

Strategy in Bao

-- an introduction

by Alex de Voogt

Bao is a two-player strategy game of the mancala family. It is played in East Africa; the specific version I will be discussing is standard in Zanzibar. It is played with 64 counters or seeds on a board consisting of four rows of eight holes. The players each own the two rows of eight holes nearest to them. During a move the seeds are spread one-by-one in consecutive holes in a clockwise or counterclockwise direction according to the rules of the game. The object of the game is to empty your opponent's front row.

Unlike strategy games such as Go or even Draughts, Bao is not a game of few rules. It has been played at the championship level for more than a hundred years, and the rules have been refined with subtle additions from the beginning. Even without the detailed rules, the game appears complex for the beginning player. It is not so much the number of rules, but the number of rules per move that will frustrate most players trying to learn Bao from a set of written instructions. In practice it is much less difficult to learn Bao with a board and teacher, who will correct the many mistakes during a turn and slowly teach a player the habit of performing a correct move. Only after mastering the rules and being able to play a move without hesitation or mistake is it possible to start thinking about strategy. As will be illustrated in the following articles, strategy in Bao is complex but often spectacular.

Since the rules are difficult to learn from paper and since not all readers may have the time or interest to play and practice this most complicated of all mancala games, the examples in later articles will illustrate more than just the rules. Firstly, they will cover the stratagems in detail, and secondly they will deal with the overall complexity and/or beauty of Bao moves. Whenever you meet a Bao master, and the chances of that are very small indeed, you do not need to understand exactly what he is doing, but you may simply marvel at his speed and depth of thought and the changes he produces on the board. It is indeed the changes on the board that make traditional ideas about 'positional evaluation' worthless. In Bao a master calculates every move and every possible countermove. The changes during a turn can be so radical that for beginning players there are no obviously bad moves except those that lead to immediate loss, and even those may be beyond their calculation.

Before going into details, which can be daunting for the beginning player, it is traditional to tempt the unsuspecting bystander with a short outline of the rules as if it were a game like any other. These basic rules allow a complete game to be played, but, as mentioned above, a number of different rules may need to be applied in a single turn, so beware!

RULES OF PLAY

Each player has two rows of eight holes. Right of center of each player's inner (or front) row is a larger square hole called the *nyumba*. This is shown in the diagram at the top left of this page, which also shows the opening set-up. There are six seeds in each

nyumba, and another two seeds in each of two holes to the right of the *nyumba*. Each player, therefore, starts with ten seeds on the board and has 22 seeds in a stock. A player whose front row is empty has lost the game.

Apart from the *nyumba* there are two holes on each end of the inner rows that have special names too. The *kimbi* holes, shown with the lighter shading in the diagram, have special rules attached during capturing. They are difficult to defend when they contain many seeds. The *kichwa* (=head) holes, at the ends of the inner rows, shown with the darker shading, are also involved with these special rules, and are one of the most volatile places on the board.

Bao positions such as the opening position here will be represented as follows:

00000000	Stock 22
02260000	
00006220	
00000000	Stock 22

Phase I – Playing from the Stock

On each turn a player sows one seed from his stock into an occupied hole (i.e. a hole containing at least one seed) in his front row. If this hole is opposite an occupied hole in his opponent's front row, then the seeds in this hole are captured. (See *Capturing*.)

Sowing:
If the opposite hole in the opponent's front row is empty, the player empties his own hole and distributes, or sows, these seeds around the board. They are placed one at a time in each of his holes, moving in either a clockwise or anticlockwise direction, starting from the hole immediately adjacent to the hole the pieces came from. If he reaches the end of his front row, he continues 'around the corner' into his back row. If the last seed drops into an empty hole the player's turn is over. If this seed drops into a hole with at least one seed then this hole is emptied and sown in the same way. This procedure continues until the last seed of a distribution drops into an empty hole.

Once the direction for sowing is selected by the first distribution of a turn, the player must continue sowing in the same direction for the rest of the turn. The exception to this rule is if a capture is subsequently made from a *kichwa* or *kimbi* hole that dictates a different direction of sowing. (See *Capturing*.)

It is only allowed to sow a seed from the stock into the *nyumba* if a capture is possible or if there are no other occupied holes in the front row. In the latter case just *two* seeds are removed from the *nyumba* and sown either clockwise or anticlockwise. If the *nyumba* (via another hole) is emptied and spread (or captured by the opposite hole), special rules for the square hole are discounted for the remainder of the game.

Capturing:

If there is a choice between sowing a seed from the stock that makes a capture and one that does not, then the capturing option must be chosen. When capturing the seeds from an opponent's

hole these seeds are sown along the player's front row starting from the left or right *kichwa*. If the last seed drops into an empty hole, the turn is over. If it reaches an occupied hole and the hole on the opponent's side is also occupied, then another capture is made. If not, the player lifts the contents of the hole and continues sowing in the same direction.

Seeds that are captured from the opponent's *kichwa* or *kimbi* must be sown starting from the player's *kichwa* on the same side. If the contents of one of the middle four holes are captured, the player is allowed to choose from which of his *kichwa* he wishes to start sowing. The exception to this rule is if the capture is made as the second or later capture in a single turn and the direction of sowing has already been established. (A capture from a *kichwa* or *kimbi*, on the other hand, may override an established direction of sowing.)

If a capture is not made on the first play of a turn, when a seed from the stock is sown, then no capture can be made in that turn, even if the last seed from a distribution falls in an occupied hole in the front row with an occupied opponent's hole opposite. However, if a capture is made on the first play of a turn, then the player may make one or more distributions without capturing (if he cannot capture) before capturing again.

Phase II – Once the stock is exhausted

When all 22 seeds from the stock have entered the game, as the first play of a turn, the player must choose one of his occupied holes to sow that contains *two or more* seeds. This may be sown in either direction (which establishes the direction for the rest of that turn, captures from *kichwa* or *kimbi* that override this direction notwithstanding). If possible, the player must choose a hole which when sown will result in a capture. If this is not possible directly (i.e. by making the capture in one distribution), he must pick a hole to sow from his front row. If none of the holes in his front row have more than one seed, he must pick a hole from his back row. If the last seed from a distribution falls into an empty hole, the turn finishes. If the last seed from a distribution falls into an occupied hole but a capture is not made, then the contents of this hole are lifted and sown as usual. All rules from Phase I concerning capturing, direction of play, *kichwa* and *kimbi*, and so on, apply in Phase II—one of the main differences is that the first play of the turn consists in sowing an occupied hole with two or more seeds.

The next article will discuss the notation system and illustrate some of the basic moves in Bao. Since one cannot work without the other, they need to be discussed together. The short outline above should provide a quick background for all those interested in Bao strategy. ■

Alex de Voogt has been a board games researcher since 1990. In 1995 and 1997 he organized a colloquium at Leiden University 'Board Games in Academia,' which now travels around the world. The next will be held in Fribourg, Switzerland in 2001. His publications mainly relate to mancala games and started with a cognitive psychological study of Bao masters which led to a PhD in 1995. Alex's thesis has been published as Limits of the Mind: towards a characterization of Bao mastership (Research School CNWS, Leiden, 1995). Today he lives in Amsterdam and works for the Research School CNWS, where he is responsible for International Relations.

Bao is a complex game, the most highly developed of all the mancala games. This first article is intended to present the basic rules. From the directions given here it is possible to play this basic form of Bao, although some previous familiarity with

mancala games would be an advantage. Alex intends to flesh out these instruction in future issues with plenty of examples of play, illustrating both the rules and strategic ideas.

Opposite is another complex game, Chu Shogi. This is the first of what we hope will be a regular column. Chu Shogi and Grand Chess make a nice pair: two splendid larger chess games from East and West, respectively.

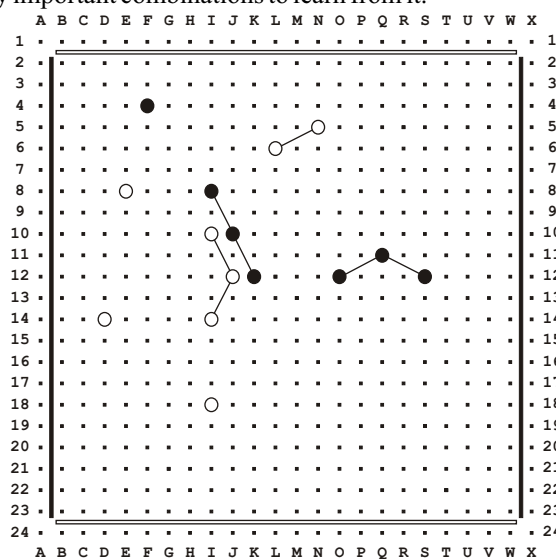
Aside from reviews the complete rules will usually be given for every game that is covered in Abstract Games. A complete description of the Chu Shogi rules would, however, take up half of one issue, so we have had to make an exception in this case. For Chu Shogi rules readers may refer to New Rules for Classic Games by R. Wayne Schmittberger (John Wiley & Sons, New York, 1992), Middle Shogi Manual by George Hodges (The Shogi Association, 1992), or Roger Hare's Chu Shogi page at <http://www.ed.ac.uk/~rjhare/shogi/chu-shogi/intro.html>.

As to the authors of this column, readers of this magazine will be familiar with Colin Adams through the interview with him we printed in AG2. For further information on Colin's Chu Shogi activities visit <http://www.colina.demon.co.uk/chulib.html>. Colin's work on Tenjiku Shogi and Chu Shogi is simply astounding. Nixon Bardsley is a book editor and Shogi variant enthusiast living and working just outside London. He represents the Book Sector on the National Executive Council of the National Union of Journalists in the UK.

A word is necessary about the Chu Shogi diagram. Readers will notice that we have followed the practice that is common with regular Shogi and represented pieces with just the top character of the pair that form the piece's name. This was done for reasons of space and clarity. The only ambiguity that could arise with the unpromoted pieces concerns the Dragon King and Dragon Horse, both of which have the same top character. This is solved by using the bottom character of the Dragon Horse piece, which happens to coincide nicely with the characters used for pieces with identical movement in regular Shogi. When we come to represent promoted pieces in future issues, the top character will always be used except for the Flying Ox, Flying Stag, Free Boar, Horned Falcon, and Soaring Eagle, for which the bottom characters will be used. -- Ed.

Twixt Puzzle by Klaus Hussmanns

White to move and win. This puzzle is quite hard, but there are many important combinations to learn from it.



The solution is given on page 25.