Ken Thompson's 6-man Statistical Graphs

Article

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[With insignificant differences the above article is in the December 2001 number of the *British Chess Magazine*. Tim Krabbé reacted on this BCM article on his webpage (http://www.xs4all.nl/~timkr/chess/chess.html - Open Chess Diary) with a piece called "Duck of the century" from which we quote: *"my great scoop The messenger – the Saavedra myth exposed where I related how Rynd had anticipated the famous Saavedra study in a simul game, was in fact a canard. I'll have to rewrite that piece."*]

A puzzle remains: why has no trace of Porterfield Rynd being tackled - in public or in private - come to light? One of the Dublin *Evening Herald* solvers was "W.H.S.M.", i.e. W.H.S.Monck, later a leading *Chess Amateur* solver in several sections until his death (reported in October 1915). If anyone we are aware of had both the opportunity and the knowledge to confront Porterfield Rynd it would have been Monck. Could Irish researcher David McAlister delve into private papers that may survive? Monck lived in Northern Ireland. [AJR]

EG COMPETITION - ANNOUNCEMENT!!
An **EG** challenge (no prizes!):
to concoct a convincing game of the right length (37 moves!) leading to the position before 37...Sd3, in the alleged game between Porterfield Rynd and C.Yates.
Closing date: 31vii2002
Send to: AJR


COMPUTER SECTION **EG**
editor: John Roycroft

KEN THOMPSON'S 6-MAN STATISTICAL GRAPHS
Guy Haworth

This note addresses some questions about Ken Thompson's graphs at http://cm.bell-labs.com/ cm/cs/who/ken/chesseg.html.

These give some statistics about 6-man BTM White wins: there is no information about WTM or Black-win positions. There are two graphs per endgame and the metric is DTC or Depth to Conversion, i.e. to mate or change of force. The horizontal axis is linear in five equal parts; the vertical one is logarithmic having marks at 25%, 50% and 75%; the 'floor' is 0.1%. DTC = 0 is not credited with the *btm_mated* positions.

One graph gives the number of lost BTM positions at each depth: the depth (usually 1) featuring most positions is highlighted. The other shows the percentage of BTM positions lost in DC or fewer moves. The maxDTC and percentage of lost BTM positions is given.

1, 231246870

44, 0.1822

QQ-QQ
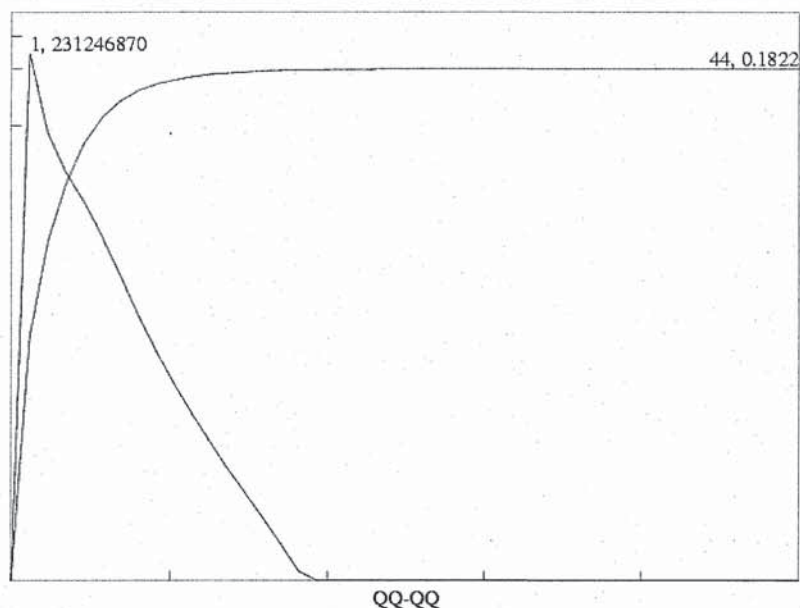
Thus, for KQQKQQ, we can see that, according to the statistics:

maxDTC = 44; 18.22% of BTM positions are lost; more positions have DTC = 1 than any other depth; 231,246,870 have DTC = 1; from DTC = 17 on, the numbers are too small to show on the 'positions per depth' graph. In fact, 318,444 positions have DTC = 17.

Some caveats. These statistics are affected by symmetries which Ken has not factored out. For example, the 231,246,870 positions mentioned above are not all different: exchanging two wQQ or bQQ makes another position in the count but not on the chessboard.

Although Ken did not include the *btm_mated* position, it appears that he did include them in the count of all BTM positions so his percentages are underestimates. For KQQKQQ BTM White wins, Wirth gives 20.05% and Nalimov gives 20.01%: they handle symmetries differently but both show that Ken's 18.22% is low.

528

Hyatt, R. ftp://ftp.cis.uab. edu/pub/ hyatt/TB/ Server providing Nalimov's EGT's and statistics.

Tamplin, J. http://chess.jaet.org features data on chess endgames, including Ken's recent results.

Wirth, C. http://nobi.inf.ethz.ch/ games/chess. DTC EGT's.

KEN THOMPSON - tributes direct and indirect
John Roycroft

1. Snapshots of memory

The vi2001 issue of the *International Computer Games Association* journal includes a number of personal and technical tributes to Ken Thompson, who has now retired from the *C* arena.

Three 'snapshots' are high on the list of my personal memories of Ken Thompson.

The first snapshot is of being consulted by Ken early in 1983, by post and by phone. Ken wanted to know for which pawnless endgame he should create the first 5-man pioneering oracle database. My answer was 'two bishops against knight'. The result is in EG*74* in the same year.

The second is in the late autumn of 1985. We were looking down on what must have been New York's twin World Trade Centre towers from the small plane that Ken was expertly piloting, having hedge-hopped the bridges down the long Manhattan stretch of the Hudson River. We banked steeply into a 180-degree turn.

The third occurred in the same visit. This time it was in Ken's New Jersey home when we were both seated at a table. Ken had just explained how 121 million bits can represent all BTM positions of a 5-man pawnless endgame. A bit 'on' denotes a win for White, otherwise no win. In a flash I saw that if a like number of WTM bits were compared bit for bit with the BTM set then nothing more was needed to identify all positions where White did not win WTM, but did BTM: reciprocal zugzwangs. Ken silently disappeared into his sanctum and programmed it, coming back within half-an-hour with the unique result for 0023. The now routine sniffing out of reciprocal zugzwangs was born. Lists for other endgames followed thick and fast from Ken; for instance, that for GBR 1006 was created on 7xii1985, though not until viii1988 was it published (in **EG**).

2. Symbiotic research

The reci-zug story illustrates the computer's 'brute force' capability to produce same-day, and indisputably final, output of eye-opening significance for the non-computer specialist. There has to be untapped potential for more of the same. The inhibitor for this to happen is, we think, unsatisfactory channels of between-the-ears communication between programmer and 'domain specialist', the latter term being

529