CORRESPONDENCE

The Editors received a question by Hermann Kaindl and an answer by Don Beal. Both are reproduced below in slightly edited form.

A QUESTION

by Hermann Kaindl[1]

Moebling, Austria

With much interest I read the paper *Random Evaluations in Chess* by D.F. Beal and M.C. Smith in the *ICCA Journal*, Vol. 17, No. 1, pp. 3-9. Having studied the problem of the pathology/benefits of minimaxing, I wondered whether the study reported in that paper may help to gain insight into this more general problem. Since the senior author was one of the first to study this problem, I would be very interested in his opinion.

AN ANSWER

by Don Beal[2]

Queen Mary and Westfield College
London, England

Yes, I did consider the "random" experiment as contributing to the fundamental questions concerning minimax search, in the same spirit as pathology/benefits analyses.

I believe the same effect will be observed in essentially all games that humans like to play. However, that statement has to be qualified by applying the analysis in slightly modified form for some games.

For example, in Go the number of moves, equalling the number of empty intersections, tends to decrease steadily rather than fluctuate with the fortunes of each player, and is the same for both players (subject to minor effects from special rules). Since the "random lookahead" scores basically respond to the number of moves available, one might expect random lookahead to fail to produce benefits. However, in Go, a component of the *final* score is *always* available – namely the number of stones captured. It is arguable that this component should be included in *any* evaluation, even an otherwise random one. If it is, then the "random lookahead" benefits should be observable in Go. I have not done the experiment, though.

Also, as I commented in the paper, I think the effect is significantly different from using number-of-moves directly as an evaluation, because "random" lookahead smears out the "measurement" of number-of-moves over all depths of the lookahead tree, rather than only measuring it at the horizon. I hypothesise that for *very deep* searches, random may do better than using "number-of-moves" at the horizon, despite the apparent greater efficiency of the latter.

I also think the observation of random lookahead benefits is significant for completely unsupervised game learning. It means that learning systems can potentially start from *absolutely nothing* and progress, even in the beginning and middle phases of previously unknown games, far away from game-end results.

---

[1] Schillerstraße 45b, A-2340 Moebling, Austria.

[2] Department of Computer Science, Queen Mary and Westfield College, Mile End Road, London E1 4NS, England. Email: icca@dcs.qmw.ac.uk