

Complementary SETI Research Strategies

By Scot L. Stride

scot.stride@interstellar-probes.org

There is wide agreement that many possible observational manifestations of extraterrestrial technology exist. These manifestations take the form of energy or matter markers. While manifestations of ET mind and consciousness might also be possible, designing observational experiments to search for such exotic markers does not presently fit within the scope of SETI. Some argue that extraterrestrial consciousness studies are a necessary ingredient, but observational SETI researchers are not ready to go there. I agree. Of the more familiar energy and matter markers there are shared features. Electromagnetic emissions whether microwave or optical are the result of a physical device; these devices are artifacts. In the SETI research an alien transmitter, whether located on a very distant world or on a robotic space probe near our solar system, is an artifact of extraterrestrial technology. In essence, the SETI is an indirect search for artifacts of extraterrestrial technology.

SETV is the Search for Extraterrestrial Visitation. SETV is a new strategy – a hybrid of the SETA (Artifacts) and SETI strategies. Like SETI, SETV is a passive search for artificial emissions from ETI. Unlike traditional SETI, SETV is a local search within our solar system for physical artifacts of ET technology. These artifacts might be robotic probes which emit energies that are detectable on Earth. Being within the solar system it's also possible to directly image these artifacts.

When people hear the term “visitation” they mainly think of alien beings in ships coming to study Earth. Unfortunately the SETV strategy gets confused with UFOlogy; after all, SETV is a solar system search for ETI, and if ET probes can get here at all they might take an interest in life on Earth. Similarly there are large numbers who indiscriminately lump microwave SETI efforts with UFOlogical efforts; after all, both claim to be looking for ET. The truth is the SETI and SETV strategies complement each other; both are the opposite of UFOlogy.

SETI and SETV follow well established scientific methods handed down from decades of observational astronomy. Both strategies depend on instrument data for their scientific proof. UFOlogy, by the very nature of the available data, follows vastly different methods. UFOlogy methods range from archival and historical document analyses to collecting eye-witness reports and interviews with “abductees.” Certain prominent figures in UFOlogy have tried in vain to apply observational methods to their research. Frustrated in their efforts they decided it was cheaper and easier to get their data in other ways (e.g., hypnotic regression, FOIA searches, etc.). Unlike UFOlogy, which is ridiculed as being “pseudo-science”, modern SETI/SETV efforts avoid such cynicism by depending exclusively on objective data from electronic instruments.

SETV, like SETI, is a passive observational experiment using instruments, sensors and computer technology. SETV is a scientifically based search within the solar system for active *robotic* spacecraft of presumed ET origin. The SETV search environment is bounded by the volume of space within the orbit of Pluto. There are two components to SETV, the “back porch” search and the “back yard” search. The back porch search, like SETA, endeavors to collect observational data in the space between the Earth's surface and the Moon (cislunar space). The back yard

search, termed Solar System SETI (S³ETI), seeks indirect evidence of ETI artifacts in the solar system. S³ETI is a targeted search for anomalous microwave or laser emissions using existing or future ground-based SETI resources.

In any case these robotic probes are expected to be remarkably advanced and endowed with artificial intelligence. Based on the history of Earth's space programs, it is far more practical and valuable to construct robotic probes to explore the cosmos than to send out biological entities. For example, the cost of the NASA Apollo program alone (~\$25B) was significantly more than that spent on all NASA planetary exploration missions to date. However, we have learned more about the solar system from robotic missions than manned ones. Robotic exploration continues to be a better deal for tax payers than manned exploration. While it's been postulated that advanced ETI could genetically engineer a crew to live and work in interstellar space, their first attempts at interstellar exploration will involve smart spacecraft.

Steven Dick postulates the universe could presently be in a "post-biological" epoch where artificial or machine intelligence dominates biological intelligence. As computer and nano technologies continue to advance at record pace, it's plausible that in the future our interstellar probes will possess artificial intelligence, autonomy, reconfigurability, self-repair and self-replicating capabilities. Many futurists and "big thinkers" predict major changes to society when intelligent self-aware machines come into existence. In fact, some believe biological intelligence is an evolutionary step towards machine intelligence, one that's better adapted to survive the interstellar frontier. The SETI community generally agree that the first ETI we encounter will be vastly more advanced than us. To me "vastly" means highly evolved machines, not genetically enhanced humanoids. If we detect ETI in deep interstellar space it is likely to be an artificial intelligence. Intelligent machines will possess technological capabilities far beyond our present means. A machine intelligence may be in our solar system right now and detectable using the S³ETI strategy.

The microwave strategy has dominated the SETI field for over forty years, and it's true that no artificial signals have been confirmed. With the impending construction of the Allen Telescope Array (ATA) the dominant strategy will have a new and powerful tool at its disposal. If ETI exist and are broadcasting EM signals, the ATA represents the best resource for detecting them. The ATA could operate for at least 20 years, and if no ETI signals are detected by 2025 then what? SETI researchers are a patient bunch but they can't afford to pin all their hopes on the ATA.

The SETI community must no longer ignore searching our own solar system for signs of ETI. The shared goal of *all* SETI researchers is to find valid and objective scientific proof that we are not alone in the cosmos. And believe it or not the cosmos includes our solar system! It is time for the SETI community to invest considerable intellectual resources on alternatives. To foster innovative strategies, a "SETI Strategic Initiatives Workshop" needs to be organized and convened. Robert Bradbury points out that such a workshop may fall under the auspices of the NASA Astrobiology roadmap. While the roadmap goals exclude research into "signatures of intelligent life" a NASA sponsored workshop exploring alternative ways to identify "intelligence signatures" would be very healthy for the SETI. Lets get busy!