

from JL. Quadri's Science folder.
re SETI

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From:

JL

To: Van Allen

Lapp -- for further distribution

Jim-- I wonder if I can interest you in taking a close look at the problem of detecting interstellar communication (as a Q/S venture). It might be difficult to find another group that does as well to pull together the very wide range of interests and competence needed to inspire and oversee the program. I have no brilliant ideas about implementation, though I imagine we could set up a joint venture with one of the aerospace laboratories to engineer any proposals we might develop. Meanwhile, if you would also give it some push, I would hope that the group of us might come up with some concrete ideas.

(Quite apart from Q/S, Carl Sagan is visiting Stanford for 4 months, ~~xxxx~~ starting next week, with an intention, among others, of our surveying some of the fundamental issues in this field. He might be an excellent person to pull in as an additional consultant if we did decide to go more deeply into this project.)

Let us take it that the OZMA approach, groundbased detection of radio-microwave signals is already in hand by another group -- though not necessarily beyond the utility of further impetus.

I have had only two concrete ideas so far:

1). The "others" (what should we call them?) have reached a standoff not too different from our own. It is much cheaper to listen than to send, so everyone is listening, no one sending. This is an interesting bargaining situation; it may call for our investing the first ~~xxxx~~ alerting signal, just to provoke a response (hopefully less expensive for them than for us just now.) The cheapest alert I can think of is a string of nuclear detonations (thus wideband, pulse signals) fired from a heliocentric spacecraft, as far from the sun as possible to facilitate their resolution from the solar background. Some of the necessary data may be classified but Carl will be calculating the interstellar detectivity of such signals in various spectral regions. We might well think how to dope a detonation to accentuate a signature; apart from this, I do not now propose this item for special Q/S consideration.

2). The solar-terrestrial noise background is no help in searching for other signals, in any wavelength band. We may want to put our detectors in a well shielded site -- the other side of the moon is an obvious ~~xxxx~~ choice. Now we need a detector of very large aperture, not necessarily of very high resolution (as these desiderata tend to conflict with one another for very large systems). When we get to the point of lunar surface exploration, a large lunar crater may have a suitable figure for a reflector or antenna. Before then (and probably within the range of

present day technique) inflatable, orbiting structures may give us the best opportunity for mounting very large detectors. I have in mind something like the 100-foot (or larger) Echo balloon, but this would now be partially silvered to serve as a condensing mirror.

Am I wrong in thinking that a figure accurate enough to be useful could be constructed this way, if one did not ~~insist~~ insist on the kind of angular resolution which is requisite for the conventional aims of astronomy? As first choice, I have in mind a scan for a laser type signal, though perhaps at shorter wavelengths than are accessible to our own lasers just now (~~inaccessible~~ so that the stellar background would be proportionally less).

Needless to say, I would not be forwarding these tentative suggestions if I did not take the problem (and likelihood) of communication with other intelligent life as a very serious challenge. When we get over the first hurdle of taking the problem seriously, then just such groups as we constitute ought to make a systematic study of imaginative thoughts how to go about it.

(P.S. A large collector in earth orbit might not be useless for terrestrial reconnaissance, say for UV-signatures of missile exhausts; whether a low-resolution system would be beaten by the solar background, you will have to tell me.)

J.C.