

19 June 93 Saturday

Dr. Joe Andrade  
 Dept. of Bioengineering  
 Univ. of Utah  
 Salt Lake City  
 FAX: 801 585-5361

Miake  
 (18)

Dear Joe and Barbara,

I am leaving for the Twin Cities, Minn this morning to meet with friends at the Prairie Expo Center in Worthington and the Minnesota Historical Society and the Science Museum of Minnesota in St. Paul. I won't be back in Sudbury until Saturday night, June 26, '93.

Will greatly miss meeting you in Toronto. Mattie will arrange things and welcome your visit warmly.

Please FAX your arrival time at the Sudbury airport if you are flying so that I can meet you (FAX: 705-675-1223) or call Ann (705-675-2933).

If you are driving up, just call us Sunday to let us know when you are leaving Toronto. The Science North people are also ready for you. I suggest you experience both places as "ordinary visitors" first before meeting staff at both places. Greatly look forward to our meeting!

Taizo . D. Martin 612-296-3830



*The Center for  
Integrated Science Education (CISE)*

May 6, 1994

(18)  
Taizo Miake  
1304 Lakewood Dr.  
S.S.I. Site 12 Box 1  
SUDBURY, ONTARIO P3E-458  
Canada  
FAX: 705-675 1223

Dear Taizo:

Thank you for your FAX of May 5. It is very timely because today we are having our all day retreat on the Utah Science/Arts Center Project. I'll fill you in on the discussions and outcome sometime early next week.

Your schedule to arrive May 16 will work out very well. The only minor glitch is that my son, Tonio, is returning home on the 20th and since we last talked we had planned a fairly long weekend hike in one of the Southern Utah slot canyons, weather permitting. If that indeed does materialize I will be out of commission for four days, but I think the schedule can still work because we will have had a chance to meet with the class together and to meet with them as individual groups, and they can perhaps work with you during that long weekend and then we will have a chance to follow up with them together the following week before you leave for Minnesota.

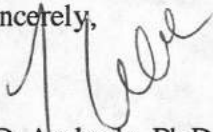
I will ask each student to prepare a brief biographical profile on Wednesday (I have not done this and it is, of course, an excellent idea) and get that FAXed to you. They are also making mid-course presentations of their projects on Wednesday and I will get those materials to you as well.

I will ask Bob Johnson and Rod Millar to prepare biosketches for you to send on to Japan, and mine will be sent at the same time.

Thank you for the background on Saji and on the Openheimer article.

We look forward to seeing you and to working with you soon.

Sincerely,



J.D. Andrade, Ph.D.  
Professor

cise/6may94

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Salt Lake City, Utah 84112  
(801) 581-8528  
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5 May 94

Miake 18

①

Dr. Joe Andrade

- o Thanks for your memo (Apr 19, 94) on the Science Projects course and the list of students.

Melinda Steadman and Dana Overacker have a special challenge!

The Ontario Science Centre Exhibits and Programs was built with a "core" of 7 of my ex-students from Cal State, Long Beach and Milwaukee's Layton School of Art.

None of the 7 had any experience with Science Centers (Seattle's PASC was still struggling with left overs from the Science Pavilion of the Century 21 World's Fair — Jim Backstrom worked as "guide," then assistant to Dr. Billie Ray (?), then succeeded her as director when she took the post of the chairperson of the Atomic Energy Commission. Jim, like me, has no science degree.) (Frank Oppenheimer opened Exploratorium the same year we did. 1969.)

NO professional knowledge, NO museum experience can mean the development of an "openness" very close to most of our visitors and essential in articulating (hardwares, activities, programs, editing and selecting) what is significant in science/technology development + education.

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The same was true at the Science Museum of Minnesota. Our friend, Lou Casagrande, had just graduated from Yale with his Bachelor's degree in anthropology.

Paul Martin, who worked closely with Lou for several years at SMM and currently the Head of Exhibits at the newly opened Minnesota Historical Society's Museum, was a 19 year old high school drop out and musician when we developed what was then the new addition of OMNIMAX and 30,000 SF of exhibits. Paul and Barbara Franco (Asst Director of Museum, MHS) developed, designed, produced and laid it all out on the floor worked with a Team of people who were almost all "first timers" at exhibit and program development.

Nurturing that "openness" — the empathy and compassion with visitors — is crucial and, in my experiences, the most powerful condition for creative thinking, feeling and production for life-long visitor-learning.

So hale to your students!

What you have initiated is wonder-full!  
Look forward to interacting and encounters of a close kind.

- o If it's OK with you, I will schedule my flight to arrive in SLC on Monday afternoon, May 16<sup>th</sup>.



If possible, take me through the personalities and projects the following day, Tuesday. I would like to observe and absorb what is happening during your class day, Wednesday. I would certainly like to interact and discuss things with the group as a whole. I would also like to spend as much time in smaller groups or individually as much as their time allow. The weekend of 21<sup>st</sup> + 22<sup>nd</sup> may be the best time for some students. I'll certainly be available.

I'll schedule to leave May 27<sup>th</sup> (Friday) to fly to St. Paul, Minnesota to work with the Historical Society people for a few days. I could leave <sup>on</sup> the 28<sup>th</sup> (Saturday) if you think that's better. Please let me know.  
(FAX: 705-675-1223)

If possible, please FAX or send any material about each student or what they may have sketched or written so far.

① Dr. Haruo Saji's profile follows.

I've read one of his books, in Japanese, a few times. It is, I think, extraordinary. In 1950, Dr. J. R. Oppenheimer wrote an article in a special 50<sup>th</sup> anniversary edition of "Scientific American." (1950 - 4 years before his trauma with the McCarthy Trials - only 22 years after Dr. Niels Bohr's

articulation of the Principle of Complementarity. ④  
 A few paragraphs from Oppenheimer's article follows.

Dr. Saji made a presentation in English to a group at "Kumbayah 1994, the International Camping Congress, Bringing Together a World of Outdoor Experience," last March in Toronto.

His presentation could have used much better sound and light projection systems since he used rare sounds from radio astronomy Telescopes and pictures from the Voyagers, etc. But, excerpted from that presentation (and very much out of context and pacing):

"... As you know, the distance between the sun and the earth is about 150 million km and sun light travels this distance in 8 min. and 15 sec. But, you should also be aware that it takes about 4000 years for the light generated at the center of the solar body to reach the surface of the sun because of the extremely high density of the core of the sun.

This means that all living things on the earth benefit from ancient sunlight generated 4000 years ago and the sunlight being generated in the sun just now is for the living things 4000 years in the future.

From the cosmological point of view, human life is a one shot in the continuing long story of the universe and our lives are closely related to the past and the future simultaneously.

Date 6/11/93

TO : 三 明 光 生

MR. GARY GRAY

Total page(s)

DR. SAJI'S brief profile.

FROM :

Japan Foundation for Science and Technology Promotion  
Space Project Office7F COSMOTOWER Bld. 1-3-10 Shiba-Daimon, Minato-ku, Tokyo 106  
Tel/03-9459-8118 Fax/03-9459-8118

SUBJECT : 佐治晴夫 先生の 70712

レ. 急ぎ佐治先生の70712を送りました。

Dr. Haruo Saji was born in Tokyo, Japan on January 31, 1935. He graduated from the department of physics, Rikkyo University, Tokyo, Japan in 1959. From 1960 to 1962 he was with the Institute for Solid State Physics, University of Tokyo, where he did research in the area of solid state physics. In 1973 he received the Dr. Sci. degree in theoretical physics from Hokkaido University, Sapporo, Japan.

From 1962 to 1992 he had been engaged in basic research on theoretical physics at Matsushita Research Institute Tokyo, Inc. (MRIT), Kawasaki, Japan, where he conducted fundamental research and development of long-time recording magnetic ferrite VTR-heads, 1/f-fluctuations and cosmology. He is also well known as an advocator of a new interdisciplinary field of aesthetics: "Mathematical Science of Art"

Dr. Saji is presently a Professor of Educational Research Institute, Tamagawa University, Tokyo since 1993 and also a Visiting Professor of Seijo University and Meiji University, Tokyo, Japan.

Professor Dr. Saji is a member of the Physical Society of Japan, Astronomical Society of Japan and the Japanese Society for Aesthetics.

(6)

is a sign of error, a beginning for inquiry..... where their outcome appears to conflict, that conflict gives rise to new inquiry and the discovery of new truth....."

".....The discoveries in physics.....revealed the inapplicability of causal, Newtonian physics to problems of individual atomic systems; they uncovered the universal duality between corpuscular and undulatory descriptions of atomic systems.....The basic finding (in Bohr's principle of complementarity) was that in the atomic world it is not possible to describe the atomic system under investigation, in abstraction from the apparatus used for the investigation, by a single, unique, objective model. Rather a variety of models, each corresponding to a possible physical experience, stand in a complementary relation to one another, in that the actual realization of any one model excludes the realization of others, yet each is a necessary part of the complete description of experience in the atomic world....."

*articulated  
in 1928*

".....Yet it is clear, as has repeatedly been stressed by Bohr himself, that the discovery of complementarity has provided us with a far wider and more sophisticated framework for the synthesis of varieties of scientific experience. It has refined and extended the pluralism natural to science, and added new elements of subtlety to the idea of dialectic\*.....It has also tended

\*dialectic - the concept of the contradiction of opposites (thesis and antithesis) and their continual resolution (synthesis).



②

*Dr. Saji's thoughts  
and feelings are born  
and developing out of  
the understanding  
of these diverse  
traditions, and  
he articulates them  
gently and  
powerfully —  
uniquely and  
profoundly, for me,  
44 years after  
Oppenheimer's insight  
and 66 years  
after Bohr's  
articulation.*

of course to emphasize the elements of analogy between the scientific tradition and the great traditions of Oriental philosophy, of Lao-tse and of Buddha -- a circumstance which may hold some promise at this time, when understanding between diverse cultures seems more imperative than ever before.

"The candor, the openness, of science is too well known to need elaborate emphasis. Yet it is basic.....The mutual respect and the tolerance which ought to prevail, and so largely do prevail, in the sciences, rest in overwhelming measure on this complete accessibility.....Few of us can forget the delight of entering a new field of inquiry that appeared relevant at one time or another to our own work but had hitherto been unknown to us.

"No doubt there are elements of overidealization in this sketch of the relation of the individual scientist to his scientific community. Honor, prerogative and worldly pomp do sometimes, briefly and almost trivially, color and infect that relation. Yet there are few human institutions in which cooperation is more fruitful or the freedom of the individual conscience and taste more complete, where mutual respect makes for so great a harmony between the flourishing of the community and the liberation of the individual man.

"This harmony, even in science itself, is being destroyed or threatened in vast areas of the world today. Terror, orthodoxy, recantation, hierarchy, secrecy -- these words are full of grim omens for science and for

⑧

① Joe, please FAX me your own profile.  
And Bob Johnson's, if it's OK.

I have spoken about you both and the Utah project to Mr. Sakuraba and through him to Dr. Saji. Mr. Sakuraba is the manager of space Projects of STEP, the Japan Foundation for the Promotion of Science and Technology.

Mr. Sakuraba invited Dr. Saji to participate in the brief "pilot project" we jointly conducted here in the Sudbury Region last summer. The "Nature Science Camp" last year involved 15 Japanese young people paired with 15 Canadians and their families for 4 days of "Homestay". Four days were lived on the beautiful John Island Camp in the "channel" of Georgian Bay, north of Manitowlin Island. Dr. Saji seemed especially interested in the special pow wow with local Ojibway people. I'll bring along a video + some printed material on this.

We will expand the number to 32 (8 to 14 year olds) from Japan and paired with 32 Canadians and their families for 2 weeks.

Would like to FAX your <sup>profiles</sup> files to Japan as soon as possible.

Hi to Barbara! See you soon

Taizo.

THE  
UNIVERSITY  
OF UTAH



Center for  
Integrated Science  
Education (CISE)

June 6, 1994

(18)  
Taizo Miake  
1304 Lakewood Dr.  
S.S.I. Site 12 Box 1  
SUDBURY, ONTARIO P3E-4S8  
Canada

Dear Taizo:

I trust your trip home was safe and pleasant. Thanks again for your stimulating visit. Barbara and I enjoyed being with you. Tonio also thanks you again for the discussions and conversation. Our tentative plans are to be in Minnesota in late July, but we'll know more precisely in about 2 weeks.

I finally made contact with Margaret Wheatley, author of *Leadership and the New Science*. She is focusing much of her current activities on education and has a particular interest in science education so when she gets back from an extended trip this month we will meet, probably together with Paul Cox at BYU, who has been involved in the Science Center Project from the very beginning. Paul is the rainforest ethnobotanist who was featured in the November, 1993 issue of *Discover Magazine* and has an article in this month's issue of *Scientific American*.

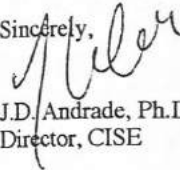
The students did very well at their presentation on June 1. The architects came through beautifully with a two person perception station, which was very well fabricated and constructed. We are proceeding to establish Leonardo's Shop as a science center project headquarters and mini-science center. James will be coordinating that effort all summer.

Your consulting check has been processed and you should receive that in 2-3 weeks. If not, please contact Jamie in the Bioengineering office at (801) 581-8528. I still have not reached Ray regarding payment for your travel expenses, but we will try to get that processed within the next few days.

Keep me posted on your activities and travels in the event that we may be able to make contact during the summer.

Thank again!

Sincerely,

  
J.D. Andrade, Ph.D.  
Director, CISE

cc: R. Kingston

cise/2jun94

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7 June, 1993

Taizo Miaka  
FAX 705-675-1233

Dear Taizo,

Thank you for your kind letter and the letter of collaboration for the Whitaker Foundation proposal. That was submitted and we will now need to wait 2-3 months to see what action they choose to take.

The present plan for our Canada trip is to arrive Toronto Wednesday, June 23, and to spend most of Thursday visiting the city and the Ontario Science Center. My meetings with the individuals which you suggested at the Ontario Science Center are set up for Friday, June 25. Barb and I plan to rent a car and drive to Sudbury over the weekend, arriving Sudbury probably Monday morning, June 28. We will then plan to visit Science North, have a meeting with Brockbank on Monday afternoon, and additional meetings with the staff on Tuesday morning, June 29. We would then plan on driving Tuesday afternoon back to Toronto, and leaving Toronto Wednesday, June 30 for Salt Lake City.

We will make arrangements to stay at an airport hotel on June 29 in Toronto. We would appreciate any recommendations you might have as to where to stay on June 26-27 as we drive up to Sudbury. We would of course be delighted to spend June 28 with you and your family, although we do not want to be any imposition. We could very easily also stay at a local hotel or motel.

I look forward to bringing you up to date on the deliberations and activities of the Utah Science Center initiative, and very much look forward to discussions and to your input and ideas. Your vision and concepts have had a very dramatic impact on the Science Center Task Force and on its Program Committee. We really do expect that Utah's Science Center will be the first of the 21st Century Science Centers, employing your concepts of connections, integration, and hierarchy, as well as hands on experience, participation, and control, in very major ways.

We look forward to seeing you again soon.

Sincerely,

J.D. Andrade, Ph.D.  
Professor

tsp/jun2

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FAX: (801) 585-5361



CISE

November 13, 1996

(12)

Taizo Miake  
1304 Lakewood Dr.  
S.S.I. Site 12 Box 1  
SUDBURY, ONTARIO P3E-458  
Canada

Dear Taizo,

Greetings from Salt Lake City. It's been a long time. I've meant to call you many times. Your inspiration and creativity is alive and well in Salt Lake. Although our science center project has been put on hold until a new site and revised plan evolves, Leonardo on Wheels is doing very well. The traveling science center has been touring the state for the past nine months. We will soon be looking for a new technical director of the Hansen Planetarium <sup>with</sup> and the hope and expectation is <sup>and</sup> that ~~individual~~ <sup>individual</sup> will be hired not only to over see the Planetarium, but to expand it, <sup>and</sup> to incorporate and include a Utah science center. <sup>side</sup> The main reason I'm contacting you is the enclosed video. It represents Program 1: The Art of Science, The Science of Art; Program 2: Observing and Perceiving; Program 39: Creativity; and Program 40: Where Do We Go From Here?. These are the initial and final programs of my Science Without Walls: Science in Your World telecourse which is now airing throughout the state of Utah on KULC, Utah's learning channel. This course has really been in gestation for the last seven or so years and represents everything I have learned and feel is important in the area of science literacy for the general population. Much of that, particularly the development of the connections and synergism between science and art, I owe to your guidance and inspiration. Thank you very much.

Please note especially the credits at the ends of Programs 1 and 40.!

I hope you enjoy the videos. If you would like to see any of the other 36 programs just let me know. I hope you are doing well and look forward to seeing you again sometime soon.

Merry Christmas.

Sincerely,

J.D. Andrade, Ph.D.  
Professor

encloses:

univ/13nov96  
Encl S.W.W. videos



21 May, 1993

Dr. Tiazo Miake  
FAX: 705-675-1223

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Dear Tiazo,

Barbara and I are looking forward to our visit to Sudbury, to Science North, and with you and your wife in late June. The plans are now made. We expect to be in Sudbury on June 28-29. I have been in touch with Joyce Elliott.

I am in the process of completing a proposal to the Whitaker Foundation titled "Enhancing Bioengineering Education by Developing Projects for the Utah Science Center."

The Whitaker Foundation is a private foundation with a particular focus in bioengineering. The Utah Science Center is planning a wide range of fully interactive, discovery-based exhibits using the visitor herself as the experimental sample. A few of the preliminary ideas are briefly described in the enclosed preproposal.

I hope you will agree to serve as a consultant to this project in the event that it is funded.

We would budget 1-2 visits per year and a nominal consulting fee in the proposal. As a consultant to the project, the students might call upon you sporadically by telephone for advice and suggestions, and you would be expected to visit once or twice a year to participate in a review of ongoing as well as proposed projects.

If you agree, could you kindly send me a letter immediately. I must have it no later than Wednesday, May 26. I have taken the liberty of drafting a rough letter for your convenience:

J.D. Andrade  
Department of Bioengineering, 2480 MEB  
University of Utah  
Salt Lake City, UT 84112

Dear Joe,

I was pleased to learn of your proposal to the Whitaker Foundation titled "Enhancing Bioengineering Education by Developing Projects for the Utah Science Center." I have been very interested in the Utah Science Center initiative, and was pleased to participate in the feasibility study and in the formative discussions of your Program Committee.

Department of Bioengineering  
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(801) 581-8528  
FAX: (801) 585-5361

I would be very happy to serve as a consultant and advisor for your Whitaker project.

Your interest in emphasizing experiments and interactions directly with each individual visitor and in utilizing physiologic and bioengineering experiments and activities as a means to motivate each visitor is unique and very interesting. I am looking forward to working closely with you on these projects.

Please let me know if you need any further information.

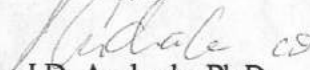
Sincerely,

Tiazo Miake

I also need a 1-2 page biosketch to include in the proposal. Please feel free to edit, modify, condense, or expand the draft letter as you see fit, but please FAX it and the biosketch to me by Wednesday to (801) 585-5361.

Thanks for your help.

Sincerely,

  
J.D. Andrade, Ph.D.  
Professor

Encl. Preliminary Application

x/found/whitaker