

A terrible Thursday

Due to a conference on discrete algorithms, held here in town, the Department is flooded by speakers that "are in Austin anyhow". This morning, we had a speaker on the - I guess asymptotic - complexity of scheduling divide-and-conquer algorithms on a hypercube machine. He tried to convey his message via a mixture of sentences, gesticulations, formulae, and pictures; the design of a "language" adequate for the presentation of his material seemed to me to be his most urgent task. The end of his talk was particularly unintelligible; here I confine myself to something I saw earlier.

I had noticed that in almost all his formulae "p" occurred in the combination "log p", so that his formulae could be shortened by expressing them in y instead with y and p linked by "y = log p". But then he showed the formula - well, not really! -

$$\log p \log \log^x p$$

Could this be expressed in y? And, if so, how? The answer is "yes", and in the speaker's notation the result would be

$$y \log^x y \quad !$$

The explanation of this miracle is to be found in the intended parsing of the original formula, viz.

$$(\log.p) \cdot (\log.(\log.p))^x$$

My question on how to parse his formula was considered irrelevant since, in the mean time, it had been shown that $x=1$ could be chosen.

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Later that day we had a Distinguished Lecturer with a survey of complexity results for approximations. There were obvious linguistic problems. Concerning the feasibility of something, he should have written

"There exists a δ for which it cannot be done" or perhaps

"For some δ , it cannot be done"

or perhaps

"It cannot be done for all δ ." ;

he wrote

"It cannot be done, for some δ ." ,

in view of the preceding formulation clearly an unfortunate choice: it should be absolutely - i.e. syntactically - clear whether the clause about δ is within or without the scope of the negation, and the answer now depends on the absence or presence of a comma.

More suspicious I became at the visual stating that something

"maximizes the number of random strings R such that [...]"

where this was the only occurrence of the identifier R . This sentence was repaired by removal of the superfluous identifier " R " and the here nonsensical adjective "random". (Note that also the word "random" requires some sort of scope: when you introduce "a random bit" into something, this is short for introducing 2 somethings, one with a 0 and one with a 1. The scope of the duplication has to be clear.)

I became totally desperate at the introduction of something of the syntactic form

$$CPC [s(n), q(n), e(n)]$$

Here, " n " was of type "natural number", because that was the type of the argument of functions s , q and e . I think that CPC was an identifier, global to the definition being given, that s , q , and e were formal parameters - dummies, local to the definition - of type function, and that the mentioning of n was just a mistake - a convoluted way of typing s , q and e - .

I think that an "instantiation" like

$$\text{CPC}[s(7), q(7), e(7)]$$

would be completely meaningless, because the something introduced should have been of the form

$$\text{CPC}[s, q, e]$$

I underline "think" because I am not sure, since I could not get the clarification I sought. When the speaker gave the expression "log(n)" as example of a function, I gave up.

I had forgotten how incredibly and unforgivably sloppy the average mathematician is, how inconsistent about his syntax and how vague about the scopes of definitions and quantifications. I love mathematics, but it's mathematicians I cannot stand, for since ALGOL 60 there is no longer an excuse. By the time I came home, I was deeply depressed.

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