

## CORRESPONDENCE

### A CONJECTURE CHALLENGED AND WITHDRAWN

Occasioned by Ingo Althöfer's article "Retrograde Analysis and Two Computerizable Definitions of the Quality of Chess Games" in the *ICCA Journal*, Vol. 12, No. 2, pp. 74-78, the Editor has received two letters, published in full below and amounting to Althöfer's withdrawing of one of his claims.

### A CONJECTURE CHALLENGED

*Peter Mysliwietz*

University of Paderborn  
Dept. of Mathematics and Computer Science  
P.O. Box 1621  
4790 Paderborn / West Germany

I would like to make a remark concerning Ingo Althöfer's very interesting article in the *ICCA Journal* of June 1989.

In the introduction Althöfer described the problem to decide whether given any two chess positions A and B on an  $n \times n$  board there is a legal chess game leading from A to B. He conjectured that this question is undecidable. This is not true, simply because the number of chess positions on an  $n \times n$  board is finite (dependent on  $n$ ). Therefore a path-finding procedure for the reachability graph is sufficient to solve the problem.

### A CONJECTURE WITHDRAWN

*Ingo Althöfer*

University of Bielefeld  
Faculty of Mathematics  
P.O. Box 8640  
4800 Bielefeld / West Germany

Rainer Feldmann and Peter Mysliwietz have drawn my attention to a bad misser in my note "Retrograde Analysis and Two Computerizable Definitions of the Quality of Chess Games", in *ICCA Journal*, Vol. 12, No. 2, pp. 74-78. In the introduction I had conjectured that it might be impossible to decide whether there is a regular chess game from A to B, where A and B are two positions on the generalized  $n \times n$  board (instead of  $8 \times 8$ ). However, for every fixed  $n$  there are only *finitely many* different chess positions on the  $n \times n$  board. Hence it is, at least from the theoretical point of view, trivially feasible to decide whether there is a path from A to B in the finite directed graph which corresponds to the  $n \times n$  chess.

The refuted conjecture of the note can be modified by looking at positions with *finitely many figures* on the *infinite chess board* (consisting of the whole plane). In this case the decidability status of the 'legal-game question' is *a priori* not clear as there are infinitely many positions.

I conjecture that also this case is decidable. Namely, it may be possible to prove something like the following statement:

"Let A and B be two positions on the infinite board such that in both all figures are standing on a subboard of size  $n \times n$ , and let P be an arbitrary regular game from A to B. Then there exists a game P' (maybe  $P=P'$ ) which also leads from A to B, and in which all figures do not leave a finite subboard of size say  $n^2 \times n^2$  around the above-mentioned  $n \times n$  subboard."

Such a statement would reduce the infinite board case to the finite one, which being denumerable is decidable.