

# **Blindfold Chess: The Memory Factor and Mnemonic Techniques**

**by John Knott**

## **1. Introduction**

This article makes some observations about the role of memory in blindfold chess and discusses some of the techniques available to blindfold players to help them cope with playing several games at once, particularly in the opening stages when games may not have acquired their own distinguishing characteristics. It does not attempt to explain why blindfold chess is possible, or how the ability to play blindfold may be acquired: for these topics the reader is referred to our book *Blindfold Chess*. Rather, this article expands on comments in the book about memory and mnemonic systems; examines the advice—some good, some bad—offered by various writers over the years, for players of single and simultaneous blindfold games; and analyzes techniques used by blindfold record holders.

## **2. The Role of Memory in Blindfold Chess**

The current decade has seen a revival of the pioneering spirit in which blindfold players during the 19<sup>th</sup> and early 20<sup>th</sup> centuries explored the limit of the ability to cope with multiple blindfold games simultaneously. After Miguel Najdorf played 45 simultaneous blindfold games in 1947<sup>1</sup> the next record attempt was by Janos Flesch in 1960 to play 52 games; but an exhaustive examination of that event revealed that it lacked many of the qualities needed to justify it as establishing a new world record.<sup>2</sup> It was not until the German FIDE master Marc Lang played 46 games at once in November 2011 that the boundary was pushed back<sup>3</sup>; and later his achievement was eclipsed by Uzbekistan-born GM Timur Gareyev, who played 48 games simultaneously in December 2016.<sup>4</sup> Not just for the general public, but also for experienced chess players, these are amazing performances, apparently calling for prodigious feats of memory beyond most people's comprehension. How are some chessplayers able to

1 See account at pp. 93-98 of *Blindfold Chess*.

2 For a detailed explanation see pp. 99-110 of *Blindfold Chess*.

3 See article by Eliot Hearst, at

[http://www.blindfoldchess.net/blog/2011/12/after\\_64\\_years\\_new\\_world\\_blindfold\\_record\\_set\\_by\\_marc\\_lang\\_playing\\_46\\_games/](http://www.blindfoldchess.net/blog/2011/12/after_64_years_new_world_blindfold_record_set_by_marc_lang_playing_46_games/)

4 See article at

[http://www.blindfoldchess.net/blog/2017/07/timur\\_gareyev\\_and\\_blindfold\\_chess\\_an\\_appraisal\\_by\\_john\\_knott/](http://www.blindfoldchess.net/blog/2017/07/timur_gareyev_and_blindfold_chess_an_appraisal_by_john_knott/)

remember the location of pieces in a blindfold game, particularly when playing so many games at once, and how are they able to avoid confusion between games?

### ***2.1: Sighted analysis compared with blindfold play***

A consideration of the memory component highlights similarities between mental analysis during an over-the-board game and the playing of a single blindfold game. In chess games, all players beyond absolute beginners seek to determine in advance the likely outcome of a planned move, by trying to predict their opponent's response and deciding how they will then proceed further with their idea or plan. Sometimes it is desirable (and sometimes necessary) to calculate several or more moves ahead, often in more than one set of possibilities or variations. Strong players will instinctively know in which positions they can proceed from a memory and understanding of an opening system; or on general principles with not much concrete analysis; and which positions call for a more detailed treatment.

In any such analysis of future possibilities during a sighted game a player will be carrying out the same sort of mental operations as he would need to undertake if he were playing blindfold, inasmuch as he will be imagining rather than physically seeing a series of new positions. There are, of course, some differences. Strictly, a player analyzing in a sighted game will still be able to see with his eyes part of any envisaged future positions, because in most cases only part of the current position will be changed. But to achieve a full view he will have the additional task of overcoming "ghost" pieces, which in his analysis may have moved to other squares or may have been captured; and also the task of imagining active pieces moving into their new positions. Nevertheless, a common factor between sighted and blindfold play is that, at any one time save in a thinly populated endgame, both a player at the board and a blindfold player will typically be envisaging the movement of relatively few of the remaining pieces, and will be concentrating on only the most relevant features. Accordingly, large parts of most current positions will remain unchanged during any but the most intensive analysis. On this point Reuben Fine, a very strong over-the-board and blindfold player, wrote: "The player readily comes to feel that certain positions are plausible, while others are implausible. In any one game, the series of positions is interconnected because major sections of the [mental image] remain unchanged for long periods of time."<sup>5</sup>

5 R. Fine, "The psychology of blindfold chess: An introspective account", *Acta Psychologica*, **24**, 352.

Similar considerations apply when players discuss moves away from the board. At any one time, a blindfold player is concentrating on only a small part of the board. Edward Lasker, who acted as teller for Alekhine's 32-game performance in Chicago in 1933, said: "One never sees the whole board clearly. Rarely more than eight or nine squares appear to be 'focused'. The rest of the board seems blurred and can be seen clearly only by shifting one's vision to the desired area."<sup>6</sup> The analogy of a spotlight moving among actors on a stage is quite striking: the focus is on only a small area at a time, the rest of the stage being in relative shadow.

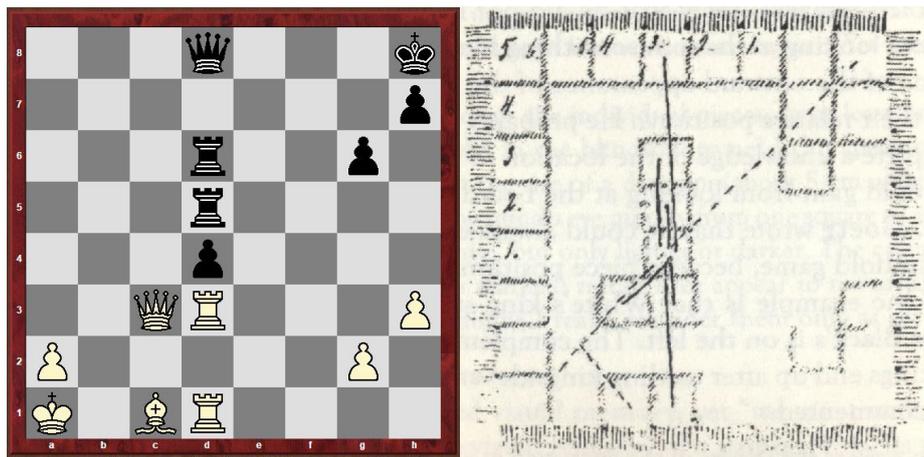
For these reasons a strong blindfold player, contrary to popular expectation, does not attempt to hold in his working memory a representation of the whole board and all its pieces. Rather, he creates as much of an image of the board and pieces as he needs for his immediate purposes, knowing that he can, if necessary, recreate the entire position. There is, as the Dutch psychologist and chess master Adriaan de Groot pointed out, a distinction, particularly in blindfold simultaneous games, "between *knowing* which position it is (feeling able to reconstruct it) and '*imagining*' a position (having a workably complete picture in mind)".<sup>7</sup> A similar conclusion was expressed by P.J. Hampson and P. E. Morris, writing in 1979: "Increasing sophistication with certain problems seems to imply less dependence on fully articulated, concrete images, and more reliance on abstract, less highly structured representations."

One sometimes hears players discussing chessboard and piece imagery in a way that suggests they are trying to create a photographic image of the whole board and all the pieces. Doing so would call for a greatly increased effort, both in the construction of a mental image and also in its retention, and its manipulation as moves are made. That is not how a typical, strong blindfold player operates. His image is not like a photograph but is abstract, with the degree of abstraction broadly matching his playing strength: the stronger the player, the more abstract will his image typically be. The well-known sketch drawn by the 19<sup>th</sup> century player Stanislaus Sittenfeld (next page) shows the abstract nature of his mental image of a position.

<sup>6</sup> Ed. Lasker, *The Adventure of Chess* (New York, Dover, 1959), pp. 59-60.

<sup>7</sup> A.D. de Groot, *Thought and Choice in Chess* (The Hague, Mouton, 1965), p. 6.

Alphonse Goetz, a competent blindfold player living in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, who contributed to French chess magazines under the pseudonym A. Geoffroy-Dausay, said that he could not tell which style of chess piece he “saw” when playing blindfold. Stressing the abstract nature of his mental image, and matching Sittenfeld’s portrayal, he said: “I am aware only of the significance of a piece and its course. The rook, for example, moves in a straight line.... To the inner eye, a bishop is not a uniquely shaped piece, but rather an oblique force.”<sup>8</sup> Sittenfeld’s drawing is a representation of what Reuben Fine called a “spatio-temporal Gestalt” which, in a game, is initially that of the board and pieces in their starting positions. The representation takes on features similar to that of a cartoon, in which the pieces may be regarded as what IM Bob Wade called “amorphous blobs”.



*The drawing on the right is by Stanislaus Sittenfeld, who was trying to show how he might view the position on the left in a blindfold game. Neither the pieces nor the squares form a concrete image. What is held in the mind is the relative locations of the pieces, with their potential relevant activity shown by lines of force. (Drawing from Binet, 1894<sup>9</sup>)*

For many players, the presence of a physical board helps them when analyzing during a game, both as regards the board’s geometry and also the current location of the pieces. Indeed, that is what happens during the majority of casual and club games, and in most tournament games. But for some players, and at some times, a board and pieces form a distraction. Hence, a not uncommon scene at grandmaster tournaments is that some players occasionally look elsewhere, perhaps at the ceiling, while analyzing. But while there are some similarities between analysis in a sighted game and the playing of a blindfold game, a major difference is that in a sighted game a player knows with certainty the current position,

8 A. Binet, *Psychologie des Grands Calculateurs et Joueurs d’Échecs* (Paris, Hachette, 1894), p. 303.

9 See note 8, above, at pp. 300-301.

and can always return with certainty to it, because it is on the board in front of him. A blindfold player, on the other hand, has to visualize the current position as fully as he needs at any one time; and, quite apart from envisaging a future possible sequence of positions (or active elements of those positions), has an additional memory task of exiting his analysis at the correct place before he makes his move. As GM Sergio Mariotti said, commenting on a claim by the 19<sup>th</sup> century blindfold expert, Zukertort, that a single blindfold game could be played to a higher standard than a single game over the board:

It is true that you have less distractions than in a normal game, but sometimes it is more difficult to play a combination because you may for example discover that your analysis is faulty, when you must start analysing again from the position the game has reached. However, possibly you may not then recall the exact location of some of the pieces, so you may have to reconstruct the position by replaying the moves of the game.<sup>10</sup>

That this is not an isolated occurrence is clear from a similar observation by Fine, who wrote:

In the process of thinking about the game (when playing over the board), the player shifts back and forth all the time. In his calculations, he must come back to the position which is now on the board. If he is looking at the board he never loses track of the present position. If he is not looking at the board there is a slight tendency to confuse the present position with ones that have come before or with ones that may come afterwards. Typically, these confusions would involve mislocating one part of the Gestalt, for example thinking of a pawn at a2, rather than at a3.<sup>11</sup>

An almost identical comment was made by Erich Eliskases about a few occurrences in Najdorf's 1947 record event, when Najdorf used misdirection to ascertain the location of a critical piece.<sup>12</sup>

## ***2.2: The relationship between memory and meaningfulness of material***

A moment's reflection shows that in everyday life there is a strong link between the meaningfulness of a subject matter and the ease of remembering it. One example will suffice: "sbtothrlldovhedwsttnutefeleehsie" compared with "we hold these truths to be self-evident", comprised of the same letters, but arranged in a meaningful way. T-h-e-w-a-y-w-e-r-e-a-d is not by consciously and laboriously converting a string of letters into words and then back into a thought. We do not remember twelve distinct letters, but rather the sense of the expression "the way we read". Alfred Cleveland, in a 1907 study of some of the psychological aspects of chess, concluded that the memory of a chess game "is similar to that of a remembered

<sup>10</sup> Personal communication to the author, 1978.

<sup>11</sup> R. Fine, "The psychology of blindfold chess: An introspective account", *Acta Psychologica*, **24**, 352.

<sup>12</sup> See *Blindfold Chess* at p. 98

conversation: the one who recalls it does not recall each word separately but rather the meaning of each remark and its connection with what preceded or followed.”<sup>13</sup>

Naturally, such an achievement is possible only when we have become familiar with the individual words and when we are able to detect a meaning in the group of words as a whole. Without such an understanding we might still be able to repeat unfamiliar words from memory, for example, words in an unknown foreign language; but we would not be able to conduct a debate about the subject matter. So it is with chess. The beginner, after becoming familiar with chess notation, can describe a short sequence of moves without referring to a board, but that does not enable him to fight a game blindfold.

It should, accordingly, be no surprise that the ability to play blindfold is closely related to a player’s strength at over-the-board chess, because for the stronger player chess positions are richer and more meaningful, and they impact on such a player at a deeper level. In response to questions as to how he was able to play so many games blindfold, Alekhine said:

I think that the whole secret consists of an innate acuity of memory which, in a suitable way, develops the fundamental knowledge of the chessboard and a deep penetration of the process of thinking chessically into the whole essence of the player.<sup>14</sup>

The link between meaningfulness and memory in chess was also stressed by Dr Siegbert Tarrasch, when responding to a questionnaire drawn up by the French psychologist Alfred Binet. Tarrasch said:

My memory on the whole, can only be described as about average. ... Often, patients of mine greet me in the street without my being able to remember who they are. On the other hand, ... my memory ... is very good and very precise for all that I am keen to recall, that I study or read with interest. ... I can always recall very precisely my patients’ illnesses even if the memory of them as individuals has long faded. And for the game of chess, my memory is particularly faithful because I am especially interested in it.<sup>15</sup>

13 A.A. Cleveland, “The psychology of chess and learning to play it”, *The American Journal of Psychology*, (1907) **18**, 269 at p.280. Cleveland’s paper, which was based on his Ph.D. dissertation at Clark University, Worcester, Mass., contained a lucid and penetrating analysis, and many of his findings still have relevance today.

14 A. Alekhine, “The Blindfold Game”, *Chess Life and Review*, (1971) **26**, 522-523. (A. Buschke, trans. 1932 from “Blindpartien”, originally published in *Shakhmaty v SSSR*, (1931) **14** (July 30), p. 235)

15 A. Binet, *Psychologie des Grands Calculateurs et Joueurs d’Échecs* (Paris, Hachette, 1894), pp. 351-352.

Professor Ian Hunter, a noted specialist on human memory, made the same point:

To anyone who knows nothing of the game of chess, it seems incredible that a person could watch a game being played and then give a move-by-move account of the game. But an experienced chess player can accomplish this feat of recapitulation because, for him, the game is not a succession of independent moves but, rather, a developing pattern of themes-of-play.<sup>16</sup>

Here, the expression “developing pattern of themes-of-play” apply describes the way ideas in a game gradually build upon the structure of the existing position. Once a game has acquired its own character the player has before him at successive moves not so much different and separate positions, as the same position modified according to certain ideas. In a somewhat similar way, when one meets a friend after an interval one can identify him despite his increased age, different clothes, different hair style, a broken nose, the addition of sabre scars, arm in a sling, or whatever. One notices the changes, but the same core structure is present.

Reuben Fine pointed out that the role of memory in blindfold chess is not as large as might be supposed, because of the logical connections between the moves of a game and the grouping of various moves into themes. This enables a player of sufficient strength to sum up a game into a small number of key phrases—just as a paragraph can be broken down into its constituent parts. He wrote:

At first sight the memory feat in blindfold chess seems enormous, since even in one game lasting, say, an average of 40 moves, 80 different positions must be remembered. It is also a common experience that at the end of any blindfold exhibition, the player can repeat the scores of all the games verbatim. An explanation can be offered for this memory feat. First of all, the 80 different positions in any one game are interconnected. Only one piece in the position, or at most two, change at any particular time and later parts of the game always indicate some relationship to the earlier ones. Most significant is the pawn structure which changes least in the course of the game. In most cases, the king would move only relatively little until the end of the game. Thus, a 40 move game could be remembered with perhaps five or six key phrases. Second, the language used for chess, i.e. the chess notation, is as familiar to the expert as ordinary language. The summation of the game in this language again facilitates the memory process.<sup>17</sup>

This account contains perceptive comments. Fine draws particular attention to two main facets: the link between the positions after successive moves and series of moves; and the help received from the use of a formal chess language for describing the moves. On the first

16 I.M.L. Hunter, *Memory* (Harmondsworth, Penguin, 1966), p. 73.

17 R. Fine, “The psychology of blindfold chess: An introspective account”, *Acta Psychologica*, **24**, 352.

point, Fine's reference to key phrases echoes a remark made by Aron Nimzovitch to the effect that he regarded a ten-move combination he made in a blindfold game as just a three-move combination made up of sequences of three, four, and three moves.<sup>18</sup> Experienced players will recognize somewhat similar incidents in their own games, whether sighted or blindfold. It is only at a low level that a player typically proceeds in pedestrian fashion, groping ahead move by move with no real idea of where he should be going. The relative stability of the pawn structure, once developed, and the king's position, do help the chess expert to reconstitute a position, partly because they are key structural elements. Particularly for a blindfold player, they materially help to give a game its distinguishing character, which often survives substantially, and in a recognized fashion, many of the incidents of the battle. An investigation carried out in Yugoslavia during the mid-1970s found—reinforcing Fine's comments—that the locations which were most accurately recalled for the pieces in a position were the kings, followed by the pawns. Indeed, it is a common experience to look at a middle-game, or sometimes an endgame, position, and know that the game probably started as a French Defence, or a Benko Gambit, or a Yugoslav Attack in a Sicilian Dragon, or whatever.<sup>19</sup>

The language of chess notation, which Fine also highlights, is not merely a means of describing the moves. From repeated use of such language over the years the expert gains further points of support for chess thinking, in much the same way that a musician has a multitude of supports upon which he can draw. For example, in the early stages of a game particularly, a blindfold player can frequently operate almost entirely from a knowledge of the opening variation, with scarcely any need to attempt to represent the position to himself spatially. When considering a move during the opening period he might perhaps portray a minute section of the board—possibly only two or three squares, or part of a diagonal. The acts of portraying a part of the board, conceiving an appropriate reply, and preparing to call out his move, are operations which are often so closely merged that they become almost indistinguishable to an experienced player. For a player who lacks a good working

18 A. Alekhine, "The Blindfold Game", *Chess Life and Review*, (1971) **26**, 522. (A. Buschke, trans. 1932 from "Blindpartien", originally published in *Shakhmaty v SSSR*, (1931) **14** (July 30), p. 235).

19 The study was by I. Bratko, P. Tancig and S. Tancig of the J Stefan Institute, Faculty for Physical Culture, University of Ljubljana, Yugoslavia: "Some new aspects of chess board reconstruction experiments", (1976) 3<sup>rd</sup> European Conference on Cybernetics and System Research, Vienna.

knowledge of the board and a system of chess notation, such co-ordination is not possible. For him, the consideration of his reply is like planning a car journey with only a hazy understanding of the working of the vehicle and the geography of the area; while announcing his intended move is like struggling to express himself in a foreign language by relying on a phrase book. He may be able to accomplish both operations in a fashion—but with what effort!

Over the years, numerous experiments have been carried out to investigate aspects of chess mastery, including the ability of chess players of various strengths to reproduce chess positions they have seen for a few seconds. One of the pioneers in this field was the Dutch chess master Adriaan de Groot, Professor of Psychology and Methodology at the University of Amsterdam, whose conclusions linked chess mastery with the intelligent penetration of the structure of a position.<sup>20</sup> De Groot was building on an investigation carried out a few years earlier by Professors Djackow, Petrowski and Rudik, who had studied some of the competitors from the 1925 Moscow International Tournament and had concluded that the memory of chess masters was better than average only for chess-related material.<sup>21</sup> What clearly emerged from de Groot's investigations in the 1930s and later was that the degree of success with which a player reconstructed a position was dependent on three main factors:

1. The length of time during which he could study the position;
2. His strength as a player; and
3. The degree to which the position was inherently logical.

De Groot found that where a strong player and a weak player were shown for the same length of time a position taken from a game, the stronger player's reconstruction was consistently more accurate. Where, however, the players were shown a manufactured position where the pieces were set up on a random basis, the differences between the accuracy of the solutions were much less marked. Similarly, the investigations carried out in Yugoslavia during the mid-1970s, mentioned earlier, reached the important conclusion that the reconstruction of a position could not be adequately accounted for simply by reference to individual groups of related pieces (a reference to earlier conclusions about the relevance of the "chunking" of

20 A.D. de Groot, *Thought and Choice in Chess* (The Hague, Mouton, 1965).

21 I.N. Djackow, N.W. Petrowski and P.A. Rudik, (1926) *Psihologija Shakhmatnoi Igry* (Chess Psychology), Moscow; and *Psychologie des Schachspiels* (Berlin, de Gruyter, 1927).

pieces into familiar groups). Rather, it involved to a large extent the plausibility of the dynamic properties of a position as a whole. In other words, an important factor for success was the meaningfulness of a position—reinforcing de Groot’s conclusion.<sup>22</sup>

Similar considerations apply in other areas of life. Even Solomon Shereshevsky, whose phenomenal ability to remember data was investigated over a period of 30 years by the Russian neuropsychologist Professor Alexander Luria, augmented his strong natural visual memory in ways that made material more meaningful and more memorable for him.<sup>23</sup>

### **2.3: Importance of motivation**

With blindfold chess, it is clear that the more games that are being played at once, the greater must be the demand on memory. There will be variations between players, including between strong players, in the power of their memory for chess positions, and this is an important factor contributing to different abilities at blindfold chess; but it may, of course, be not the only cause of any difference. Among other factors of importance are ability at mental imagery, and a person’s motivation. Some very strong players, such as Capablanca and Kasparov, were not interested in developing at blindfold chess, despite their undoubted ability to do so.<sup>24</sup> On the other hand, some very successful blindfold players, including George Koltanowski, who was (only) an honorary grandmaster, and Marc Lang, who is a FIDE master, each succeeded in capturing the world record for simultaneous blindfold games because they made a special study of blindfold play, took an interest in it, and developed methods to help them remember each game.<sup>25</sup>

22 I. Bratko, P. Tancig and S. Tancig of the J Stefan Institute, Faculty for Physical Culture, University of Ljubljana, Yugoslavia: “Some new aspects of chess board reconstruction experiments”, (1976) 3<sup>rd</sup> European Conference on Cybernetics and System Research, Vienna. See *Blindfold Chess*, from p. 155 onwards, for a discussion of chunking.

23 A.R. Luria, *The Mind of a Mnemonist* (Cambridge, Mass., Harvard University Press, 1987). And see M.I. Kostyanaya and P. Rossouw, “Alexander Luria: Life, research and contribution to neuroscience”, *International Journal of Neuropsychotherapy*, Vol. 1, Issue 2 (October 2013), pp. 47-55, for new information about Shereshevsky.

24 See p. 51 of *Blindfold Chess* regarding Capablanca, and pp. 126-127 regarding Kasparov.

25 It has been estimated that Koltanowski’s rating during the mid-1930s, when he played 34 blindfold games simultaneously, was 2450. Lang’s rating in 2011, when he played 46 blindfold games simultaneously, was 2300. The players’ memory techniques are discussed later.

## 2.4: *Beyond memory*

Regardless of its importance, the memory component of the skills involved in playing blindfold chess is just a basic requirement. As Alekhine pointed out:

If the public at large supposes that the most essential difficulty consists of remembering at all times the relative positions, then it forgets that the blindfold player has to overcome a second, much greater difficulty, namely to fight blindfold, to find in every position, blindfold, the relatively best move!<sup>26</sup>

A similar comment was made by Janos Flesch, who had a highly retentive memory, not only for chess but also for Hungarian poetry and mathematical tables. He said:

Most people think that the main consideration is to keep an accurate picture in one's head of the battle positions; that everything depends on that. But this is not so. To know the positions is a fundamental requirement, but is only the start. The battle positions in themselves are dead; they have to be worked up in one's head. Combinations have to be imagined. These will produce countless variations over a number of games. I must choose from these the best with which to defeat my opponents.<sup>27</sup>

Nevertheless, memory does have an important role in blindfold chess, particularly when multiple games are played at the same time; and it is a faculty that serious blindfold players need to address. How a player may gain assistance from various mnemonic techniques is examined later.

## 3. Reducing the Burden on Memory in Single Games

Various writers over the years, including some strong blindfold players, have offered their advice for reducing the burden on memory, and allowing more effort to be devoted to fighting blindfold. In examining such material it is easy to underestimate the considerable difficulties that the early authors faced in giving a coherent exposition, which occurred partly because the functioning of the human brain was not then so well understood, but also in some cases because of those writers' lack of familiarity with blindfold chess. Largely because of these difficulties, but also in some cases because of unnecessary complications they introduced, some of the advice is useful in ways unintended by those offering it; mainly because it indicates what to avoid.

26 A. Alekhine, "The Blindfold Game", *Chess Life and Review*, **26**, 522-523. (A. Buschke, trans. from "Blindpartien", originally published in *Shakhmaty v SSSR*, (1931), **14** (July 30), p. 235).

27 Personal communication to the author, 1980, translated by John Reti.

### **3.1: Damiano's advice**

In Jacob Sarratt's early 19<sup>th</sup> century translation and arrangement of *The Works of Damiano, Ruy Lopez and Salvio on The Game of Chess*, there is a section headed "The elements of the Art of Playing Without Seeing the Board; Chiefly taken from Damiano's scarce and valuable treatise".<sup>28</sup> This sets out numerous basic precepts for keeping track of the moves in a game, such as: "The student must, in the first place, become perfectly acquainted with the names of the squares on which the pieces are placed, and also with the names of the squares to which they may be moved." After several mathematical observations, which amount to little more than a description of the board in numbers, the advice concludes:

The pieces that may be exchanged in the course of the Game must be carefully recollected, and every new situation requires the most sedulous attention. These rules will prove of great utility to any Chess-Player who is desirous of acquiring the art of playing without seeing the board, but he will find himself deceived if he imagines that they are sufficient to enable him immediately to excel in it, as they will prove unavailing if they be not combined with great practice.

Regrettably, just how the student is to apply these "elements" is not explained.

### **3.2: Walker's advice**

Rather more specific, albeit dubious, advice was offered nearly 30 years later by George Walker, one of the stronger players in London in the middle part of the 19<sup>th</sup> century, who was the author of several chess books and magazine articles and columns. He advised the aspiring blindfold player to "Take off the pieces as early as possible consistent with safety, and especially the knights, the movements of these leaping cavaliers being extremely difficult to calculate blindfold." He also recommended the early exchange of queens, cautioned the player against closed games, warned him of the difficulties of endings on account of "there being so many squares unoccupied", and urged him "not to aim at *too* brilliant a style of play" and to "be content to win the queen rather than lose the game by trying to give checkmate".<sup>29</sup> However, some of Walker's advice made good sense without reducing the game to an exercise in simplifying in the hope of not losing. He drew attention to the importance of knowing the points of intersection of files, ranks and diagonals, and he

28 J.H. Sarratt, *The Works of Damiano, Ruy Lopez and Salvio on The Game of Chess* (London, T. Boosey, 1813), Ch. 10.

29 George Walker, "Chess without the Chessboard", *Frasers Magazine*, Vol. 21 (March, 1840) pp. 313-315.

recommended various exercises involving a few pieces: advice similar to that given subsequently in rather more detail by Réti, nearly 90 years later.<sup>30</sup>

Walker also discussed the “knight’s tour”, in which a blindfold player calls out the progress of a knight, traversing the whole of an empty board by legal moves, visiting each square once only. Walker described how this might be accomplished by the use of a memory aid involving assigning consonants to the files and then expanding these to three-letter syllables representing the squares in the files, selected for their phonetic similarities to the numbers one to eight. He suggested that “B” represents the h-file, when h1 could be “Bun”, h2 could be “Boo”, h3 could be “Bee”, etc. The performer would then need to study one of the routes that a knight might take to cover the whole board, and then string together these syllables in groups of four, requiring him to remember, in the correct order, 16 nonsense “words” of four syllables each. It would, however, make more sense at least to match existing file letters where possible, leaving only the allocation of consonants to the “a” and “e” files.

### **3.3: Selkirk’s advice**

Later, in the 1860s, George Selkirk boldly described one chapter of *The Book of Chess* as giving “full instructions for blindfold chess”.<sup>31</sup> Selkirk thought that blindfold chess depended “not only upon the general memory, but upon the ability to bring before the mind a vivid photograph of the position of the pieces on the board at any given time” – a belief that persisted for some time until discredited by Alfred Binet, the French psychologist (commented on later). But Selkirk did draw attention to the folly of following Walker’s advice that it is frequently good for the non-seeing player to give up his rooks for the opponent’s knights, by pointing out that a blindfold player giving up a double exchange “ought consequently, beyond all question, to lose the game.”<sup>32</sup>

Nevertheless, the rules devised by Selkirk to assist a blindfold player to determine and memorise the movement of a knight were more likely to place a player attempting to rely on them at a greater handicap than if he had followed Walker’s advice and sacrificed the

30 See *Blindfold Chess*, pp. 65-66, for a summary of the method by which Réti developed into one of the strongest over-the-board and blindfold players of his era.

31 George H. Selkirk, *The Book of Chess: a popular and comprehensive guide to all players of that intellectual game with the latest discoveries and full instructions for blindfold chess*, (London, Madgwick Houlston, 1868)

32 See previous note, at p. 374.

exchange twice. For example, Selkirk instructed a blindfold player who wished to move a knight between two squares to check first of all whether they were on the same rank, file or diagonal. If they were, the player was to refer to a remembered table for further information. If the two squares were *not* aligned, the player was to add together the “number of distance” of the two squares, by which Selkirk meant the respective distances between the two files and the two ranks forming their co-ordinates. If the total was an even number the squares were of the same colour; if not, they were of opposite colours. the player then needed to recall from the appropriate table the “number of command” which corresponded to the higher of the two “numbers of distance”. This “number of command” was the number of moves required to transfer a knight from one of the squares until it “commanded” (i.e. threatened or defended, as the case might be) the other square. Selkirk’s “tabulated formulae” was this:

NUMBER OF DISTANCE	NUMBER OF COMMAND			
	Straight	Diagonal	Union of straight and diagonal	
			Same color	Different color
1	2	1 *	-	2
2	1	3	1	0
3	2	1	1	2
4	1	3	1	2
5	2	3	3	2
6	3	3	3	2 or 4
7	4	5	3	4

*Selkirk’s table relating to knight moves. (\* 3 for a corner)*

Selkirk gave the following example of how his plan could be used:

The application of this table, as regards the straight and diagonal lines of squares, is apparent, and I need only illustrate it respecting the union of the two. Suppose your Knight is on a3, and you wish to know the shortest number of moves in which it will command h7, the “numbers of distance”, 7 and 4, make 11, an odd number, therefore the colors of the two squares are different. The greatest “number of distance” is 7, and on referring to the table, under “different color”, we find it will take four moves.<sup>33</sup>

The reader will have noted that after mastering and applying Selkirk’s table he will know how many moves it would take a knight to travel between various squares on a *clear* board, but he will be no nearer to planning its route. So what lesson can be drawn from Selkirk’s

33 See note 31, above, at p. 377.

bizarre advice? Quite obviously, an approach such as he advocated would place an extra burden on a blindfold player, for no discernible benefit. A far better approach would be to adopt the idea sketched out by Walker and elaborated on by Réti, of becoming familiar with the points of intersection of the various ranks, files and diagonals. And an even more fundamental task would be to become fully familiar with the layout of the board and the colors of the squares. Some blindfold players have advocated the study of a diagram representing a quarter of a chessboard, as the most effective way of achieving this.<sup>34</sup>

### **3.4: Dr Vogler's advice**

Selkirk's advice was, however, a model of lucidity and helpfulness compared with that given in 1919 by Dr H. Vogler in a privately published monograph titled *Guide pour l'étude du jeu d'Échecs à l'aveugle*. Dr Vogler, acknowledging help he had gained from suggestions of a Dr W. Schulte-Limbeck in an appendix to a work not named but which was probably *Typische Mattstellungen*,<sup>35</sup> dismissed the possibility of blindfold play based solely upon a knowledge of the geometry of the board. He formulated a mnemonic scheme for memorizing chess positions by assigning to specified geometric piece arrangements complex letter groups derived from Esperanto, thus producing artificial syllables such as dra-gla-fa-bla, by means of which, he asserted, the position on a board could be summed up and remembered easily. Dr Vogler stressed that after every move in a game a blindfold player must repeat the whole position, for which purpose the board should be divided into quarters, or principal "carrés", each of 16 squares. The player would need to call over to himself each principal carré in turn, taking its component minor carrés, each of four squares, in a clockwise order. Dr Vogler's main table listed 54 different combinations of piece arrangements, each with its own identifying letter code.

Now the follower of Dr Vogler's system should not overlook the several advantages of simplicity claimed by its inventor to arise from the consideration that the system did not attempt to locate the precise positions of pieces within the minor carrés (but, simply, the ratio of occupied squares to vacant squares), nor to indicate either the color of a piece or its power. These limitations are fortunate, as even in its present form the system requires a player

<sup>34</sup> See, e.g., Koltanowski's explanation in *Blindfold Chess* at pp. 84-85.

<sup>35</sup> Dr W. Schulte-Limbeck, *Typische Mattstellungen ....Mit einem Anhang zur Erlernung des Blindspiels*, (Leipzig, Curt Ronniger, 1919).

constantly to bring up to date and call over to himself a string of nonsense syllables, each representing one of a vast number of possible piece arrangements—an enterprise which calls for greater effort, and causes greater difficulty, than attempting to play blindfold from a knowledge of the board and an understanding of the significance of the various moves. The prospect of trying to apply Dr Vogler’s system to a single game, let alone several games at once, is quite terrifying.

### ***3.5: Summary of early advice***

Selkirk’s method for calculating elements of a knight’s move, and Dr Vogler’s introduction of nonsense syllables, are typical of misguided attempts that have been put forward over the years by people who regarded blindfold chess as a mysterious activity for which there must be some “mechanical” explanation. On the other hand, the advice by Walker to capture an opponent’s knights at almost any cost, and other suggestions of his of the same type, appear to have been aimed particularly at weak players. Walker claimed to have played a few blindfold games within a rook of his normal strength. Later, he experienced first-hand the ability of a strong blindfold player, as he was one of Morphy’s opponents in a blindfold display of eight games, given in London in April, 1859.<sup>36</sup> There are some superficial resemblances between Vogler’s nonsense syllables and a mnemonic system used by GM Anthony Miles when he played 22 blindfold games simultaneously in Roetgen, Germany, in 1984; but Miles’ system was restricted to distinguishing between games in the early stages.<sup>37</sup>

### ***3.6: Comments by early blindfold experts on memory in single games***

Of considerably more practical use than most of the advice just examined were responses made by some strong blindfold players to the questionnaire mentioned earlier, published in the chess magazine *la Stratégie* and elsewhere by Alfred Binet. In 1894, the year when he was appointed director of the Laboratory of Physiological Psychology at the Sorbonne, Binet published the results of his investigation into blindfold chess in book form.<sup>38</sup> Binet had started with the belief that blindfold players relied on a concrete visual memory, involving

36 The game was unfinished and treated as a draw. H.J.R. Murray, the historian, wrote a favourable article about Walker in the *British Chess Magazine*, May 1906, pp. 189-194. A copy is available at <https://www.chess.com/blog/batgirl/george-walker> .

37 See *Blindfold Chess*, pp. 121-122, and later comments in this article.

38 He combined the publication with a study of mental arithmetic in *Psychologie des Grands Calculateurs et Joueurs d’Échecs* (Paris, Hachette, 1894). See *Blindfold Chess*, pp. 179-184 generally, and (p. 409) for details of Binet’s less detailed treatment in a paper published the previous year in *Revue des Deux Mondes*.

something like a mental photograph of a chess board and pieces, or, as one contemporary writer put it, seeing a populated board as if in an “interior mirror”; but as a result of his investigation he changed his belief and concluded that the mental representation was an abstract one. Binet’s work has sometimes been under-valued because some statements in his writings showed that he was not very familiar with chess; but his general conclusions have proved to be basically in accordance with current theories. His study is perhaps most important for his perception of the abstract nature of a blindfold player’s visual memory, and for the reports that he received from some of the strongest blindfold players of his day, describing aspects of their play.

Several well-known players responded to Binet’s questionnaire, including Siegbert Tarrasch, J.H. Blackburne, Alphonse Goetz and others, who mentioned, in varying degrees, the abstract nature of their mental image during a blindfold game.<sup>39</sup> The most detailed and clear responses were by Goetz and, particularly, Tarrasch, a medical doctor who, as readers will know, was one of the top players in the world from the early 1890s for more than 20 years. Tarrasch explained what was involved for him in holding in his mind the changing image of the position in a blindfold game. Some parts of Tarrasch’s lengthy comments tend to suggest that his mental image of a board and pieces was concrete rather than abstract; but from the context of his full remarks it is clear that his images were indeed abstract. In fact, even during and immediately after a *sighted* game he was not aware of what type of pieces and board he had been using.<sup>40</sup> Describing the progress of a typical blindfold game, he said:

Presently one launches an attack or defends, or has great hopes or makes a wrong move, or takes or exchanges a piece, etc. A good game of chess can be described almost as being a series of actions each one related to the others. The happenings in a game are logically connected, which explains why there is less difficulty in remembering the history of a game than there is in learning a short poem.<sup>41</sup>

Tarrasch’s remark that “the happenings in a game are logically connected” interweaves the understanding and recalling of a sequence of moves, and emphasises the link between memory and the meaningfulness of material. His apparently deprecatory comment about poetry, however, is probably more useful in understanding Tarrasch (who had dogmatic views about chess) than for any intrinsic merit.

39 Some extracts from their comments are recorded in *Blindfold Chess*, at pp. 179-184. See also text to note 9, above.

40 See *Blindfold Chess*, p. 183.

41 A. Binet, *Psychologie des Grands Calculateurs et Joueurs d’Échecs* (Paris, Hachette, 1894), pp. 353-354.

#### **4: Memory considerations when several blindfold games are played at once**

One of the extra burdens in playing several blindfold games at once is keeping the games distinct in the mind. This has been stressed by almost all the famous blindfold players. At the start of a simultaneous display all the positions are, of course, identical. From the very first moves most blindfold players will, even at this stage, be seeking to create quite distinct situations on the different boards. To this end they will usually vary their openings as much as possible, according to a pre-arranged plan, and may even play “inferior” moves, if necessary, to accomplish this. As there is usually a significant disparity in strength between the blindfold player and his opponents—certainly in a display on many boards—the single player is not thereby greatly reducing his prospects of success. In fact, his opponents will often not apply the appropriate counter-measures to unusual or “inferior” moves, because they do not have such a good understanding of the game as does the blindfold player.

Occasionally, as in Pillsbury’s twenty-one game exhibition in Hanover in 1902, the margin of superiority of the single player will be relatively small for this type of event. The individual games will then be tougher and the blindfold player’s burden of keeping account of the different games and of fighting with a heavy time handicap may become decisive factors: each of Pillsbury’s opponents had 21 times as long to think between moves. Then, the blindfold player will find that small errors on his part, or failures to exploit fully the potential of a position, will soon turn advantageous games into draws and “drawn” games into losses—as happened with Pillsbury.

Historically, with a few exceptions (such as in Najdorf’s 1947 record event), when giving a large display most blindfold players have taken the white pieces on all boards, and have regarded that as an advantage. It has only been in the current century that some players, most notably Marc Lang and Timur Gareyev, have regularly taken the black pieces on some boards, particularly when playing many games at once. For Lang’s successful record attempt in 2011 playing 46 games, he had the black pieces on every fifth board; while Gareyev, when capturing the record in December 2016 by playing 48 games, had the black pieces on alternate boards. George Koltanowski sometimes achieved a somewhat similar result by having the moves in some games called out in English descriptive notation and the rest in algebraic notation.

When a blindfold player has the black pieces on some boards he is immediately providing a means of keeping many of the games distinct from each other, but in doing so there is the downside that he loses the advantage of the first move in those games, and has less control over the choice of opening (which will affect any pre-planned memory aids). Virtually all blindfold players after the start of the 20<sup>th</sup> century, when playing many games at once, have started the games in accordance with a pre-arranged plan, aimed at minimizing the risk of the games becoming too similar to each other. A selection of those plans will be examined. Some have been quite basic, while others have been highly sophisticated. But earlier, while several 19<sup>th</sup> century players did take on ten or more opponents at once, it seems that they relied on their normal memory, without the assistance of a pre-arranged game separation plan.

#### ***4.1: Zukertort's and Tarrasch's explanations***

The few 19<sup>th</sup> century blindfold players who attempted to explain their methodology for simultaneous games were mostly vague in the extreme—with the notable exception of Tarrasch and Goetz. For example, Johannes Zukertort, who established a world record in 1876 by playing sixteen blindfold games at once,<sup>42</sup> spoke in mechanical terms about keeping the various games in separate boxes. A report in the *New York Herald*, under the sensational headline “What The Memory Can Do. Dr Zukertort Describing How He Plays Blindfold Chess. A Head Full Of Pigeon Holes. Mental Pictures that Come and Go Like Those of a Magic Lantern”, quoted Zukertort as saying that he thought there was no *mental* limit to the number of games he could play at one time, but that there was a *physical* limit, as it was very tiring work. Zukertort said that he did not plan a sequence of different openings, but that he went:

... entirely by the numbers of the boards. Each game became identified in my mind with a certain number. Call that number and I see the game. The most difficult part of blindfold playing is not, as many suppose, towards the conclusion of the games but in the beginning of them, where the pieces are apt to be similarly placed on two or more boards. The further the games progress the easier it is to recall them. A board always comes into my mind precisely as I left it after the last move. I never have to go back

42 Zukertort credited his ability at blindfold chess to the reading of many chess books, when he discovered that he could follow the moves of games without using a board and pieces. He found he could play games blindfold, and gradually increased the number until he gave his first public performance of seven games in January 1868, and worked his way up to 16 games eight years later: *St Louis Daily Globe-Democrat*, December 29, 1883, p. 8, cited by Edward Winter at <http://www.chesshistory.com/winter/winter141.html> .

over the moves in order to find out how the men stand, but I can at any time give the moves in the regular order in which they were made or the reverse order.<sup>43</sup>

In trying to explain the manner in which he held the information in his mind, on the same occasion Zukertort gave an analogy in terms that would be familiar to the readers of those days. His reference to photographs—with the implication of highly detailed and concrete images—should probably not be taken literally. The whole tone of the reports was a simplified explanation for general readers: he was not taking part in a psychology experiment.

I have a way of photographing a board in my mind, and—the boards being numbered—when one board is called the photograph of the position of the men on that board comes instantly before my mind while the last board as quickly disappears. I never see two boards before me even for an instant. My mind at such times is like a wall upon which a magic lantern casts a shadow, and just as the pictures are changed in the magic lantern so the photographs of the chessboards change before my eyes.

On another occasion Zukertort explained that in a blindfold display of fourteen games he would imagine fourteen boards, numbered 1 to 14, placed in separate closets side by side in a row, each closed by a door. Having made his move on No. 1 board, the door closed and that of No. 2 opened; and so on.<sup>44</sup> It was not until Binet's investigation, mentioned earlier, that anything close to a meaningful explanation emerged as to how blindfold players managed to conduct several games at the same time. Again, it was Tarrasch who gave the clearest account. He said that in each game something particular happened which was sufficient for him to distinguish it from the others.

I hear the teller call out for example, 'Game 4, king to queen's 1' (... Kd8). At that moment there is nothing but chaos in my mind. I do even know to which game he is referring, or what is the position in the game, or what significance or effect the given move has. I only hear the report of the move made by my opponent. I then try to recall what the fourth game is about. Ah! It is the Knight's Gambit in which the other side has defended himself according to theory until the moment when he made the extraordinary move of advancing the queen's bishop's pawn one square (... c7-c6) by which he subsequently obtained a good game. Soon, however, by good luck my opponent made the mistake of allowing me to sacrifice a bishop at his king's bishop's two (Bxf7+). Now, he has not captured the bishop but has moved his king to queen one (... Kd8), as has been announced to me.

43 *New York Herald*, December 2, 1883, p. 16. As a comment on those times, the report occupied nearly a whole column, while adjoining it, and taking up one-third of the space, were seven reports of deaths from shootings, including one incident at Salt Lake City where "A lynching party was formed, but at the latest accounts they had done nothing."

44 Charles Tomlinson, FRS, "On Blindfold Play and a Post-Mortem", *British Chess Magazine* (1891), p. 383. In as much as Tomlinson's article related to a post-mortem, it was a spoof.

The recapitulation of the game rarely takes place in such a precise manner. As the games progress the differences between them increase and they are no longer capable of being confused. In the end, the announcement of the fourth game and the bishop's moving to the king's square, is sufficient to remind me that it is the game in which the sacrifice of my bishop was not accepted. It is thus that I recall in greater or lesser detail the progress of this game. The respective positions etch themselves little by little until they are perfectly clear in my mind and I can easily plan and indicate my move.

The same procedure is repeated for the next game. Game 5, I am told 'queen's pawn moves two squares (... d7-d5)' Ah! This is the Scotch Game in which I have played the opening well, without my opponent being able to develop his pieces. Now he tries to arrange that by sacrificing a pawn. So much the better, etc. In that way I feel perfectly orientated and I 'see' the board in front of me with all its pieces in the game position.<sup>45</sup>

Significant is Tarrasch's comment that the positions "etch themselves little by little until they are perfectly clear." This illustrates nicely that repeated reference to a position, as a game develops, concentrates the attention upon its special features. Contrary to what one might at first suspect, the positions do not generally become *less* clear as the games progress. On the contrary, in a simultaneous display it is this very divergence between games that enables a blindfold player to recognize a particular position and game by its individual characteristics. For the same reason it would be easier to distinguish between a dozen animals of different species than between, say, a dozen zebras.

From these accounts it appears that neither Zukertort nor Tarrasch used a pre-arranged set of opening moves, or any mnemonic aids, but simply relied on their natural memory to help them identify games and plan moves. Zukertort apparently found that the number of a particular game was adequate for him; while Tarrasch seemed confident that there would be a sufficient natural divergence between games for him to separate them in his mind, and to associate them with the correct board number. But Zukertort played a maximum of sixteen games simultaneously, while Tarrasch may not have played more than eight blindfold games at once, so neither player would have been faced with the much more substantial problems encountered by later record holders, fighting against 20, 30, or 40 and more opponents.

#### **4.2: Pillsbury's method**

The first player in the 20<sup>th</sup> century who exceeded 20 blindfold simultaneous games was Harry Pillsbury, described by Alekhine as "one of the greatest masters of blindfold play of all time".

45 A. Binet, *Psychologie des Grands Calculateurs et Joueurs d'Échecs* (Paris, Hachette, 1894), pp. 354-355.

Pillsbury played a large number of blindfold games over a short period of years, gradually building up his total. He gave numerous displays on 16 boards, starting at Chicago in February 1900 (which equalled Zukertort's record); he went to 17 in March 1900 at New Orleans; to 20 in April 1900 at Philadelphia; to 21 in July 1902 at Hannover; and to 22 in December 1902 at Moscow—each result being considered to have established a new world record (although, strictly, the Hannover event, against very strong opposition, was a failure).<sup>46</sup>

It seems that Pillsbury was the first player to apply a detailed methodology to the task of playing simultaneous blindfold games. From 1894 for a period of four years, he gave hardly any blindfold displays, and he later explained that for most of that period he studied ways of improving his blindfold play, including ways of shortening the length of a display, and also studying how to forget the games afterwards—a potential problem experienced by several blindfold masters. It is highly likely that during those years Pillsbury studied mnemonic techniques for aiding his memory, and also at that time investigated opening arrangement plans aimed at helping him to keep the games separate in his mind.

During an interview in 1902 Pillsbury gave the following detailed explanation of his method for separating the games of an exhibition into various groups of openings.

First I will tell you of one of my methods of arranging a séance of twelve boards blindfold. I mentally group them into fours. The first group will include boards 1, 4, 7 and 10; second, 2, 5, 8 and 11; and the third, 3, 6, 9 and 12, leaving a space of three between each number in the group. Take the first group. I start all with e4, and if the usual—and, I may add, what is generally considered to be the best—reply is made, namely e5, my second move would be Nf3. Should they continue in the usual line of this opening with Nc6, my third move on boards 1, 4 and 10 would be Bb5, whereas on number 7 I would play Bc4.

*Q. Why this diversion?*

Because I have to begin to individualize the games.

*Q. And do you treat all the groups like that?*

Oh no! For instance, in group 2 I should probably try for two Queen's Gambits.... Intending, as I said, to get two Queen's Gambits, I play on boards 5 and 11 d4, and subdivide this group by playing e4 on 2 and 8 and turn these two into the Vienna Opening. The third group I should open with e4 right along and try to offer the King's Gambit on all.

*Q. What would you do if, say, three elect to play the French Defence?*

<sup>46</sup> Details and commentary in *Blindfold Chess* at pp. 54-59 and 397-399; with available games at pp. 216-238.

That wouldn't bother me any. I mentally eliminate them from their respective groups and form them into a fresh group by themselves.

*Q. I suppose you find a difficulty in distinguishing one game from another as soon as complications arise, do you not?*

Why no! That is just when they become easier as they branch out into a distinct individuality of their own and may be likened to a business transaction which becomes easier to the businessman when it has some marked characteristic of its own; for a man knows by instinct or experience—at any rate by the customer he is dealing with—whether he can be trusted to act squarely, cannot be trusted at all, or is shifty, tricky customer who needs watching in case of bluff. Just so in chess. There are book students, people with “defences” and tricky players who live for traps.

*Q. Do you use the system you have explained when playing 16 or 20?*

Yes, the same, with, of course, added numbers in each group; but I have various systems which will also apply themselves to 12, 16 or 20 games blindfold.<sup>47</sup>

Pillsbury's explanation shows not only how a blindfold player can help to distinguish between the games by playing different openings, or variations of openings, but also how he can relate the individual games to their respective board numbers—an important consideration when there are several games. It is not sufficient for the blindfold player to be able to mentally reproduce each position or the development of each game (to the extent that he needs to at any one time), if he does not associate the position with the correct opponents, as often a given reply will be legally playable in several games. The suggestion that a game or a business transaction is more readily understood as it develops its own features, is now a familiar one. The further analogy with the perceptive businessman shows a psychological approach to the game, which was intended to help Pillsbury to economize on his analysis when it was safe to do so, and to be alert to hidden dangers.

The next table (two pages forward) includes a reconstruction of Pillsbury's game separation plan for his 16-game blindfold event played at Chicago on February 10, 1900, when he equalled the record that Zukertort had established in 1876. As will be seen, he was White in every game and he mentally split the games into four groups of four games each. Group 1 comprised boards 1, 5, 9, and 13. In each of these games Pillsbury opened with 1.d4. The other groups were spread out in turn, at every fourth board, in the way shown. Throughout groups 2-4 Pillsbury opened with 1.e4. But his planning went deeper than that. He had also

47 R.A. Bowles, “Mr H,N, Pillsbury's Chess Career”, *British Chess Magazine*, (1902) 22, pp. 344-345.

worked out in advance how he would respond to his opponents first moves, and how he would subsequently play in order to avoid duplication between games.

In group 1, all four opponents replied to 1.d4 with ...d5. Pillsbury's idea was to respond to 1. ...d5 with either 2.c4 (for the first occurrence) or with 2.Nf3 (for the second occurrence). Then, if more players in group 1 also played 1. ...d5, he would respond with 2.c4 to the next, and (if called for) with 2.Nf3 in the final game in that group. And if any of those four games remained identical after the second move, he knew how to make them unique, as he showed by his play in games 5 and 13. In those two games he played different fourth moves. There is no indication what Pillsbury would have played if any of those four players had started with a different first move, because that did not happen, But he would have taken into account that he could have met other moves, such as 1. ...Nf6, 1. ...f5, or any of the other moves that were then current; and he would have prepared a similar deviation plan.

Pillsbury had devised the same type of plan in relation to the other twelve games, albeit that it was rather more complex because more games were involved, with the increased possibility of duplications occurring. As can be seen from the table, ten of the twelve opponents in groups 2-4 replied to 1.e4 with 1. ...e5; the other two, on boards 7 and 16, played 1. ...e6. It should be borne in mind that in the year 1900 opening play was much less sophisticated than nowadays. It would be highly unlikely that a similar number of modern opponents would have responded with 1. ...e5, although the move does, of course, remain popular. Notably, no Sicilian Defenses were played, nor (apart from the two French Defenses) any of the other wide range of first moves by Black that are common today.

The way that Pillsbury had planned to meet multiple occurrences of 1. ...e5 was to play differently in each group. In group 2 he would continue with 2.Nc3, likely leading to either the Vienna Game or Gambit; in group 3 he would continue with 2.Nf3, leading to more conventional lines; and in group 4 he would continue with 2.f4, offering the King's Gambit. In group 2, Pillsbury met three different second moves, meaning that there was one duplication, causing the other two games to become unique; in group 3 there were no duplicate replies at move 2, so all three of the 1. ...e5 games were then unique; and in group 4

he met two different replies in the 1. ...e5 games, meaning that one of the three was then unique. Where there remained duplication between games after the second move, Pillsbury selected different variations as soon as practicable. For example, with the two French Defenses, he created separation by playing 5.Bxf6 in game 7, and 5.e5 in game 16.

Group No.	Game No.	Opening Moves	Unique by move	Result
1	1	1. d4 d5 2. c4 e6 3. Nc3 Nf6 4. Bg5 Be7 5. e3 0-0	2	1-0
	5	1. d4 d5 2. Nf3 Nf6 3. e3 e6 4. Bd3 Nc6 5. 0-0 Be7	4	½:½
	9	1. d4 d5 2. c4 Nf6 3. cxd5 Nxd5 4. e4 Nf6 5. Nc3 e6	2	1-0
	13	1. d4 d5 2. Nf3 Nf6 3. e3 e6 4. d4 d6 5. Nc3 Ndb7	4	1-0
2	2	1. e4 e5 2. Nc3 Nc6 3. Nf3 Nf6 4. Bb5 Bb4 5. 0-0 0-0	3	½:½
	6	1. e4 e5 2. Nc3 Nf6 3. f4 d5 4. fxe5 Nxe4 5. Qf3 Nxc3	4	1-0
	10	1. e4 e5 2. Nc3 c6 3. f4 exf4 4. Nf3 d6 5. d4 Bg4	2	1-0
	14	1. e4 e5 2. Nc3 Nf6 3. f4 d5 4. exd5 Nxd5 5. Nxd5 Qxd5	4	1-0
3	3	1. e4 e5 2. Nf3 Nc6 3. Bb5 d6 4. d4 Bd7 5. Nc3 Nf6	3	1-0
	7	1. e4 e6 2. d4 d5 3. Nc3 Nf6 4. Bg5 Be7 5. Bxf6 Bxf6	5	1-0
	11	1. e4 e5 2. Nf3 Bc5 3. Bc4 Nc6 4. c3 Nf6 5. 0-0 Nxe4	2	1-0
	15	1. e4 e5 2. Nf3 Nf6 3. d4 d5 4. exd5 e4 5. Ne5 Nxd5	2	½:½
4	4	1. e4 e5 2. f4 exf4 3. Nf3 g5 4. h4 g4 5. Ne5 d6	4	0-1
	8	1. e4 e5 2. f4 exf4 3. Bc4 Qh4+ 4. Kf1 g5 5. Nf3 Qh5	3	1-0
	12	1. e4 e5 2. f4 exf4 3. Nf3 g5 4. Bc4 Bg7 5. d4 d6	4	½:½
	16	1. e4 e6 2. d4 d5 3. Nc3 Nf6 4. Bg5 Be7 5. e5 Nfd7	5	1-0

*An analysis of Pillsbury's game separation plan for his 16-game blindfold event played at Chicago on February 10, 1900 when he equalled the record established by Zukertort in 1876. In 11 of the games Pillsbury created the uniqueness.*

In eleven of the games Pillsbury himself created uniqueness by following his pre-arranged plan; but in the remaining five games he did not have to, because his opponents played unique moves. As a result, five games were unique by move 2; three by move 3; six by move 4; and the remaining two by move 5. From some of Pillsbury's remarks in the interview set out earlier, it seems likely that he was expecting to meet mostly symmetrical first moves (...d5 in group 1, and ...e5 in groups 2-4). So, to the extent that that did happen, by his planned second (and, where relevant, subsequent) moves, he had to a large extent solved the two related tasks of remembering the initial moves in a game, and associating a game with a particular board number.

As recorded in *Blindfold Chess*, Pillsbury often added interest to his blindfold displays by combining them with other activities, such as memorizing lists of uncommon words, or playing some games of checkers blindfold. It is highly likely that during the period when he was studying blindfold chess he was also developing various mnemonic techniques, although he does not appear to have spoken of them. (Some such systems will later be discussed briefly.) Accordingly, I have no doubt that, in addition to pre-arranging the opening moves in this 16-game event, Pillsbury also had in place methods of securely linking games to their board numbers. Then, having ensured that all the games developed in distinct ways, along familiar paths, all that remained for Pillsbury to do was play sixteen separate games with no danger of confusion between them.

As mentioned above, Pillsbury went on to increase his maximum number of simultaneous games to 17, 20, 21 and 22. For each of these events he would have prepared similar opening systems. He also gave numerous blindfold displays on fewer boards.

#### **4.3: Koltanowski's system**

George Koltanowski, who had initially thought that blindfold chess was possible only by trickery, made a study of it after taking part in 1921 in a display on two boards given by the Serbian student Branco Tchabritch.<sup>48</sup> Koltanowski went on to become probably the most prolific blindfold player of all time, and twice captured the world record for the number of

<sup>48</sup> The game, and Koltanowski's account, is in his *Adventures of a Chess Master* (New York, David McKay, 1955) at pp. 24-25.

games played simultaneously: 30 games in Antwerp in 1931 (+20, =10), beating Réti's total of 29; and 34 games in Edinburgh in 1937 (+24, =10), beating Alekhine's total of 32.<sup>49</sup>

In blindfold chess Koltanowski was a showman, often more interested in an impression than with details; and while he has given several accounts of his pre-arranged openings plan for playing many games at once, they somewhat differ among themselves. As, however, all the games of his large events are available, his plan can be reconstructed. The next table shows a reconstruction based on the Antwerp record event, when he played against 30 opponents. It is clear that Koltanowski mentally divided the games into five groups of six games. Unlike Pillsbury, he composed his groups of consecutive games rather than spreading them out. So group 1 comprised boards 1-6; group 2 was formed of boards 7-12; and so on. In groups 1 and 3, Koltanowski planned to open with 1.e4, and with 1.d4 in groups 2 and 4, on all boards in those groups apart from the last board in each, where he would play 1.f4. That would act as an end-of-group marker. In the last group he chose to use a variety of opening moves: on boards 25 and 26, it would be 1.Nf3; on boards 27 and 28 it would be 1.e3 (which might transpose into the Colle System, one of his favorite openings); on board 29 it would be 1.e4, with 1.f4 (as usual) on the last board in the group. In addition, Koltanowski devised the plan, mentioned earlier, of having the moves of some of the games in a blindfold display called out in English descriptive notation, and some in algebraic notation; thus creating a further method of distinguishing between games. As for recalling the positions in the different games, Koltanowski found it helpful in the early stages of a game to mentally repeat all the moves played so far. He would do so until about the tenth move, by which point he found that he was fully familiar with the positions.

As the table shows, Koltanowski had arranged matters in such a way that more than half of the games became distinct by move 2 (in fact, nineteen of them); with a further six by move 3; three more by move 5; and the remaining two by move 9. Koltanowski was able to launch the Max Lange Attack, a favorite of his, in two games, winning both; and had tried for that line in another game but the opponent did not oblige. Rather surprisingly, only two Sicilian Defenses were played. Against the first, Koltanowski adopted the Wing Gambit, and could consequently allow the other to follow main lines. There were three Queen's Gambits

49 Full details in *Blindfold Chess*, at pp. 83-91 and 402-404, with games at pp. 271-294.

Declined; two King's Indians; two French Defenses (one of them by transposition after 1.d4); and two examples of Philidor's Defense. So it was the end-of-group marker, Bird's Opening, that occurred most frequently.

Group No.	Game No.	First Move	Opening	Unique by move
1	1	e4	Max Lange	9
	2	e4	Caro-Kann , Advance Variation	1
	3	e4	Max Lange	9
	4	e4	Sicilian Defense, Wing Gambit	2
	5	e4	Hungarian Defense	3
	6	f4	Bird's Opening	2
2	7	d4	QGD, Tarrasch Variation	3
	8	d4	King's Indian Defense	5
	9	d4	French Defense (by transposition)	3
	10	d4	QGD, with 2. ...Nf6	2
	11	d4	Colle System	2
	12	f4	Bird's Opening	2
3	13	e4	Sicilian Defense	2
	14	e4	Philidor's Defense	3
	15	e4	Two Knight's Defense	5
	16	e4	French Defense	3
	17	e4	Petroff's Defense	2
	18	f4	Bird's Opening	1
4	19	d4	French Defense (by transposition)	2
	20	d4	King's Indian Defense	5
	21	d4	Dutch Defense (by transposition)	2
	22	d4	Queen's Pawn – irregular	2
	23	d4	QGD, Slav Defense	2
	24	f4	Bird's Opening	2
5	25	Nf3	Réti	2
	26	Nf3	English Opening (by transposition)	2
	27	e3	Irregular	1
	28	e3	Irregular	2
	29	e4	Philidor's Defense	3
	30	f4	Bird's Opening	2

*Analysis of Koltanowski's opening preparation for his 30-game blindfold event at Antwerp in 1931. Games in red act as end-of-group markers.*

With the two games where the Max Lange Attack occurred, Koltanowski was content to follow the main line. The two examples, in games 1 and 3, were identical as far as move 9,

when the opponent in game 3 fell into an opening trap and lost a piece. The next longest duplicate set of moves occurred in the two examples of the King's Indian Defence. In game 8, in the line classed as E20, in response to Koltanowski's 6.h3 the opponent played ... Nc6; while in game 20 at the same point the opponent, not having already castled, played ...e5, making the game distinct. The other games became unique by move 3 at the latest, because either Koltanowski or the opponents played differently when the same opening occurred. From then onwards, Koltanowski was playing 30 separate games, with no possibility of confusion between them, and his only other memory task – apart, of course, from the basic one of remembering the positions – was in associating the various games with the correct board number.

Koltanowski claimed to have a near-perfect, natural memory, which he said he developed at the age of eleven when, from an untreated splinter, he had contracted blood poisoning affecting both legs, and underwent fourteen operations and was confined to bed for two years. He spent much of the time developing his memory, which he claimed had already been surprisingly good (he called it “photographic”), even from when he was six years old.<sup>50</sup> Like Pillsbury, Koltanowski also frequently added memory stunts to his blindfold displays. One spectacular feat of his was to have people write down various data, such as the names of cities or telephone numbers, and place their pieces of paper on the 64 squares of a large chessboard. He would study these “for a minute or two” and then call out the names and numbers as he moved from one square to the next while giving a blindfold demonstration of the Knight's Tour.<sup>51</sup> It is not known what, if any, mnemonic techniques Koltanowski may have used in connection with his blindfold chess games. Perhaps, because of his naturally retentive memory, and the opening arrangement plan which he used, he had no need of any. At any rate, like Pillsbury, he does not appear to have referred to this subject.

#### **4.4: Tony Miles' system**

The English grandmaster Tony Miles, who had won the silver medal in the world junior championship in 1973, and whose rating reached the world's top ten in 1986, gave only one

<sup>50</sup> Koltanowski gives more details in his *Adventures of a Chess Master* (New York, David McKay, 1955) at pp. 22-24.

<sup>51</sup> Koltanowski gives a short description of this, and a newspaper report, in his *Adventures of a Chess Master* (New York, David McKay, 1955) at pp. 181-182.

public blindfold exhibition. That was in 1984 in the German town Roetgen, when he played 22 games simultaneously, beating the German record of 21 achieved 82 years earlier by Pillsbury during the Hannover Tournament 1902, mentioned above.<sup>52</sup> Miles had had a private practice run at home on 24 boards, and felt confident in tackling a public event. In *Blindfold Chess* we gave an extract from an article that Miles wrote in the magazine *Chess*, ten years after the event, describing how he had been persuaded by fellow grandmaster Vlastimil Hort to undertake the feat, and how, knowing that the most difficult part would be in the opening stage, he prepared a plan for trying to keep the games distinct from each other.<sup>53</sup>

The plan involved two main features. Miles mentally split the games into five groups, with five games in each of groups 1-4, with the remaining two games in group 5. The second feature was that Miles did not prepare different moves within similar variations (as had Pillsbury and Koltanowski), but allocated letters to each game in a mnemonic system of his own devising. The first part of this system called for 1.e4 on the first and third boards of a group; 1.d4 on the second and fourth boards; and 1.c4 on the fifth board. However, in groups 2 and 4 this was varied slightly, with 1.Nf3 on the last boards.

The preparation called for by the second part of the system involved Miles assigning a letter to each game in a group, varying according to the opening, and using vowels as much as possible, “in the hope that the set of five would be a pronounceable sound.” Miles’ idea was that this would help him to move easily from one game to the next, as he would know what opening had been played. For example, the details included a game starting with 1.e4 and the reply ...e5 being designated as “e”; 1.e4 e6 would be “f” (for French Defense); 1.d4 d5 would be “d”; 1.d4 Nf6 would be “u” (for usual); 1.e4 c5 would be “s” (for Sicilian); 1.d4 d5, 2.c4 dxc4 would be “a” (for Queen’s Gambit Accepted); and 1.Nf3 d5 2.c4 would be “r” (for Réti).

This was an ingenious idea, but it had two major drawbacks. The main drawback was that it did not allow for more detailed separation within a particular opening. For example, if ten opponents had played the Sicilian Defense, the pre-arrangement would not have been

52 On April 14, 1994 Miles sent a print-out of the games to Edward Winter, for safekeeping. All 22 games are available at <http://www.chesshistory.com/winter/extra/miles.html>.

53 *Blindfold Chess*, pp. 120-122, and comments at pp. 195-196.

sufficient to separate them, as Miles may not have prepared different variations. The second drawback was that, using many vowels, it would be a matter of chance as to whether a group of five letters would form a pronounceable and memorable “word”. As we pointed out in *Blindfold Chess*, an improvement would have been to use consonants exclusively, with vowels inserted as null letters to help make complete real words or phrases. Numerous such systems exist, mainly used for converting numbers into letters and thence into words.

As it turned out, Miles encountered a few anxious moments during the event, but he completed it successfully, scoring +10, =10, -2 in 11½ hours, playing a total of 674 moves. The longest game went to 68 moves.

#### ***4.5: Marc Lang’s method***

The German master Marc Lang has featured several times on this website in reports by Eliot Hearst on Lang’s blindfold displays on 15, 23, 35 and 46 boards; the second being a new German record (beating Tony Miles’ 22 games, mentioned immediately above); the third establishing a new European record (beating Koltanowski’s 34 played at Edinburgh in 1937); and the last creating in 2011 a new world record, beating Najdorf’s 45 games played in 1947.

For his 35-game event, Lang mentally divided his opponents into seven groups of five players. In the first four games in each group he took the white pieces and played in accordance with a theme; and he had the black pieces in each of the last games, using these as an anchor, similar to how Koltanowski had used Bird’s Opening.

After playing 35 games, Lang decided that he needed a more sophisticated game separation system for tackling the world record. The next table includes a reconstruction from the actual games that Lang played when he established a new world record on 46 boards. As can be seen, Lang took Black in every 5<sup>th</sup> game, which he used as a marker for the end of each of the groups of five games into which he had mentally divided the opponents. Accordingly, he was Black in nine games, for which he had to prepare separately. In the event, the opponents in two of those nine games used Grob’s Opening (1.g4!?), to which Lang replied with 1. ...d5 to the first, and 1. ...e5 to the second. Thus those two games quickly stood out from all the rest. Of the remaining games where Lang was Black, one opened with e4 but quickly transposed

into the Queen's Pawn, Chigorin Opening; three others also started with e4, to which Lang responded twice with a Sicilian Defense in which he had created different positions by move 4, while in the third he played the French Defense; another started with Nf3 and transposed into a Nimzo-Indian Defense; and in the remaining two games where he was Black, one became a Trompowsky Attack and the other started as a Queen's Gambit to which Lang played with Albin Counter-Gambit. Accordingly, all the games where Lang had Black soon developed into unique games. These became quite separate from the other 37 games (where Lang was White) despite his comment that he mentally viewed *all* the games from the White side. For those other 37 games, Lang had made preparations aimed at keeping the positions as distinct as possible, as early as possible. This is how he described his preparation:

I have a few techniques to make life a little easier in exhibitions with more than, say, 20 opponents. In that case, I divide the boards into sets of five, taking the white pieces on the first four of each group and black on the fifth. Then, I give each group a theme. For instance, on last weekend the first group had the theme "knight to the left", the second "c-pawn", the third "d-pawn" and so on. Then, I play the thematic move on board 1, 4 and 5 of each group, 1.d4 on board 2 and 1.e4 on board 3. Applying this to the motto "knight to the left" of group one, I played 1.Nc3 on board 1&4 and 1...Nc6 on board 5. This helps you a lot when you're coming to a board and just can't remember what position's currently on it. You think about the theme you used and then in most cases the position "returns from the grave" :-).<sup>54</sup>

Applying this approach, in Group One, games 1-4 all involved Nc3 on the first or second move. Two developed as Vienna Gambits, with deviations on move 5, while the other two continued as Queen Pawn openings, which were distinct by move 2. In Groups 2-9, Lang opened with 1.e4 a total of 17 times; with d4, 10 times and also in the single game in Group 10; and twice each with 1.f4, 1.c4, and 1.Nf3. At first sight, the opening moves in the remaining groups may appear to be largely on a random basis. There is, however, a pattern among the opening moves of the first and fourth games in Groups 1-9. For Groups 1-6, those opening moves went across the board logically, with Nc3, c4, d4, e4, f4 and Nf3; while in Groups 7-9 the first and fourth games started with e4. Also, in Groups 2-7 and Group 9 the second and third games all started with d4 and e4 respectively, while in Group 8, the second and third games started with e4.

<sup>54</sup> <http://www.chessvibes.com/reports/fm-marc-lang-sets-new-blindfold-simul-record-of-46-boards> (explanation by Marc Lang, under *Comments*).

Group No.	Game No.	First Move	Opening	Unique by move
1	1	Nc3	Vienna Gambit Declined	5
	2	d4	Queen's Pawn, Chigorin Opening with 2. ...Bf5	2
	3	Nc3	Vienna Gambit Declined	5
	4	Nc3	Queen's Pawn, Chigorin Opening with 4.Bg5	4
	5	e4	Queen's Pawn, Chigorin Opening (trans.)	1
2	6	c4	English, Symmetrical Variation, with 2.g3	2
	7	d4	Modern Defense, with 4. ...a6	4
	8	e4	Caro-Kann	1
	9	c4	English, Symmetrical Variation, no fianchetto	2
	10	e4	Open Sicilian. with 2. ...e6 and 4. ...Bc5	4
3	11	d4	Queen's Gambit Declined, Exchange Var.	4
	12	d4	Queen's Gambit Declined, Semi-Slav	4
	13	e4	Scandinavian Defense, with 2. ...Qxd5	1
	14	d4	Modern Defense, with 4. ...f5	4
	15	g4	Grob's Opening, with 1. ...d5	1
4	16	e4	Philidor's Defense	2
	17	d4	Queen's Pawn, Chigorin Opening with 3.e3	3
	18	e4	Ruy Lopez, Steinitz Defense	3
	19	e4	Scotch Game, with 3. ...f6?	3
	20	g4	Grob's Opening, with 1. ...e5	1
5	21	f4	Bird's Opening with 1. ...d5	1
	22	d4	London System	3
	23	e4	King's Gambit Declined, with 2. ...d6	2
	24	f4	Bird's Opening, with 1. ...Nf6	1
	25	Nf3	Nimzo-Indian Defense (transposition)	2
6	26	Nf3	King's Indian Defense, Classical Variation	2
	27	d4	Bogoljubow Defense	3
	28	e4	Petrov Defense, Classical Variation	5
	29	Nf3	Réti's Opening	2
	30	d4	Trompowsky Attack, with 2. ...Ne4	2
7	31	e4	Giuoco Piano, Main Line	3
	32	d4	Queen's Pawn, Hübsch Gambit	3
	33	e4	Petrov Defense, Classical Variation	5
	34	e4	Two Knight's Defense, with 4.Ng5	3
	35	d4	Albin Counter-Gambit	2
8	36	e4	French Defense, with 3. ...c5	2
	37	e4	Owen's Defense	1
	38	e4	Pirc Defense, Austrian Attack, 5. ...0-0	5
	39	e4	Pirc Defense, Austrian Attack, 5. ...c5	5
	40	e4	Open Sicilian, with 2. ...e6 and 6.Nxc6	4
9	41	e4	Ruy Lopez, Bird's Defense	3
	42	d4	Grünfeld Defense, 4.Bf4 Variation	3
	43	e4	Modern Defense	4
	44	e4	Scotch/Göring Gambit	3
	45	e4	French Defense, Exchange Variation	1
10	46	d4	Queen's Gambit Accepted	2

*Analysis of Lang's opening preparation for his blindfold record, playing 46 games simultaneously at Sontheim an der Brenz, Germany, in November 2011. Games in red are where Lang had the black pieces.*

So, having selected patterns with which he was happy, Lang would have no difficulty in recalling the opening move in each game. By selecting different variations where identical openings were played, Lang was able to ensure that 32 of the games were distinct by move 3—some, in fact, were unique after their first moves—and all were unique by move 5, despite several transpositions between openings. He said that sometimes, in the early part of a game, he might have to mentally run through all the moves of the game, to be certain about the location of some of the pieces: something that Koltanowski said he did in all his games up to move ten.

Where Lang’s blindfold events have differed from all other record performances, has been in the physical layout of the boards and players. Lang sat facing his opponents, but could not see their boards or pieces, which were covered by a low screen, as in this photograph.



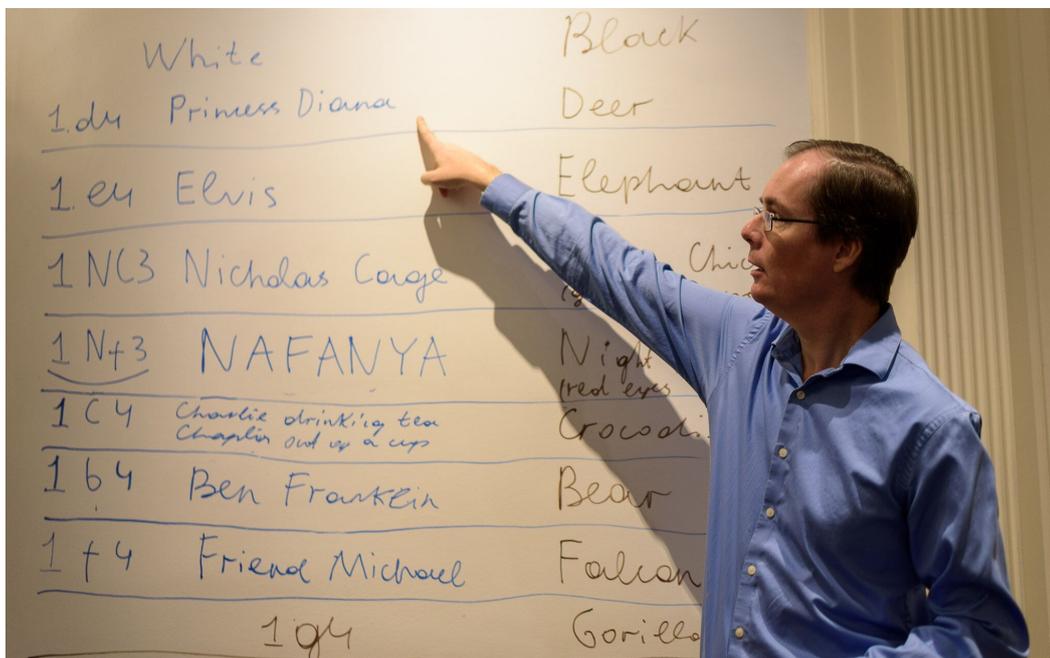
*Marc Lang in center (blue shirt) with opponents’ boards screened from view.  
Photo (screen capture from video) courtesy of Frank Hoppe.*

Lang received notice of his opponents’ moves on a computer monitor, in text form, using standard algebraic notation. In that way, ambiguities were avoided and a record was automatically kept of all the moves—but only the current move was available to Lang during the games. A main feature of the set-up was that because Lang could see his opponents, he

had an additional means of linking the board numbers to the correct game positions, and in fact sometimes spoke with an opponent.

#### 4.5: Timur Gareyev's system

Before Timur Gareyev in December 2016 successfully captured the blindfold simultaneous world record, which had been held by Marc Lang since 2011, he made a particular study of memory techniques over a period of several months. Gareyev has commented briefly on several occasions about the training he carried out with the help of James Jorasch, the founder and CEO of the New York strategic consultancy Science House, in developing personalized mnemonic techniques for coping with the memory tasks of such a large blindfold event. And a few photographs are available which give a glimpse of part of the system which resulted from their collaboration.



*James Jorasch of Science House, during a memory training session with Timur Gareyev (Photo courtesy Albert Silver)*

In this photograph, Jorasch is seen standing in front of a white-board on which are set out memory aids identifying various opening moves, from both White and Black's points of view. The system deals with the possibility of Gareyev playing any of seven opening moves with the white pieces, and possibly facing any of eight opening moves in the games where he had the black pieces.

The order of the opening moves in the list, namely d4, e4, Nc3, Nf3, c4, b4 and f4, was probably intended to match the frequency of their appearance in games where Gareyev had the white pieces. The key words associated with the moves were the names of people, the initial letters establishing links with the particular moves. Thus, 1.d4 was linked with Princess Diana; 1.e4 with Elvis; 1.Nc3 with the actor Nicholas Cage; 1.Nf3 with Nafanya (which could be a reference to several things, including a person); 1.c4 with Charlie Chaplin drinking tea out of a cup (an English tradition, linking with the name of the opening); 1.b4 with Ben Franklin; and 1.f4 with a Friend called Michael.

For the games where Gareyev would take the black pieces, the opening moves were associated with animals or birds. Thus, in games where an opponent played 1.d4 the link would be with a Deer; 1.e4 would link with an Elephant; the links with 1.Nc3 and Nf3 are partly obscured in the photograph, but the first may have been with Chicken, preceded by a word beginning with “N” (Nankin?), and the second may have been Night Fox (because of the note “red eyes”, as seen in a car’s headlights); 1.c4 was linked with Crocodile; 1.b4 with Bear; 1.f4 with Falcon; and 1.g4 (a move that Gareyev appears not to have originally been planning on opening with as White, although he did use it in Game 29) with Gorilla.

Thus, by picturing the person or creature associated with a particular opening move, Gareyev would have a mental image which he could modify or to which he could add other information as necessary. For each of the games in which he was White, he would know in advance what opening move would occur, because he had prepared a plan which called for specific opening moves to be played in groups of games (as shown in the next table). For the games where he was Black, Gareyev would create a mental image based on the opening move, which he could then associate in a suitable way with a board number, and could also put into a new group. For instances where a particular opening move would be played in more than one game where he had the black pieces (which was highly likely to happen with several of the moves, such as 1.e4 and 1.d4) Gareyev would need a method of distinguishing between those games, most likely by transforming the images or by creating a series of basically similar images which either differed in some material respect or which he could associate with other images indicating an idea in a game; or which he could mentally place in predetermined locations in a “memory palace”; or by using some combination of these

methods, including possible associations with a player's name or appearance—for which purpose Gareyev had made a point of meeting each player before the event started.

In particular, Gareyev wanted a way of indicating further developments in a game, to at least the point where there were no duplications between games, and where each game had acquired an individual character. It seems that with some of the games he played in a certain style linked by a system of his own to a particular board number. When interviewed by Gus Lubin for *Inverse*, Gareyev said that in aiming to make each game stand out in his mind he would create a story, so that when he returned to a game his brain would have something to latch onto. He said:

If it's board number 13, maybe I'll play something risky because it sounds unlucky. Or board 21, that's like blackjack so it has to be some kind of gamble. If board 14 is a little boy and he plays Scandinavian, then that's a theme. I capture a piece, it could be like a burst or a diagonal shape or I could see water flowing based on the theme.<sup>55</sup>

Other methods that Gareyev used to make a game stand out included playing unusual moves in some of the games, for example 1.d4 d6, 2.e4 g6, 3.h4!? in Game 1; and the so-called Humphrey Bogart Gambit, 1.d4 Nf6, 2.g4!?, in Game 33. But as for rigidly following his prepared plan, on the morning when his record attempt was to start Gareyev decided that the full system was too complicated, and that instead he was going to “wing it” and “try to go with the flow and let the memory do its work the way it normally does.”<sup>56</sup>

This next table shows how Gareyev started the games in which he was White, and the following one shows how he responded to his opponents' opening moves when he was Black. Gareyev treated the games where he was White as six groups of four games each, with a single game in Group 7. In the games in Groups 1 and 5 he started with d2-d4; Groups 2 and 6 started with e2-e4; with variety provided by the two center groups. The opening moves in Group 3 are all different (though it would have seemed more logical to have reversed the positions of the openings in games 29 and 41), while Group 4 contained Ng1-f3 in three of the games and b2-b4 on the fourth. Game 48 is in a groups of its own, because when the number of opponents was increased from 47 to 48 at a late stage it seems that confusion

55 <https://www.inverse.com/article/29863-timur-gareyev-blindfold-chess-memory>

56 As previous note.

somehow arose, caused partly by the fact that five opponents were playing remotely. The consequence was that of the 48 games Gareyev had the white pieces against 25 opponents, and the black pieces against the remaining 23 opponents.

Group No.	Game No.	First Move	Opening	Unique by move
1	1	d4	Pirc (transposition) with 3. h4!?	1
	13	d4	Queen's Gambit Declined	3
	25	d4	Catalan	3
	37	d4	Dutch Defense with 2. g4!?	1
2	3	e4	Sicilian, Wing Gambit Accepted	2
	15	e4	Sicilian, Morra Gambit Accepted	2
	27	e4	Sicilian Najdorf with 6. Bc4	5
	39	e4	Caro-Kann	1
3	5	Nc3	Blackmar-Diemer (transposition)	1
	17	c4	English, with 1. ...e5, 2. ...f6?!	1
	29	g4	Grob's Opening	1
	41	f4	Bird's Opening, with 1. ...d5	1
4	7	Nf3	KP, Queen's Fianchetto	1
	19	b4	Polish Opening	1
	31	Nf3	English by transposition	1
	43	Nf3	King's Pawn Irregular (transposition)	2
5	9	d4	Trompowsky, with 2. ...e6	2
	21	d4	Queen's Gambit, Chigorin Defense	2
	33	d4	Queen's Pawn with 1. ...Nf6, 2. g4!?	2
	45	d4	Queen's Pawn, irregular	2
6	11	e4	Scotch Game, with 3. ...Bb4+	3
	23	e4	Scandinavian Defense	1
	35	e4	Center Game	2
	47	e4	Open Sicilian, with 5. f3	5
7	48	g3	Reverse Alekhine's, 4 Pawns Attack	1

*Opening moves in the 25 games where Gareyev had the **white pieces**.*

Where Gareyev was White, the table shows that 12 of the 25 games became distinct after the first moves by each side, with a further eight games having distinct positions after two moves had been played, and with the remaining games becoming distinct by the fifth moves at the latest. That shows how successful it can be to plan opening moves in advance. Compared for example with Pillsbury's 16 game event, many more opening systems were played.

Where Gareyev was Black it seems likely that he formed further groups based on the opening moves, which I have tentatively shown as Groups 8-10, although these are larger than the others. Nine opponents opened with 1.e4, seven games started with 1.d4, and the remaining seven games covered five different first moves. Although Gareyev had less control over the choice of opening, he was still able to secure distinct positions in 21 of the games by the second move at the latest, and in the remaining two games by move 3, which would certainly have helped to avoid confusion between games.

Group No.	Game No.	First Move	Next Few Moves	Unique by move
8	4	1.e4	... e5, 2.Nf3 Nc6, 3.Bb5 a6	2
	8		... c5, 2.Nc3 Nc6, 3.Bb5 Nd4	3
	22		... e5, 2.d4 exd4, 3.Nf3 Nc6	2
	26		... c5, 2.Nc3 Nc6, 3.f4 g6	3
	28		... c5, 2.Nf3 Nc6, 3.d4 cxd4	2
	30		... d5, 2.exd5 Nf6, 3.Nc3 Nxd5	1
	32		... Nf6, 2.e5 Nd5, 3.d4.d6	1
	36		... c5, 2.Nf3 Nf6, 3.Nc3 d5	2
	38	... c5, 2.d4 cxd4, 3.c3 d5	2	
9	2	1.d4	... Nf6, 2.Bg5 e5, 3.dxe5 h6	2
	6		... d5, 2.c4 e5, 3.dxe5 d4	2
	10		... f5, 2.c4 e6, 3.g3 Nf6	1
	12		... Nf6, 2.Bg5 Ne4, 3.Bf4 e5	2
	18		... d5, 2.Nf3 Nc6, 3.e3 Nf6	2
	24		... Nf6, 2.c4 e5, 3.dxe5 Ng4	2
	44		... Nf6, 2.c4 e6, 3.Nc3 Bb4	2
10	14	1.Nh3	... d5, 2.a4? Bxh3, 3.gxh3 e5	1
	16	1.c4	... e5, 2.Nf3 e4, 3.Nd4 Nf6	1
	20	1.b4	... e5, 2.Bb2 e4, 3.e3 Nf6	1
	34	1.Nf3	... g5, 2.e4 g4, 3.Ne5 h5	1
	40	1.Nc3	... e5, 2.e4 f5, 3.exf5 Nf6	2
	42	1.Nc3	... e5, 2.d3 d5, 3.Be3 d4	2
	46	1.Nf3	... d5, 2.g3 h5, 3.h4 Nc6	2

*Analysis of the openings in the 23 games in which Gareyev had the **black pieces***

Of the nine games where his opponents started with 1.e4, Gareyev responded twice with ...e5, after which the games diverged on the second move, once each with ...d5 and ...Nf6; and he played ...c5 in the remaining five games. There does not seem to be any structure in the

choice of Gareyev's first moves, save that in the first four of the eight games starting with 1.e4 (Games 4, 8, 22 and 26) he played ...e5 and ...c5 alternately. There is, however, a nearly complete structure in the responses in the seven games where the opponents started with 1.d4. In those games Gareyev played in turn ...Nf6, ...d5, and ...f5; then ...Nf6 and ...d5 in the next two; but failed to repeat with ...f5 in the sixth game, and instead responded with ...Nf6 in that game and also in the seventh. Gareyev would have correctly anticipated that the opening moves 1.e4 and 1.d4 would be the most popular, but—as shown by the chart in the photograph (page 35, above)—he also made some preparations for less common opening moves. 1.Nf3 was in fact played twice, and on each occasion Gareyev chose unusual responses, no doubt intending to startle opponents who would probably have expected a more positional game after their choice of opening move. The first of these two (Game 34) went 1.Nf3 g5!?, 2.e4 g4, 3.Ne5 h5, when the white team ambitiously sacrificed their knight on f7, losing at move 31. The second (Game 46) started with 1.Nf3 d5, 2.g3 h5!?, and White also lost in 31 moves. Two opponents opened with 1.Nc3. Of these, Game 40 continued ...e5, 2.e4 transposing first into a Vienna Game and then, after ...f5!?, into a reversed King's Gambit in which Gareyev developed a blistering counter-attack and won in 14 moves. In the second, Game 42, Gareyev also replied with ...e5, when White blundered away a piece after 2.d3 d5, 3.Be3?? d4, with Gareyev winning the game in 13 moves. The remaining three games in Group 10 started with 1.Nh3, 1.c4 and 1.b4, thereby all becoming distinctive immediately.<sup>57</sup>

## 5: Final Comments

The technique introduced by Pillsbury, of preparing a specific opening system for each game, has been adopted in most, if not all, significant blindfold simultaneous events since then. The foregoing analysis shows that modifications of the technique were used in record performances by Koltanowski, Miles, Lang and Gareyev. A similar approach was adopted by

<sup>57</sup> After this article was drafted, some further information became available about Gareyev's preparation for his 48-game record performance, in an article by David Fadul titled "Memory Techniques: the chess equation", on the chessbase website: <https://en.chessbase.com/post/memory-techniques-the-chess-equation>, in which Gareyev confirms the methods outlined above. As one example, he translates the sequence of moves 1.d4 Nf6 as Princess Diana throwing a horseshoe into a fountain. In this image, the fountain is the location associated with the particular board number, Princess Diana represents the move 1.d4 (see photograph at p.35, above), and the horseshoe represents a normal move by the g8 knight to f6. Later, to reinforce his response 2.Bg5, Garayev modified his mental image by picturing Princess Diana in a long wedding dress (associated with a Bishop move), which was then sufficient to make that game both distinct and memorable for him.

Ostrogsky (23 games in 1904<sup>58</sup>), Breyer (25 games in 1921<sup>59</sup>), Alekhine (26 games in 1924, 28 in 1925, and 32 in 1933<sup>60</sup>) and Najdorf (40 games in 1943, and 45 games in 1947<sup>61</sup>). A similar method is highly likely to have been used also by Réti (24 games in 1919, and 29 in 1925<sup>62</sup>) but insufficient of his games have survived to allow for proof.

Where a blindfold player has the white pieces, knowing in advance what the opening move will be on each of those boards gives him a small but solid foundation on which to construct the rest of a game. But even better is also to prepare a range of possible continuations. As will have been seen, the players whose techniques have been examined planned beyond the first move. The basic ideas were explained by Pillsbury in his 1902 interview and developed by Koltanowski. Later players incorporated wrinkles of their own, with Miles opting for a rather cumbersome phonetic system, and both Lang and Gareyev introducing themes. Clearly, each player should tailor a system to his individual preferences and style of play, and needs to select variations of openings that lead to early deviations, preferably in a planned sequence, so as to reduce the risk of confusion between games. And from the start, a player needs to identify each game with its correct board number, probably by using one of the mnemonic techniques that involve “placing” games in specific areas within a remembered matrix of

58 *Blindfold Chess*, pp. 59-62, 238-245 and 399-400. Out of his 23 games Ostrogsky opened with 1.e4 in 19, and with 1.d4 in the remaining four. In the e4 games his opponents answered with 1. ...e5 in all but one. Ostrogsky played a King’s Gambit from Board 3 onwards on every 4<sup>th</sup> board except for a Danish Gambit in the last game; a Ruy Lopez on every 4<sup>th</sup> game from Board 5 onwards; and he opened with 1.d4 (or 1.e4 and then played the Vienna) in every 4<sup>th</sup> game from Board 2 onwards. In the remaining games he aimed for an Evans Gambit on every 4<sup>th</sup> game from Board 4 onwards, and succeeded three times.

59 *Blindfold Chess*, pp. 72-73, 247-255 and 400-401. Of his 25 games, Breyer played 1.e4 in the first 16 and 1.d4 on the rest. He aimed for a King’s Gambit on Boards 1-4 and either a Göring Gambit or a Danish Gambit on Boards 5-8; possibly an Evans Gambit on Boards 9-12 (but his opponents did not oblige); and a Ruy Lopez on Boards 13-16. The openings in the remaining games were less well structured. Breyer’s plan was somewhat similar to Ostrogsky’s

60 *Blindfold Chess*, pp. 73-83, 255-270, 280-284 and 401-403. Of the 28 games played in Paris in 1925, Alekhine divided them into four groups of seven. In the first group he opened with 1.e4; in the second group with 1.d4 on Boards 8-13 and 1.c4 on Board 14; in the third group he started with 1.e4 on Boards 15-21; and in the last group he played 1.d4 on the first six boards and 1.f4 on the last. Insufficient games are available from the 1924 and 1933 records, but there is no reason to suppose that Alekhine did not apply similar systems in those.

61 *Blindfold Chess*, pp. 91-98, 294-310, and 404-406. Of the 45 games that Najdorf played in São Paulo in 1947, he divided them into three groups of 15. In the first six games in each group he played 1.e4, in the next four he opened with 1.d4, in the next two 1.c4, in the next two he took the black pieces, and in the last of each group he played an unusual move. Almost certainly, Najdorf used a pre-arranged plan when playing 40 games at Rosario in 1943, but insufficient of those games have survived to allow for proof.

62 *Blindfold Chess*, pp. 62-72, 245-247, 400 and 402.

locations, or through the association of mental images, or by using such combination of methods as he finds most suitable.

Where a blindfold player chooses to take the black pieces in some of the games in a simultaneous event, as seems to be the increasing trend where many games are being played, he will thereby reduce the danger of confusion between games, but at the cost of having no initial framework for those games, and having less control over the way they will develop. Koltanowski's idea of having the moves in some games announced in a different notation is an interesting one, but would not suit all blindfold players, and algebraic notations are now well established.

As with the gradual reduction of performance times in athletic track events, so with the increase of the number of blindfold chess games played simultaneously: any speculation that a limit has been reached is likely to be disproved before long. But unlike with a reduction of times at sporting events, with simultaneous blindfold chess games the limit for opponents, spectators and organizers is not far off, unless—which appears unlikely—the games can be played at a significantly faster rate while still involving sufficiently strong opponents. The conclusion, as this author suggested in his previous article, is that it would be sensible to reduce the number of games to perhaps 10 to 15, and increase the standard of opposition. Then, an event would be likely to last not much longer than a theatrical performance, and would be attractive to many more people.

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