

from. It has been stated repeatedly, including to Prof. Michie in person, that Deep Thought contains no element from Hitech, period. The evaluation function of Deep Thought was in part based on the written descriptions of both the Northwestern Chess 4.X program and the Belle chess machine. There was no written description available about Hitech's evaluation function for us to draw on. In fact, we deliberately avoid any entanglement with Hitech in order to preserve our independence.

3. "... its partial debt to Hitech..." [p. 134], ditto. There was simply no way for Deep Thought to be indebted to Hitech; we made certain of that."

[For our readers, we quote the entire sentences of which parts are cited above. " The evaluation function is less knowledge-rich than that of Berliner's Hitech, from which some of its constituent evaluators were adapted, notably concerning pawn structure. But it contains more knowledge, if only by reason of its partial debt to Hitech, than the evaluation functions of Deep Thought's other predecessors."]

DEEP THOUGHT'S CHARACTERISTICS CLARIFIED

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The Editors have received a rejoinder by Prof. Michie to Dr. Hsu's comment. It is published in its entirety, albeit without the saluting formulae.

"In reply to the three points made in Dr. Feng Hsu's letter:

1. My characterisation of Deep Thought's evaluation function as less knowledge-rich than that of Hans Berliner's Hitech was based on my own assessment of the respective descriptions given me by Drs. Feng Hsu and Berliner. Note that I credited Hitech's evaluation function with being more "knowledge-rich", not "better".
2. I based my statement about DT's treatment of pawn structure on discussions with Dr. Berliner and, as I thought, Dr. Murray Campbell of the DT team. In a recent telephone conversation Dr. Murray corrected my mistake. I asked him why, since Berliner's deeply researched pawn-structure ideas were at the time well known to him, his team did not make use of them. He explained that implementational considerations made this impractical. I am glad to place this clarification in the public domain.
3. In the light of Dr. Feng Hsu's letter and of Dr. Campbell's statement I withdraw my attribution of a partial debt owed to Hitech. I also take this opportunity to express my long-held opinion that the scientific contribution to computer chess as a whole made by Hitech's author Dr. Hans Berliner has been and continues to be massive."

LITTLE TO FEAR FROM CHESS COMPUTERS

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The editors are glad to have received a letter from Mr. Bakker as a comment to Prof. Hans Berliner's report on the "Humans versus Computers Match 1989" (cf. *ICCA Journal*, Vol. 12, No. 3, pp. 182-183). With Mr. Bakker's permission, we reproduce his letter, as directed to Hans Berliner, below.

"I was very pleased to read that it is finally your intention to focus on the realities of the situation concerning computers playing chess versus humans. Your conclusions however do amaze me. You state that the top six

computers do very well against any but well-versed IM strength players.

Well, the tournament in The Hague was won by two human players who are not at all of IM strength. When analyzing the games, not just gloating over the results, it becomes evident that the reasons for their victory are that these human beings took their opponents seriously and refrained from experimentation.

I think you are right in saying that computers are still incapable of playing a well-conceived strategic game. And this is also the reason why I still believe, as I stated four years ago, that I have little to fear from computers, even though I don't play much anymore. It will take ages, if ever, before a computer is capable of beating a good human chess-player under tournament conditions. (In blitz chess and rapid chess computers may win some games.)

MUCH TO FEAR FROM CHESS COMPUTERS

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"After reading Mr. Bakker's note several times, I am at a loss to understand what it is about. My only explanation is that either:

- 1) he is upset at the last paragraph of my article, or
- 2) he really does not understand too much about chess.

I will reject the latter as an explanation since he seems to be a master level player. Now let us come down to the crux of the matter. Mr. Bakker made a statement in the open literature (*ICCA Journal*, 1985 [Vol. 8, No. 4, p. 260]) that "he did not expect to have anything to fear from computers for the next 5 years". That was based on a single encounter with Cray Blitz, a program that all connoisseurs know has done miserably against human competition in the Fredkin matches. Therefore, I found it insulting to have the whole field judged by the performance of Cray Blitz, especially at a time when Hitech had just won the ACM tournament with a perfect score.

Now one could take issue with what "nothing to fear" means, but I believe all will interpret the statement to mean that he does not expect to lose to computers at least until 1990. However, I challenged him to turn his expression of confidence into a bet, and he declined this (*ICCA Journal*, Vol. 9, No. 2, p. 111 and 125). It seems rather clear to me that he or his backers would lose whatever money they wagered, very likely against Hitech, and certainly to Deep Thought.

So why is Mr. Bakker changing the argument to "computers beating good players" all of a sudden. "Good players" is as non-quantitative as "nothing to fear". Mr. Bakker seems to revel in making statements that are imprecise, and when one tries to challenge him to make them precise, he quickly runs away.

That is all I have to say on the matter. If Mr. Bakker wishes to make ridiculous statements in the press, then he must be willing to "put his money where his mouth is". Failing to do that, he appears to be falling back on writing meaningless letters to the editor."

HELP WANTED: KRP(a)KB

Lars Falk

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From Dr. Lars Falk, we received the following suggestion for exploiting a database innovatively. The endgame considered is KRP(a)KB. Quite recently dr. Falk discovered that a Russian composer, Rezvov, has found a complicated win in this endgame based on a series of Zugzwang positions. To quote him verbatim: