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Mr. Shoichi Suzuki
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Dear Harry,
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As you perhaps you have heard, I am now in Paris at IRCAM until September. I was able to take some sabbatical leave from Stanford, which is welcome indeed. I arrived with Maureen on January 21 and since we have been getting settled. I have been finishing up work for Stanford which I unfortunately had to bring along... there was simply not enough time before I left. In any case, I am now continuing full-time on my composition for Yamaha keyboards, but more about that later. I would like first to give you some impressions regarding Yamaha's evolving relationship with the world of contemporary art music which I find to be a healthy and exciting development.

First, Mr. Hirano's participation in the ICMC last October in Paris was very effective and welcomed by all of the participants. While it was clear to everyone that he could not answer every question posed to him regarding future developments etc. because of their proprietary nature, he nonetheless was able to answer many questions and he did so in a very clear and concise manner. His thorough knowledge and obvious engineering capability together with his sensitivity to the questions and needs of composers were impressive. David Bristoe's demonstrations, both formal and informal, and his extraordinary musical sensitivity were equally impressive. Altogether, Hirano and Bristoe made a very fine impression for NGK.

Second, I believe that Mr. Hirano was surprised at the degree of interest that was expressed by computer music composers and researchers in your "X" series products at the conference. There were many references throughout the presentations to especially the DX7. The "X" series has become the "moving technology" in computer music for several reasons which I think are perhaps worth enumerating.

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1. Cost- is low compared to the synthesizing power available. While the DX is not as complete as large synthesizers such as the Samson Box at CCRMA or the 4X at IRCAM, a large proportion of the pieces composed at Stanford, for example, could have been done on the DX7.
2. Extensibility- the instruments are designed to connect through midi to others with a proportional increase in synthesis power.
3. Availability- while the Samson Box and 4x machines are real-time, because they are unique machines and difficult to transport, they are therefore primarily suitable for taped compositions. It is true that Boulez travels with the 4x for his composition 'Repons',

however, it is very costly and only with large subsidies is that possible. The "X" instruments, on the otherhand, can be found anywhere so that a piece written for them can be easily performed.

4. A Future- composers see already that the investment made in both money for purchase and time to learn the DX7 results in a rich potential. The TX816 does not render the DX7 obsolete but rather extends the system's capabilities and at not great additional cost. Again, while the Samson Box may be more powerful now, because of VLSI there is reason to believe that future commercial synthesizers will surpass it in power without significant increase in cost.

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Finally,
the solutions to synthesis problems required to produce better commercial synthesizers might also vastly increase the musical usefulness of the same product to computer art music, thus there can be converging interests. As an example, the single greatest improvement which can be made to the next generation products would be periodic and/or random vibrato which could be applied
independently to each note through keyboard scaling of both depth and rate much as generator output scaling is handled in the DX7. This would allow a degree of voice independence which would greatly improve the sustained sounds such as strings and allow the production of much improved chorus effects through overlay. There would be an additional benefit to computer musicians (and to keyboard performers of early music): the solution to fine independent frequency control could also allow a solution to alternative tuning systems. While popular musicians are largely content with the tempered tuning system, art musicians are not. There is currently a great interest in new tuning systems primarily because the fine control allowed over spectra with digital synthesis suggests research into the relationship between spectral space and pitch space. In addition, as much early keyboard music is more appropriately performed with other tuning systems (eg. mean-tone), an entirely different group of musicians interested in the harpsichord repertory would welcome an instrument of such capability.

I believe that the contacts which exist between Yamaha and Stanford and which are developing with other centers
such as IRCAM are very important in that they foster the exchange of information both abstract and concrete which is ultimately of very great importance to all.

Now, regarding my piece. As I originally proposed, the piece was to be written for three GS1s and a DX1. Perhaps it is fortunate that the DX1 was late in reaching the market since otherwise I would now be rather far along on the piece wishing that I was composing it for the new "X" series rather than the GS1s. Having "seen the future" and liking what I see, it seems that a revision of the plan is in order.

I propose to use three keyboard players (instead of four) each playing an "X" system. In order to compose the piece I will need only one system, however, which would consist of the following:

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Needed as soon as possible at IRCAM:
    1 KX88 Remote Keyboard
    1 TX816 FM Tone Generator System
    1 QX1 Digital Sequence Recorder
    1 DX7 (for voicing the TX816)
    1 CX5 (")
Needed in May to begin work with spatial projection:
    1 Rev-1 Professional Digital Reverberator

Needed at CCRMA, Stanford by September 1, 1985

all of the above
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In exchange for your making the system available to me for the purpose of composing the piece I propose to write for Yamaha, in conjunction with David Bristoe, a tutorial on general FM synthesis based upon voicing the "X" series. I believe that with his knowledge of the DX7 and amazing intuition and my knowledge of the theory, we can produce a step by step tutorial which is both accessible to naive users and complete. I would try to finish the tutorial by early summer.

I hope that this is possible for you to do. I am enthusiastic indeed about the piece and I believe that it will demonstrate the power of the "X" systems in the domain of art music.

With best wishes to you and all of my good friends in your division.

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John Chowning

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copies to Mr. Mochida and Mr. Hasegawa