

# Consequences Of Accomplishment

Jerry Wickey



## **WHITE PAPER:**

Scientific Exploration Of:

- Likelihood of extraterrestrial civilizations
- Probability of visitation
- Impact on mankind's current distress

**OFFICIAL**

**When we peer into the night sky looking for answers, our view may be impeded by our own accomplishments.**

**This White Paper sorts between fact and conjecture to assemble a scientifically plausible picture of the likelihood that technologically proficient alien civilizations may exist and the circumstances under which we may meet any that do. Given current observations, there are many things about the universe of which we can not be certain, however, some of the things of which we can are surprising and thrilling.**

## **Surviving The Consequences Of Our Own Accomplishments**

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Humanity is an amazing race of creatures. Armed with technology no more sophisticated than water levels, earthen ramps and natural fiber rope, humanity achieved the construction of monumental pyramids four times the volume of the largest modern sky scrapers. Humanity excavated the Suez canal three times; the first time, four thousand years ago, a second time in 300 BC and once again in the modern era. We have set the foot prints of men upon the moon. We are a formidable and young race. It is possible, if not likely, we are smarter than we are wise.

It is conceivable that we can invent a way of destroying our selves before we learn to get along. Indeed, we are already past the point of merely conceiving this possibility.

It is also conceivable that civilization could have progressed differently than it did. Its individual members could have been less intelligent than we know mankind to be. Such a civilization could have developed the same technology as we have achieved, even far greater technology, albeit, at a much slower rate, over a much longer period of time; enough time to develop emotionally; enough time to learn to "stop and smell the roses" as it were.

If such a civilization's technological development were slow enough, the civilization would inevitably confront and must resolve the increasing demands that all growing populations place on limited resources, but without weapons of mass destruction which only more rapidly developing technology could offer. Such a civilization would be forced to learn how to get along rather than devise means to destroy opposing factions of their own civilization.

Civilizations which develop technologically too fast are threatened by their own self destructive power. While civilizations which are populated by less intelligent individuals are more likely to discover and adopt intra-civilization protocols which work to safeguard the continuation of their civilization.

We know only two great and lasting civilizations. Since humanity's first written records, our first cities and the employment of labor specialization, western civilization has experienced two great civilization set backs, two dark ages; one after the fall of the Egyptian Mesopotamian Indus societies, the time which the Romans called their ancient history; and another after the fall of Rome, which we call the dark ages. Both

times, the damage was limited by our immature technological and the inability to destroy ourselves. Humanity rebuilt.

China on the other hand, has never fallen. China has maintained continuous and unbroken growth for the entire period of civilization on this planet. However, that has now changed. The east and the west have merged their shared technologies and societies and have become one world wide civilization. Now, only one civilization exists on this planet and that civilization may not survive the next set back.

Can a unified human population rebuild after a third fall? After the use of nuclear or biological weapons? After a carbon induced ecological collapse? Do we have any other option than wait and see what happens to us?

If we rebuild, will we rebuild only to destroy ourselves again and then again, each time with more proficiency, until we perfect the art of self destruction, finally accomplishing a lasting extermination? Can we learn to get along? If we had another option which costs less than our current efforts at environmental mitigation and which might be easier than teaching world leadership and their constituency how to work together, should we ignore? Or should we pursue such an option?

Perhaps, we could merely ask for help! This option is cheap and easy to attempt. It may lead to nothing. Or it may lead to educational opportunities, technological and medical advances on an unprecedented level which can only be vaguely compared to the few occurrences in modern history when an isolated tribal society was introduced to modern civilization. We may find our selves to be that isolated tribal society, unaware of just how large the civilized universe may actually be.

Most educated people consider the likelihood that there are many other civilizations in the vastness of the universe but at the same time, few educated people are willing to make the leap claiming that any such civilization has actually visited Earth. This poses a paradox. If we are not alone, why are we alone?

The solution to this paradox chosen by most educated people is that the speed of light forever prevents conquering the vastness of space, leaving each civilization forever alone. This is by far the most common solution adopted by most people.

A distant second choice for solving this paradox is that the values for the parameters of Drake's equation yielding the number of intelligent, technologically sophisticated civilizations are over estimated such that intelligent life, if not life itself, is so exceedingly rare that we are essentially alone.

This one has few proponents because of its supernatural implications. The universe is a big place. There are more stars in the universe than grains of sand on all the beaches of the world. Could a universe of 20,000 billion billion suns spread throughout 100 billion galaxies, where one in ten suns might have water planets in the habitable zone, produce only one single planet on which robust and extraordinarily diverse and intelligent life exists with out conferring onto our planet Earth some special and super natural accord? Very few wish to adopt such a view. The argument quickly disintegrates into "We might not be the only one, but so few that we will never find each other." We will see shortly, how this is merely a specious derivative of the same argument.

The very distant third is that intelligent life is sufficiently populous throughout the universe and possesses technologies capable of addressing the limitations imposed by the speed of light, but the interstellar community has placed earth off limits, perhaps because of some defect in us or perhaps by random chance we fall within some environmentally protected nature preserve.

Although this solution does adequately explain sporadic sightings by credible and competent witnesses of what appear to be unidentified structured craft under intelligent control, but which never leave supporting physical evidence. None the less, this solution is viewed as strictly "Star Trek - prime directive" science fiction in the opinion of the vast majority.

Very recently, cosmologists discovered conclusive evidence that matter in the universe did traverse space at large multiples of the speed of light during a time in the universe's distant past. Evidently, the laws of physics do not preclude manipulating space/time and matter/energy in such a way as to breach the speed of light. Indeed, nothing can go faster than the speed of light... literally, nothingness or empty space and the matter/energy residing within it can go faster than the speed of light.

Astronomers observe very distant galaxies receding from us with their rapidity dependent upon their distance. This is an echo from when the universe was very young, when its energy was so great that the expansion or inflation of space itself occurred at speeds far exceeding the speed of light and carried with it the matter/energy occupying that space.

In addition, even the speed of light is not an obstacle once a civilization discovers what our own modern science is just now discovering about genetics and biological immortality. Inhabitants of civilizations perfecting such knowledge and possessing

biologically immortal lives would no longer see a hundred thousand year journey to the other side of the galaxy impractical. The travel time itself would be short at relativistic speeds which greatly shortens the passage of time for the traveler; and their loved ones would still be alive and remain in perpetual vital health to greet them upon their return. In civilizations such as these, ten thousand year voyages of discovery might be scheduled regularly as the final exam for higher degrees of education.

The "speed of light" solution to the paradox is out! And it was the most popular! That leaves "life is too rare" and "prime directive."

Given the differing rates for the development of technology and rates for the development of social harmony which many civilizations might experience, it is reasonable to assume that half developed socially at a faster rate than they developed self extinction technology. Such civilizations would be populated by individual members of relatively lower intelligence such that their industrial revolution took perhaps a thousand years instead of a hundred as ours did.

During that time, they ran into many social problems such as overpopulation and starvation for which they were forced to find solutions which could not have involved "cold war" threats of the use of civilization ending technologies, because they did not have such technology. This set of circumstances could drive the development of diplomatic skill and the science of sustainable international relations. After having established a long history of social harmony, their technology slowly but inevitably could have reached the stars before some planetary catastrophe such as an asteroid impact.

At which point, such an interstellar civilization would possess the social harmony to use their technology in ways which do not destroy others. Such a civilization would be made up of less intelligent individuals each trained to use their far superior technology with a very high specialization of labor. Having learned to solve problems peaceably they could continue to productively explore space as they had their own world.

Such a civilization would then surpass their vulnerability to planetary catastrophe and all other civilization ending events because they have conquered their own self destructive tendencies and have colonized distant worlds which could not all be destroyed simultaneously. The major portion of such a civilization will always remain vibrant and at their full potential. Such a civilization becomes immortal itself. Drake's equation presumes that all civilizations must come to an end, but this is merely a

prejudice imposed on us by our own self destructive experience, which is something not necessarily inherent to all intelligent life.

Evolutionary selective pressures favor such civilizations. Civilizations filled with smart people would likely develop civilization ending technologies before they are forced to deal with social issues, and would therefore face the ever increasing likelihood of perishing by their own actions. Hence, it is the former, peaceful civilizations which we would expect to find far more prevalent throughout the universe rather than the latter, clever, and potentially violent races. Perhaps, we are an example of the latter.

"A little leaven, leaveneth the whole lump." Merely one of these peaceful civilizations is enough to explore and populate the entire universe.

The universe started producing high metallicity stars within its first billion years. Heavy metal stars, like our own sun, suitable to sustain life, have been around for thirteen billion years. Even if intelligent life around one of these distant stars required eight billion years, twice as long as we required, to arise, they would still have beaten us to space by five billion years. That's before our world was even a planet! In that time their population and colonization of the universe would have grown exponentially.

Simple exponential math, reveals that a population of only one billion and which doubles its population and colonizes another habitable planet only every thousand years will grow faster and be able to populate new planets faster than the speed of light allows their ships to travel.

If they have also achieved faster than light space travel, in merely one hundred thousand years, their total population would reach billions of billions of billions of billions and they could have colonized every one of the 2,000 billion billion habitable star systems, each with a billion members of their race. Of course, given the lessons they learned early on, we imagine, they have avoided this.

Life is prolific! Human population here on earth grew from merely tens of thousands to six billions in only ten thousand years. At that same rate, in another ten thousand years, ignoring limitation of resources, the human population would exceed three million billion. Can you imagine a million billion people?

Keeping the example of our own exponential population growth in mind, exploring 20,000 billion billion stars could easily be accomplished; and would have

been completed long ago, billions of years ago, if only one single such civilization existed on any single planet of the 2,000 billion billion habitable star systems. The math simply blows the "life is too rare" argument right out of the water.

Is it possible to make any credible estimates of the number of technologically sophisticated civilizations which may exist? Especially so, if the only thing about which we can even begin to estimate with any degree of confidence is that there are probably 2,000 billion billion worlds in the universe which contain liquid water. Drake's equation requires guesses for many variables and only reports a value based largely on the pre-suppositions for those unknown values which were put into it. Since it is reliable information which is the limitation, the question needs reframing such that it relies upon less information.

Given the number of possible planets on which a civilization could arise, what is the least likelihood of intelligent life arising anywhere which provides reasonable assurance that humanity arose on Earth?

Since we did arise on Earth, the answer to that question yields the smallest reasonable likelihood that any given planet currently gave rise to a technologically sophisticated civilization. This question is crafted to lend itself to probability calculations. The mathematical restatement of this same question is:

$$p! / (p-n)! / n! * (L-1)^{(p-n)} / L^p = 0.99 \text{ solve for } 1/L$$

where:

0.99 is reasonable certainty that we are present here on Earth.

$p = 2,000$  billion billion, the number of worlds with liquid water. Other than Earth, we have already found three in our own solar system alone. Ganymede, Callisto and Europa.

$1/L$  is the likelihood of a technologically sophisticated civilizations currently existing on any given planet. This is the value which this formula was designed to find.

$n = 0$ , the number of planets which would currently harbor a technologically sophisticated civilization when asking the question what is the threshold likelihood which results in reasonable certainty that intelligent life exists on Earth.



Stated in this way, the only important fact of which we need to be confident is our own existence. The fact that we arose on one planet among many billions implies something very useful about the probability of intelligent life arising on any given planet. If we assume that probability is one in the total number of all water planets, our existence would be far from certain. There would be only a 63.2% chance that we would exist at all.

If the probability of intelligent life arising on any planet is less than one in 199 billion trillion then the probability of our arising here on Earth is negligible. We could not exist. We can be certain that the chance of intelligent life arising on any given planet must be greater than the least probability which provides reasonable chance that we arose. If someone believes that some supernatural force arranged the chance of intelligent life arising such that it is just enough for us to arise here on Earth, but too rare for life to arise anywhere else, then science has no tools to effectively argue the point. Since science is unable to address the supernatural. For everyone else, the probability must be higher. It may be ten times higher or a thousand times higher. We don't know.

One in 434 billion billion planets is 4.6 times higher than one chance in the number of water planets; and is the lowest probability which provides a negligible chance that we did not arise here on Earth. If we assume that low probability is the actual probability then there is a 94.4% chance that intelligent life arose more than once; and a 48.8% chance of more than four.

If the actual probability is only one in a billion billion planets then there is a 90% chance that the number of planets in the universe which gave rise to technologically sophisticated civilizations falls between 1,939 and 2,106. Of course, a probability of one in a billion would result in billions of planets, dozens in our own galaxy. If the likelihood of intelligent, tool using life arising is high enough to arise once, it certainly arose many hundreds or thousands or millions of times.

These likelihoods regard the arising of intelligent life. To justify our own existence here on Earth by entirely naturalistic means, we must expect that we were the only one among many many planets which started with simple microbial life which ascended to complex and then intelligent life. The likelihood of microbial life must be much more likely.

Inferring anything more than the fact that the existence of thousands of intelligent alien civilizations is a near certainty becomes more difficult. Aliens must be made of

atoms like ourselves. Carbon dioxide and water are some of the most common compounds which accrete during planet formation; and the carbon in carbon dioxide and the hydrogen in water can be put together to form a molecule which is very good at storing energy in a chemically usable form, sugar. This makes sugar the most common energy source for developing biological life. The process of turning water and carbon dioxide into sugar is called photosynthesis. A byproduct of photosynthesis is free oxygen. This is the same chemical reaction no matter on which planet it takes place. Life everywhere likely creates oxygen atmospheres, but it does not follow that most life breathes oxygen and lives on land.

The surface of our world is shielded from massive amounts of life killing solar radiation from our own star by several chance circumstances. Only a portion of other planets could be expected to experience similar. Under the water, however, life is safe from solar radiation and the deeper, the safer from temperature variations. This means that aquatic intelligent life may be much more common than land dwelling intelligent life. Further speculation can not be made with any reasonable certainty.

It becomes no longer a game of numbers where we fret over the fact that only one in a million galaxies might have one single civilization. Instead, life evolving in the universe is like life evolving on a planet. Only one single successful microscopic self replicating organism is needed to completely blanket an entire planet in a thick layer of life replete throughout sea and land at the speed of exponential growth.

If an interstellar civilization existed anywhere at any time, even at the modest rate of only one civilization in every billion galaxies every billion years, then it is certain that at least one of those civilizations has already succeeded in the exploration and colonization of planets throughout the universe; and that even a handful of interstellar civilizations distributed randomly throughout the universe has already had sufficient time to explore the entire universe.

In the light of this math, even the argument that we might be the very first civilization to contemplate reaching for the stars leads back to the same obstacle of conferring some special and super natural accord onto us. While, somebody had to be first, we are very late in the game. If life can arise on even an infinitesimal portion of habitable worlds, then it has already arisen on billions of worlds, billions of years ago. The odds against us being the first intelligent, tool using species to arise is astronomical,... literally - astronomical!

If we desire to confine ourselves to reasonable likelihoods and not wonder off into

emotionally charged bias, and to resolve our paradox with rational coherence, we must concede that the most likely solution to the paradox is the "prime directive."

Any form of the prime directive theory does adequately address why credible witnesses like airline pilots and astronauts repeatedly and consistently report sightings of unidentified mechanical craft under intelligent control, but are left with no physical artifacts of the event. What's more, while each of the other two solutions have strong evidence countermending their premise, the "prime directive" can not be disproved and its supposition, life grows exponentially, is a proven observation.

If there is any chance that a peaceful and technologically proficient civilization populates the universe, one which has the answers to surviving the transition from possessing technology capable of destroying our planet to the wise use of that powerful technology, it becomes incumbent upon us to explore introducing ourselves to them. Especially so when the cost of such an effort is minimal and the danger is non-existent.

If they exist, they already know we are here. Waving our arms in the air does not reveal to them something which they did not already know and to which they have evidentially already chosen to react benignly.

The muzzled attitude of the United States' population toward discussing such remarkable events diverges from most of the rest of the industrialized world, but the United States' negative attitude influences the world greatly. This could be a reason for our censure from a possibly thriving interstellar community. Humanity's long history of desperate attempts to discredit and humiliate those dissenting the currently accepted wisdom might be distasteful to an educated interstellar community and probably only further substantiates the wisdom of a prime directive against introducing such an aggressively obtuse race to an educated, refined, peaceful and genial interstellar community.

"If they think they are so special, let them have it their way." might be an interstellar community's argument. Take a moment to giggle and fart and get it all out of your system. After your perspective returns to the seriousness of humanity's precarious circumstances, it is difficult to argue against scientific institutions devoting a small amount of serious study into the UFO phenomenon with the goal of finding a means of making contact.

What if they treat us like we did the Indians? What if they do? Who among us has a "tribal" affinity for the dirt under our feet on this planet? If each of us finds only one

tenth the standard of living afforded members of such a civilization, we will each live like kings. The American Indian tribes didn't evaporate because they were outlawed. Young Indian tribe members saw greater opportunities in the civilized world and simply abandoned the Indian way.

So it was also when the Romans arrived. They built roads and theaters and libraries. Many Germanic tribes who warred amongst themselves over limited resources, welcomed the Romans and enjoyed fountains of running water in their new town squares, bath houses, and roads upon which horse drawn carts could easily carry goods for trade to the next village. What incredible new technologies to have access to!

That aside, the circumstances of exploration versus invasion are different in a space faring context. If our planet has some unique resource which can not be more easily obtained by a space faring civilization from an asteroid belt, then the interstellar community evidentially respects us enough to not take it by force. Or, our planet has nothing of any special interest, except unique intelligent life. Either way, we are safe; we have nothing to lose which would not already have been taken from us.

It is the human sense of fierce independence which laments the loss of the American Indian way of life; and it was that same fierce independence which caused many Germanic tribes to fight the Romans instead of paying their taxes and enjoying civilization. It may well be that same fierce streak of independence that is the reason we are excluded from a possible interstellar community. That same flush of independence may also paint our prejudices regarding the possibility of intelligent life elsewhere and the nature of their attitude toward us.

Giving up our ludicrous arguments against numerous eye witnesses, radar and military response to structured craft not of terrestrial origin is the first step in ameliorating the cantankerous and troublesome aspects of that independence we value so much. Perhaps merely acknowledging UFOs as real and publicly professing a desire to join an interstellar community, if one exists, is enough to persuade an interstellar governing body to introduce themselves to us.

It may be tempting to dismiss the conclusions presented here merely because they run counter to accepted wisdom, but doing so without developing a rationally coherent argument for dismissal, is merely perpetuating humanity's persistent emotional attachment to the more worrisome components of our beloved independence. If the ideas presented here are truly invalid, then one or more of the

facts or conclusions made here must be incorrect. If, instead, each is substantively correct, then the conclusions are valid; and not acting on them is irresponsible.

If you find yourself still snickering, imagine you are a tribe member of an isolated South American tribe whose most revered medicine man told you that the world ends over the next mountain top. Some fellow villager tribesmen wish to investigate the large, noisy, white smoke billowing birds that sometimes fly very high over head. Others claim they are merely big birds whose nests have not yet been found. Which villager are you?

If we choose to be the inquisitive and willing student, and proffer the effort, we shall surely find ourselves capable of the task. If we can build a pyramid with copper implements, engineer a 160 kilometer canal having only hand tools at our disposal and fly to the moon using computers that were less powerful than a modern digital wrist watch, we can surely find the means to persuade a shy interstellar envoy to have a conversation with humanity.

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About the author:

Jerry Wickey lives in Key West, FL where he studies complex information systems such as the information stored in DNA and the billions of bits of information which flow through the internet all the time. After retiring from a career in real estate, he spends his time writing software models of RNA World evolutionary theories of abiogenesis and software which provide electronic counter measures against satellite TV signal piracy.

Jerry has never seen a UFO, but finds the mathematical probabilities compelling. On one occasion, while eating lunch in an outdoor Key West restaurant, on a clear day in the mid afternoon, Jerry took note of a bright light in the sky directly over head.

After a short time, he looked up again expecting that the light would no longer be there. Instead it was unchanged and appeared to be in the same location. Intrigued, Jerry apologized to this lunch companions and repositioned his chair such that an ornament which hung high over head fell directly between him and the light. In this way, he could verify the light was stationary.

For fifty minutes, the light's intensity remained unchanged; and it remained stationary while a single cirrus cloud passed under, momentarily obscuring the light. As well, a very high flying commercial airliner's contrail, blown by the wind, passed under the light also obscuring it momentarily. After the fifty minutes, the light began to move slowly and steadily to the south west and dim to vanishing requiring less than two minutes to do so.

The power required to produce light, more than four miles up, visible in mid day could only have come from some powerful cosmological or atmospheric phenomenon, the reflection of the sun off of some reflective surface or be artificially generated. There simply are no other reasonable possibilities. Super nova and some comets are visible in the day, but all cosmological events move as the Earth turns at 15 degrees per hour. This light was not a celestial object, star nor planet. Satellites are only visible near the horizon and move at 4 degrees per minute.

Atmospheric phenomena move with the wind and are too transient to remain an unchanged point of light for fifty minutes. Leaving only artificial generation: Helicopters can not climb nearly as high as a commercial airliner. Nor could on board lights from any aircraft be bright enough to be visible at that distance against the daytime sun nor would aircraft have any need to employ such a light in the daytime.

A weather ballon is permanently anchored twenty two miles east of Key West at a hight of 2,000 feet. Jerry's companions concluded that there was no other possible explanation for the light. They decided it was surely that weather balloon.

The remarkable nature of this observation does not inform this White Paper as the observation offers no useful data. What Jerry did find very informative, however, was the eager willingness of his friends to accept an irrational solution rather than explore the true nature of the observation for fear of ridicule. Perhaps, remarkable sightings such as this are vastly under reported, for this same reason.

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