



SearchLites

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SETI Institute Reinvents SETICon

by H. Paul Shuch, Executive Director Emeritus

Recently in Santa Clara, CA, our friends at the nonprofit SETI Institute hosted an event billed as the "first ever SETICon." Their conference included three full days of activities, four programming tracks, some top-notch guests, and a gala banquet. As fellow SETI enthusiasts, we in The SETI League wished them every success with their event. But, we were, and remain, puzzled.

Longtime SETI League members will recall the annual technical conferences which our international nonprofit organization hosted, starting in 2001, and continuing for several years (until we ultimately ran out of money). We called them SETIConS. To be sure, SETI Institute personnel were well aware of these meetings, since we are privileged to have several of their staff as SETI League members, and in fact were lucky enough to welcome a few of their number as SETICon presenters.

Although our two organizations advocate different (complementary) research modalities, relations between these two leading SETI groups have always been cordial and mutually supportive. We all lamented the demise in 1993 of the briefly funded NASA SETI program, and each tried, in its own way, to fill the void. Both organizations continue to advance radio telescope technology, and both conduct ongoing searches for electromagnetic emissions of intelligent extraterrestrial origin.

The differences between the two groups are significant, but serve more to unite than to distance us. The SETI Institute uses generous contributions from some well-known captains of industry to employ a top-notch staff of highly trained, very talented professionals. The SETI League adopts a more grassroots approach, with no paid employees, minimal funding in the form of dues contributions, and relies on the volunteer efforts of hundreds of its members around the world to accomplish its scientific mission.

Both the SETI League and the SETI Institute are committed to furthering SETI science. For the past several years, the SETI Institute has spearheaded the design, development, construction, and operation of the Allen Telescope Array, clearly the world's most advanced SETI research instrument. The SETI League takes a different tack, encouraging the construction of hundreds of small, low-cost amateur radio telescopes around the world. In years past, the SETI Institute has conducted a powerful targeted search of nearby sun-like stars, while the SETI League has concentrated on a significantly less sensitive all-sky survey, in hopes of detecting those very powerful, yet highly intermittent, signals which might well evade a more sensitive, targeted search.

With common goals approached from different directions, it is no surprise that the recent SETI Institute SETICon differed in emphasis from those SETIConS which I had previously chaired. The California group rounded up an impressive slate of prominent speakers from the fields of science, academia, and entertainment. Speakers at the original SETIConS were just ordinary SETI League members, doing extraordinary things. Their event was held in a posh hotel; ours were on austere college campuses. Their \$150-a-ticket banquet doubtless featured far better food than was served at our \$30 buffets. Our \$30 registration fee included a self-published volume of Proceedings. Their \$35 basic registration covered attendance, but (as far as I was able to determine) no Proceedings. All of our registrants received free coffee and soft drinks. Their \$500 and \$1000 VIP attendees got champagne.

Unfortunately, I did not attend this new SETICon. Frankly, I couldn't afford to. And, it's a pity, since I have nothing but the highest respect for the science and technology breakthroughs coming out of California. And I'm genuinely pleased that SETI Institute personnel decided to follow our lead, and resurrect the SETICon concept. Perhaps, with their resources, this will be an annual event that will continue well into the future, something that the SETI League was not able to accomplish.

The SETI League is delighted that our friends at the SETI Institute finally sponsored *their* first SETICon, and we continue to wish them the very best. We only wish they had thought to invite us to participate.



Guest Editorial

Finding a Benford Beacon

by Paul Gilster

Centauri Dreams

It's heartening to see James and Gregory Benford's work on extraterrestrial beacons receiving broader coverage. News features like a recent one in *TIME Magazine* are pushing the Benford brothers' work out to a much larger audience. That's an important step, because right now the view of SETI most likely held by the average person relates to movies like *Contact*, in which huge dishes pointed at particular stars seem to be the way to proceed. The Benfords want to re-write that scenario in a big way.

We'll have to leave as debatable the question about how far away our own television transmissions can be received. James Benford commented not long ago that a civilization of approximately our technological level would not be able to receive broadcast signals as weak as those we've sent out carrying the likes of Milton Berle and *I Love Lucy*. Presumably, a far superior civilization could find those signals, but the question for our SETI search is, what kind of signal is feasible for us to receive today, and where do we look?

I like the notion of applying economics to this issue, which is what the Benfords do in analyzing how cost-effective an interstellar transmission strategy would be for the civilization sending it. It turns out that short, powerful bursts sent out now and then are far more reasonable than continuous broadcasts, given the realities of energy usage on the interstellar level. We're a lot less likely to find such 'Benford beacons' if we aren't pointed at just the right place at just the right time. Could the 1970s-era 'Wow' signal have been a Benford beacon, one we lacked the resources to follow up on with sufficient rigor to track down its true nature?

Whatever it was, the 'Wow' signal stands as a reminder that there's a lot we aren't doing. Gregory Benford told *TIME* that adding up all the SETI observing time over the past half century yields only a few months of data. So what would the chances be of finding a sporadic burst given the listening time and strategies involved? All of which gets me to Project Argus, an inspiring attempt by the SETI League to enlist the service of amateurs in the cause of broadening SETI's reach. The ambitious goal is to deploy 5,000 small radio telescopes around the globe, providing what the SETI League calls 'the first ever continuous monitoring of the entire sky, in all directions in real time.' From the SETI League:

Traditional research grade radio telescopes (the type which NASA used) can view only a small fraction of the sky at a given time, typically on the order of one part in a million. All-sky coverage with these instruments would thus require a million telescopes, properly

aimed. At a cost of perhaps one hundred million US dollars apiece, such a network would exceed the Gross Planetary Product. Fortunately, there is another way.

That other way involves amateurs putting up to a few thousand dollars into an amateur radio telescope capable of the microwave coverage Project Argus demands. What you get with 5,000 small telescopes is full-sky coverage with the ability to pick up microwave radiation from a technologically advanced civilization out to several hundred light years. In a recent post on a mailing list of space professionals, writer David Brin noted that targeted signals like those sent to other stars from the Evpatoria radio telescope in the Crimea would probably not be detectable by an Allen Telescope Array, whereas a Project Argus at full strength would have found them.

Paul Shuch, executive director emeritus of the SETI League, is well aware that Project Argus will have to grow from its current 150 or so installations to the requisite 5000 to be truly operational, but perhaps this is where a philanthropist with a SETI bent could make a difference. In any event, what Project Argus is doing is of so fundamentally different a nature than the SETI Institute's work that it's deserving of our support. A combination of approaches is all to the good, and Project Argus adds a component that in Benford terms is more likely to succeed. Here's Paul Shuch on the matter in a recent SETI League editorial:

Both the SETI League and the SETI Institute are committed to furthering SETI science. For the past several years, the SETI Institute has spearheaded the design, development, construction, and operation of the Allen Telescope Array, clearly the world's most advanced SETI research instrument. The SETI League takes a different tack, encouraging the construction of hundreds of small, low-cost amateur radio telescopes around the world. In years past, the SETI Institute has conducted a powerful targeted search of nearby sun-like stars, while the SETI League has concentrated on a significantly less sensitive all-sky survey, in hopes of detecting those very powerful, yet highly intermittent, signals which might well evade a more sensitive, targeted search.

So on with the Allen Telescope Array, but kudos as well to the hard-working SETI League and its attempt to set up the kind of observational effort that just might detect the next 'Wow' signal. We should also keep in mind the other Benford caveats, that the obvious direction to look is toward the center of the Milky Way, where civilizations around older stars might have a more advanced technology and might have chosen to deploy a beacon along the galaxy's radius. Short, powerful bursts are going to be tricky to catch, so the more eyes and ears on the case, the greater the chances of success. Project Argus is an apt name. The mythical Argus had 100 eyes and could see in all directions at once, perhaps just the ticket for finding another civilization.



Event Horizon

SearchLites readers are apprised of the following conferences and meetings at which SETI-related information will be presented. League members are invited to check our World Wide Web site (www.setileague.org) under *Event Horizon*, or email to us at info@setileague.org, to obtain further details. Members are also encouraged to send in information about upcoming events of which we may be unaware.

September 2 - 6, 2010: *Aussiecon 4*, 68th World Science Fiction Convention, Melbourne Australia.

September 25, 2010: *Mid-Atlantic States VHF Conference*, Montgomeryville PA.

September 27 - October 1, 2010: *61st International Astronautical Congress*, Prague, Czech Republic.

October 4 - 8, 2010: *Second IAA Symposium on Searching for Life Signatures*, Milton Keynes, UK.

October 8 - 10, 2010: *AMSAT Space Symposium*, Elk Grove, IL.

November 17 - 18, 2010: *IAA 50th Anniversary Celebration*, Washington, DC.

November 19 - 21, 2010: *Philcon 2010*, Cherry Hill, NJ.

April 11 - 15, 2011: 18th IAA Humans in Space Symposium, Houston, TX.

April 16, 2011, 0000 UTC - 2359 UTC: Twelfth annual SETI League Ham Radio QSO Party: 3.551, 7.0309, 7.2039, 14.084, 14.204, 21.306, and 28.408 MHz.

April 17 - 22, 2011: Third International Conference on Advances in Satellite and Space Communications, Budapest, Hungary.

April 24, 2011: Seventeenth SETI League Annual Membership Meeting, Little Ferry NJ.

Late June, 2011 (date to be announced): *Third IAA Symposium on Searching for Life Signatures*, St. Petersburg, Russia.

August 17 - 21, 2011: Renovation 69th World Science Fiction Convention, Reno NV.

October 3 - 7, 2011: *62nd International Astronautical Congress*, Cape Town, South Africa.

April 21, 2012, 0000 UTC - 2359 UTC: Thirteenth annual SETI League Ham Radio QSO Party: 3.551, 7.0309, 7.2039, 14.084, 14.204, 21.306, and 28.408 MHz.

April 22, 2012: Eighteenth SETI League Annual Membership Meeting, Little Ferry NJ.

September 2012 (dates TBA): *Sixth International Congress for Radio Astronomy*, Medicina, Italy.

October, 2012 (dates TBA): *63rd International Astronautical Congress*, Naples, Italy.

April 20, 2013, 0000 UTC - 2359 UTC: Fourteenth annual SETI League Ham Radio QSO Party: 3.551, 7.0309, 7.2039, 14.084, 14.204, 21.306, and 28.408 MHz.

April 21, 2013: Nineteenth SETI League Annual Membership Meeting, Little Ferry NJ.

April 19, 2014, 0000 UTC - 2359 UTC: Fourteenth annual SETI League Ham Radio QSO Party: 3.551, 7.0309, 7.2039, 14.084, 14.204, 21.306, and 28.408 MHz.

April 20, 2014: Twentieth SETI League Annual Membership Meeting, Little Ferry NJ. ❖

The Enduring Legacy of the Voyagers by Larry Klaes

In the first decade of the Space Age, humanity had succeeded in sending a handful of robotic space probes to Earth's two nearest planetary neighbors, Venus and Mars. The voyages of these mechanical vessels, which only took a matter of months, were brief in their visits to these alien worlds. Nevertheless, these new kinds of explorers gave scientists their first knowledge of the true natures of these places after centuries of speculation.

Much farther beyond, where the Sun is eventually reduced in appearance to just a very bright star, is the realm of the outer gas giant worlds. These planets are many times larger than all of the inner terrestrial globes put together and lack solid surfaces in the same sense as our Earth and its celestial brethren. The Jovian planets also keep in their mighty gravitational grips collections of moons and rings of debris that would qualify them as whole solar systems in their own right.

But for humanity in the early days of space exploration, these alien places were very far away and full of unknowns, including whether a fast-moving spacecraft could navigate the natural boundary between the terrestrial and Jovian realms known popularly as the Asteroid Belt without being smashed to pieces by potentially deadly dust and meteoroids. In addition, a spacecraft of that era would take decades to reach all the outer worlds; such vessels were still on the proverbial drawing boards, while most of the actual probes which did reach the nearest worlds in functioning order often did so with a lot of luck and engineering skill.

In that same time, when the two main players of the Space Age were preparing to see who could place the first humans on the lunar surface, it was determined that the outer planets would align in such a way in their solar orbits in the late 1970s that they could be reconnoitered by a quartet of nuclear-powered space probes flying past each world in just one decade. The plan and the mission were appropriately named the Grand Tour.

Early on the project was threatened with termination, not by some hazard in space but by budgetary problems on Earth. To stay alive in NASA, the Grand Tour was scaled back to explore just the two nearest gas giants, Jupiter and Saturn. The vessel numbers were reduced from four to two: The remaining probes were christened Mariner 11 and 12, following in the line of American space probes that had opened the way to understanding the inner Solar System. By the time the vessels that remained from the initial outer worlds exploration plan were ready to be launched into the heavens in the late summer of 1977, there were a number of further significant changes to the mission.

Up front, the twin spacecraft had their names changed from Mariner 11 and 12 to Voyager 1 and 2. This was done both to reflect their expanded designs and goals beyond what

the earlier Mariners had accomplished and to make the probes and their missions more exciting to the public. The Voyager team also hoped that, though the craft were still officially meant to explore just Jupiter and Saturn, they would be strong and adaptable enough to complete most of the original Grand Tour plan by reaching Uranus and Neptune just over one decade hence.

Finally, just months before the two Voyagers would leave Cape Canaveral in Florida aboard separate powerful Titan 3E/Centaur rockets, a small group of far-seeing individuals convinced NASA to place a sampling of sights and sounds of our world and our species engraved onto two golden records which were subsequently attached to the sides of the Voyagers. These discs would accompany the probes past the outer worlds into the wider realm of the Milky Way galaxy. These artifacts would serve as a long-lasting record and tribute to the beings who built and launched these early interstellar wanderers and as a greeting for either their distant children or other intelligences that may move among the stars.

With their missions spanning the second decade of the Space Age, the two Voyagers truly revolutionized our understanding of the outer Solar System, in spite of the fact that they were not the first vessels from Earth to explore that region of our celestial neighborhood. That honor went to Pioneer 10 and 11, which flew past Jupiter in 1973 and 1974, respectively, with Pioneer 11 going on to flyby Saturn in 1979. The Pioneer probes then headed off into interstellar space carrying golden plaques engraved with basic information about humans, our Solar System, and our place in the galaxy. Nevertheless, the improved technologies aboard the Voyagers allowed scientists to surpass what was seen and found at and about those enormous globes by either the Pioneers or Earth-bound astronomers of the era.

At their first destination, Jupiter, the Voyagers revealed the incredibly complex patterns of the planet's cloud patterns, including the Great Red Spot, which was confirmed to be a hurricane system three times the size of Earth that has been churning in the Jovian atmosphere for at least four centuries. Amazing as this was, what captured even more attention from the scientists, media, and public alike were the four large Galilean moons that circled Jupiter, collectively named after the Italian astronomer who discovered them in 1610. These moons were truly worlds in their own right and not the relatively sedate places initially thought to be.

The innermost of the Galilean moons, named Io, turned out to have highly active volcanoes spewing molten sulfur all over its surface and far into space. Alien volcanoes had been seen before, on the planet Mars, but Io's were anything but extinct, to say nothing of being almost completely unexpected before the Voyagers came on the scene in 1979. The next moon nearest to Io, called Europa, was a contrast: The moon's surface was icy and smooth, populated by long dark lines across its face, with only a few impact craters large enough to be visible to Voyagers' cameras. But underneath Europa's covering of ice appeared to be a different story: A global ocean of briny liquid water perhaps sixty miles deep with twice the volume of all the water on Earth! Though certainly not visible to the instruments of its mechanical discoverers, serious speculations on the possibility for living creatures and what

forms they might take in the distant waters of Europa wasted little time in appearing.

Thanks to the Voyagers, worlds that were once hardly even considered as abodes of geological activity and life were now seen as even better prospects for living organisms than the traditional worlds in those categories. Voyagers' discoveries at Jupiter, perhaps more than any other place the probes would fly past on their journeys out of the Solar System, truly changed humanity's perspectives on the alien realms inhabiting the outer reaches of our celestial neighborhood. Witnessing the truly dynamic nature of our Solar System through the Voyagers also enriched and expanded our thinking about worlds and beings around other suns, made all the more plausible by the discoveries of extrasolar planets in the years since the primary Voyager missions, of which most of those found so far appear to be similar to Jovian worlds.

Thirty-three years after leaving Earth and twenty-one years after Voyager 2 had flown past the last of the gas giant planets, Neptune, both Voyagers continue to function and return priceless data on regions of the outer Solar System where no human-made spacecraft has ever been before. This area, known as the heliosphere, is considered part of the cosmic boundary between our Solar System and where true interstellar space lies. Perhaps before they expire around 2025, one or maybe both of the Voyagers will last long enough to perform one more scientific mark by revealing the constituents of deep space beyond the influence of our Sun.

The very fact that the Voyagers would be propelled into the Milky Way galaxy by their interactions with the giant planets of the outer Solar System is what inspired the late Cornell astronomer and science popularizer Carl Sagan and others to create what has become known as the Voyager Interstellar Records. While he and others knew the odds of the Voyagers ever being found by other intelligences were small, the fact that the probes would be only our third and fourth artifacts sent to the stars compelled Sagan and his companions to utilize this opportunity to preserve something of ourselves where it could last far longer than anywhere on Earth, perhaps one billion years or more.

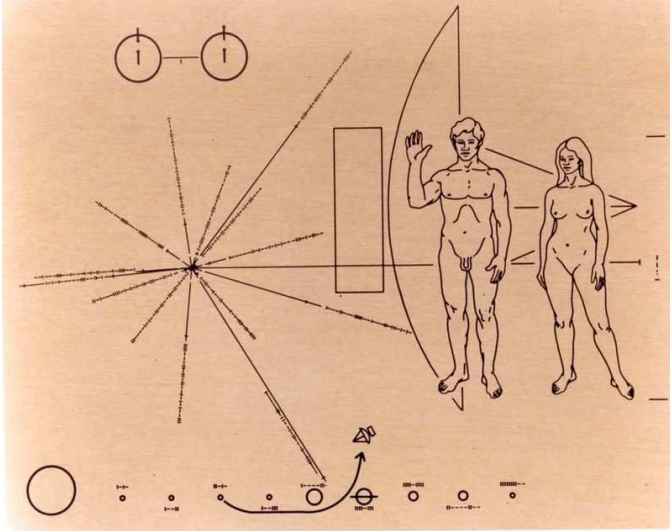
Most importantly, while the Voyagers were built and launched by the United States of America, the golden records were designed to represent as much of our whole human species and the rest of life on Earth as possible in images, words, sounds, and music. Scanning through the contents of the records, which can be done from this Web site: <http://goldenrecord.org> one gets a definite sense of our being one species on just one world among hundreds of billions of stars in a vast Universe composed of billions of galaxies. To quote Carl Sagan in the Epilogue of the 1978 book on the Voyager Interstellar Record titled *Murmurs of Earth*: "But one thing would be clear about us: No one sends a message on such a journey, to other worlds and beings, without a positive passion for the future. For all the possible vagaries of the message, they could be sure that we were a species endowed with hope and perseverance, at least a little intelligence, substantial generosity and a palpable zest to make contact with the cosmos."



Pioneer Plaque Immortality

by Nick Sagan

A BBC reporter recently interviewed me for a program they're doing about the Pioneer Plaque, which provided me the happy opportunity to reflect on my mom and how her art might be remembered:



I'm thrilled, quite honestly. To know that your mother's artwork is out there perpetually voyaging, just waiting for a prospective extraterrestrial to come along and discover it is a surreal but strangely satisfying feeling. Long after you and I are gone, that iconic man and woman will still be around with hand raised in greeting. It's a fantastic kind of immortality. For my mom, specifically, in the sense that her art will live on long after her, but also for the human race as a whole.

Whatever foolishness we may do, there is a record of us. A representation. Who we are, what we look like, where we come from. It's possible that the Pioneer Plaque will some disastrous day become one of the few relics of our now mighty civilization, but hopefully years from now when we're still going strong, our descendants will look fondly back at space missions like Pioneer and Voyager and appreciate them for carrying humanity's optimism.

The Plaque says a lot about us, not only to potential aliens, but to ourselves - it lives on as a commemoration of what drives us to reach out to others, a commemoration of our hope of encountering life beyond the confines of our beautiful blue-green world as we take our first fledgling steps into the vast cosmic dark.

Note: Reproduced by permission from the Nick Sagan Online blog, at

http://nicksagan.blogs.com/nick_sagan_online/. ❖

Guest Editorial

Greenpeace, Which Side Are You On?

by Adriano V. Autino

President, Space Renaissance Initiative

We in the Space Renaissance Initiative, a quickly growing international association, believe that technology, particularly space-based technology, is the key to the survival of human civilization and all life on Earth. We are horrified and crestfallen by the long and continuous series of crimes committed by the oil industry against the sea, the primary source of life on our mother planet. The April 2010 oil platform disaster in the Gulf of Mexico is just the latest, incredible, absurd, terrorist attempt against one of the most beautiful and rich sea environments of Earth.

Greenpeace, for the last 40 years, you have been the champion of environmentalism and the defender of nature. And, we would like to see you step up your efforts:

- We want to see the Rainbow Warrior protest the BP ships that currently troll the Gulf of Mexico, scouring it of its oil.
- We want to see Greenpeace at our side, pursuing public lobbying for the advent of Space Based Solar Power in order to finally emancipate ourselves from the slavery of oil--the very worst polluting source of energy, which is also responsible for hundreds of horrible crimes against the sea.

Greenpeace, come and join the Space Renaissance. It's the best chance of survival and civil progress for humanity...and the only chance to relieve this planet from the burden of our development.



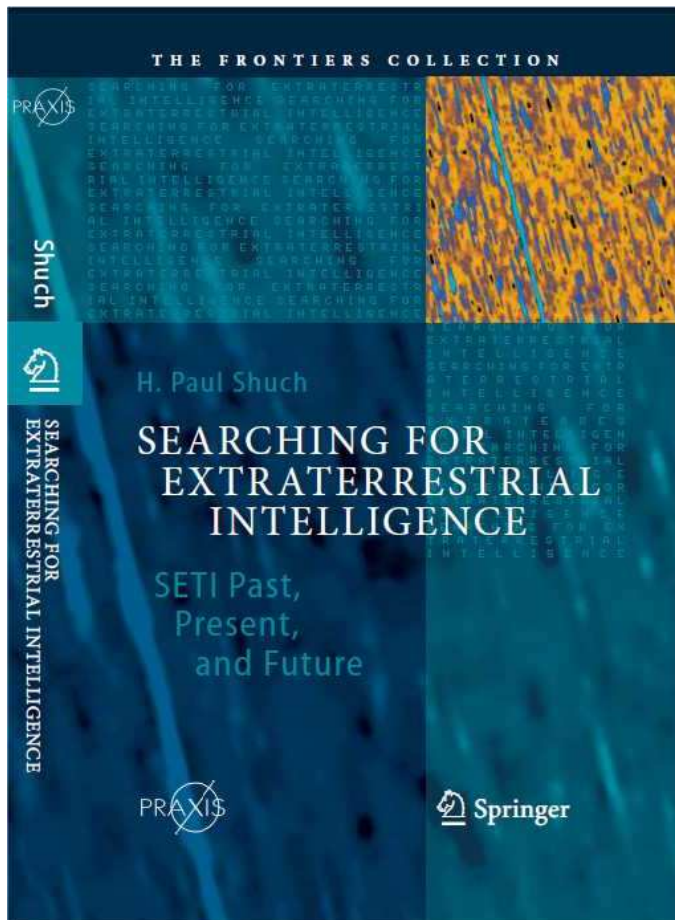
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Book Preview:

Searching for Extraterrestrial Intelligence

SETI Past, Present, and Future

Edited by H. Paul Shuch



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- Brings together seminal papers on SETI (search for extraterrestrial intelligence) science, each authored by the pre-eminent authority on the topic
- Reviews the technical aspects of this highly interdisciplinary intellectual pursuit
- Covers the past, present and future of SETI science
- Demonstrates why new scientific knowledge coupled with emerging technologies promise a positive result within the next half-century

This book is a collection of essays written by the very scientists and engineers who have led, and continue to lead, the scientific quest known as SETI, the search for extraterrestrial intelligence. Divided into three parts, the first section, 'The Spirit of SETI Past', written by the surviving pioneers of this then emerging discipline, reviews the major projects undertaken during the first 50 years of SETI science and the results of that research.

In the second section, 'The Spirit of SETI Present', the present-day science and technology is discussed in detail, providing the technical background to contemporary SETI instruments, experiments, and analytical techniques, including the processing of the received signals to extract potential alien communications.

In the third and final section, 'The Spirit of SETI Future', the book looks ahead to the possible directions that SETI will take in the next 50 years, addressing such important topics as interstellar message construction, the risks and assumptions of interstellar communications, when we might make contact, what aliens might look like and what is likely to happen in the aftermath of such a contact.

Content Level » Popular/general

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About the Editor:

Dr. H. Paul Shuch is Executive Director Emeritus of the SETI League, an international educational and scientific non-profit corporation involved in and promoting all aspects of SETI research. He designed and served as principal investigator for the Project Argus all-sky survey, he is Principal Investigator for the Invitation to ETI initiative and he is best known for having developed and produced the world's first commercial home satellite TV receiver. ❖

Exoplanet–Lithium Link Debated

by Douglas Pierce-Price and Patrick Baumann
Max Planck Institute for Astrophysics
European Southern Observatory

In a recently published result, astronomers have used several telescopes, including ESO's 3.6-metre telescope at La Silla, to measure the properties of 117 Sun-like stars, of which 14 are known to host exoplanets. They measured the amount of the chemical element lithium in the stars, along with other stellar parameters. The researchers have found that the level of lithium in the stars studied decreases with the age of the star, and furthermore that the lithium levels do not behave differently in stars with known planets.

Relatively low levels of lithium are found in our Sun, compared to other Sun-like stars, and there has been much debate about the reason for the difference. One possible explanation is that the presence of planets, as found in our Solar System, may be linked with reduced levels of lithium in the host star. Such a link was indicated in research also done with ESO's 3.6-metre telescope and its HARPS spectrograph, which was published in 2009. The new result indicates a contradiction with the earlier paper, and argues that the Sun's lithium content is as expected when one takes its age into consideration. This is a good example of the process of scientific research: new results may build on, and in some cases contradict, earlier studies. Scientific research, which takes place at the edge of our knowledge about the Universe, is, by its very nature, a difficult, incremental process.

The research is ongoing with several teams trying to decode the lithium mystery in Sun-like stars. For example, it is thought that the rotation of a star may also affect the level of lithium observed, and that the presence of planets may affect a star's rotation. Therefore, our understanding of possible links between lithium levels and the age of a star or the presence of planets will develop as more observations are obtained. One thing is certain: we can expect further debate in this exciting field.



Guest Editorial

Alien Invasion: Why Stephen Hawking is Wrong

by Paul Davies

When British cosmologist Stephen Hawking warned against contact with extraterrestrials in a new Discovery Channel documentary, he was repeating a well-worn argument. "If aliens ever visit us, I think the outcome would be much as when Christopher Columbus first landed in America, which didn't turn out very well for the Native Americans."

But Hawking's reasoning is flawed on a number of counts. First, we can ask why the aliens would come here with guns blazing. What could they possibly want? Hawking suggests that Earth's resources might be a reason. "I imagine they might exist in massive ships, having used up all the resources from their home planet. Such advanced aliens would perhaps become nomads, looking to conquer and colonize whatever planets they can reach."

It is a chilling image, reinforced by science fiction stories from *War of the Worlds* to *Independence Day*, but the argument doesn't really wash. A super-civilization capable of making starships would certainly have the means to observe Earth in detail from many light years away, and they would have known all about our planet's resources for as long as they had possessed advanced technology.

Here we hit another common misconception. Earth is about 4.5 billion years old, and there were stars and planets around long before the solar system even existed. Assuming intelligent life is likely, as Hawking suggests, then some alien communities would have emerged a very long time in the past. If resources are the motivating factor, then at least one group of aliens would surely have spotted Earth as a desirable destination millions of years ago, and come here when they could have had the planet for the asking, without pesky humans to complicate the takeover.

Another problem with Hawking's picture is the sheer distances involved. The galaxy is huge by human standards. The nearest star is over four light years away - about 25 trillion miles. Within the scientific community, even the optimists believe the nearest civilization could well be hundreds of light years away. Because nothing can travel faster than light, the Hollywood image of aliens plying the vast interstellar voids in star fleets is absurd. It's far more likely that alien civilizations would limit contact to radio communication rather than engage in the sort of close encounters favored by movie makers.

But suppose by some fluke aliens did come to visit Earth in the near future, then comparisons with Columbus are in any case wide of the mark, and reflect the rampant anthropocentrism that pervades much speculation about alien life. Just because we go around wiping out our competitors doesn't mean aliens would do the same. A civilization that has endured for millions of years would have overcome any aggressive tendencies, and may well have genetically engineered its species for harmonious living. Any truly bellicose alien species would either have wiped itself out long ago, or already taken over the galaxy.

By comparison, humans would quite likely be considered dangerous warmongers, posing a possible menace to our galactic neighbors in centuries to come. If so, then ET may act to eliminate the threat if we didn't mend our violent ways. Ironically, the greatest danger from an alien encounter may be ourselves.

Disclaimer: The opinions expressed in guest editorials are those of the individual authors, and do not necessarily reflect the position of The SETI League, Inc., its Trustees, officers, Advisory Board, members, donors, or commercial sponsors.





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Life Member (until we make contact)	\$1,000
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