical scientists abandon probability when they discuss the nature of alien civilizations and the way such civilizations will behave in a contact situation. They exclude or ignore much of the evidence from the only data base we have: the human past. They are very selective in choosing analogies from the human example. Too often, they give us preferred outcomes, or warnings based on fears about our own behavior.

## II. Utopian Predictions

There is a long history of authors using writings about extraterrestrial civilizations as a device for social criticism. Over the centuries, many authors have envisioned alien utopias, implicitly intended to be models for our own future.

Carl Sagan and others revived the utopian vision in the 1970s. Sagan imagined alien societies “in excellent harmony with their environments, their biology, and the vagaries of their politics, so that they enjoy extraordinarily long lifetimes.” The authors of the *Project Cyclops* report hoped that we would discover social forms and structures most apt to lead to self-preservation, and new esthetic forms and endeavors that lead to a richer life. SETI pioneer Frank Drake foresaw that, by communicating with extraterrestrials, we may find general rules of civilization that we can apply to our own.<sup>2</sup> We have no factual evidence that supports such speculations.

### III. Assumptions

Some contact optimists assume that more advanced civilizations will be generous in sharing their knowledge. According to one book, all the important questions in science, engineering, and social science could be answered for us.<sup>3</sup> Where are the data that support that conclusion? Where is the example from human history?

There also has been a tendency to assume that more advanced civilizations will be peaceful and unthreatening. Astronomer Paul Horowitz asserted that SETI is a screening mechanism: "Civilizations that don't acquire the wisdom to control war will destroy themselves long before they can take to space, so the ones we are trying to contact will be, by definition, no longer menacing."<sup>4</sup> Where is the scientific evidence that supports this statement?

What events in our past are the most credible analogies? Some SETI optimists have ignored or willfully excluded those examples that do not support their predictions. Other observers have been sharply critical of this practice. David Brin described the classic SETI scenario as a wishful fantasy that does not have a single precedent in the history of human to human contact.<sup>5</sup>

The SETI community has been extremely selective in choosing examples of past contacts between human societies, generally avoiding those that involved direct encounters. Early SETI advocates used the analogy of civilizations separated in time, citing the example of Greek knowledge rediscovered by Europe in the 13<sup>th</sup> century. Yet the hundreds of episodes of direct human-to-human contact offer the largest data base for analyzing the possible consequences of contact between Humankind and an extraterrestrial society.

SETI optimists often dismiss direct contact as impossible, or assume that extraterrestrials with the means for interstellar travel will be benign. Hundreds of scientific and engineering papers have shown that interstellar flight by machines would be possible for a technological civilization only slightly more advanced than our own.

What about the assumption of benign behavior? Astronomer Robert Jastrow contended that physical science already has provided some elements of a natural religion, with a cosmology (the scientific history of the universe's origin) and a moral theory (adversity and struggle lie at the root of evolutionary progress).<sup>6</sup> I invite you to consider the implications that moral theory would have in a direct encounter between our civilization and a more powerful one.

Drawing on the assumption that physical and chemical laws are valid throughout the universe, astronomer John MacVey thought it reasonable to expect that biological laws will be too. In that light, aliens seem more likely to be predatory than benevolent.<sup>7</sup> Several people involved in this debate have commented that alien civilizations like ours, or like the only forms of life we know, are far more likely to be Darwinian than angelic.

What about the assumption that advanced extraterrestrials will be altruistic? The human example is not very reassuring. We get different results if we treat universal altruism as a testable hypothesis rather than assuming such altruism as an axiom. SETI Institute astronomer Seth Shostak acknowledged that aliens will have little biological reason to be altruistic, only intellectual ones.<sup>8</sup>

I would add that few of us show altruism toward Humankind's nearest relatives, the chimpanzees. In our own history, separate codes have governed behavior toward those who are like us and those who are not.

### IV. Escaping the Human Analogy

No objective observer could deny that human history is replete with tragic and gruesome events. Ah, some say, but that was the past; things are different now.

Recent history does not support that conclusion. Many thought we had put international tensions behind us in 1991, when the Soviet empire collapsed. Americans, congratulating themselves on winning the Cold War, lived in a fool's paradise for ten years, until the terrorist attacks of 2001 reminded us that we were not exempt from history.

Now the Russians seem determined to re-establish their influence over those countries in their “near abroad” that once were under Moscow’s thumb. The West will have to respond. History always catches up with us, sooner or later.

“Western culture has promoted certain illusions about human nature,” observed New York Times columnist William Pfaff, “a naïve version of the faith in inevitable human progress that arose during the French enlightenment....People in the West want to continue believing in these illusions, despite all that history has done to disprove them.”<sup>9</sup> We can not exempt our society and our time from history.

So, how do millenarians get around this problem? One approach is to assume that we humans are uniquely evil, that other civilizations will be more peaceful and altruistic than we are. We have not one shred of scientific evidence to support that conclusion. It is a preference, not a proven fact. It is not science.

It is far safer to apply Carl Sagan’s assumption of mediocrity, to assume that we are neither the best nor the worst. Assuming ourselves to be average has the highest probability of being right, said astronomer Sebastian von Hoerner.<sup>10</sup> Yet SETI scientists have tended to shy away from this analogy when it is applied to behavior, presumably because of the historical record of how more powerful human societies deal with those less powerful.

Others claim that warfare and large-scale violence are fading from human history. Yet the factual record tells us that the twentieth century was the bloodiest ever. Look at examples from SETI’s most utopian years, from the 1970s to the 1990s.

The communist Khmer Rouge held power in Cambodia from 1974 to 1979. During that period, about 1.7 million people died from starvation, disease, overwork and execution as a result of that group’s attempts to build a classless society. In some cases, children were forced to execute their own parents. Please note that this was not a war driven by racial hatred or rival territorial claims. This slaughter was driven by an ideology.

Well before the current conflict in Darfur, an estimated two million people died in Sudan because of the civil war between the Moslem north and the Christian and animist south. One million people died as a result of the civil war in Angola that finally ended in 2002.

Assumptions about alien behavior have not passed the observational test. We have no evidence of what motivates intelligent extraterrestrials, or of how they would behave in a contact situation. If we insist on assigning our best qualities to them, we also must allow them to have our worst.

## **V. Active SETI**

This issue has been sharpened by the recent debate about calling attention to ourselves by sending out unusually powerful signals. Once again, we are hearing arguments that alien civilizations, no matter how far advanced, can not cross the gulfs between the stars. Or, if they can, they will be altruistically benign. Dissenting opinions, such as mine, are exiled or ridiculed by the SETI establishment.

This is not science. It is a willful dismissal of what science has told us about interstellar travel by machines, and about human behavior.

Those who claim that there is no risk in trying to provoke a response from possible extraterrestrial civilizations by sending powerful signals are, in David Brin’s words, isolated, insular, self-referential and self-reinforcing. They badly need input from fields like history, biology, philosophy, and law.<sup>11</sup>

In trying to sell the rest of us on a rosy view of contact, some physical scientists have known sin – the sin of being unscientific. The burden of proof lies on those who think that alien behavior will be nobler than ours.

## **VI. Social Scientists**

Can social scientists improve this situation? They can, but only if they take the initiative and prove that their work is credibly supported by data.

Let's face it. Physical scientists often are skeptical about social science findings, seeing them as insufficiently supported by proven facts. Former NASA SETI chief John Billingham said in 1999 that people involved in the societal aspects of SETI are 25 years behind SETI physical scientists in achieving respectability.<sup>12</sup>

Too often, papers written by social scientists -- including some of my own -- have seemed more like advocacy essays than reports based on statistical data. The debates we engage in can be intellectually stimulating. Yet debate does not prove anything -- only experiments do.

Sometimes we see the heavy hand of political correctness. Here is a test. Are we prepared to accept all forms of social organization and all forms of behavior as equally worthy of respect? Does that include cultures that practice slavery? Does that include cultures that treat females as inferior? How would we react if we learned that some aspects of an alien society were deeply repugnant?

Ah, some say, more scientifically and technologically advanced civilizations will move beyond such horrors. Where is the scientific evidence in support of that assumption?

Less than seventy years ago, one of our planet's most scientifically and technologically advanced nations -- Germany -- conducted a campaign of ethnic extermination that killed six million people. During the same era, Soviet collectivization caused as many as 20 million deaths. That example later was imitated by China.

## **VI. Looking Forward**

Here is the good news. Contact could offer fabulous opportunities for social scientists.

One of the reasons that the social sciences lack the maturity of the physical sciences, anthropologist Ben Finney reminded us, is that so far we have had only one opportunity to study the development of consciousness, intelligence, and culture. Perhaps there are deep laws of individual and social behavior that hold true for all species, all times, all cultures.<sup>13</sup>

Communicating with other worlds could help to make history an experimental science. We might learn the stories of civilizations stretching far back into the galactic past, becoming aware of alternative cultures, arts, social and economic systems, and forms of political organization.<sup>14</sup>

Many social science research questions related to contact already have been identified.<sup>15</sup> So far, there has been no systematic effort to commission or fund the research needed to answer them.

To make the best use of social science, others must recognize its limitations. Although social science may produce many useful findings, it may not yield laws comparable to those in physical science.

The best thing that can happen is that social science be required to meet tougher standards of objectivity, imposed by funding organizations. The U.S. Department of Defense plans to spend about 20 million dollars on social science aimed at understanding real and potential threats to national security. Psychologist Baruch Fischhoff of Carnegie Mellon University commented that social scientists can sharpen their thinking by working with officials in defense and other "real life" fields. "They will press you on the quality of your data," he said.<sup>16</sup> As they should.

## **VII. Conclusion**

Here is my plea to social scientists. Volunteer to get involved in serious discussions about the implications of contact. Don't wait to be asked.

Please resist the temptation to impose a political or ideological view on the interpretation of data. Don't confuse advocacy with social science. Report human behavior as it is, not as we would like it to be or as we fear it might be.

In short, be scientists. As Jack Cohen and Ian Stewart said, "Science is the best defense against believing what we want to."<sup>17</sup>

## References

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- <sup>5</sup> David Brin, "A Contrarian Perspective on Altruism: The Dangers of First Contact," at <http://www.setileague.org/iaaseti/brin.pdf>.
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- <sup>15</sup> Albert A. Harrison, et. al., "The Role of the Social Sciences," in Tough, editor, 71-86; John Billingham, "Scientific and Cultural Aspects of SETI," paper prepared as background material for a meeting of the International Academy of Astronautics SETI Committee in 1994 (the meeting was canceled).
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- <sup>17</sup> Jack Cohen and Ian Stewart, *What Does a Martian Look Like?*, Hoboken, New Jersey, Wiley, 2002, 209.