



THE ASSISTANT SECRETARY OF COMMERCE  
WASHINGTON, D.C. 20230

MAR 31 1970

Dr. Joshua Lederberg  
Professor of Genetics  
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Stanford, California 94305

Dear Dr. Lederberg:

I, too, enjoyed our discussions very much and look forward to another chance to continue them. In the meanwhile I have been and will continue to read your writings. The papers you sent me were most interesting.

The work on the topology of organic chemistry and the use of linear graph theory to guide computer programming is most interesting. For aliphatic compounds up to C<sub>20</sub> I suppose one could rely on bigger and bigger computers, but it does seem to me that the brute force enumeration of all possibilities reaches a dead end--probably long before C<sub>20</sub>, even with an ILLIAC. It would be efficient if there were some way to incorporate the BADLIST in the main program to inhibit some aspects of the automatic listing of all possibilities. Of course you have already probably thought of these ideas.

There is a certain similarity between your methods for "scoring" the various possibilities (retained by successive filterings through GOODLIST and BADLIST) and the methods of multiple hypothesis testing described in my book. (See especially the program HYPTEST.)

The program is, of course, an example of the general problem of character recognition. My students and I have had good luck using Bayesian inference for this purpose.

I also wondered why you did not use some concepts of free energy more explicitly than in your BADLIST. Sometime in the late 40's Dr. Mott Souders of Shell Labs published in I.& E.C. (I believe) a table of free energies associated with various organic substructures. Given a structure it predicted free energy. If this material were applied to your listing it would give an initial ranking on free energies which, I believe, is what the effect of BADLIST really is.

I found your views on risk taking and on the social implications of biological technology most interesting and quite close to my own prejudgments. I especially like your choice of phrases. I know I have a hard time resisting the urge to be carried away by them and admire your restraint! There is one other fellow I know who matches you in highly readable output--and that is my friend Larry Kubie, the psychiatrist. When we next get together I hope to explore our concern for moral judgments on technology.

Sincerely,



Myron Tribus