Eidg. Technische Hochschule

Institut für angewandte Mathematik

Zürich

Prof. Dr. H. Rutishauser

ZÜRICH, 17. Februar 1960

Herrn P. Naur
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DENMARK

Dear Mr. Naur,

I am extremely unhappy that I already have to send corrections to my letter of February 12. The reason for this is to 80 % that I was sick at the time the letter had to be mailed in order to meet the deadline and therefore was unable to check it. The remaining 20 % however, are more serious.

Corrections

1. At the end of part F the following sentence was omitted: "For these reasons we can impossibly place declarations for parameters into the procedure body".

2. At the end of the letter, the secretary wrote "big publications" instead of "pre-publications".

3. In my remarks to 3.4.1. the 5 Boolean operators $\neg, \vee, \wedge, \subset, \equiv$ besides " first, second" etc. have been omitted.

4. In the remarks to 4.5.4. text and examples are slightly mixed. I hope you could disentangle it.

5. In my remarks to 5.4.5. a further remark was omitted: "It would save ink if the specifications had only to be given for non-real's. We could do this and say:"If for a certain parameter no specification is given, the specification real is understood." I leave the decision to P. Naur."

6. In writing my example, I found ambiguity in the following connection: Let

procedure A(x,y) ; value y ; real x,y ;

~~be~~ S: begin
    y := x
    y := x + y
    x := x + y
    end A ;
be a procedure and

    A (x,z)

the call for it. How can the compiler at call- or compile-time

distinguish whether the variable y is also output parameter or not?

In fact this would make quite a difference, namely if y is only input parameter, then the call must be executed as

```
H : begin  real y ;

            y := z ;
            S ;
            end H ;
```

But if y is also output parameter, the call must be executed as

```
H :   begin real y ;

            y := z
            S ;
            z := y
            end H ;
```

and the latter is also correct, if y is only output parameter.

Please let me know if I am wrong with respect to point 6, but if I am not wrong, we have to do something, namely either abolish call by value at all or reintroduce the 2-bracket-structure ( ) = : ( ) of the Zürich report.

Very sincerely yours,

H. Rutishauser

This letter goes to you only.