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DOUBTING CASTLE

It is a rare chess-player nowadays who has any memories of John Bunyan’s Pilgrim’s Progress. Yet, vague memories may persist about Doubting Castle, a place where the pilgrim is beset by doubts about Heaven, Earth and the Nether World, each proclaiming their merits and deriding those opposed.

Doubting Castle is where we seem to be stuck at when considering the multifarious claims of computer-to-computer, computer-to-human and – dare one mention it? – human-to-human chess. In the past few months, positions have been amplified without necessarily being clarified. In the previous issue we gloated, perhaps somewhat prematurely, about Deep Thought actually consulting human play for better guidance. In at least some respects, our hopes have been dashed. Yes indeed, human play has been consulted but, sadly, has been found wanting: T.S. Anantharaman in his feature article in this issue rather convincingly argues that a human master’s suggested best move is a poor paradigm for the computer to emulate.

In the present contribution by Dr. Anantharaman the main problem is as follows: the underlying search algorithm was in a constant state of flux. The author was vitally concerned with developing algorithms which, given search modifications A_1, A_2, A_3, \dots , would *within a reasonable amount of time* impose a partial ordering on the A_i at a given pre-stated 95% level of confidence. The essence was that a mere day or so was available to establish a partial ordering $A_i \geq A_j \geq A_k \geq \dots \geq A_z$ for i, j, k, \dots, z out of a set of cardinality, say, up to six. The partial ordering must be established within such a time as was compatible with the once-a-day change of the algorithm for the heuristic search.

Though Dr. Anantharaman's case is not totally persuasive, it is at least indicative. As that sage, Henry David Thoreau (1817-1862) taught us: "Some circumstantial evidence is very strong, as when you find a trout in the milk." Still and all, Dr. Thomas S. Anantharaman has accumulated enough evidence to show that human Grand-Master play falls short of being a final arbiter of chess excellence. In its turn, this implies that our jubilations in the previous editorial, *Force Comes to Mind*, may have been premature and should be muted. Force may come to mind, as indeed it did, but force at the end of the day overruled mind or so it seemed, much to the regret of our readers as this may be.

But there is more. Ossi Weiner, a partisan reporter though an honest one, has been watching the Kasparov-Karpov event with a plodding, admittedly slow and, some would say, delightfully commercial Mephisto. Who can sketch our readers' surprise when devilish imp Mephisto outplayed, at least occasionally, the world's best pair? Yet it did and convincing evidence is displayed in more than a dozen instances in the pages to follow. All of the above creates delightful and, we hope, constructive queries in our readers' minds: "Where is chess?" or even "What is chess?"

What decides what constitutes chess? Is it merely the World-Championship's outcome or is it outguessing some single move within their games? If the latter, at least one program has shown itself to be occasionally superior to even such gifted human beings as Karpov and Kasparov. This, lest our readers jump to conclusions, is *not* the same as outdoing them at every move.

What this Journal wishes to address in future is the principal question remaining: when a human being and a computer program play the game of chess or checkers or Go, are they playing the *same* game, even though both scrupulously adhere to the manifest rules-of-play?

The short answer seems to be that there *is* an identity of play because there is an identity of rules which must be adhered to. Longer answers seem to be in the view of your Editors that there is a subtle discrepancy. While conforming to the same external rules, the internal algorithms are such that in the end they diverge intrinsically.

In our limited experience, external rules admit a near-infinity of internal rules producing identical external effects. We may define the periphery of our Doubting Castle as the union of all algorithms yielding reasonable outcomes given reasonable inputs.

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