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COUNT YOUR BLESSINGS

There is a persistent and certainly slanderous story about some newly-discovered tribe, in which counting ability is summed up by: "one, two, many". No decent anthropologist, not even an amateur one, will lend it credence: after all, our fingers provide us with all the numerals up to ten and so-called primitives mostly go unshod, bringing the score up to twenty ...

Your Editors are sorry to confess that they discounted the story entirely until they were appointed to teach youngsters to program. Many of their pupils, aiming for some natural n , perversely almost always managed to come up with either $n+1$ or $n-1$, and seemed studiously to avoid the n targeted. So, as a contribution to anthropology, our own field work results in: "programmers cannot count", a proposition falsified only by near-geniuses or better.

Now anthropologists are recursive animals, applying their discipline to themselves under the reasonable assumption that even anthropologists are human beings. By analogy, your Editors, being programmers, must apply their statement to themselves from which it follows that they are unable to count.

Being in possession of Peano's axioms for arithmetic did not save them, hosts of clever small computers provided no refuge: alas, they miscounted not by a single unit, but by some 200. Our secretary/treasurer showed, by close reckoning and full accounting, that the best estimate of our membership is *not* over 700, as boastfully stated in previous issues, but a mere 500 in round numbers. We sincerely apologize and can only hope that time will provide a ready remedy, making good our boast in a short time from now.

Assiduous readers will recall that counting troubles have beset us well before this. Judging from experience, we now hardly expect any two database statistics to tally exactly, position for position. To the initiated, this seems yet another confirmation — if such were needed — of the familiar sly adage: "Computers? — Don't count on them!"

As the French would say: between counting and accounting there is but one step.

Accounting for the Grand Masters' superiority is the common thread running through this issue's two major scientific contributions. The Editors are particularly happy with the paper by Donald Michie and Ivan Bratko, because it is, we believe, a bridge between the worlds of Artificial Intelligence and Computer Chess, which on the whole tend to keep to their own distinct closed orbits. Riding roughshod over their main thesis, one might fairly sum it up in that human experts have difficulty learning from databases, which, for certain endgames, are the ultimate experts. Their audacious claim is that inductive programs are effectively constructible which reduce expert knowledge to rules which *can* be assimilated by human experts unable to digest the raw data. The authors readily admit that the project is still in the laboratory stage, yet they see a way of making it progress well beyond that, ultimately reducing to induced rules much of the apparently arbitrary components of reality.

The long and fascinating article by Dap Hartmann is also an attempt to account for Grand Masters' skills and, indeed, envisages ways to tap it by standing on their shoulders. Standing on one's predecessors' shoulders is a procedure not to be despised, as we know from Newton's famous claim. Of course, Hartmann's work, too, takes the longer view, as well befits a student of astronomy. He also employs a database, namely one of Grand Masters' games. Again very roughly, it is his view that Grand Masters have some sort of evaluation function. Unfortunately, we are in ignorance of the components entering into it. Hartmann's way of approaching the mystery of a Grand Master's skill is to trace how various notions evolve as the game unfolds. From it, he gleans a quite good estimate of which notions are valid and relevant in themselves and an even better idea about when to apply what notion. Finally, his accounting of the advantage of Winners over Losers is intriguing: it would almost seem as though some notions could be used as an early-warning device to separate the victorious from the defeated. However, the latter conclusion is merely an editorial conjecture to which the author would probably never agree without having taken a great number of meticulous steps toward proving it. Apart from its intrinsic interest, Hartmann's contribution can be recommended as an outstanding specimen of careful statement and prudent reasoning.

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