The Go Ranking System of Klaus Heine

Franco Pratesi

Here is another contribution to my recent articles about-Go ranking systems. Let me call attention to the fact that the whole series results from a personal approach to the topic, aiming to show the most promising features of systems adopted or just proposed, and the theoretical prerequisites for a correct ranking of Go players. In particular, I selected and examined past proposals in view of their possible application... to future systems – without caring, for instance, whether a given system had been adopted by a national association.

Now, after the absolute scale of playing strength proposed by Walther Schmidt, discussed in the previous issue, the next contribution to take into account is that by Klaus Heine. He is a Doctor in Physics and has taken advantage of his scientific education in approaching several aspects of Go theory.

The question of player strength and ranking, which is the subject of this series, was thus only one of the many scientific aspects touched by his investigation. As Schmidt and other scientists, he was forced to study a better definition of the basic rules.

Moreover, he studied the values of moves, komi and handicaps. Other aspects were considered by him, such as the learning process, leading him to postulate a possible use of Go as a, model for fundamental studies of pedagogy and psychology.

Heine not only offered his own contribution but assisted the necessary exchange of information among interested experts and scholars, stimulating the two worlds of Go players and professional scientists to work together toward a theoretical approach to the game. To this aim he organised, in particular, two seminars at the European Go Congresses of 1975 and 1979, where several scientists from Europe and the USA took part actively.

Only an unpublished summary has been kept for the former congress, but we have a whole book for the latter: *Proceedings of 2nd Seminar of Scientific Go-Theory* (K. Heine, Ed.), Mülheim a.d.Ruhr, 1980, 126 pp.

What is here of specific interest is the attention that Heine devoted to the scores of Go games. In Go – different from most other games – the amount of a win can be determined and this fact induced Heine to conclude that Go may be the best candidate for a quantitative investigation of game features and correlations. In particular, he performed some statistical analysis, and used similar analyses by other researchers, in order to find the correspondence between game score and player strength. The diagram in the Figure – reproduced from the *Proceedings* – shows the relation between the scattering of the results of Go games and the strength of the players.

For measuring player strength, Heine systematically adopted the 'European' system, which we have already seen in the first article of this series. It had been introduced by Bruno Ruger in 1922 (and revised in 1944), as a derivation from the Japanese handicap-stone ranking system. Among other features, it has the advantage of using a single, continuous scale. After WW2, this system was further modified and in practice the interval of one-half stone between adjacent ranks was eventually applied to the full scale. The limit for weakest players was set at 60 or even higher – ranks around 75 can be found in the lists of German Go players of the 1960s. The limit for strongest players was considered by Heine to be better 0 than 1, in agreement both with ranking systems once in use for chess, such as the INGO one, and with absolute scales based on ratios instead of intervals.

Heine indeed considers the 0-80 (or 100) European scale as an absolute ratio scale of playing strength – one should however further investigate whether using any scale based on handicap stones is really suitable for measuring playing strength, as discussed in previous parts of this series.

At the same time, Heine regards the final score of a Go game as the accumulation of the mistakes of both players. A comparison is suggested with the theory of information, mistakes acting as noise on a signal. Without mistakes, perfect play can exist. Passing to weaker players the number of mistakes increases with their weakness. Actually, the process does not correspond to a gradual increase of the same kind of small mistakes made by both players; rather, it is the magnitude of each mistake that increases for weaker players, and this may require functions different from the normal distribution for a statistical analysis of the scores.

The study of a few selected tournaments was considered to support the basic hypotheses; nevertheless, Heine clearly stated more than once that his scientific approach needs more data gathering for a statistical confirmation. Unfortunately, Go players did not contribute enough to this topic and in the years after the Seminars, until now, Heine got very little cooperation, if any. Players usually show little interest in the progress of the scientific theories of Go, and in particular are far from inclined to have the 'correct' scores of their games recorded, especially for lost ones.

Any reader interested in analysis of game scores and their relation with playing strength – in the framework of a more general scientific approach to Go – should contact Prof. Klaus Heine in person, through his e-mail address (klgeheine@t-online.de) or web pages: http://home.t-online.de/home/klgeheine/

Subsequently, other ranking methods have been proposed and adopted. An interesting proposal dated 1994, I intend to describe in the next issue.
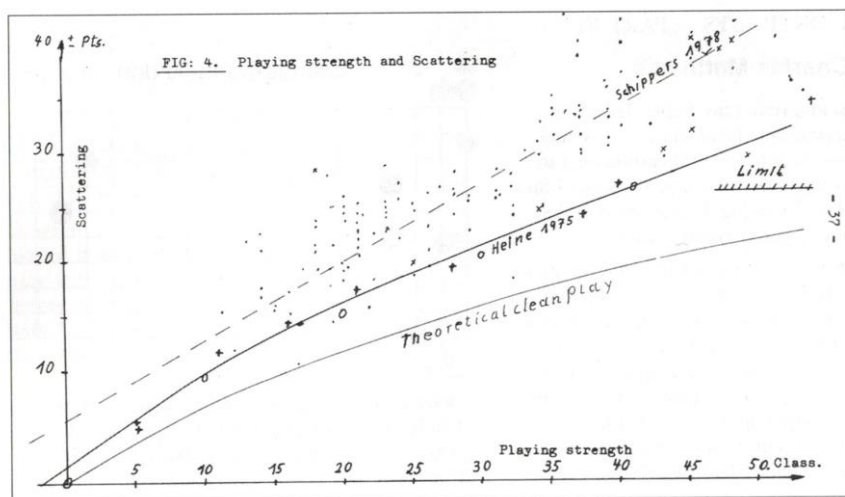
Scattering in the scores of games plotted against the strength of the players. Playing strength is measured using Bruno Rüger's European system.