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How to tell about SETI: rectifications and new opportunities

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Abstract. The urgent feeling of having to specify the big difference with respect to ufology and other trendy pseudo-scientific beliefs inspired by the subject: these are the "rectifications" that SETI communicators need to deal with. However, once this issue has been addressed (possibly with very strong impact), a thousand opportunities open, to explain the research method, the involved disciplines and skills and to share all the status-of-the-art knowledge about life in the Universe outside the Earth, on all counts.

1. Introduction

Search for Extra Terrestrial Intelligence (SETI) is a scientific research program. The subject favors the confusion of SETI with other fancy pseudo-scientific theories, that is why the communication of the project is perceived as somehow dangerous from scientists, as can easily be mystified. The Radio Astronomical Station in Medicina (close to Bologna) operated by the Italian National Institute for Astrophysics (INAF) has been involved into SETI research for 20 years now, thanks to a technology that allows piggy-back observations. We present here some of the difficulties that we have faced during our experience. On the other hands, we have also pointed out a good side of the story, i.e. the natural interest that the SETI project can benefit from, which offers a lot of great opportunities of "out-reaching" towards the general public, involving them in all aspects of the search for extra-terrestrial life through SETI. In the end, we suggest a possible format for the communication of the SETI project within INAF.

2. SETI and scientific communication

Research within the framework of the SETI project is proper scientific research, based upon the common criteria of the scientific method, such as describability in terms of making hypothesis and testing procedures, guaranteeing replicability, asking for external review, etc. It makes use of the same radio telescopes used for astrophysical research (using piggy-back techniques) or it has some dedicated technologies, funded by private citizens/organizations or industries. The research methodology is chosen upon scientific theoretical bases and always according to a certain "principle of reasonableness" of the investment of time and money.[1]

Before and after the opening of the "Marcello Ceccarelli" visitor center of the INAF radio telescopes in Medicina, a lot of people visiting the site have been asking about SETI, since they know the 32-meters dish was

[1] SETI program was embraced by the United States National Space Agency (NASA) in 1992-1993.

Fig. 1. Seth Shostack in Bologna in 2010.

involved in that research project. During all these years, we have faced some behaviours and beliefs that, according to us, can be pinpointed as the main risks of SETI research being misinterpreted or mixed up with something else.

2.1. SETI vs UFO

During the talk presented in 2010 (fiftieth anniversary of the Drake equation) in Bologna, Seth Shostack (Director of the SETI Institute back then) devoted 20 of the 47 minutes of his exposition to the clarification of the big differences between SETI research and the widespread beliefs about UFOs. Shostack put it in his usual friendly way, saying: ”A lot of people think that doing SETI is a waste of time because aliens are already here, flying around in their saucers or occasionally pulling you out of your bed for experiments that are not appropriate on a first date”.

2.2. SETI vs. the ”official” science

The search for extra-terrestrial life, and consequently SETI, is not referred to as a ”typical” scientific research. It is often presented as opposed or anyway external to the ”official” science, in conformity with ufology. The Italian program ”Voyager”, usually committed with mysteries and ”unexplained phenomena” of many kinds, in 2009 dedicated an episode to SETI and visited the Medicina radio telescopes. The presenter started off by saying: ”When we talk about extra-terrestrials, scientists usually turn up their noses [...] buy there are some scientists actually looking for signal of alien lives. And some of them work right here, in Italy”.

2.3. SETI vs other ”daydreams”

The ET-alien-UFO misunderstanding often leads SETI to be linked by journalists to not as such scientific tales. The above mentioned Voyager telecast about SETI was carefully checked by the Public Outreach and Education Officer of the Institute of Radio Astronomy of Bologna, with regards to all texts, references, filmed scenes, in order to make sure the scientific message was correct and without ”poetic license”. Nobody could either prevent or foresee what the authors were about to put right after the TV report about SETI, during the same episode. It was a report about ”Gettysburg, the more haunted place in the world”. In general, it often happens to come across articles about SETI (see fig. 3) paired to non-scientific stories aliens- or UFO-related (fig. 4).

3. To tell or not to tell about SETI? And how?

Fig. 2. A scene of the episode aired on February 25th 2009 of the Italian telecast Voyager.

When public research is involved, the confusion between SETI and pseudo-scientific or non-scientific themes is certainly risky in terms of explanation of how the funding for the research is used in the first place. Not telling anything, especially being this such attractive

Fig. 3. A page of the Italian magazine Focus, telling about some possible massages received within the SETI project, which werent real ET signals.

Fig. 4. At the bottom of page shown in Fig.3, some "daydream" stories about UFOs, apparently considered relevant to the topic of the above article.

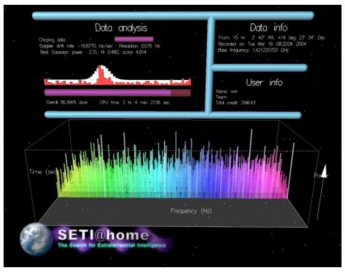

Fig. 5. The screensaver of the SETI@home project.

Fig. 6. The poster of the movie Contact, 1997, telling about the discovery of an ET signal with the Very Large Array of radio telescopes in New Mexico.

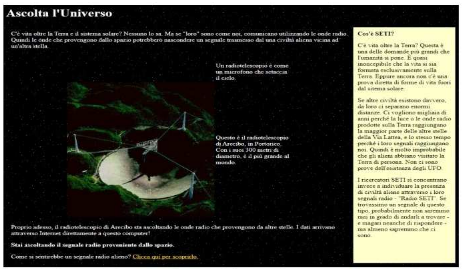

Fig. 7. The Hands-On Radio SETI exhibit at the visitor center of the Medicina radio telescopes.

and troublesome topics, could anyway be interpreted as hiding something. Appearing within a big TV telecast as Voyager in Italy implied reaching two million watchers at once, explaining what SETI is, against the roughly five thousand people per year visiting the radio astronomical station. Nevertheless, the possibility of not accepting the visit of the presenter and the authors of the telecast has been largely considered, because of the reputation of the program (that would mean a lot of work of scrutiny and check-up of the contents) and in order to preserve the research infrastructure from the possible backfire of incorrect or equivocal communication. But this would have possibly meant being named during the episode as the ones that did not let us in, as if they are hiding something. Within the broad framework of the fear for a conspiracy, many people do believe that the discovery of a SETI signal would not be communicated to the public and would instead be kept secret, or even covered in lies[2]. The great advantage about

[2] Seth Shostack told of when in 1997 he received a signal that looked like ET and instead was the Soho satellite. He reported that nobody from the government or the military called: hours later, the first one to call was a journalist of a modest local newspaper.

SETI research and communication is that its subject is naturally intriguing. This means that the general public finds more acceptable and sustainable, even in economic terms, with respect to other they may consider less familiar or fascinating. People tend to like the SETI project and are eager to be involved in it, as the success of SETI@home project in 1999 clearly demonstrated[3]. On the other hand, very few realize the technical difficulties of this research, dealing with enormous distances and the finiteness of the speed of light. If we consider that a scientific research can be perceived as sustainable when it maximizes the result of the relation (importance of the discovery) x (difficulty of discovery), SETI project is definitely worth the effort, according to a public of both experts and non-experts. Besides, since the search of life outside the Earth is facing a massive acceleration[4], also the communication of the SETI project need to be significant. Surely, as shown with the many examples and considerations above reported, a great attention is needed, in order to:

– properly and efficiently convey the science of SETI;
– curb the media, mainly with regards to the mystification of this research and the confusion with non-scientific subjects.

The Hands-On Radio SETI Exhibit (HORSE) developed at Berkeley University is a very good tool for explaining SETI to a general public. It shows the differences between a monochromatic radio signal and a natural, broad one, also giving hints about the difficulty of this research activity. It also includes a game for the research of SETI signal in a sky map with a pointer that simulates the observing radio telescope. This exhibit, translated in Italian, is shown at the "Marcello Ceccarelli" visitor center in Medicina. During the years of SETI research activities at INAF-Institute of Radio Astronomy, the working group for outreach and education has argued a lot about the opportunity of introducing other aspects of the scientific search for extra-terrestrial life, also using a model representing ET (the movie character). After considering all aspects, we have decided that, as not talking about this issue was unacceptable, we would face the risk of misconception (and try to stem them) but, on the other side, we would also take advantage of the appeal of the argument, in order to tell about INAF research activities about life beyond the Earth. We then decided to put a model of ET close to the HORSE exhibit; ET carries a tablet showing presentations about exoplanets, esobiology, SETI, etc.

Fig. 8. The HORSE exhibit with ET close to it.

4. Ideas for the outreach of the SETI project within INAF

The SETI project involves two radio telescopes of the Italian National Institute for Astrophysics. SETI research has been carried out in "piggy back" (background) since 1998 at the radio telescope in Medicina. Recently, also the Sardinia Radio Telescope (SRT, close to Cagliari) has being used for this type of researches. In addition to that, the search for Exoplanets and the study of the chemistry of

[3] The SETI@home (1999) is a project of distributed calculus aimed at:
- supporting scientific research to identify signals of intelligent life outside the Earth;
- demonstrating the feasibility and practicability of voluntary and distributed calculation.
It was acknowledged by the 2008 edition of the Guinness World Records as the largest computation in history.

[4] Shostack in 2010 said that, unless we completely misunderstood the physics fundamentals, we would find ET signals within 24 years from then (by 2034).

the Universe in search of markers of life is very active inside INAF. Also the idea of using new technologies (such as the telescopes dedicated to the study of Cherenkov light, or optical SETI) for the background or active search of extra-terrestrial life is catching on. Therefore and for all reasons above indicated, SETI within INAF can be effectively communicated together with other scientific researches looking for indicators of life beyond the Earth. We suggest the scheduling of periodic open days or festivals explaining the state of the art of the search for extra-terrestrial life. The events should include:

– ”panels”, workshops or round table discussions, where different experts tell about their research, the intersections and the complementary aspects;
– interactive exhibits on SETI, games and laboratories explaining what an artificial signal is and allow the public to try themselves the search for life beyond the Earth with the same methods (and the same difficulties) the scientists.

The open day or the festival could also be the closing events of a SETI INAF research-technological workshop.

5. Conclusions

Despite the fact that a sort of hesitation is obviously faced when talking about SETI and the search for extra-terrestrial life on scientific basis, due to the many misconceptions related to the fanciness of the subject, we conclude that not only it is necessary to talk about SETI, but also it is advisable and promising. The great attention and good mood that the public shows with respect to this project can be used to perform a very effective communication not only about the project, but also about other fields of research related to life outside the Earth on all counts. Regarding INAF, in particular, since the Institutes commitment into SETI project and other research activities related to the quest for extra-terrestrial life already is or is becoming more and more active, we suggest the organization of periodic open days for the public, telling the status-of-the-art of these researches.

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