Reply to Lassiter

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Lassiter's new data on search and pattern recognition in chess are interesting, but his conclusions about their implications for theory are unfounded.

Lassiter's data show that chess masters lose playing strength, relative to computer programs playing with the same time constraints, when the time per move is shortened. He attributes this to the human player's search being more hampered by time scarcity than the computer's. But as the relative times remain constant, if computers rely as heavily on search as humans, as is likely, the conclusion would not follow. Moreover, the

human difficulty could as readily be dearth of pattern-recognition time as dearth of search time, or time available to consult stored opening variations. Because there are many other possibilities, the implications for the respective roles of pattern recognition and search are not determinable from the data. As the ratios of skill losses to time compression are closely comparable to those for the Kasparov matches, Lassiter confirms our findings over a wider time range and additional cases.

Kasparov did not always play the white pieces. To make these matches as close as possible to real matches, in all cases, he played black in half of the games. As for our "small sample," Kasparov has played in four more exhibitions since our article appeared, with very similar results. He played twice against Argentina, with performances of 2708 and 2633, and twice against Israel, with performances of 2784 and over 3519 (the indeterminacy is due to Kasparov scoring 100%!). (In support of our conclusion, we also reported data by Calderwood, Klein, & Crandall, 1988, on speed chess; Lassiter fails to mention these data.)

Lassiter's remaining data concern correspondence chess, which is entirely different, psychologically, from over-the-board chess. The postal-chess player may use a chess library, can set up a dozen boards or more, and has time to transfer much information about the position to long-term memory. Comparing postal and tournament chess is like comparing multiplying eight-digit numbers with and without paper and pencil, or reading Shakespeare aloud and reciting him from memory. The much speedier pattern recognition in the absence of a large short-term memory load, combined with the access to

information not in the memory of the player, could easily account for the large gain in postal chess. That is why Elo ratings do not have remotely similar meanings in postal and in tournament chess.

Finally, our findings were a reply to Holding's (1985) claim that skill in search is the key to differences in humans' chess skill levels. In the chapter that Holding was responding to, we did not assert that chess skill does not involve search, but rather said that "our studies point to the . . . ability to perceive familiar patterns quickly . . . as the basic ability underlying chess skill" (Chase & Simon, 1973, p. 267). Patterns are perceived not only in the present board position, but in all positions considered during search.

For these reasons, Lassiter does not show our conclusions to be either premature or unwarranted. Of course, there remain many unanswered questions about chess search and pattern perception, and his data may help answer some of them.

References

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