Abstract of "The Expert Mind" by Philip E. Ross

Because chess can easily be split into measurable units, which can be used to compare a chess master's current and previous games, psychologists have long studied the playing methods of chess grandmasters in cognitive experiments. Such studies have lead to new theories about the process of becoming an expert in fields beyond the chess world. There is hope that discovering the secret of chess experts will enable educators to use these methods in their classrooms.

Early chess research indicated that expertise was not due to prodigal talent, but was rather a product of consistent training and study. Further studies confirmed that it was also not a function of a vast memory, but a particular ability to organize and retrieve information from memory. For instance, researchers estimated that people can only keep approximately five to nine pieces of information in normal memory at a time. Psychologist Herbert A. Simon postulated that chess experts, however, were able to access more information – not by retaining more pieces of information, but by retaining larger chunks of information. Also, brain imaging studies have shown that chess masters more frequently access their long-term memory than is usual, indicating that they are able to retrieve even more information more readily.

While psychologists are not completely sure about how experts manipulate these chunks of information, they are sure about how the chunks of information are accumulated. The 10-year rule estimates that it requires about ten years of dedicated study and practice, combined with a desire to always improve, to become an expert in any field, from math to sports.

The message of these cognitive experiments for parents and educators is that motivation and dedicated study are crucial for bringing up the next generation of experts. Already, some schools are experimenting with offering small cash rewards for evidence of improved test scores, with some positive results.

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