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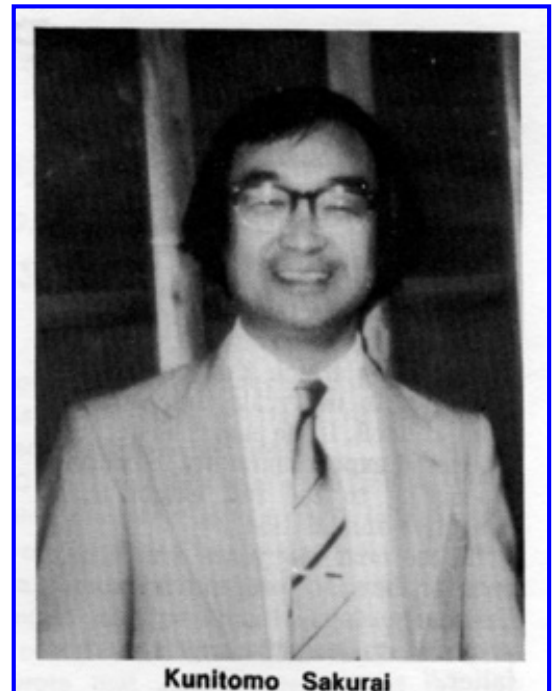
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## SETI in Japan — An Interview with Kunitomo Sakurai

By: David Swift



This



interview with Dr. Sakurai was obtained by David Swift, Professor of Sociology at the University of Hawaii and Contributing Editor of **COSMIC SEARCH**. Dr. Swift has had a long standing interest in astronomy and space. A Ph. D. from the University of California at Berkeley, he is author of the books: "Sociology of Education Ideology and Change in the Public Schools," Charles Merrill Publishing Co 1971 and "American Education Sociological View," Houghton-Mifflin 1976. Dr. Swift is currently preparing a new book on SETI, its history and implications.

**Cosmic Search:** When did you first think seriously about the possibility that extraterrestrial intelligence might exist?

**Sakurai:** In the 1950s when I went to the university. Accordingly, I took some courses in biology during my freshman year and planned to major in biology. At that time in Japan there was a very popular book written by Professor Schrödinger, who had developed the idea of quantum mechanics entitled **What is Life? Biophysical Processes About Evolution**. He never mentioned anything about intelligent life in the universe, but we read it for courses in biology and some other classes. People sometimes talked about the possibility that intelligent life existed elsewhere, and I began to study some of the problems related to it in my freshman year.

**C-S:** When do you guess that we will actually receive some kind of signal from ETI?

**Sakurai:** I am still very skeptical about the possibility that some Extra-Terrestrial Intelligence (ETI) is sending us radio signals which contain information about their existence.

**C-S:** You are skeptical?

**Sakurai:** Yes. We can send out radio waves to try to find ETI somewhere within 100 light years or so. If we are following some evolutionary trend of the stars and their planets, and most of the civilizations are evolving in the same steps as ours, then maybe some ETI has just reached the stage of civilization that we have. Then they are also trying to send radio waves to communicate with other species. But we are all at the same stage. Therefore it is difficult for me to believe that maybe 100 years or 200 years ago some extraterrestrial intelligences were already sending us information of their existence.

**C-S:** You are assuming that any other civilization is progressing at about the same rate that we are?

**Sakurai:** Yes, within a very close area around the Solar System, because most of the stars within 100 or 200 light years are almost the same age as our Sun. That means that if planetary systems evolved around some stars within that area, they may evolve life at about the same rate as ours. Perhaps beyond our reach some more advanced civilization may exist, but it may be almost impossible to communicate with them.\* (\* Although a hypothetical civilization on a planet orbiting another sun might be at our identical stage of development, it is not very likely since this would require that their rate of evolution matched ours for billions of years. For the difference to be less than 100 years in a billion years requires matching our average rate to a precision of one-hundred-thousandth of one percent (or one part in 10 million).

Ed.)

**C-S:** What would be your guess as to when we might actually make contact with them?

**Sakurai:** Maybe within a couple of hundred years or so we may reach the stage of communicating with each other by sending radio signals, or maybe some other different signals, using gamma rays or neutrinos or laser beams. It may be necessary to develop new techniques.

**C-S:** Then you do not expect it to happen tomorrow?

**Sakurai:** No, I don't think so. But we might detect something within a few years because in Japan a 45-meter radio telescope is now under construction, and we may start to search for ETI with it. We are asking for some observing time on the radio telescope. We hope that our project will be accepted. We are very eager to receive some radio waves from outer space. But now we have no possibility of studying ETI by any means.

**C-S:** There is no one in Japan who is actually studying it?

**Sakurai:** No one else.

**C-S:** How many other scientists in Japan are interested in extraterrestrial intelligence? How many would be studying it as seriously as you are?

**Sakurai:** I guess about thirty people. We have a very small association we call the **Association of the CETI**. We call it in Japanese "Seti no Kai." "Kai" means small group of association. We have occasional meetings and we discuss the possibilities of existence of ETI and communication with ETI using radio telescopes under construction.

About five people working at the Tokyo Astronomical Observatory are members of the association. Also some biologists, chemists, economists, radio engineers and mechanical engineers are very much interested and they are members of the association, too.

**C-S:** How important is SETI to you at this time? What priority does it have in your own professional work?

**Sakurai:** Not too high, because I am doing research on cosmic ray physics, mainly solar-flare particles and solar neutrinos, and some of the problems that may be related to the origin of cosmic rays. But in order to study these problems we have to know what is going on in interstellar space and interplanetary space and on the sun.

Our understanding of the origin of the solar system suggests that the sun was initially produced by action from a supernova explosion. If so, we must study also the sun's origin and the evolution of the planetary system including the earth, which was influenced by the shock wave produced by the supernova.

If we study some very old meteorites, called carbonaceous chondrite, we may obtain information about the birth of our sun and its planets. We may also find very interesting chemical evidence about the original composition of the earth's atmosphere and also the atmosphere of the giant planets and the terrestrial type planets. This knowledge is closely related to the possibility of the origin of life on those planets. Then we have to learn all that happened in the evolution of the planetary system in relation to ordinary life and its evolution. That's why I have become so interested in studying life in the universe. The existence of life in the universe is very closely related to all of the physical and chemical processes of the stars and solar systems. The evolution of life is very important to understand what went on in the history of our universe.

**C-S:** How about most scientists in Japan; do you think they agree with your view?

**Sakurai:** I don't think so. We may be considered by most of the scientists in the physics and chemistry community as the unusual guys. Most of those people don't believe in the existence of intelligent life elsewhere in the universe. Some do, but most are very skeptical, especially about the possibility of communication between us and ETI. Some people say to us that this is nonsense but we don't think so.

**C-S:** Is this true for other scientists as well as the public?

**Sakurai:** Even some scientists are very skeptical. The public attitude may be different. Now we have some magazines about extraterrestrial life and space travel. These journals are very useful. Many people are very much interested in learning what is going on in the universe, especially on ETI, but their interests are a little different from ours. They don't care very much about the scientific basis. We need to tell them what we are doing exactly on the scientific study of ETI. That's why I am writing along this line.

**C-S:** Was your intention to inform the general public through the book that you translated and the one that you

are writing now?

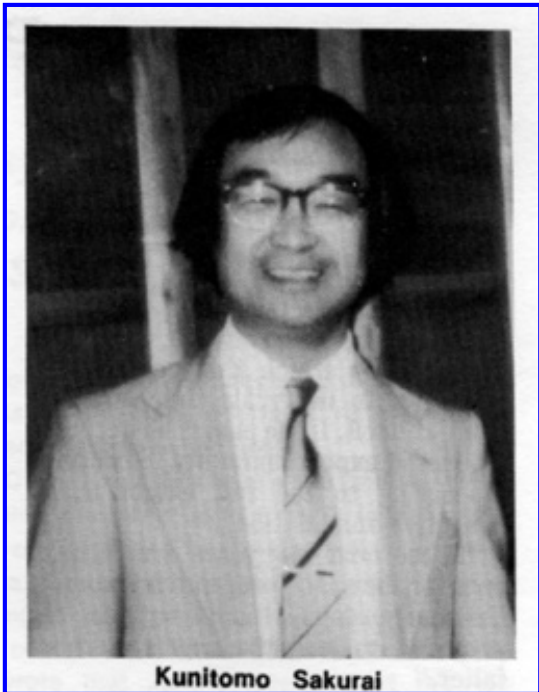
**Sakurai:** Yes.

**C-S:** It was not only just your fellow scientists but also the public, too, that you are trying to instruct?

**Sakurai:** Yes, I tried to explain to the public what we are doing. The book is for lay persons. I hope my article will be also read by those people. I never use difficult technical words. I just explain the current status of the search for ETI.

**C-S:** Do you include any mathematics?

**Sakurai:** No, except for one very simple formula, the Drake equation. Anyone can understand it. It's not very difficult.



**Kunitomo Sakurai** is Professor of Physics at Kanagawa University, Yokohama, Japan. Born in 1933 he was educated at Kyoto University. As an undergraduate he majored in physics, particularly cosmic ray physics and geophysics. In graduate school he mainly studied problems related to solar flare particles. After receiving his Ph. D. in 1961 he continued his work at Kyoto University until 1968, first as research associate and later as associate professor.

From 1968 to 1974 he was senior research associate and then a resident scientist at NASA's Goddard Space Flight Center. From 1975 to 1977 he was professor at the Institute of Fluid Dynamics and Applied Mathematics. Then he assumed his present post in the Institute of Physics at Kanagawa University.

He has published over 100 technical papers in English in professional journals on solar physics and high-energy astrophysics and he has written seven books, one of which, *Physics of Solar Cosmic Rays* is in English. Several of his publications deal with

extraterrestrial intelligence.

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