

Tilburg University

A watershed?

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A WATERSHED?

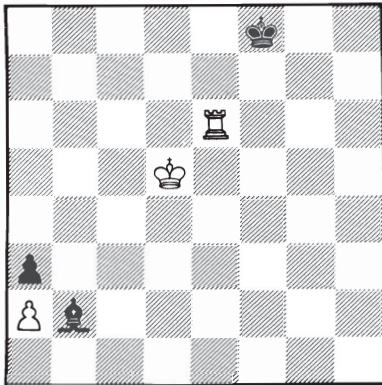
Ever since Leibniz, scientists of all descriptions have adhered to a belief, explicit or hidden, that Truth existed. Truth was invariable in time and could be arrived at by induction or, at worst, by an inductive process sustained by a few deductively gained constants.

Those were the heydays of the natural philosophers: Boyle's law, $PV=kT$, was one instance and the crowning jewel was, of course, Newton's $F = g \frac{m_1 m_2}{r^2}$. Only k and g needed to be determined; once determined they would be valid for all time and for all places, for all gases and for all masses.

There are many reasons why modern research is reluctant to adhere to such simple paradigms. It is not even a matter of essential complexities having been introduced since then, as best illustrated by one of the few clean bits of short verse we know:

Nature and Nature's laws lay hid in night:
 God said, *Let Newton be!* and all was light.
 It would not last: the Devil, howling, *Ho,*
let Einstein be, restored the *status quo.*

It is rather a matter that any modern researcher, in this post-Popperian age, is beset by doubts about the scope and the validity of his own research. Your Editors are not immune to the afflictions of the age. With unmitigated pride, they announce that two of their students have put paid to a famous problem of long standing.



It cropped up most acutely as far back as 1979 and as remotely as Rio de Janeiro, where Timman playing White saw himself opposed to Velimirović in what we can decently describe as KRP(a2)KBP(a3). The diagram will clarify the exact instance. For the record, Timman won. This took him 37 moves, with some help from his opponent. Timman became fascinated by this endgame and improved upon Chéron's best estimate of a win-in-60, honing it down in Rio to a win-in-44. After the tournament, Timman devoted twenty pages of detailed analysis to it in a mighty tome, reducing the win-in-44 to a win-in-40.

To revert to the present time, our students have constructed a database dealing with KRP(a2)KBP(a3). This, in itself, may be seen as a watershed in mastering complexity, especially since it was obtained without the timing benefit of a supercomputer.

So far so good. Then, cognitive complexity turned out to interact with program complexity in ways we might have anticipated by hindsight, but did not expect beforehand. The first shock to any Leibnizian belief we might have had about easy computability of Truth was a simple matter of Black and White. The endgame turned out to need to be decomposed into two, according to the colour of the squares covered by the Bishop. This was an inner Truth one could not even suspect by Leibnizian means. Even if of minor impact on programming, this realization may be perturbing to those trying to develop a definite notation for endgames.

Nor were our troubles at an end here. It is elementary and a matter of brevity that databases such as ours arise out of a backward-chaining enumeration of no-successor positions [within the same domain]. It follows easily that the set of no-successor positions must be complete in order to allow the database to be constructed at all. The second shock came when Timman, who graciously consented to be a consultant in this matter, discovered no fewer than 15 no-successor positions not included in our previous heuristics. The above experiences are to be sufficient to demote ourselves, along with our readers, from Leibnizian certainty into post-Popperian doubt. We shall be extremely proud to reveal our 6-man database KRP(a2)KbBP(a3) in the next issue of this Journal and can assure any reader that it has been obtained by the best available techniques in the hands of very competent research students, Najib Nakad and Denis Onneweer.

Yet, doubts remain and we maintain that, in this day and age, they *should* remain. The best any researcher in our field can pretend to publish is all too often just a high probability that the results he claims are correct. So be it: the ICCA Journal is better off as a Journal of successive approximations, full of crawls and creeps, than as a Journal of *ultimate* Truths, so few in number as not even to merit a Journal.

Bob Herschberg
 Jaap van den Herik

Recognition of the Journal

Readers and especially contributors to this Journal are likely to be interested to learn of the acclaim accorded the Journal as a source of scientific information. Details will be found on p. 145.