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FASTER THAN LIGHT COMMUNICATION

Was SETI obsolete from the start?

As it is written:
"First the stone,
Then the plant,
Then the animal,
And then man."
But before the stone I am the Fire,
Distributed equally in space,
Nowhere absent, filling all.
Paul Foster Case
(As light would speak.)

FTL Communication Is Possible

There was an experiment first performed by Albert Einstein, Boris Podolsky, and Nathan Rosen in 1935 - later called the EPR experiment. It was a thought experiment in quantum mechanics which produced results so strange that Einstein rejected them as a flaw in quantum theory.

In 1980, the experiment was physically performed by splitting a single photon into two, each of which had half the energy of the "mother" photon. These two "entangled" photons were polarized at ninety degrees to one another. Whenever the polarization of one of the two was detected (absorbed), the polarization of the other would always be at ninety degrees to the first. The first polarization could be detected as either horizontal or vertical, and the experimenter had that choice - but once the detection occurred, the second detection would always be at ninety degrees to the first.

Einstein's objection with this experiment was that the removal of one polarization (by detecting it) made the second one predictable *instantaneously, regardless of the physical distance between the locations of the two detections*. This is an example of faster-than-light (FTL) communication.

In 1992, an experiment was performed by Ming Lai and Claude Diels. In this experiment, it appeared

that a single photon traveled in two directions simultaneously even though the two directions were almost ninety degrees from one another. This was explained in quantum mechanics as photons being probability waves. Regardless of the theory behind the experiment, the results indicated that a photon traveling in two directions at once could result in instantaneous communication between two points of detection. Therefore, a photon could be in at least two places at once and FTL communication is possible.

The Nether (Dynamic Ether) Theory

In dynamic ether theory, space is not empty. The old ether theory was proposed by scientists who told the ether what its physical properties were to be - as opposed to allowing nature to tell them its true physical properties. In order avoid confusion between a dynamic ether and the old ether, the dynamic ether has been christened "nether" just as the ancient Greeks had christened the underlying substance.

Nether is the medium that transmits electromagnetic energy in wave form. A wave can easily mimic a particle, but a particle cannot mimic a wave except in certain instances. The subatomic creator of light is the electron.

It is known that all electrons appear to have the same value of "spin" and that value never changes regardless of what happens to the electron. Therefore, in the standard model, the electron breaks two fundamental laws of physics: the *conservation of momentum* and the *conservation of energy*. In the standard model, the electron is a particle. In nether theory, the electron is a vortex of nether, with a "vacuum" at its center and nether pressure outside creating the energy that powers the vortex. Therefore, in nether theory, the two fundamentals of conservation are not violated. In fact, they are needed to create the vortex.

The Nether Electron

In the nether model of the electron, the electron is a vortex taking nether out of our "space" and into the past via the fourth dimension we call time. The time dimension is at right angles to the three dimensions of space - so the mouth of the electron vortex can be pointed in any direction and still take in nether that is moving at ninety degrees to its original direction of travel. To conserve momentum, a vortex is formed so that the nether takes a curved path similar to what air does as it enters a tornado.

The reactive speed of the nether is the product of the speed of light, "c", and the square root of two. So $2^{1/2}c$. Light enters the fourth dimension at the speed of light and, at 90 degrees, the tangential component of the inflow is also moving at the speed of light. The equation for kinetic energy, E_k, is:

$E_k = (1/2)mv^2$ in which m = mass, and v = velocity.

The resultant velocity of the nether at the electron center is $2^{1/2}c$. Substituting this in the kinetic energy equation, we have:

$E_k = (1/2)mv^2$ [The equation for kinetic energy]

$E_k = (1/2)m(2^{1/2}c)^2$ [Substituting for v.]

$E_k = (1/2)m(2^{1/2})^2(c)^2$ [Separating the two squared quantities.]

$E_k = (1/2)m(2)(c)^2$ [Because$(2^{1/2})^2 = 2$]

$E_k = mc^2$ [Because (1/2)2 = 1]

Which is why the kinetic energy of the inflow is the reason the rest energy of the electron is equivalent to the product of its mass and the speed of light squared ($E = mc^2$).
In other words, if the hole into the fourth dimension were to cease bringing in the nether, the energy that would be released would be mc^2.

The electron vortex has effects that extend to the limits of the universe. When it reverses its direction, the inward nether flow that may have been clockwise is suddenly changed to counterclockwise. It is this change that moves outward as a half-wave in a plane that is oriented at ninety degrees to the direction of the electron movement. Many electron reversals within its limited space about the nucleus of its atom create a series of half-waves that we call a photon. This happens when the electron falls from a "higher" orbit to a "lower" orbit about nucleus of its atom. "Higher" and "lower" actually refer to energy levels, and "orbit" is not the best term for what happens - because the electron is not using centrifugal force to stay away from the nucleus, and it is not moving in an orbit as we know it. Instead, it is confined to a small volume by the repulsion of the other electrons in the atom. An energy infusion causes it to move farther away from the nucleus (to gain more space for itself), and it falls when the infusion ceases. As it falls, it "rattles" within its space, reversing direction many times to create a "photon".

The Nether (Dynamic Ether) Nature of the Photon

Today (2013), photons are still a mystery to most scientists, and are considered to act as waves part of the time and particles at other times. In nether theory, there are no particles - what is known as particles are either vortices or combinations of vortices composed of nether. The entire universe, including the "mystery" subatomic entities, is composed of nether.

The photon is neither a particle nor a vortex. It is a series of waves within the nether. It's frequency is measured according to the number of waves in one second, and the second is an arbitrary means of measuring created by man - not by nature. The series of waves known as a photon are created by an electron in motion, and that motion is never completed in exactly one second.

A half-wave that is part of a photon moves outward like a ripple on a pond except that its energy is found in the entire rotational movement of the ripple which is at ninety degrees to the movement of the electron creating the wave. What is called "polarization" is the direction of electron travel - so the energy is at ninety degrees to the polarization of the wave and the wave is therefore a "transverse" wave. The ripple moves outward from the electron, always maintaining the same energy when detected (the law of conservation of energy). The act of detection stops the transverse movement of the **entire circumference** of the ripple.

The transverse ripple's motion may be stopped (detected) anywhere along its circumference. So a photon (which is composed of such ripples) can be said to be detected in an infinity of places when those places are in the same plane as its ripples. [Actually, the conservation of the transverse energy of the half-wave as the ripple moves outward probably causes the energy of the wave to be detected more as "bump" than a movement.]

The Nether (Dynamic Ether) Interpretation of EPR Experiment

According to nether theory, the two photons resulting from the splitting of a single photon as in case of the EPR experiment, are mutually moving parts of the same photon. The removal (detection) of one part (polarization) at any point will result in the complete removal (detection) of that part (polarization) at any distance from that point, leaving only the other part (polarization) to be removed (detected) at a distant point. *This happens instantaneously even though the two removals may be light years apart.* This is why some of us believe that FTL communication is possible - and even possible with our current state of technology.

If we have a choice of either removing or not removing a photon at a distant location, and if this can be communicated to us instantaneously, then we have a binary form of FTL communication that can evolve into a more sophisticated version.

Pulse-Code Modulation (PCM)

The purpose of a communication system is to move some form of information accurately from one point in space or time to another point in space or time. This task often requires changing the means of communication to one more suitable for the purpose. For example, voice communication from one individual to another is the process of (1) coding into words that which is in the mind of the sender, (2) coding the words into nerve pulses, (3) sending the nerve pulses to the sender's organs of speech, (4) transmitting the words via sound sound waves, (5) coding the words into nerve pulses of the receiver, (6) sending the nerve pulses to the receiver's brain, and (7) translating the words into ideas which may be close to what the sender intended them to be.

Smoke signals were an early form of pulse-coding messages for long distance communication, with each puff of smoke acting as a pulse, and a lack of a puff acting as a lack of a pulse. This was a binary system, meaning that it had two possible states: "puff" and "no puff". Later, Samuel Finley Breese Morse invented the telegraph and the code that was named after him. Morse code was also a binary system in which there were either short pulses (dots) or long pulses (dashes). Each coded binary system was able to transmit only a small amount of information in any particular length of time. However, what it did transmit was relatively coherent and would tolerate extensive interference before the information was too distorted to be understood.

When teletype was invented, it used essentially the same principle but was much faster. The teletype used five positions in time as a coded "frame". Each of these five positions could either have a pulse or not have a pulse, so it was a binary system used to denote one of 32 characters ($2^5 = 32$) with each frame.

Early types of electronic audio communication were what we call "analog" systems. Analog systems could tranmit information quickly relative to other means at the time they were invented, but the information they carried was subjected to damage or distortion from interference of various kinds. Receiving AM (amplitude modulation) radio when thunder storms are involved, causes losses of information due to lightning, and static due to other causes. Telephone conversations through the old carrier systems were often filled with crosstalk, static, and 60 cycle buzzing from power lines.

Ideally, a system of audio communication should have the form of a binary code with the information-carrying ability of the analog systems. Furthermore, it should be quickly repeatable so that any repetition which was altered by interference could be checked against another repetition and the better repetition accepted as the correct version. These were the considerations when our present-day digital communication systems were developed.

"Pulse-code" refers to the system having a binary code in which a pulse is either present or not present. This means that there is only one of two states at any point in time. The two-state systems of today carry information that is repeated very quickly an odd number of times. The repetitions "vote" to see which will be used as the correct version. There cannot be a tie vote because there is an odd number of repetitions. Each point in time is sampled very quickly and coded into a frame. The frame has a two-state code of pulses which is repeated several times before going to the next frame which may be from another set of information entirely. Such a system that operates at lightning speed allows several sets of information to be carried on the same line or frequency band at the same time (as we perceive time). Actually, all sets are separated by unbelievably tiny fractions of a second and repeated samples of the sets occur every second. Our telephones, space probes, and satellites use such systems. Book Six of my series called *Behind Light's Illusion* has more detail on pulse-code modulation.

The Problem with "Search for Extraterrestrial Intelligence" (SETI)

SETI was formed to discover intelligent life from other places in the universe. To the best of my knowledge it still uses electromagnetic radiation to send (and hopefully receive) information with the object in mind of the ETs viewing our messages and then sending something back - all at the low speed that is light.

It takes light about 8 minutes to begin at the sun and reach us. It takes 4 years for it to arrive here from the nearest star. For a message to be received from the occupants of a planet orbiting that star, it would take (1) 4 years for our request to get there, (2) time for "them" to decode and build a way to send it back, and (3) another 4 years for it to get here. That star and others that are still reasonably close, we now know, do not have the capability to evolve life as we know it. Sending messages to the far stars can take hundreds of years or more to pass through the intervening space using the speed of light. It seems logical that FTL communication would have been discovered and used by the ETs long before we were even an evolved humanity. This is especially true in light of the fact that FTL communication is possible.

So SETI was obsolete from its inception - unless a UFO operated by ETs happens to be very close by to answer us.

Extraterrestrials

In the July 2000 issue of *Scientific American* is an article by Ian Crawford entitled *Where Are They*, referring to alien cultures that are supposed to be relatively nearby. It is not the only article which has posed the same question. To contact ETs that would have anything in common with us the following should be the case.

First, they must exist. The probability of this, within our present framework of knowledge, is a large one. Odds are ETs exist.

Second, the ET must be sufficiently like us to make communication possible. Is the time frame of the ET basically the same as ours? This is not a silly question. Here on earth, a hummingbird has an entirely different idea of time that do we humans. Does the ET have the same curiosity that we do (otherwise, the ET will most likely not care about us at all). And there are other things (do they have two sexes, none at all, or more than two, etc.). Considering the number of ETs that are probably out there, odds are that there are some who will conform to our expectations.

Third, is the ET advanced enough to use radio communication, too far advanced to use radio communication, or just right in its development (primitive like us). Those who use radio will find that interstellar communication by this means is not practical. Too much power is required to be

broadcasting to the universe at large. The ETs - like us - would discover that they could not muster the resources necessary to send ordinary radio messages far into the vast universe.

Fourth, the ETs that are like us may not have passed the test that we are facing again - in which we may fail by allowing one or more of our segments to start a war in which we blow ourselves up or destroy the planet by other means. The greed of the big bankers who are behind the Federal Reserve Act, the pollution barrier, the corrupt politicians, and other evils are all threats to our existence.

Fifth, the ETs must be stupid enough to want to contact a planet filled with people too stupid to properly take care of their own nest.

Sixth, we must recognize it when we are contacted by the ETs. Most of us are too stupid to pay attention to things like crop circles - so we certainly would not pay attention to a less obvious method of communication.

Travel through the Universe

If ETs exist who might wish to come here, odds are that they could do so by using one of the following ways.

First, they could take a spaceship in which they use suspended animation to make the trip bearable and possibly prevent health problems from a low-gravity environment.

Second, they could use a spaceship that is so large that they could have an entire community of their species take many generations to move from one star to another.

Third, they could have an energy source sufficient to accelerate and travel near lightspeed and use time dilation to make the voyages subjectively shorter. In this case, they need a means of tolerating the extreme acceleration needed to arrive at almost the speed of light and to accelerate in reverse to slow down as they near their destination.

Fourth, they might develop a "warp drive" like in Star Trek or some other exotic means of traveling that we cannot envision at our current stage of development.

Fifth, they could send robots or robot-like life forms out to do their work or to observe.

The Rudiments of FTL Communication

FTL communication would best be accomplished by using the principles of PCM.

1. Ideally, the message-sender should have a very large energy source. Some of the greatest energy sources in the universe are pulsars, stars which produce massive amounts of energy in a periodic manner. Some of the electromagnetic waves from such a source might be detected by the message-sending station and thus eliminated from detection by the message-receiving station - provided that **(A) the message-sending station is closer to the source than the message-receiving station, (B) the sending and receiving stations are tuned to the same frequency, and (C) the sending and receiving stations are located in the same plane as the outgoing ripples of electromagnetic waves.**

2. FTL communication should use a binary system, meaning that it should have two states such as: "present" and "absent". The act of pulsar wave detection at the message-sending station would cause an "absent" or "less present" state for the message-receiving station, and the lack of detection at the message-sending station would cause a "present" or "more present" state for the message-receiving station. So this could be the binary system for FTL communication.

3. FTL communication should have "frames" that are repeating within millionths of a second so that any "noise" can be eliminated. This is a technical ability that we have now. It could easily be used with FTL communication.

During the passage of a message through the nether from the sending station to the receiving station, there would be distortions due to the gravity or magnetic fields of celestial bodies enroute. The path taken by such a message would be best kept away from celestial bodies whenever possible. Sufficiently wide ranges of polarization and frequency would usually prevent problems from gravity and magnetic fields - and some of the relatively small amount of energy needed for detection may be used to create such wide ranges. Needless to say, if the path were close enough for severe gravity lensing to occur, the message would not arrive at the receiving station unless the severity of gravity lensing were taken into account.

No doubt, the ripples would be severely distorted at different places in their circumferences as they encounter distant suns and planets. This would have no effect on communication with the receiver unless the receiver is near the part of the circumference that is distorted, or the distorted portions are between the sender and the receiver.

This system of FTL communication would be instantaneous except for the time taken for an outward moving ripple to pass from the sender to the receiver. If the sender's distance from the source is "A" and the receiver's distance from the source is "B", then the time for the message to move from the sender to the receiver is the time taken for light to move the distance that is B minus A. B must always be greater than A, but it would be most advantageous for A and B to be almost equal.

For two-way communication, the receiver must become the sender and the sender must become the receiver. A different source (pulsar) would allow this to happen. So it may be possible for an ET ship to

be in almost instantaneous contact with its base or another ship - or for one solar system to be in almost instantaneous contact with another. Perhaps the communication system we see in episodes of *Star Trek* is not too far fetched.

Other Possibilities

Today, there are computer programs which allow a plastic model to be created at a distance by sending the "blueprints" on line from one computer to a receiving "construction" computer. The material of which the model is created exists at the receiving end before the transmission of the blueprints. If the material itself were to be sent from the sender to the receiver, the energy involved would be staggering - like several hydrogen bombs. This is why the transporter in *Star Trek* is not actually practical. It supposedly moves the person's molecules from one spot to another. But a real-life version might be built using material already available at the receiving end. The transmission of blueprints could be instantaneous even when the distance from sender to receiver is measured in light years.

Theoretically, an extremely advanced civilization might be able to build a transporter that is not really a transporter. Instead, it might be a machine capable of creating copies of people or other objects from blueprints sent instantaneously from far away places. This could be a means of placing objects and beings here - even if their "blueprints" originated in distant star systems. However, the receiving station must be created at our end first - in a place with the correct molecules available for its use. Would such an advanced civilization go to so much trouble? Who knows?

Alice was rather doubtful whether she ought not lie down on her face like the three gardeners, but she could not remember ever having heard of such a rule at processions. "And besides, what would be the use of a procession," she thought, "if people had all to lie down on their faces, so that they couldn't see it?" So she stood where she was and waited.

Lewis Carroll


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