

July 17, 1973

To: Recipients of "Reduction languages and variable-free programming"

According to my records, you have asked for and/or received a copy of the report "Reduction languages and variable-free programming". The enclosed paper, "Programming language semantics and closed applicative languages", deals with similar subject matter. It will appear in the Proceedings of the Symposium on Principles of Programming Languages, October 1-3, 1973, Boston, sponsored by SIGACT/SIGPLAN of the Association for Computing Machinery. The Proceedings copy will be single-spaced; the present one is double-spaced.

In view of your possible interest in the first paper, I take the liberty of sending you this one. I should be most grateful for any comments you might care to make.

For those who have read the first paper [RL] it may be helpful to compare it with the present one [PLS]:

(1) PLS axiomatically defines a hierarchy of language-classes which obsoletes much of the "classification" section of RL.

(2) PLS distinguishes between "language" and "language realization". RL does not.

(3) PLS defines a new class of languages called "closed applicative languages" [CALs]. RL does not.

(4) The Red languages of PLS differ from and are simpler than those of RL.

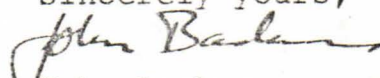
(5) Red languages are defined in PLS by restricting the definition of CALs [to which they belong]; a "realization" of them is then given which satisfies the definition. In RL only a realization is given.

(6) λ -Red languages, another type of CAL, are defined in PLS. These are new and resemble the λ -calculus. They do not appear in RL.

(7) RL contains many examples of Red programming and discussions of many topics such as universal programs, Red language extensions, comparisons of Red and other languages, and the relation between this and other work. These topics are treated briefly in PLS if at all.

(8) RL attempted to introduce the rather radical topic of Red languages using a tutorial style with some redundancy. PLS is more terse; but it is hoped that there are enough examples to make each concept clear. The treatment of Red languages in PLS should appeal more to those whose interests are primarily theoretical, whereas that of RL, while its Red languages are slightly different and fussier, may be helpful for those who find the PLS treatment too condensed.

Sincerely yours,


John Backus