

# The Search for Extra Terrestrial Intelligence (SETI) – Are We Alone in the Universe?

**Who is out there? What have they found?**

By Mark Moidel

Are we alone in the Universe? Who is out there? Scientists around the world are trying to receive extraterrestrial signals. What do they hope for? What have they found? Where is the evolution of human beings headed?

## The Cosmic Radio Dial

290 miles northeast of San Francisco, California, something other worldly is going on.

An array of 350 antennas is being put together at Hat Creek Radio Observatory. This array made of large radio antennae, resembles the one that Jodi Foster's character Ellie worked at, in the screen adaptation of Carl Sagan's book "Contact". Officially it's called the Allen Telescope Array.

Funded mostly by former Microsoft co-founder Paul Allen at a price of \$50 million, the SETI Institute, all these years later, is still hot in pursuit of an alien message beamed our way.

SETI researchers believe an advanced alien civilization attempting to communicate with another species, in this case us, would beam a message into space via radio waves. The challenge has been to figure out what radio channel they are transmitting on.

It was put forth by Giuseppe Cocconi and Philip Morrison in a paper appearing in Nature Magazine, that the most reasonable place to send a message would be near the radio-channel of neutral hydrogen. Neutral Hydrogen's cosmic frequency is 1420 mhz on the radio dial. At that frequency there seems to be a

minimum amount of background noise and so they postulated, that would be the best place to send a message. So for decades, SETI researchers excited by that possibility have been trying to listen in on the cosmic radio dial at or near that radio frequency to hear if there might indeed be a signal from an extra terrestrial civilization beamed in our direction.

## **A Species-to-Species Call**

During the first 4.5 billion years nothing but silence has emanated from our planet on the cosmic radio dial. Then, during the past 100 years Earth started broadcasting radio and TV signals which have leaked off our planet and out into space.

It is reasonable to assume that if there were an advanced civilization within 100 light years of Earth (as the radio and TV waves travel at the speed of light) listening for messages, the way we are, they would hear our first broadcasts. They might think we are still in World War 1 or 2 if they don't take into account the time it took for the signal to travel there. It makes you wonder if seeing that might give them the wrong impression (or the right one) of our race.

If they were on the ball and sent out a reply to us, depending on their distance from us, it would take up to 100 years for their reply to reach us.

As co-author of the Cocconi-Morrison paper and MIT physicist Philip Morrison said, "It's not a person-to-person call. It's not a station-to-station call. It's a species-to-species call!"

## **Optical SETI**

Dr. Stuart Kingsley, of the Columbus Optical SETI Observatory, has argued for years that if aliens were transmitting a signal toward Earth, they would certainly try to send the signal through pulsed light beacons because using that method, one could store a lot information and have it travel further with less loss of data than one could using radio waves.

## Are We Alone in the Universe? – The Search for Extra Terrestrial Intelligence (SETI)

His views were found interesting, but due to some hard-nose politics, and a lot of competition for funding, he flew solo on the Optical Search for many years, tirelessly promoting Optical SETI.

His arguments proved to be correct. “After all” Dr. Kingsley said, “we can see that in the future, robots probing Mars will beam back messages via laser beam and that signal will in turn be broadcast in your home via fiber optic. The future is clearly photonic!”

Now, nearly two decades later, his advocacy for Optical SETI has paid off. There are now Optical SETI searches at Harvard, sponsored by the Planetary Society, and at UC Berkeley as well as his own (formerly in Columbus, Ohio now relocated to Bournemouth, United Kingdom).

### What Have We Found?

After several decades of searching it's fair to ask, “What have we found?”.

The best signal so far came from a former SETI Search Programme at Ohio State University, called “Big Ear”. The “WOW Signal” was a signal that appeared to come from an extra terrestrial source but didn't last long enough to be verified by another source. Several attempts to re-acquire the signal were in vain. It's referred to as the “WOW Signal” because the astronomer on duty wrote “WOW” on the paper print-out monitoring the signal.

That's pretty much it.

Sure there are signals all the time, but unless the observers can verify that the signal came from an off-Earth source, they can't officially record anything as a confirmed existence of an extraterrestrial signal.

For that reason, searches are taking place all over the world, in both hemispheres. Some do the key searching, others do the follow ups, if something of interest might be discovered.

So you ask, “After decades, that's it?”. Well remember, if the aliens listening to our TV and Radio broadcasts are 60 to 100 years away (and that's considerably close considering the vastness of space), and if they have a response prepped and ready to send immediately without further pause, then that will take decades to centuries to receive a reply, if they choose to reply.

## Are They Benevolent?

They may be asking the same thing of us Earthlings, especially if the first signals they received from us are that of World War.

They may choose not to make “Contact” with us until we have solved our problems.

Conversely, our military experts might argue, we may choose not to reply if we receive a confirmed signal from them, as we may not know their intentions. They just may well be hostile. Some argue that a technologically advanced society would have overcome their petty differences and hostilities. Has technology helped us overcome our differences or has it only hastened the killing?

It is hoped that the aliens would be able to offer us cures to our rare diseases and have a Galactic Treasure Trove of knowledge at their fingertips (if they have fingers). Are we so audacious as to hope that they would share that information with us? Have we proven ourselves worthy of such knowledge?

Regardless of intentions, the SETI researchers are not broadcasting (like our Radio and TV stations) rather, they are listening.

Whether they'll release the details of a signal detection is another matter. Are religious institutions and people around the world ready to accept that ‘we are not alone’? That we were not created in HIS image?

Arthur C. Clarke said, “If after centuries of searching we still find nothing, then we can consider ourselves to be ‘Guardians of the Galaxy!’”

## Learn More

### Videos

For an excellent introduction on the subject of SETI, watch the film

[Contact: The Search for Extra Terrestrial Intelligence](#)

¡Video disponible en español! A Spanish version is available

[Contacto: La búsqueda para la inteligencia extraterrestre](#)

“Contact: The Search for Extra Terrestrial Intelligence”, speaks with researchers, authors and scientific experts about the various SETI issues.

The film features eminent science fiction author of “2001: A Space Odyssey” Arthur C. Clarke, MIT physicist Philip Morrison, Gerritt Verschuur, the SETI Institute’s Seth Shostak and Jill Tarter, Jaymie Matthews (UBC), Clive Goodall, Stuart Kingsley (Optical SETI), Bob Dixon (Ohio State University), Harvard’s Paul Horowitz, UC Berkeley’s SERENDIP researchers and many others.

The re-mastered DVD runs 48 minutes.

**“An excellent introduction to the most awesome quest upon which science has ever embarked – the search for intelligence elsewhere in the Universe.**

**The interviews with the astronomers and engineers involved should convince any thoughtful person that the modest sums needed for the enterprise may be the best investment mankind will ever make.”**

**–Arthur C. Clarke, Chancellor: International Space University**

“Contact: The Search for Extra Terrestrial Intelligence”, the DVD, is available for purchase through the Space Viz web site at:

<http://www.SpaceViz.com>

The DVD is also available for purchase from [Amazon.com](http://www.amazon.com)

## Online

For more comprehensive information about SETI visit the following links:

The SETI Institute <http://www.seti.org>

SETI at U.C. Berkeley <http://seti.berkeley.edu>

Columbus Optical SETI <http://www.coSETI.org>

SETI League <http://www.setileague.org>

SETI@home <http://setiathome.ssl.berkeley.edu>

Ohio State Big Ear <http://www.bigear.org>

Optical SETI at Harvard <http://seti.harvard.edu/oseTI>

Project BAMBI <http://www.bambi.net>

SETI Australia Centre, Southern SERENDIP <http://seti.uws.edu.au>

SETI Italia <http://www.seti-italia.cnr.it>

A plethora of other material about the SETI issue can be found online.

## About the Author

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**Mark Moidel** is a film maker, musician, editor, interviewer and author, based on Earth, with a planet to save.

He has a Science background and a Fine Arts degree. He is a science buff, an amateur astronomer and speaks at Special 'Science' Events throughout the world. He is often invited to speak (or Key Note Address) to the general public-at-large in a succinct, educational and entertaining way about astronomical phenomena. His advice is sought after by the local media and press.

Mark's special interests and expertise also include dogs (and pets in general); music composition and publishing; and independent film production and distribution.