# Intelligent Life On Earth, The Pros And Cons

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## Abstract

Is there intelligent life on other planets? This question usually supposes that there is intelligent life on earth, and that this intelligent life is us. Is this so?

We think of intelligence in a life form as a high degree of consciousness of its environment and a great deal of ability to make changes in that environment on the basis of its consciousness. No one could deny that human beings have made, and continue to make, sweeping changes in the environment of earth. The development of powerful tools to master the environment continues apace through science and technology. Science, technology, and especially information technology have contributed to the amazing growth of consciousness of the past 500 years or so. Yet are we conscious enough? The non-intelligent aspects of human control of the environment are those which threaten the existence of the ecosystem.

After discussing a number of these threats, I attempt to state what is and is not intelligent in dealing with these problems, and the ways in which technology, and especially information technology, can move in an intelligent direction. Information technology, above all, has the potential to contribute to the increase in consciousness. Yet it can just as easily enable questionable applications of technology which further our extinction as a species. I want to examine, from the point of view of an intelligent species as defined above, what our responsibilities as managers of technology are.

**Keywords:** Intelligence technology "information technology" ecosystem

## Introduction

Is there intelligent life on other planets? This question usually supposes that there is intelligent life on earth, and that this intelligent life is us. Apart from a few comic artists (Lily Tomlin and Douglas Adams come to mind [Adams]), there has not been much discussion of the prior question: Is there intelligent life on earth, and, if so, is it us?

### *The Paper*

We think of intelligence in a life form as a high degree of consciousness of its environment and a great deal of ability to make changes in that environment on the basis of its consciousness. No one could deny that human beings have made, and continue to make, sweeping changes in the environment of earth. The development of powerful tools to master the environment continues apace through science and technology. Yet when we step back and look

at the net results of our changes in the environment, there are some disturbing aspects of our control.

We are indebted to science for the amazing growth in consciousness of our position in the planet and the universe. It is astonishing to remember that only 400 years ago, in the most advanced of European countries, people such as Galileo were under attack for threatening a more limited traditional consciousness. Until very recently, most human beings were conscious of the universe as a three-storied place, with the living in the middle, the dead in the underground, and the gods and spirits in the heavens. In fact, these views continue to be advocated by many religions and believed by many people. Yet we know from science that they can be at best figuratively true. It is a measure of the intelligence of most believers in Heaven and Hell and the afterlife that suicide is rarely committed to gain entry to a place that does not exist in physical reality. Yet the old beliefs are very natural, and persist in some form even when consciousness has advanced beyond them.

Science has in the past 150 years or so also made astonishing contributions to our understanding of ourselves as living beings among living beings. The twin discoveries of evolution and genetics have barely been assimilated even by science itself. Individual living beings are the expression of complex genetic codes honed over time by interaction with the rest of the environment. Even more recent work in ecology has demonstrated the complexity of that interaction. Yet human leaders often don't consider the possibility that human economic activity has to be constrained by the ecosystem.

For the disturbing aspects of human control of the environment are those which threaten the existence of the ecosystem. As human systems increase in size, their scope becomes global. The alarming feature of these systems is that there are no automatic features of the ecosystem which can bring things back into balance. As Miriam McGillis put it, we have taken the planet off automatic pilot. We are probably the first species on this planet with the capability of destroying the entire ecosystem, not just in one but a multitude of ways:

- Einstein and Teilhard de Chardin were impressed with the fact that nuclear weapons gave humankind the capability of extinguishing all life. That we haven't used these weapons in war after their first use is a sign of our intelligence. The fact that these weapons are still around and proliferating is not.

- A "safe" synthetic compound developed in the 1940s for use in air conditioners and aerosol cans turned out to be inert except in the upper atmosphere, where it continues to destroy the ozone layer which protects us from ultraviolet radiation. There are two disturbing implications: (1) There does not seem to be any way that this result of normal chemical engineering could have been predicted. (2) All life has evolved under the protection of the ozone layer; this sudden a change has unpredictable consequences for all life forms in the ecosystem.

- The same unpredictable consequences are the result of the addition of gases which are the by-product of industrial technology--called the "greenhouse" gases because they increase the ability of the earth's atmosphere to retain heat, just like the panes of glass in a greenhouse. The most important gas is carbon dioxide, with much of it coming from the burning of fossil fuels in

internal combustion engines. The effects produced by the increased carbon dioxide are difficult to predict, but the size of the increase would normally happen over tens of thousands of years. One current predicted consequence, other than warming, is storms of increasing severity. Severe strains on plants and animals are also to be expected.

This issue, because it directly affects human economics, has aroused a lot of contrary argumentation based on the premise that human economic activity cannot possible affect the entire environment. This is probably wishful thinking. Science tells us that our atmosphere's composition is not a given; the amount of carbon actually in the atmosphere is about the same as that present in living beings. Consequently, adding the carbon locked up in fossils in large quantities is very likely to have an impact.

- Other components of the atmosphere necessary for animal life are also threatened. Oxygen, a highly reactive element, is present in our current atmosphere solely because plants are currently producing it. Almost all current life is oxygen-dependent, and has depended on a constant percentage of about 21% for hundreds of millions of years. A 25% percentage would cause all organic materials to ignite. With 15%, many forms of oxidation (such as fire) would not occur. [McKibben: 157] Thus the destruction of tropical rain forests, which produce 40% of the world's oxygen, is a serious threat to the survival of almost all life, including us. We can already see that it cannot be intelligent to treat everything on the planet not already humanized as "natural resources" to be utilized however we please for arbitrary human purposes.

- Human beings have for millenia treated other species as items to be exploited. While many of the problems above arose recently as the result of civilization and modern technology, there is evidence that humans were causing extinctions as long as 60,000 years ago. Richard Leakey produces strong evidence that megafauna extinctions in Australia and the Americas were caused in large part by human "overkill." [Leakey 1995:194] These extinctions were selective. The less frequent five previous mass extinctions were caused by environmental catastrophes, very likely asteroid collisions. Human beings are currently causing the sixth mass extinction, all on their own. As much as 50% of all species will be extinct in 100 years. [Leakey 1995:232-245]

  Discussions of the negative effects of these extinctions often revolve around the loss of these species for human purposes such as drugs. Once again, "man is the measure of all things," as if it were possible for humankind to exist without other species.

- One of the most mentioned positive factors of human control over the environment through technology, one clear demonstration of our intelligence as a species, has been our ability to conquer disease and extend the human life span. Yet again we almost always think in terms only of the aims of the individual human being, when the unit of survival is ultimately the species. Jared Diamond [Diamond 1997: 18-22] has noted that individual uncivilized New Guineans are more intelligent than the average civilized human being--civilization does not weed out dumber people.

- Similarly, it is wonderful when humans with life-threatening defects are given normal lives with the aid of technology, but, from the point of view of the species, it is insanity to let them reproduce those defects. It should be a matter of personal responsibility that known genetic

defects are not reproduced. As it is, the occurrence of diabetes is increasing rapidly because medical science can treat diabetics well enough to allow diabetics to live long enough to reproduce and produce--diabetic children.

Unlike the Nazis, I am not calling for the social elimination of "undesirables," but rather for the awareness of individuals of the consequences of their actions for the species. Because the survival of individuals is not just a matter of their short-term success in the environment, but also how they contribute to the long-term survival of the species, traits advantageous for short-term survival may be disastrous for long-terms species survival. The examples given above strongly suggest that the human propensity to manipulate the environment may very well not be compatible with long-term species survival.

- The same point applies to genetic manipulation in general. Since genetics are a separate dimension from regular life, there may be unforeseen consequences which do not play out within individual life spans. But if so, then how can "genetic engineering" be safe? We cannot predict the long-range effects of such genetic manipulation as producing a more frost-resistant strawberry. In nature, genetic changes are honed over time against the existing environment. By making changes out of context, we are asking for a disaster as extensive as the disappearance of the ozone layer. Additionally, current uses of genetic engineering show that science itself is not fully conscious of its own relation to the ecosystem. The changes are being judged only in the context of current benefit to current human aims.

***What about intelligence in all this?***

These examples point to a failure of intelligence in human beings as a species. The failure embodied in these examples has two roots:

- First, human beings acting independently in their own interests will not necessarily act in the best interest of the species;
- Second, the ecosystem of which we are a part cannot be treated as an external entity to be exploited for arbitrary human purposes.

My definition of intelligence in a species has two parts: Consciousness of its environment and the ability to make changes in the environment on the basis of that consciousness—and both of these at the species level.

Very often the intelligence of the human species is thought of only in terms of our ability to manipulate the environment, and the more manipulation the greater the intelligence. Indeed, many scientists and technologists hold what might be called a "manifest destiny" view of human intelligence—that it is our goal or even duty to change the environment as much as possible, and to spread ourselves as widely as possible. For example, Francis Crick has even suggested "seeding" terrestrial life on other planets. [Crick 117-129].

As noted, our human conflict with the ecosystem predates science and technology and even civilization itself. There is excellent evidence of mass extinctions caused even by precivilized human beings. The disappearance of mastodon-like animals in the Americas was

probably the work of precivilized humans. [Leakey 194]

What would a species which was intelligent in the sense defined in this paper do? It would act from its consciousness of the place of its species in the ecosystem. This is probably not compatible with anywhere near the amount of manipulation of the environment we consider routine for our own purposes.

Dolphins and whales may be examples of such beings. It has been pointed out that these cetaceans have brains at least as complex as ours. An individual of any species must expend enormous resources to maintain brains of great complexity--in the case of human beings, fully 40% of our energy budget is spent on our brains. If these organs were not of use to the individual, evolution would rapidly select them away. Yet dolphins and whales do not use their complex brains to manipulate the environment. The conclusion is that, although the complexity of their brains must be of great use to the cetaceans, we do not have a clue as to what these uses might be. They are definitely not using them to manipulate their environments.

Similarly with extraterrestrials. It is beginning to look as though planetary systems are quite common. We are looking for radio signals from beings with similar tendencies as ours to expand heedlessly into their environment. If my observations here are on the right track, beings interested in sending such signals may well have a very short window of existence in the life of a planet. In fact, until we gain greater insight into what we are doing as a species, thoughtless expansion of human life or terrestrial life into the cosmos may be from the point of view of everything else more like a disease spreading than progress.

Human beings are at this point very much like a disease in the ecosystem, especially if the concept of disease is correctly understood. A disease is a misunderstanding between two species. Our misunderstanding may be that we can exist completely apart from our biological basis in the ecosystem.

***What about technology?***

Technology, in many ways, simply amplifies this tendency. I want to consider technology in three stages: First, the traditional technology of agriculture and cities that enabled the rise of civilization, roughly 10,000 years old. Second, modern technology enabled by science, about 500 years old. Finally, information technology, about 50-60 years old.

First, the use of any technology enabling more than hunter-gatherer societies takes up a remarkably short portion of human existence on the planet. Using current estimates of the presence of human beings of our species for the last 250,000 years, civilization has been a possible human mode of existence for 10,000 years, no more than 4% of humanity's time on earth. Joseph Tainter argues in his book <u>The Collapse of Complex Societies</u> that so far, civilizations other than our current one have been unable to avoid collapsing under their own weight. He thinks our current civilization is different from previous ones in having modern technology to increase resources and thus at least postpone collapse. [Tainter: 216.]

One important characteristic of modern technology is its willingness to treat anything as a

resource to be reordered in the furtherance of human aims, including its own. Heidegger, in his *Essay Concerning Technology*, concludes that modern technology is an independent force in human existence. It builds a new and incompatible order on top of what was there, primarily in order to extract and store energy for later uses. [Heidegger: 14-17] Modern technology as such seems only to be in a position to worsen the disjunction between human beings and their ecosystem.

And yet, it is in part because of technology--at least technology in the service of increasing our consciousness of our place on the planet--that we can even begin to have any hope of overcoming the difficulties in our current position. For it is largely science and the technological apparatus necessary for science which is responsible for all the knowledge underpinning my argument so far. If our intelligence has failed us in leading us in the direction of destroying our own ecosystem, it has not failed us in revealing this very situation to us.

Yet neither science nor technology contain within themselves directions out of the current situation. Indeed "manifest destiny" technologists tend to argue that for any problem, there is a further technological fix. There are two real problems with this view: First, there is no good reason to believe it; and second, the fixes take us farther and farther away from any recognizably livable world. We end up existing for the sake of our technology.

The problem is that modern technology takes us in directions not previously encountered in our environment. Our changes tend to have "side effects", unpredictable and dangerous consequences. Chlorofluorocarbons and their effect on the ozone layer ought to be more than sufficient to put us on notice that we really do not know what we're doing with our technological changes. Further technological fixes to the ozone layer may very well have quite different unintended consequences on the rest of the ecosystem. There is simply no way of ruling out such a possibility.

Some authors actually embrace the possibility of leaving the current basis of life completely behind. Perhaps the most extreme version of technological "manifest destiny" is that of the roboticist Hans Moravec. Moravec suggests that it is time to leave DNA-based life behind in favor of the superior creations of the human mind. These "Mind Children" (the title of his book) will become our progeny through a process of "downloading".[Moravec:115-117]

To think that such a process is even possible requires belief in a metaphysical view of human beings which is an unofficial part of the methodology of modern science. This view is that human beings are radically different from other animals in having nonphysical minds as well as physical bodies. Unfortunately, no account of how a relation between a physical and a nonphysical thing is possible has ever made much sense. The first clear statement of the mind-body dichotomy by Descartes in 1641 states and fails to deal with the same difficulties that persist to this day. [Decartes] The author of Mind Children , as a good scientific materialist, merely makes the mind physical. We can "download" patterns of information, and if that was all there were to human consciousness and intelligence, a (very) large collection of leather-bound volumes would be interchangeable with any human being.

Another direction, one that may be more consistent with a solution to these problems,

appears in recent work by early 20th century philosophers such and Martin Heidegger and Gilbert Ryle, and recent physicists such as Roger Penrose. [Heidegger][Ryle] [Penrose] Heidegger distinguishes two ways of looking at things around us--either as ready-to-hand or present-at-hand. Objects viewed as "ready-to-hand" are viewed in terms of their manipulation and use by human beings in a typical human environmental context, that is, where one is a physical body amongst other physical bodies. The view of objects as present-at-hand is typical of science and abstracts from the typical human context. Objects considered in this way lack functional and value characteristics, the very characteristics most important in the environments of living beings for species survival.

In fact, researchers such as the physicist Roger Penrose argue that scientific methodology as presently conceived is incomplete and in its current form unable to deal with the mind/body problem [Penrose] So it seems as though modern science and technology cannot by themselves provide us with guidance out of our current dilemma. Science and technology do not provide the basis within themselves for applying themselves intelligently in the sense of this paper, that is, in such a way to avoid collisions with the ecosystem which threaten species survival.

***What about Information Technology?***

So what are the ways in which technology, and especially information technology, can move in an intelligent direction? Information technology, above all, has the potential to contribute to the increase in consciousness. Yet it can just as easily enable questionable applications of technology which further our extinction as a species. I now want to examine, from the point of view of an intelligent species as defined above, what our responsibilities as managers of technology are.

Information technology (IT), like modern technology, is available for use in many ways. We need to consider whether it is a neutral tool or not. Heidegger saw most clearly that modern technology is *not* neutral; it use initiates a sequence of changes that takes it to consequences beyond human calculation. [Heidegger 1954:18-21] Given the very young age of information technology, we probably cannot yet have much idea of what innate direction it may contain within it. In fact, the "productivity paradox" shows us that we don't yet have a clear idea of when IT is benefiting us. [Harris]

Unfortunately, IT does seem to be neutral with respect to the two barriers to human beings acting upon their improved consciousness of their place in the ecosystem. IT is neutral with respect to whether human beings act independently in their own interests or whether they act in the best interest of the species. IT is also neutral with respect to whether the ecosystem of which we are a part can be treated as an external entity to be exploited for arbitrary human purposes. Certainly it is not part of that ecosystem.

If the human species is to have a good chance of longer-term survival, we cannot be neutral on these issues. Consciousness of the individual's role in the survival of the species and consciousness of our place in the ecosystem need to be increased. And appropriate actions on the basis of that consciouness need to be taken.

Information Technology may have an important role in this process. The part of the process that offers some hope is the development of consciousness itself. Modern technology has already produced a globalized human species rapidly coming to share common economic and social goals. Marshall McLuhan spoke years ago of video technology producing a "global village." [McLuhan] Information technology amplifies these effects, and it is too early to say exactly how they will play themselves out on the Internet and the World Wide Web.

IT may also be able to play an important role in the background problem revealed in this paper. Is the best that human beings can do with the considerable talents their species has revealed to expand mindlessly into their environment in ways that may greatly shorten their tenure on the planet? (This is sometimes mistakenly called growth.) Or are there goals beyond this that we can adopt as a species? Right now, activity revealing consciousness of our place on the planet tends to be reactive, conservative in the root sense: We *refrain* from obliterating yet another piece of nature to build another suburban tract. We *limit or control* population. Indeed such activities are of the utmost importance until such time as we figure out what we are doing as a species and what we should be doing.

We know as managers that a business without a strategic plan is a business likely to go out of control and therefore out of existence. Yet as human beings with the ability to affect the survival of all life on the planet one way or another by our activities, we do not have a strategic plan which includes the conditions for our own survival. The ultimate question of how we should be using what intelligence we have is so far unanswered.

Although I don't share the "manifest destiny" technologist's belief in the invincibility of the human species or its technology, I finally do hope that the human species has something like the normal 2-million year life span of most species. Passing the torch to other species does not seem to be possible. Our knowledge is in a very profound sense human knowledge, tied to human society and the conditions of human beings. Kant saw this very clearly. The only thing that prevents human knowledge from dying with its possessor is other human beings who are prepared to carry on the human enterprise. It's not even that other species are not intelligent enough. Even those intelligent enough are simply not part of the biological chain that underpins all our enterprises. They did not evolve together with us as part of the complex social web within which we can communicate with each other and share goals and values.

Therefore, the answer to our original question of whether there is intelligent life on earth is: Not yet. But the human species may yet turn out to be intelligent. The answer will probably become evident not too far into the next millennium.

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**Biographical Sketch**

Robert A. Schultz received his Ph.D. in philosophy from Harvard University in 1971. He was a member of the philosophy faculty at the University of Pittsburgh, Cornell, and the University of Southern California. He later held for 5 years the position of Data Processing Manager at A-Mark Precious Metals in Beverly Hills, CA. For the past 10 years, he has been Professor of Computer Information Systems and Director of Academic Computing at Woodbury University, Burbank, CA.