



**Ardent Computer**

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Professor John Chowning  
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Stanford, University  
Stanford, CA 94305

*Copies of letter  
given to MVM, CC,  
KP-  
patt*

Dear John:

Thanks for inviting me to Stanford last week. It was nice to see you, Max, and John and to meet others at CCRMA. Computers in Music have really advanced quite a lot since the days of IRCAM. On the other hand, the PDP-10 still lives.

I couldn't help but be intrigued with the possibility of your doing something interesting with our Titan. The current version can deliver up to 64 Million 64-bit floating-point operations per second and the next version will be about twice as fast. Similarly, we'll have a smaller version with much capability too. For example, it would seem that we ought to be able to drive the speech synthesis in real time. I've forgotten just how you convert operations/second into music synthesis capability, so it's unclear just what we have. We also have an arrangement with an Australian company that's producing a more specialized signal processor that can deliver about 100 times this amount. Alternatively, since Titan's backplane provides memory to processor bandwidth of 256 Megabytes per second, it should be trivial to put a lot of signal processing chips together and deliver 500 Million floating point operations per second. None of this would be worthwhile unless you got at least an order of magnitude more than through any other synthesizer. I enclose some material on it.

If you are interested, let's get together to explore whether we have anything of common interest. As a minimum, Ardent would like to hire someone to write a demo that does automatic speech production with co-ordinated face and vocal tract movement using our graphics.

As for the honorarium, could you please give it to The Computer Museum in CCRMA's name for a membership and perhaps marked for music? Also, if you artifacts such as your first FM tapes or chips, the Museum is the place for them. The address is 300 Congress Street, Boston, Massachusetts 02210, c/o Gwen.

Sincerely,

Gordon Bell

Vice President, Research and Development