Issue 5 Spring 2001
US$5.00/C$7.50

Abstract Games

... for the competitive thinker

- Hex variants
- A beautiful move in Renju
- Anchor: a new territorial game
- Lightning: a connection game from the 1890's
- More on Bao, Hostage Chess, and Grand Chess
- Plus the usual news and reviews

Front Cover

The game on the front cover is Kimbo, released in the USA by Parker Bros. in 1960 and in the UK by Waddingtons in 1961. It could not have been very successful as it was quickly consigned to oblivion. I do not believe that Kimbo has been produced by any other company since its first release.

This is a shame because the game has much to recommend it. It is a race game, playable by two to four players, but best for four. The players each have four pieces which start off in the corners of the board. They also have six fences each, which can be inserted into slots along the sides of the squares of the board. Each move consists firstly in repositioning a fence and then moving one or two pieces according to the throw of two dice. The objective is to move all four of one's pieces into the central area of the board. When a direction of movement is chosen for a piece it must continue in that direction unless it runs into the edge of the board or a fence, at which time it is deflected either to the left or to the right. A piece running into a dead end with both left and right sides blocked is deflected straight back along the path it has traveled. A piece must enter the central area through one of its four gates by exact count. Landing on an enemy piece by exact count sends it back to one of the corners of the board. The throw of a double allows an alternative move: a piece may jump over an adjacent fence to the square on the other side.

All this seems fairly simple, and it is, but after one or two games some rather nice subtleties become apparent. The crucial part of the board is around the central home area, and particularly its four entrances. An entrance cannot be blocked by a single fence, but a wall of three fences may be built around it. Provided these three fences are all owned by one player, the only way another player can get in by this route is to park a piece adjacent to one of the three fences and hope for a double to jump over it. The player who owns the fences, on the other hand, can position one or two pieces ready to make the run home, and then on his next turn remove a fence and hope for the right roll to take one of his pieces in. Whatever happens, of course, his opponents can now place one of their fences in the vacated slot, breaking his control of this particular entrance.

This ploy together with various other tactical and strategic maneuvers make Kimbo a surprisingly pleasant game to play. It is unusual in that almost all games in which pieces are guided along some course according to the throws of dice are trivial, luck-dependent games. Other exceptions to this rule are Backgammon and the excellent new game Chebache (reviewed in *AG3*), although Kimbo has more in common with Parchesi than it does with these two.

Even though Kimbo has not been produced for many years, it is fairly easy to acquire a used set through the online auctions.

Kerry Handscomb

Contents

Publishers
Connie & Kerry Handscomb

Editor
Kerry Handscomb

Cover Photo
Connie Handscomb

Copy Editor
Caroline Purchase

Contributors
Larry Back, Claude Chaunier, Jochen Drechsler, Tony Gardner, John Leslie, Patrick Mouchet, Jim Polczynski, Mike Sandeman, Ants Soosyrv, Alex de Voogt

Game Testers
Rob Favel, Malcolm Maynard

Published by
Carpe Diem Publishing
Box 33018, 1583 Marine Drive
West Vancouver, BC, Canada V7V 1H0
email: conniekerry@sprint.ca
http://www.abstractgamesmagazine.com

Subscriptions
Annual subscription (4 issues): Canada CDN$35 (GST incl.), USA US$23, elsewhere US$26.
Back issues: Canada CDN$9 (GST incl.), USA US$6, elsewhere US$7.
Airmail delivery included.
Checks/money orders payable to Carpe Diem Publishing (address above).
Visa/MC accepted online through Paypal.

Advertising
Rates available on request.

ISSN 1492-0492

Webmaster
Vkool Communications

Printer
Print 'n Run

Pre-Press
Stellar Graphics, Ltd.

A Note on Gender
Pronouns "he," "him," etc. have been used in non-gender-specific situations. We realize that women play games, too, and this is merely to avoid awkward constructions like "he/she."

Editorial

There has been an excellent response to the game design competition. By the time you are reading this it will have closed, and the judges will be busy sifting through the responses and trying out the games. The winners should be announced in *AG6*, and some of the best games will be described in succeeding issues.

Soon after the last issue went to press I realized that I had omitted to advise readers without access to email or the Internet to send their entries directly to me. One reader did take the initiative and forwarded his game to me anyway. I hope nobody was frustrated in submitting an entry because of this, but if anyone was: keep hold of that game and enter it in next years's competition. This is likely to be an annual event.

On the subject of new games, there was quite a lot of positive feedback about Onyx, the new game presented in *AG4*. Larry Back has written an excellent follow-up article on Onyx strategy and tactics, which will be included in the next issue. I think some readers have yet to try this game because of the difficulty of drawing its unusual board design. I will be happy either to send a printout of the board by mail or to email it as a PDF attachment to anyone who is interested. We have decided to try running tournaments in Onyx and Kyoto Shogi. For more details check page 14 in this issue.

This issue contains another new game, Anchor. The game's designer, Steven Meyers, has some other very interesting ideas that may well make an appearance in later issues.

The Renju article is experimental. It arose because, after reading *Renju World* magazine, which contains plenty of references to "beautiful moves," I felt vaguely guilty about describing Renju as "an inelegant solution to the imbalance in the primitive five-in-a-row game" in *AG1*. *Renju World*'s editor, Ants Soosyrv, kindly offered to write an article that would explain a beautiful move in Renju to complete beginners. I think he has succeeded admirably. The next installment in this series should be entitled "A Beautiful Move in International Checkers." If anyone has any ideas for continuing this series, please let me know.

The next installment of Cameron Browne's Hex series was postponed for reasons of space, but it will be included in *AG6*. Hex fans may still get their "fix" from Larry Back's article on Hex variants in this issue. Another article that unfortunately did not make it this time was the second of the Chu Shogi columns. The column's writer, Nixon Bardsley, has been ill. I hope Chu Shogi will return in *AG6*.

Please note that due to the international expansion of Paypal, we are now able to accept subscription payments by Visa and Mastercard through Paypal's secure server on the Internet. This may make it easier (and cheaper) for our international readers to pay for their subscriptions.

Lastly, a very small point: readers may be wondering about the way that the names of games are written in this magazine. From the outset we decided to capitalize the first letter of all games because it was too awkward to distinguish between proprietary and non-proprietary games. The exception to this rule is when reference is being made to a genre of games rather than a specific game. For this reason "mancala," "chess," and so on may be written with a lower-case first letter in certain cases where they refer to whole classes of games.

Until the next issue, happy gaming!

Kerry Handscomb

Notation

A standardized notation is used for all games when possible. In diagrams, squares are named using an algebraic system. Starting from the bottom left of the diagram, columns are identified by the letters a, b, c ... and rows by the numbers 1, 2, 3 .... A colon ":" is used to indicate captures. A threat to win, or check, is indicated by a "+" sign after the move.

Moves in Chess variants are indicated by the initial letters of the name of the piece moving together with the destination square. ("N" is used for knights, and sometimes the "P" for pawn is omitted.) Sometimes the start square is also indicated to avoid ambiguity. Captures are noted with "x," and "+" is reserved for promotion. Promotion in the Checkers variants is also indicated with "+."

With Shogi variants, we will follow the traditional Japanese way of identifying squares. From the top right, *rows* are a, b, c ... , *columns* are 1, 2, 3 .... If the value of a piece changes at the end of a move, we will use "=" and the new value.

In Twixt each asterix "*" after a move indicates a link. Link removal syntax is in *AG2*.

Letters

Abstract Games *welcomes your views. We wish to reflect accurately the concerns and interests of the readership. Letters may be subject to editing for clarity and brevity.*

Thanks for the wonderful Issue 4. I'm going into ecstasy over that marvelous cover picture. The set is charming, especially the thick board that demonstrates a typical Japanese design style. I also like your way to connect games and nature -- unconventional but effective.

Georg Dunkel, Finland

Georg is an active promoter of Poppy Shogi and the inventor of Nana Shogi -- see pages 15 -16 of this issue. -- Ed.

I've received *AG*. It's Christmas! Thank you for the playful delights and human warmth that it yields.

Claude Chaunier, France

Thanks for another thought-provoking issue of the magazine.

I have to take issue with your assessment of Tamsk: the hour-glasses are an integral part of the game, and add an element of resource management. The whole point is, you are playing a territorial game on the board, while simultaneously managing the sand in each of your timers, plus your opponent's timers. I've played this game a lot, and I find that in most games, there comes a point where you have to make a choice -- quickly -- between making the best move from a territorial viewpoint, or keeping a timer alive.

Note that you can start the 15-second timer during your opponent's turn, and the opponent can't start the timer on your turn until the sand has run out, so you can guarantee 30 seconds or more between your opponent's turns. This means that if you have three timers with less than a minute in each, or two timers with less than 30 seconds, you have lost one of them... if your opponent is paying attention.

I suggest you go back to the board armed with this knowledge, and take another look at the game. One of the things that I like best about Tamsk is that the time really is a strategic element of the game.

Stephen Tavener, England

As for the magazines received so far -- I must admit that I haven't had much time to read them yet! I've deliberately ignored the major articles on games I already play (e.g. Lines of Action) as I want to do them full justice, but the few articles I have read (mostly on games completely new to me) have been fascinating. The big problem is that I don't have enough hours in the day!

Keep up the good work! Once I have read the magazines in more depth I anticipate sending comments and questions.

By the way, in case you are interested in the favorite games of your readership, I will say that my favorites are Gipf and Lines of Action. I played Gipf for the first time at MSO and was immediately drawn into the amazing way the fortunes of the two players can swing back and forth as the rows of men get recycled off the board. I predict a big future for this game. I guess you know how good Lines of Action is!

Thanks for a great magazine!

David Faldon, England

Thanks David! It is always good to get feedback from readers about the games we should be covering. I would encourage other readers to write to let us know. -- Ed.

A new LOA opening appeared. I was surprised when I saw it.

1. d1f3 h5:f3

I capture, as expected.

2. g1g3!

How to follow up? This move surprised me because White can block the right of the board, and I had to offer a piece.

2.... a5c7

3. g3:c7 h7f5

And so on. The game has not finished yet. I'm playing against a friend via mobile, but I have a lot of problems now.

Jorge Gomez Arrausi, Spain

Mini-Reviews

by Kerry Handscomb

More flights of chess fancy and ***Three-man pawnless endings in Losing chess***

These two slim volumes were written by John Beasley, secretary of the British Chess Variants Society (the organization that publishes *Variant Chess*).

More flights of chess fancy is a collection of problems, puzzles, anecdotes, and other curious material on the fringes of Chess. I found the material on Losing Chess to be particularly interesting -- it seems to be a surprisingly elegant game. This booklet can be obtained from the *British Chess Magazine*, The Chess Shop, 69 Masbro Road, London W14 0LS, UK; email: BCMChess@compuserv.com. The cost is GBP1.50 plus GBP0.15 postage for within the UK or GBP0.30 for elsewhere.

Three-man pawnless endings in Losing Chess is a fascinating and exhaustive computer-aided survey. Very generously, this booklet is available at no cost from the author. John is also publishing a survey of the existing work on the Losing Chess endgame. Enquiries should be directed to John Beasley, 7 St. James Road, Harpenden, Herts AL5 4NX, UK; email: johnbeasley@mail.com.

Board Games Studies

Volume 2 of this sumptuous academic journal came to my attention recently. It is expensively produced and 175 pages long, with articles in French, German and English. The managing editor is Alex de Voogt, the writer of the Bao articles for *Abstract Games*.

I do not read German and only read French with difficulty, but nevertheless I found plenty of fascinating material in this volume. For a start, I found out from an article by Benedikt Rothoeler that Mehen is the Ancient Egyptian god of board games(!). In addition, there is an article by Alex on the distribution of Mancala games, as well as articles on the history of American games, game boards used for Indian Chess, and much more. The focus of the journal is clearly academic and historical rather than play and strategy.

Single copies can be obtained for DFl.40, and three-issue subscriptions for DFl.125. There are additional charges for shipping and handling. Enquiries should be directed to CNWS, Leiden University, PO Box 9515, 2300 RA Leiden, The Netherlands; email: CNWS@Rullet.LeidenUniv.nl; website: http://oasis.leidenuniv.nl/interfac/cnws/pub/.

Corrections and Omissions

1. A sharp-eyed reader noticed that some of the kings and golds in the Kyoto Shogi diagrams on pp. 22-23 of *AG3* are the mirror-images of what they should be. Fortunately, these characters are still easily recognizable.
2. Daniel Bauer was not credited with the marvelous image of the Chu Shogi lion on p. 23 of *AG4*. Our apologies to Daniel.
3. A reader has pointed out that nowhere in the Hostage Chess article on pp. 17-19 of *AG4* is it mentioned explicitly who created Hostage Chess. To set the record straight, that author of that article, Professor John Leslie, is indeed the originator of the game.

Game Reviews

Ricochet Robot

Designed by Alex Randolph

Ricochet Robot (or *Rasende Roboter* in the German verison) is a new game published in 1999 by Alex Randolph, who is also author of our beloved Twixt. It is not a strategic board game in the usual sense. It is more like a puzzle solving competition. All players analyze the same randomly generated board position and try to move a certain robot into its target in as few moves as possible. It reminds me a bit of Shogi endgame positions when both players in *byoyomi* try to be one move faster in mating the opponent. Alex Randolph used this puzzle solving mechanism in his game Corona (also known as Orbit) as well.

The board consists of a 16x16 orthogonal grid that is surrounded by a wall. Scattered over the board you find some L-shaped walls and 17 target symbols for the robots. The board is modula, with 96 different board positions (so that nobody can memorize solutions to all possible board positions).

At the start the four robots (red, green, blue and yellow) are placed randomly on the board. The robots can move in any orthogonal direction like Chess rooks. They must move in straight lines on the grid until they hit an obstacle (a wall or another robot). When they reach an obstacle they can either stop or turn to the left or right. Every time a robot hits a wall it is considered a move.

To start a round, one player turns over one of the 17 tokens that show symbols corresponding to symbols on the board – the target square. The target squares are always surrounded by an L-shaped wall. The robot of the same color as the symbol on the token has to be moved to the target square in the manner described above. To create a path to the goal for this robot other robots can also be moved. In this way, the robots form obstacles for each other where they can stop or turn. All moves by all robots are added up to calculate the number of moves that are needed for the robot to reach the target.

When trying to find the route with the least number of moves, at first the players move the robots in their heads only. When one player thinks he has found a solution, he shouts out the number of moves he needs. A one-minute egg timer is then turned over. All players can still make their bid before the time runs out. They can make a higher or lower bid or even the same bid as the first player. But it is only allowed for one player to improve his last bid (make a lower one). When the egg timer has run out, the player with the lowest bid has to show his solution on the board and count out every move aloud. If he succeeds, he gets the token as a point. If he cannot move the right robot onto the target square in exactly the same number of moves he proclaimed, that is not regarded as success, even if he needs fewer moves. In that case the player with the next best bid has to show his solution in order to gain the point. There are two possible rulings (a strict one and a kind one) for the case that two or more players are tied for lowest bid. In the kind ruling the player with the least number of points (collected tokens) is allowed to show the solution and (if correct) gain the point. In the strict ruling the player that was first to make that bid has to show the solution.

The position of the robots after the correct solution is the starting position for the next round. The game continues until all

tokens have been won or until one player has the majority of them.

The rules do not cover every case for scoring a point and are a bit different in the German and the English/American editions. The rules presented here are what I think they should be with the best interpretation.

Even though the players are under time pressure in this game, this did not put off players who prefer a calmer pace. The surprising thing about this game is that all people liked it who had just the slightest predilection for abstract games. The game is very entertaining and lively, too. When you have just announced a bid of 13, and then another player says 6, you get very eager to see that solution as well. It is often a surprise and a pleasure to see the winner demonstrate how elegantly you could have moved the robot to the goal (in so few moves). This game is recommended for all abstract game players!

Variations

For a limited time you could get an additional silver robot from the publisher, Hans im Glück. *(The English edition is published by Rio Grande Games: http://www.riograndegames.com. -- Ed.)* They are sold out now, but if you are lucky you still might get one at some reseller. A small piece from another game or a coin can easily be used as substitute. You can use additional rules for the silver robot. For example, the robot has to touch the silver robot before reaching the target. Or you can attribute additional powers of movement to this robot: it can jump over a wall (one move), or move diagonally and so on. Or you can specify the silver robot must hit all other robots before the silver robot reaches the goal. On the web site of Hans im Glück you can find many proposals for the silver robot, although these are all in German. About every month you can also find a new puzzle on their web site. Here is the address: http://www.hans-im-glueck.de/.

The next variation, one I came up with, is for the experienced player. You need two icosohedral dice in addition to the normal set. You throw one die for the columns and one for the rows to identify any square on the grid. If you throw a number over 16, you throw again. (Unfortunately there are no 16-sided dice....) Then you turn over a token and place it on the square that you determined with the dice. The robot with the color that is shown on the token has to be moved to that square. This makes the game much more difficult because it often can happen that the robot has to be moved to a square that has no wall at any of its sides. You have to form obstacles with the other robots first to allow the active robot to reach the target (and stop). This sometimes produces solutions that need more than 20 moves. That is certainly much too mind boggling for the occasional player, but it is a fascinating challenge for the experienced addict.

Jochen Drechsler

Hijara

Designed by Martin Samuel

The Hijara board is made of grey vinyl. The pieces are glass, of which there are 32 amber and 32 blue. These colors are supposed to represent the sun and moon, respectively. As the literature that comes with the game asks, "Will the power of the sun outshine or the mystique of the moon prevail?"

Hijara is an alignment game. It is played on an array of 4x4 large squares, each of which is divided into four smaller squares. Within each large square the small squares are numbered from 1 to 4. The players take turns to place their pieces into the smaller squares. Within each large square, the smaller squares have to be filled in order from 1 to 4. Certain arrangements of a player's pieces score points. Points are recorded during the course of the game as soon as the scoring formations are made. Once all the small squares are occupied the game finishes, and the person with the higher score wins.

A diagonal or orthogonal row of four large squares in whose smaller squares a player's pieces occupy all the same number scores 10 points; if the player's pieces in this row occupy the numbers 1 to 4 in order, it scores 15 points; if a player occupies all four of the smaller squares in a large square it scores 20 points.

At first I thought this was very original, to divide the larger squares up in this way into numbered smaller squares, and to score for alignments of patterns within the large squares, but more thought indicated that it was not completely original after all. The board is exactly equivalent to a three-dimensional 4x4x4 array of cells. The rule that the numbers in the larger cells must be occupied in numerical order is equivalent to the requirement that each vertical column of four cells must be filled from the bottom up. The scoring alignments correspond to orthogonal and diagonal rows of four cells within this three-dimensional array. In other words, the game is a cross between 4x4x4 Tic Tac Toe, also known as Qubic, and Connect 4, with a scoring system.

We nevertheless found the game very enjoyable to play. Similar to other alignment games, it is important to set up multiple scoring combinations with a single move so that your opponent cannot block them all. A major strategy more specific to Hijara is to try to restrict your opponent's movement options by setting up positions whereby if he moves in a large square you can immediately move in that same square to score. Games often end in a flurry of scoring as players are forced to move into positions and give away points.

After about half the pieces have been played, it becomes very difficult to keep track of all the threats and counter threats as they are developing on the board. I found myself having to concentrate very hard, and even then having to frequently reassess positions. Hijara is an enjoyable, if vigorous, workout for the brain. As the game's designer warned me, "Beware -- it is known to have caused headaches!"

Kerry Handscomb

Hijara is published by Great American Trading Company, 90 Willow Springs Circle, York, PA 17402, USA
http://www.gatco.net.

Book Reviews

The two books reviewed below are both written by François Pingaud. They are published in French by Éditions Bourneman, 62 rue Blanche, 75009 Paris, France. *Les dames chinoises* has 71 pages and was published in 1997; *L'awélé: jeu de stratégie africain* has 55 pages and was published in 1996.

Les dames chinoises

The family of jumping race games where the two forces have to exchange positions is small. Halma and Chinese Checkers are perhaps the best known, although there have been several other proprietary games of this type. I had always considered Halma to

be the more serious of the two, regarding Chinese Checkers as more of a children's game. Initially, my main interest in reading this book was to see if there were any ideas that I could extract and apply to Halma. This slim volume has given me a new respect for Chinese Checkers.

The book starts with a very brief history of Chinese Checkers. The author casts some doubt on the accepted development of Chinese Checkers from Halma and raises the possibility that after all it might really be Chinese in origin.

A second chapter introduces the "classical" game, which is the one I was familiar with. Pingaud explains some tactics and strategy and gives a game score with commentary.

The remainder of the book, the major part, deals with the variant that Pingaud refers to as "*grand bond*." This may be translated ás "long leap," but I prefer Wayne Schmittberger's designation of Super Chinese Checkers in his book *New Rules for Classic Games*. Super Chinese Checkers was developed by Joëlle Flesselle in the 1970's, and has become popular in France. It allows one man to jump another any number of empty spaces away, landing the same number of spaces in a straight line beyond the man jumped. The standard short jump of the classical game is merely the shortest such jump.

As the author explains, this variation adds some interesting tactics, but, more importantly, it makes the largely tactical game of Chinese Checkers much more strategic. Pingaud develops some tactics and strategy for Super Chinese Checkers. He follows this with a section on endgame theory and a series of problems. The book finishes with an extensive commentary of several games and an appendix with some variants.

This book has convinced me that Chinese Checkers is not just a game for children. One of these days I shall have to try Super Halma!

L'awélé: jeu de stratégie africain

L'awélé is the name on the Ivory Coast for the game elsewhere known as Wari, Oware, Ayo, and probably a hundred other names. It is the most skillful and strategically interesting of the two-rank mancala games. It has always been one of my favorite games, so I was pleased to see this short treatise on its strategy and tactics.

The book is organized into separate chapters on rules, the basics, the opening, tactics, strategy, and the endgame. It finishes with an extensively commented example game. I found the author's presentation to be extremely interesting because he codifies a system of good play. Probably little of what he says will be new to experienced players, but it is pleasant to see it all set down with such clarity.

The major strategy of Wari revolves around building up and using overlaps, holes containing more than twelve seeds. A game position in which there are overlaps is called "strategic" by Pingaud. The phases of the game can therefore be defined as pre-strategic (when players are building overlaps), strategic, post-strategic (when there are too few seeds left to build overlaps), and the endgame (when there are only a few seeds left). As overlaps are built up and used, the game may oscillate between pre-strategic and strategic before entering the post-strategic phase. Having constructed this framework, Pingaud proceeds to develop the tactics and strategy appropriate to each phase.

I would have liked to have seen a little more information on the cultural context of the game, but that is a minor quibble. This is a nice little book that manages to communicate a real feeling for the way that Wari works.

Kerry Handscomb

A game by Steven Meyers...

ANCHOR

REDEFINING LIFE AND DEATH

by Kerry Handscomb

Go bestrides the world of abstract games like Zeus on Mount Olympus, alone and incomparable in its austere perfection. There have been many attempts to devise Go variants, but it is difficult to imagine how Go itself could be improved upon. One area that is promising is the extension of Go to a hexagonal tessellation. Hexagons, after all, with their six neighbors, more closely approximate the freedom of movement in real two-dimensional space than do squares, with only four neighbors.

Hexago, or Go on a hexagonal grid with the stones placed in the hexagonal spaces rather than on the points, was suggested by Stephen Wynn in 1972. Unfortunately Go does not translate well to a hexagonal environment because the six liberties around each point make it too easy for threatened stones to evade capture: the tension in Go between life, death and territory is lost. The game Rosette, created by Mark Berger in 1973, uses the same hexagonal grid, but stones are placed instead on the intersections, which each have three neighbors. This makes it correspondingly too easy to capture enemy groups. In order to remedy this, occupation of the ring of six intersections around a single hexagon is an alternative way to form a live group in Rosette; any group connected to such a formation is automatically alive.

While Rosette is a good game, it does not yet give us a true hexagonal Go as each point has only three neighbors rather than six. It does, however, hint of a totally different way of thinking about Go-like territorial games: *we can redefine life and death*. This is what Anchor does, and it takes this idea much further than does Rosette, as all baggage involving liberties and eyes is discarded. In creating Anchor Steven Meyers has opened up the possibility of a whole new class of territorial games in which we are liberated from Go-based concepts of life and death. It is a brilliant conception.

Anchor contains elements of Hex and Go as well as strong similarities to Poly-Y and Star, but it should be regarded as a distinct game rather than as a variant of any one of these games. Steven experimented initially with a square board and different forms of scoring, but we believe that the version presented here is the best game.

Rules

Anchor is played on a hexagon-shaped tessellation of hexagons with eight hexagons on each side. Readers may recognize this as the standard Havannah board. The corners around the board are marked alternately with black and white anchors. The function of these anchors will be explained later. The Anchor board is shown in Figure 1. There are a sufficient quantity of black and white pieces, or stones, which fit comfortably into the hexagons. Play takes place on the hexagonal spaces rather than on the points of intersection of the lines of the board.

Anchor is a game for two players, Black and White, who play the black stones and white stones, respectively. The board starts off

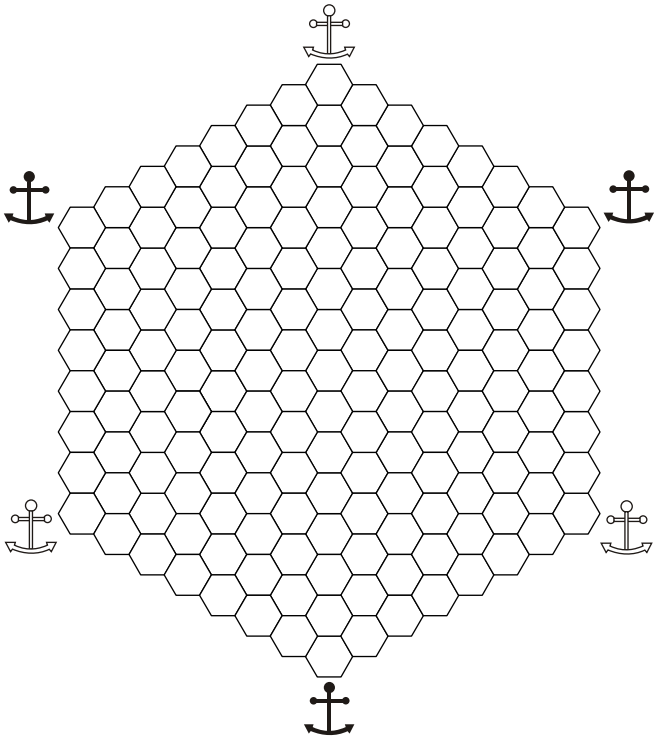


Figure 1-- The board for playing Anchor

empty. Black moves first and places a stone in any empty hexagon. Thereafter, Black and White move alternately, each turn consisting of placing a stone in a vacant hexagon. Stones once placed cannot move. It is possible for a player to pass his turn. When both players pass consecutively the game ends.

Stones of the same color which occupy adjacent hexagons are said to be *connected*. By extension, a group of stones of the same color is said to be a *connected group* if any stone in the group can be reached from any other stone through a series of pairs of connected adjacent stones in the group. A stone on the edge of the board is said to be *connected to that side*. A stone in a corner is connected to both sides of which the corner is a member. These definitions will be quite familiar to players of Go and Hex.

An *anchor* is a connected group of stones of the same color that is connected to at least two sides of the board. Thus, a single stone in a corner is an anchor as it is connected to both sides. (An anchor may be regarded as a generalization of the Hex winning position.) At the end of the game any stone which is not part of an anchor is dead.

With the regular hexagonal board it was found that the six sides made it too easy to form anchors. This is the reason for the black and white anchors at the corners of the board. The three corners of the board with anchors of a player's own color are said to be his *home corners*. The three corners with anchors of his

opponent's color are *away corners*. A group of stones of the same color which is only connected to two adjacent sides forms an anchor only if these two adjacent sides meet at a home corner. In Figure 2 the single black stone in the upper left, the black group running down the right side, and the white group at the top are all anchors. The small black group on the lower left is not an anchor since the two sides it is connected to straddle an away corner.

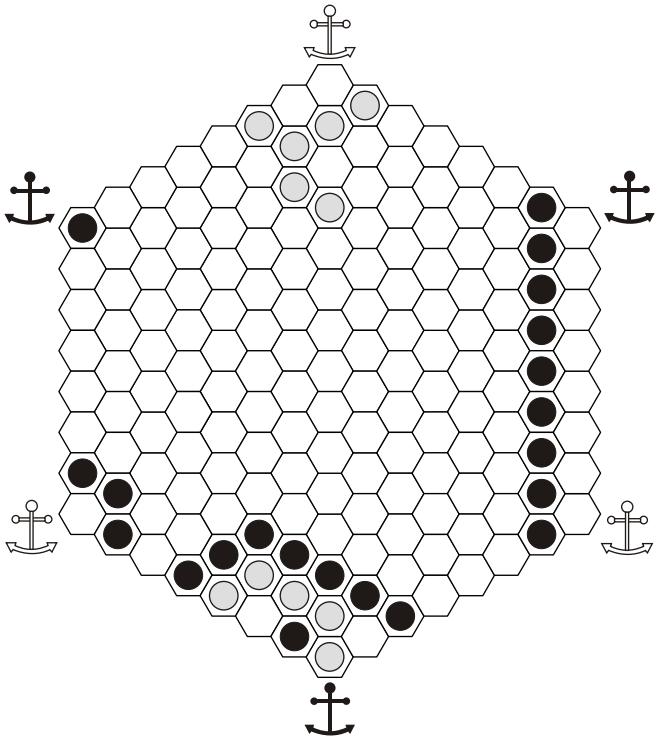


Figure 2 -- Anchor formation

Stones which at the end of the game are connected to anchors are alive. Any stones which are not connected to anchors at the end of the game are dead. Dead stones are removed from the board only at the end of the game. In rare cases a situation may arise as in the bottom of Figure 2. If the dead white stones were removed first it would be possible for the black stone to connect to the overarching black anchor (or black could simply move in the corner to form an anchor). However, all stones at the end of the game must be explicitly connected to anchors in order to be alive. An implied connection is not enough. Therefore, the black stone as well as the group of white stones is dead. This rule differs from Go, in which dead stones are removed during the course of the game rather than only at the end. (In addition, the potential in Go for a group to form two eyes, rather than explicitly having to form two eyes, is enough to guarantee life.)

As with Go, there may be a number of neutral points that can be filled in quickly at the end of the game as they will make no difference to the score. As mentioned above, when both players have passed the game finishes.

Once any dead stones have been removed at the end of the game, the players total up their territory. A player's territory is the sum of the empty hexagons on the board that are completely surrounded by his stones or by his stones and the board edge. This is equivalent to the Go concept of territory. A player scores one point for every hexagon of territory plus one point for every dead stone of his opponent.

Figure 3 shows an example of a completed game. One black stone and two white stones are dead and will be removed from the board before counting territory. It is quite normal only to have a few dead stones, although the threat of capture can be quite potent. Black has 30 points of territory plus 2 points for the captured stones, totaling 32. White has 40 points of territory plus 1 point for the captured stone, totaling 41. White, therefore, wins easily by 9 points. Black would probably have foreseen this and resigned the game long before reaching the stage in the diagram.

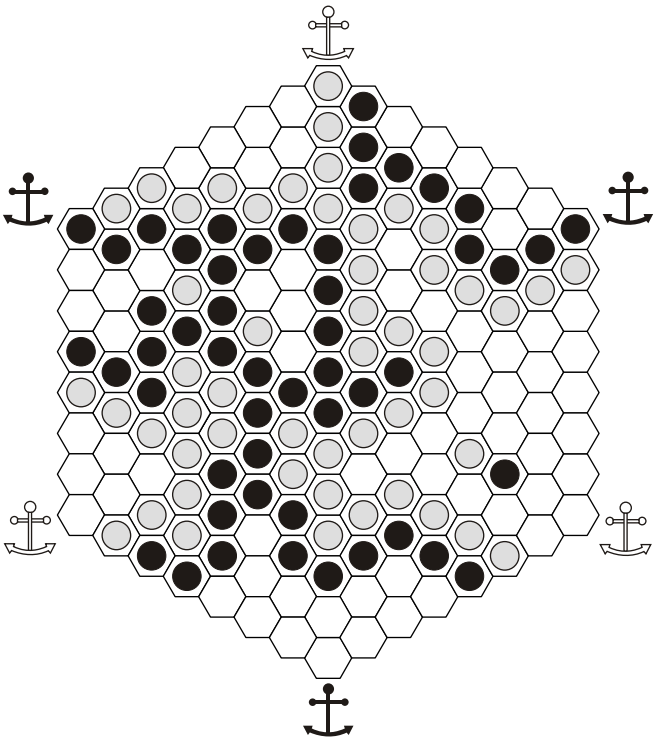


Figure 3 -- A completed game

Finally, as with many games, the first player has an advantage. To reduce or even eliminate the advantage of the opening move, the "pie rule" is used. After Black has played his first stone White has the option of swapping colors or staying White. If White decides to swap colors then the new "White" makes the next move as White. If White remains as he is, he simply places his first White stone. With his first move, therefore, Black should not make a play which is too advantageous, or White will simply swap and take the black stones.

Variants

1. Different board sizes may be used, although we found that the size given here as standard seems to balance nicely the importance of the center and the corners and sides. It also gives about the right length of game.
2. The game as originally played did not have home and away corners. This game, which we may call Free Anchor, is flawed because it is too easy to form anchors. A second version, Non-adjacent Side Anchor, disallowed *all* anchors between adjacent sides. In this case, however, the center assumes paramount importance, and in order to reduce its influence the board has to be made too large. The version presented here is a nice intermediate between these two games. In addition, it has greater strategic interest because of the difference between home and away corners.
3. Different board shapes may be used (without home and away corners). The rhombus Hex board is a possibility, as is a triangular board, but games with these boards also have the flaw that it is too easy to form anchors, particularly around the acute corners. ■

Lightning

A Connection Game from the 1890's

by Jim Polczynski

In *The Oxford History of Board Games* David Parlett defines "games of linear connection" as games in which "each [player] in turn places a tile on a bilaterally symmetrical grid of cells or points, and the winner is the first to connect opposite sides of the board in an unbroken line of pieces." In connection games such as Hex, Bridg-it, and Twixt a connecting line consists of adjacent pieces of the same color, while other connection games, such as Dr. Eric Solomon's Thoughtwave, use marks on tiles to form the connection line. Games such as Thoughtwave "involve flat tiles that can be … part of a linear track … and the aim is to lay tiles in such a way as to connect opposite sides of the board" (*The Oxford History of Board Games*).

Everything I have read regarding the origin of connection games lists Hex as the earliest. It was independently invented twice: it was first invented in the 1940's by Dutch poet and mathematician Piet Hein, and then later by American mathematician John Nash. The purpose of this article is to present a connection game from the 1890's, the game of Lightning, produced by Selchow & Richter (better known as the makers of Scrabble and Trivial Pursuit). The box cover is a beautifully lithographed picture of a man resembling Benjamin Franklin flying a kite which is being struck by lightning. The cover reads, "Patented March 29, 1892," which is *over 50 years before the invention of Hex*.

Rules

The game board is divided into two sections, each with its own 8x17 rectangular grid of squares. The pieces for Lightning consist of 150 tiles. The tiles are the same size as the squares on the board; they are marked on one side and blank on the other side. There are five distinct types of tile, as shown in Figure 1, and 30 tiles of each type.

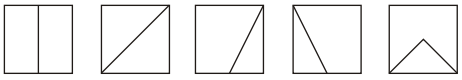


Figure 1. Tiles used in the game of Lightning

Lightning is played by two players, who share the same objective: to build a continuous, unbroken line from one end of the board to the other along the length of the board, by placing the pieces upon adjoining squares. Each player must use only his section of the board for his line. A player's line can never connect into his opponent's section of the board. The two sections must be thought of as completely separate boards. The lines, as they develop, resemble lightning bolts.

To start the game, the tiles are placed face downward on the table and mixed. The players move alternately, each move consisting of drawing a piece randomly and placing it on the board in such a manner as to carry the player's line forward to the best advantage. The line may be commenced on any one of the eight squares at the near end of the board, and its termination may be any one of the eight squares at the further end of the board; but the play must always be upon the end of the line.

Either player has the privilege of playing the piece he has drawn upon his opponent's line instead of his own if he so desires, as it may be more advantageous for him to divert or turn back his opponent's line than to extend his own line.

Should it be impossible to play the piece drawn upon either line, or should the player choose not to play it upon either line, he may leave it face upward upon the table; the pieces thus left turned up form the "pool."

Instead of drawing a man from the main pile, a player may use one of the pieces in the pool, should it contain any. The pool may contain one or more pieces, or it may be formed and emptied several times during a game.

By following these directions it will be found possible to carry the line to the side of the board, or against a piece already played, in such a way that it cannot be extended. When this happens, the line is said to be "blocked." Until the line is blocked it is said to be "open." For instance, in Figure 2 suppose the game to have proceeded as shown at A; then the line is blocked, as no further junction is possible at the end. It is also blocked at C, E and H.

A line is not complete unless it is so terminated at the further boundary that it cannot be brought back. In Figure 2 the line is not finished at G, as it may be continued as shown; but it is complete at J, as no further junction is possible, and the game is won.

When a line is blocked, a player may make a branch from the point furthest advanced where a junction is possible, or, if there be more than one such point, at either of them. In Figure 2 it will be seen that it was first necessary to make a branch at B, and later in the game other branches were started at D, F and I.

The privilege of playing upon your opponent's line may be exercised also in beginning a branch; that is, if your line is blocked, and it is your opponent's play he may begin your branch, and if there is a choice of points equally far advanced, he may choose whichever he desires.

It may happen, in endeavoring to reach the goal, that all the squares at the further end of the board may be occupied by men without having completed the line, in consequence of repeated blocks and diversions of the line. If one side is in this condition, the other player may still win by completing his line; but should both players fail to complete their lines, the game is drawn.

Comments

Because the marks on the tiles form the connection line and tiles must be placed adjacent to existing tiles, Lightning is closer to games such as Thoughtwave than Hex or Twixt. An unusual feature of Lightning is that the players play to accomplish their objectives on separate boards. In nearly all board games the players share a

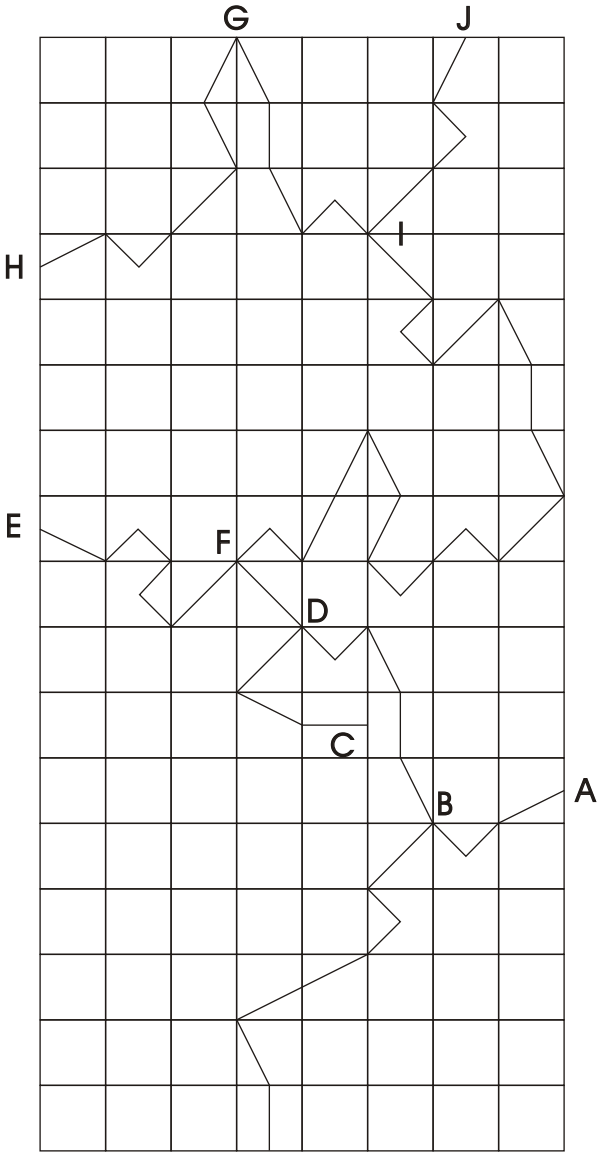


Figure 2. Example of a line

common board, although there are other exceptions, such as Salvo or Battleships.

The game of Lightning, while a connection game, is not a "pure" abstract strategy game since the tiles are drawn randomly. In addition, the only significant decisions to be made are which rotation to use for a tile when placing it on the board and when to play on the opponent's line. It really is more of a family game. When I first started thinking about the game, I thought it would make sense to play it more like Hex or Twixt, on a common board with a store of open tiles, allowing tiles to be placed freely anywhere on the board. After playing a couple of games, though, I do not think it improves the game to try to convert it into a pure abstract strategy game; play is enhanced by keeping the tiles hidden, and it plays nicely as it is.

The capabilities and powers of game pieces can have as much to do with the character and quality of a game as the rules of a game. In this respect, the only design element I might change would be the distribution of the tiles. A tile's "connective capacity" can be defined as the number of unique points where the line on the tile intersects the vertices or midpoints of an edge. All rotations of a tile are considered in determining this total. Tiles I, II, and V each have a connective capacity of four: Tile I has a connecting point at all four midpoints; Tiles II and V have connecting points at all four vertices. Tiles III and IV each have a connecting point at all four vertices and midpoints, a connective capacity of eight, twice as much as the other tiles. Tile V, in addition, is special in that the marked line connects a corner to an adjacent corner. I refer to the fifth tile as a "power tile" because the placement of a power tile accomplishes the same work in one move as a number of the other tiles. The disparity in the connective capacities of the tiles warrants an investigation of the distribution of the tiles.

Tiles can be generated for a game we may call Hex-Lightning. Simply take all possibilities where a single arc across a regular hexagon joins a vertex to a vertex, a side midpoint to a side midpoint, and a side midpoint to a vertex. Reduce the number of tiles by rotation. Optionally, some of the midpoint-to-midpoint tiles can be eliminated; the original game, for example, does not have a tile connecting midpoints of adjacent sides. Two power tiles can be created by joining vertices with an angled line. The resulting 11 tiles for Hex-lightning are shown in Figure 3.

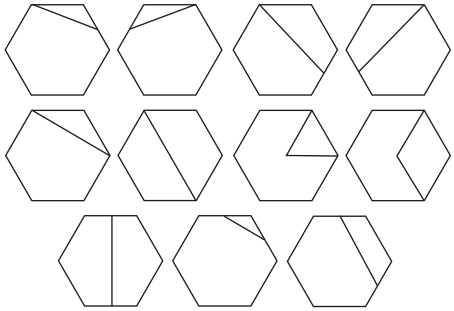


Figure 3. Tiles for Hex-Lightning

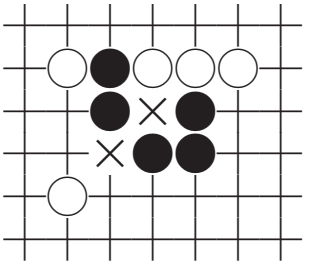
I have not yet played Hex-Lightning, but, with the larger number of tiles, the game may play nicely with a shared board and the freedom to place tiles anywhere rather than just at the end of a line.

The late 1800's and early 1900's produced some wonderful games, including Reversi, Halma, L'Attaque, and now Lightning. They pointed the way to new types of games and redefined the gaming landscape. As more research is conducted and more games or references to games surface, it will be necessary to revise the family tree of games. I hope you try playing the game of Lightning. I would appreciate any observations and comments you would care to pass along.

Also, I would like to extend a special thanks to David Galt (gamepiece@msn.com), inventor of the excellent new card game Space Dominoes, for his assistance with this article. ■

Jim Polczynski is an independent consultant in the Artificial Intelligence industry specializing in Knowledge Based Systems. He earned a master's degree in Computer Science from Villanova University where he completed his thesis on Game Playing Models. He also spent three years in the doctoral program in Computer Science at Leigh University. He lives with his wife and two of his children where he is restoring an old train depot to a bed-and-breakfast inn. He is at work on a computer system to automate the game invention process and also on a book unofficially titled A Modern History of Strategy Games.

Jim first saw Lightning at Sid Sackson's house when Jim was interviewing Sid to receive an annual award from the American Game Collectors' Association (since renamed the Association of Game and Puzzle Collectors). Jim immediately put Lightning on his "want list" and, as with everything else on this list, kept looking.



A Beautiful Move in Renju

by Ants Soosyrv

At first when I was asked to write an article about a beautiful move in Renju for *Abstract Games* I was quite uncertain. It seemed to be a hard task. I have only commented on Renju games for Renju players up to now. At the same time it seemed to be interesting and necessary to try, and it would be very nice to get some feedback to the article from the readers.

The concept of a beautiful move can be discussed and theorized about by Renju players. Since Black has the privilege to start the game, but has forbidden moves, Black also has a different playing style to White. Because of this, Black and White have different possibilities when it comes to a "beautiful" move. Generally, players who prefer to play Black mostly value impressive moves made by Black. Leaving aside the specifics that are caused by the different possibilities of Black and White, however, I can say that most of all I like active moves resulting in unexpected counter attacks. Secondly, I like calm moves which give unexpected solutions when all other alternatives lead to dead ends. I studied many games in order to find material for this article, but could not make up my mind. Then I participated in the Karepa Open 2000 tournament, in which one of my opponents made an unexpected move that I decided to use here.

The Karepa Open is quite an exceptional tournament. It is played at a quiet summer resort near the beach, in pleasant natural surroundings. Renju players often take their holidays at this resort, playing different ball games, swimming, and playing bridge and pentanque. Participants in the recent tournaments have often been very skilled Renju players, and the quality of the games is quite high in spite of the short time limits, thanks to the relaxing environment. This year we had many remarkable players taking part, mostly from Russia. The best result was obtained by Alexander Klimashin, a young man, just 19 years old. I see him as the main rival to the top Renju players right now, Ando Meritee and Shigeru Nakamura. I played with Alexander in the last round. I had slept only a couple of hours during the night before due to a long evening in the local sauna, but I was still ready to give it my best. My desire to win was increased by the fact that Alexander had won all his six games in the tournament thus far. Our game is shown in Diagram 1.

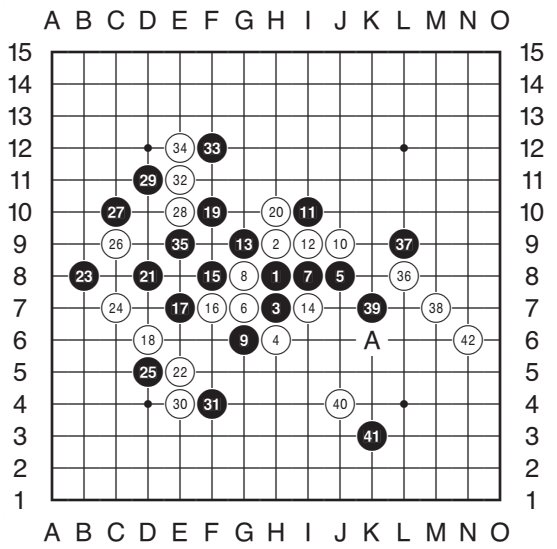


Diagram 1 -- Soosyrv-Klimashin 0-1

We played an opening variation which is quite popular now and is slightly favorable for Black. Move 15 is usually played at point A, but, knowing that Alexander was ready for that, I decided to play 15-15. My opponent's move 16 was risky, and gave me a wonderful opportunity to attack. 17(!) and 19(!) are easy, strong continuations. After move 20 I took a lot of time for thinking in order to find the way to victory. 21(!) is a move that I believed would accomplish this. The expected move from an average player would be 22-22 (Diagram 2) or E11. Both of these lead to wins for Black--if 22-22, there follows the win in Diagram 2, and if 22-E11, White has no defense against 23-E6. *(Readers may like to confirm this for themselves as an exercise . -- Ed.)*

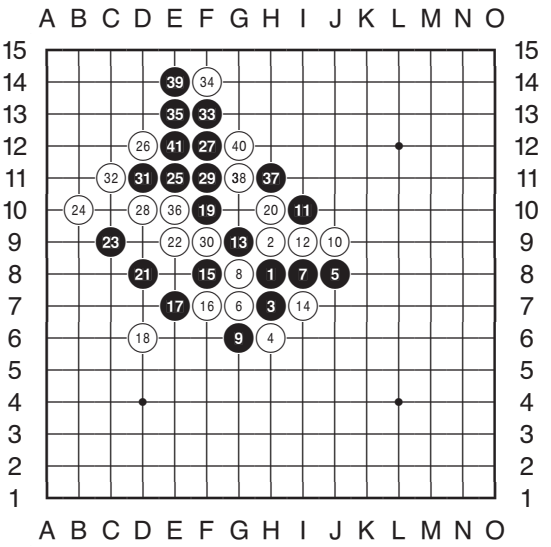


Diagram 2

I think that Black wins against all passive moves by White. Alexander found a really nice move, which inspired me to write this article –22(!), after which Black can no longer win right away. Let's see what happens if Black tries 23-23 (Diagram 3).

White defends 24-24 and gains tempo because of VCF *(Victory with Continuous Fours -- a winning combination in which one player makes a series of fours. -- Ed.)* at points 25 and 28. Black is therefore forced to defend somehow. The best defense is 25-25, but

White wins with 26-26. Black cannot close the three from above

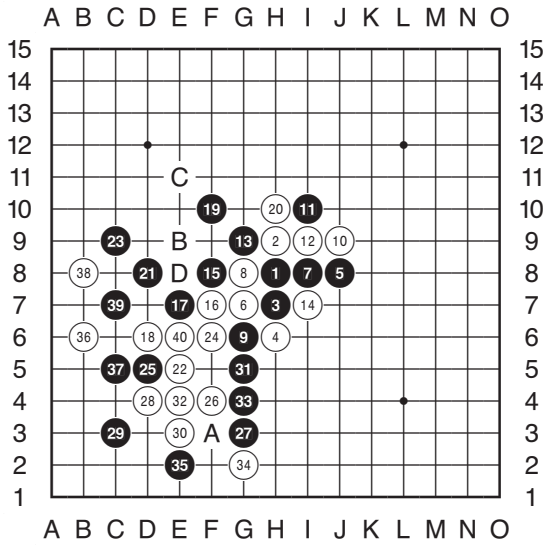


Diagram 3

because of a VCF – 28-27, 30-30, 32-29 and 34-A. If the three is closed from underneath (the move shown in Diagram 3) the sequence culminates in a prohibited 4-4 for Black, which is considered to be a remarkable win by Renju players. *(If Black defends on C6, it forms a rare 4-4 with the stones 29, 37, 39 and 23. -- Ed.)*

23-B does not work because White blocks Black's three by making a three of his own with 24-39, and Black again has no good continuation. Simply 25-38 is not possible, because of White's VCF 26-26, 28-31 and 30-25. Black can block the three after making fours (25-C, 27-D and 29-38), but now Black has used all his potential and is still forced to defend against White's VCF. But in addition to this, White threatens to win by forcing Black to make a forbidden 3-3 at point 23. There is no effective defense against these threats because after 31-31, which defends against both White's VCF and the forbidden point, White simply blocks with 32-24, and Black can do nothing. So, the best move 25 for Black is to block the three at 26 without giving extra chances to White by playing the fours. Now it is White's turn to be careful because without a definite plan he can lose the game quite easily. The best continuation probably results from 26-C, although afer the sequence 26-25, 27-40, 28-23 White would be safe from threats on the E file in case Black did play a four and took C. (Black, as you know, cannot put more than five stones in a row, so the vertical line on the E column is harmless.)

Of course, Black can play 23-39, but that lets White take the very important point B without Black being any better off since he lacks good chances to attack. Therefore, I would have to choose between two passive moves: 25-25 and 25-31. The Russian players analyzed 25-31 quite profoundly after the game, and they thought that it was probably the winning move. According to their analysis, the benefit of this move is that Black would get control over the lower side of the board, which is rather uncomfortable for White to defend. However, I think there is no forced win for Black, and the actual continuation of the game was not so bad.

The move 23-23 in Diagram 1 gave Black a VCF, 24-24 was the only defense, and 25-25 maintained Black's initiative. Certainly I should not have lost the game, but 33(??), a move made in time trouble, caused me a loss of tempo. Now White could move first on the right side, and I continued in a way that made it possible for Alexander to win by forcing me into a 4-4 at point A. *(Again, readers may like to confirm this for themselves as an exercise. -- Ed.)*

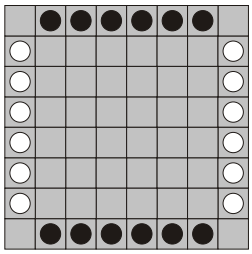
Let us return to move 22. I have tried to explain the strength of this move, which in mental games has a certain, but not exact, correspondence to beauty. The most beautiful move is not necessarily the strongest, although it is true that in many cases they are equivalent. When it comes to beauty, 22-31 is another candidate. It is more difficult to define beauty than it is to define strength, of course. Even rather new Renju players can understand with the help of diagrams why one move is strong, necessary and good. Beauty, on the other hand, is controversial, and people often have different opinions. Nevertheless, I would like to point out some things that I find beautiful about the current move.

Firstly, it is placed a little away from the black stones, almost as if it is ignoring them. Sometimes beginners make rash moves away from their opponent's stones, but they often lose rather quickly afterwards. Secondly, the move that I am describing here makes a very nice structure: White has constructed a pair and a stopped broken pair, and seems to have gained domination over the lower side of the board. Now we come to a third aspect of Renju moves: the idea behind them. A diagram is given of a position in a mental game not only to show a visually beautiful move, but also to demonstrate a certain concept or calculation. The idea behind this move is a magnificent counterattack, epitomizing the saying, "The best defense is attack." Of course my opponent had brilliantly calculated the variations, and it did not happen by chance. The fourth point, which is rather subjective, is that the move was unexpected. My opponent managed to surprise me and made the game very difficult. Nevertheless, I appreciated the surprise, and I felt that I enjoyed the game. I was also lucky not to care too much about the result. This never happens in the World Championship, for example-- nerves can disrupt the enjoyment of games!

It is time for me to stop as I feel I have said enough about this topic for now. I would welcome any feedback from the readers, and I wish good luck to other writers on the topic of "A Beautiful Move...." ■

Ants was born in Tallin, Estonia. He has been a teacher of Renju at the Tallin Hobbycenter "Kullo" since 1989, and he has taught bridge for beginners since 1993. He started playing Gomoku in 1985 and switched to Renju in 1987. He obtained fifth place at the Renju World Championship in 1997 and 1999 and was third in the Renju European Championship in 1998. Ants is also the editor of Renju World magazine.

Most readers will know that Renju is a five-in-a-row game in which there are certain restrictions on Black (who moves first). Black is prohibited from forming a double three, a double four, or a line of more than five stones. The concept is simple, but the precise description is complex. As with Chu Shogi in AG4*, therefore, we are making an exception with Renju and not presenting the full rules. The full rules are available on the Renju International Federation website at http://lemes/renju/. Recommended books are* Five-in-a-Row (Renju) *by G. Sakata and W. Ikawa (The Ishi Press: Tokyo, 1981) and* Renju for Beginners *by A. Nosovsky and A. Sokolsky (RIF, 1990). The latter is available from Tommy Maltell, President, Renju International Federation, Box 249, S-551 14 Jönköping, Sweden; email: tommy.maltell@lemes.se. There are many opportunities to play Renju on the Internet, including Richard's PBeM server at http://www.gamerz.net/~pbmserv. Renju was developed in Japan, but the most active areas in the world for Renju are now Scandinavia, the Baltics, Eastern Europe, and Russia. It also appears to be rapidly expanding in East Asia. -- Ed.*



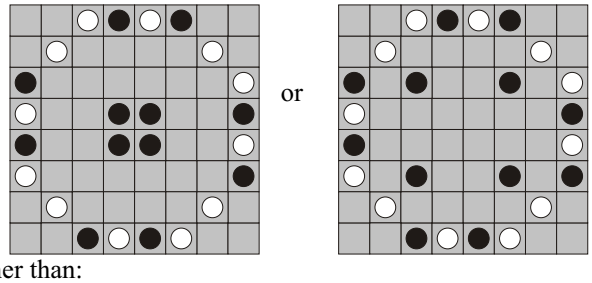
(See AG1 for rules.)

Lines of Action

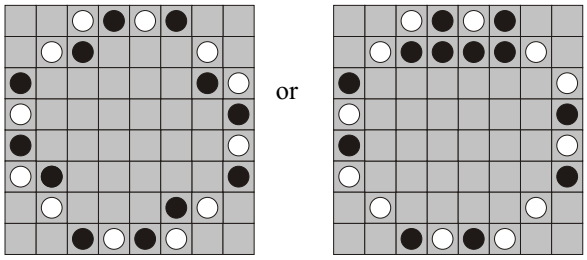
Strategic Ideas -- Part 4

by Claude Chaunier
with Kerry Handscomb *(in italics)*

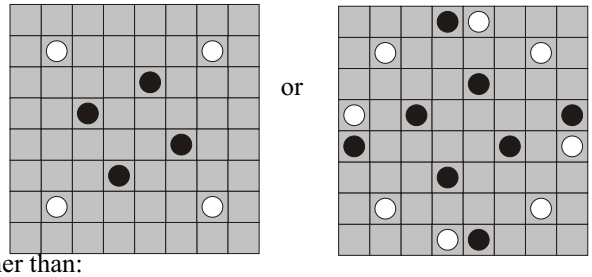
In the opening of the game, when the center of mass of the pieces is still the board center, the LOA strategy that I prefer involves control of the third rank and (if possible!) the center four squares of the board. One way of expressing this is that I like to settle down in the middle of my opponent's formation. As Black, therefore, I prefer:



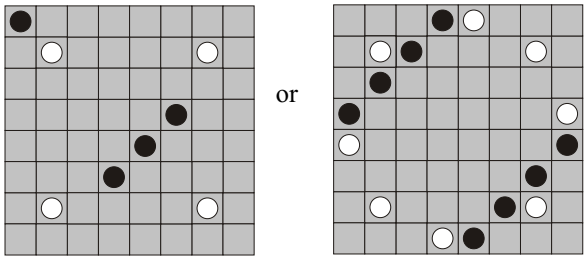
rather than:



Also, I like to get the distribution of distance between pieces in my formation uniform. As Black, therefore, I prefer:

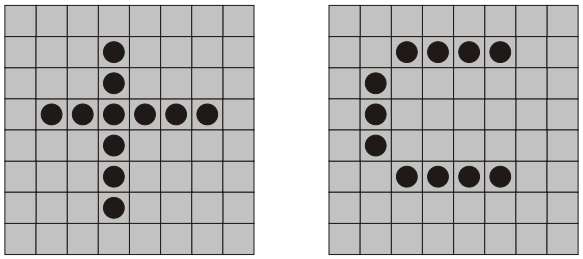


rather than:



(Claude's strategy may differ from the LOA strategy outlined in AG1-3 *in its emphasis of the importance of the center. However, the desire to take up a position in the middle of the opponent's formation is equivalent to the blocking strategy. Aiming for a uniform distribution of pieces has no equivalent in the strategic framework developed so far. In fact, it is actually antipathetic to some of my ideas. For example, I always will aim to connect as many pieces as possible as fast as possible into a compact focal group, and then worry about the remaining stragglers later. Each of these stragglers is usually no more than two moves from connecting with the main group anyway; more importantly, they can often be valuable attackers if they can shift around to target weak points in the opponent's position. Claude's strategy, on the other hand, would appear to involve bringing one's pieces to connection at a uniform pace, avoiding leaving stragglers where possible. According to Claude, his strategy is useful for combating a wall built with a foundation on the second rank because he may have double threats, unexpected moves, and flexibility. Claude says of his style, "It's a feeling hard to argue for, something almost mystical…. It might be similar to the need in Hex to put pieces spaced out here and there instead of… an early obvious connected line, and also similar to an advanced style at Go.")*

In addition, I prefer to connect through pivots (left) rather than along arched curves (right):



(This may be considered roughly equivalent to aiming for a compact position rather than a strung-out position.)

Here is a game played between Kerry and myself in October and November of 1999.

CC	KH
1. c1c3	

This is my favorite first move because it is the most central and the most ambiguous. It follows an idea borrowed from Go and Hex -- a single piece is more useful at a distance of two from an opposing group than in contact with it. (It does not block more, but it keeps active in more ways.) This move may be complemented with the symmetric move c8c6 to double the indeterminacy and isolate the left edge a little more; it is part of a small wall after b1b3; and above all it allows the fast, strong combination 2. e1b4, 3. f8c5.

1....	a5c7

This move directly answers two of the threats I mentioned, starts to escape my vague blockade, and prepares a wall in contact with my own pieces. I usually do not mind such a wall because it is a static and easily identifiable target -- I have time to think about it and prepare something against it throughout the game; also it is off-

center, so it yields fewer flexible ways to connect than central pieces, and I have more room to aim at it. However, it prevents many central moves of mine for a long time, and to break it I need to move from the center to the edge, with the inelegant consequence of getting myself off-center with a clump on the edge. (See move 5....e6:b3 for an excellent example of this.) So let us say a wall in close to the edge is a matter of delicate balance and personal taste.

2. b8b6

This is often a move to make sooner or later, to free and reactivate that cornered piece. Also, it prevents Kerry's move a6c6.

2…. a7d7

The second brick, using a piece that had nothing else to do.

3. e8g6

This move is made to decrease the usefulness of Kerry's wall and to avoid getting too isolated early on in the game. I do not know which of e8, f8, or g8 is best to move first, nor where they should go. This time I decide to cross e8 and g8 to g6 and e6, respectively, and experiment with a wall myself.

3…. h3e6

A fast move, and the best square reached by either of us so far. I should perhaps have played to e6 myself first. Kerry's position is now better than mine for centrality and connectivity and balance between the two sides. I feel, however, that wall builders take it to heart to defend static positions, and I may have the psychological advantage of attacking and provoking instability.

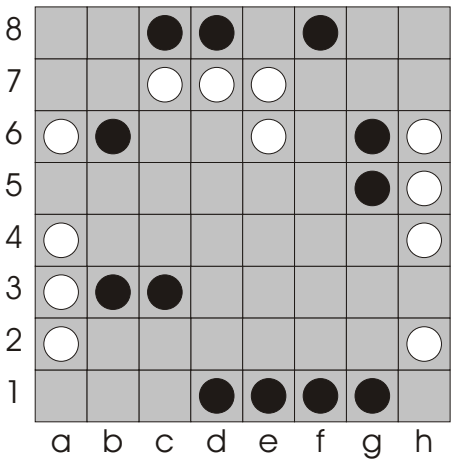
4. g8g5

I urgently need to get away from the edge, or Kerry will also be better placed for mobility. Kerry's piece on e6 is really annoying me, and I am severely isolated. I think my only choice is to reactivate my newly-blocked piece in this way.

4…. h7e7

The resulting shape is like a polyomino, already a strong clump. The piece on h7 has nothing else to do anyway, and one more brick threatens to occupy the middle of the third rank with a3d6, which would make the wall almost impossible to break. a3d6 also prevents the common attack d1d4. But I am going to attack along the diagonal I have just left. 4….a2c4 would have been better, preventing my coming attack, as well as preventing d1d4. (*I still prefer the move 4.…h7e7 because it presses down so hard on Claude's remaining 8th rank pieces and because of the threatened 5.…a3d6.)*

5. b1b3 (diagram)



Position after 5. b1b3

I could prevent a3d6 and make my own polyomino with 5. f8f6 and 6. g1g4, but I prefer an open position to a fixed, off-center connection. So here it is, my first attack. Since I cannot move e1b4, and Kerry's a2 piece is still home, I like the small fence made of b3 and c3. It is awkward for the other player to go around it. If ever an opponent lets me build two such fences, he will have big problems!

5…. e6:b3?

A central piece capturing a central piece is usually equivalent to a normal developing move, but in this case, b3 is less central than e6, it is not where Kerry wants to build a group, and the piece moved now has almost no function, while it was constantly useful on e6. Now my overall position with regard to the center is better. This a good example of what I mean when I said after 2. a5c7 that attacking a blocking wall is not always profitable. Maybe Kerry had better put up with my fence and make the slow move 5….a2c2. (*I agree with Claude that this move is a bad error. Liberating the piece on a2 while gaining material does not compensate for the loss of position. Another alternative to 5.…a2c2 is 5.…a6c4. Claude's next move destroys my position.)*

6. g1g4!

(There is nothing I can do to defend d7 and the remnants of my wall. I have to shift to a different strategy, so I decide to go for material gain in the hope that in the long run the greater flexibility will enable me to retard Claude's connection.)

6…. a4:d1

I no longer need d1 as ammunition because of g4:d7. I think this move is helping me by removing an outlying piece while increasing the diameter of Kerry's formation, yielding too big a difference in the connection race to compensate for the gain of a piece.

7. g4:d7 a6:c8?

This is another questionable capture of an outlying piece. In the current position the center is free of obstacles, I have more influence there, and Kerry has almost four more pieces than me to get off the edges. (*I agree. Surely 7.…a3d6 immediately, or even 7.…h5f3, is better.)*

8. f1f3 a3d6

This is a fine budding construction, which immediately allows the further connections d1d5 and h2e5, and gives some more sense to the last capture on c8, surrounding my top pieces. But early threadlike artistry is fragile -- one serious argument in favor of the spread style rather than the blocking style.

9. b6c5

An immediate punishment with a cruel double threat! (*Actually I believe the exchange c3:c7 for d6:g6 may be advantageous for white as it frees up the piece on h5 to make a strong move.)*

9…. d6:g6

10. e1g3

When I can I develop with a threat…. (*And it blocks h2.)*

10…. h5f7! (diagram)

Perfect move with multiple effects! (*I am now looking at building another compact focal group, centered around e7-f7-e6-f6, driving a wedge between Claude's pieces at the top and center-right.)*

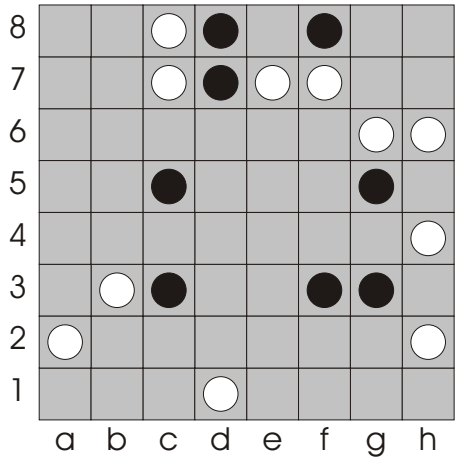
11. c3:c7 h6f6

12. f8:c8

I help Kerry to get rid of his isolated piece, but I saw a scenario where f8 was trapped on the right. Instead, the current four-piece square gives me more freedom of movement, though limited by the edge, and keeps my formation without too many opposing pieces in it.

12…. f6d6

Kerry immediately answers by bringing a piece into my formation because my pieces are getting dangerously close to each other. (*I really wanted to move 12….b3e6, finally retaking the square that I*



Position after 10....h5f7

vacated on the disastrous fifth move, but after 13. g3d6 Claude is far ahead in the race to connect. I had no choice but to block instead, even though it leaves my main group strung out. Claude, however, has a much more effective block himself on his next turn, which effectively wins the game.)

13. c7c4

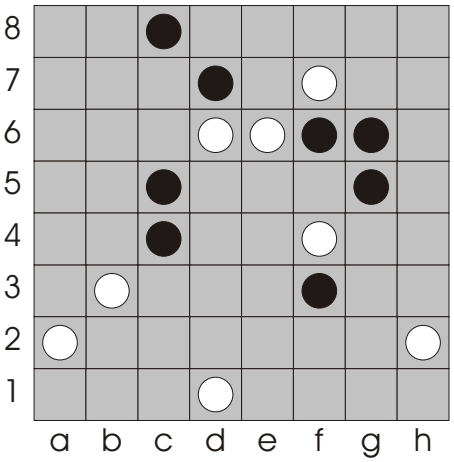
This blocks Kerry's pieces on a2 and b3 and uncovers a threat. This diagonal blockade will be crucial until the end of the game.

13…. h4f4

14. g3:g6 e7e6

(Again I am prevented from making the move I would really like, 14….h2e5, by the necessity to block Claude -- if 14….h2e5, then we may expect something like 15. c8e6 e5f6, 16. g6f5 f6e5, 17. f3e4+, and white cannot defend. This move at least keeps up some kind of wedge between Claude's pieces as well as threatening f7:d7.)

15. d8f6 (diagram)



Position after 15. d8f6

The benefit of captures is becoming more and more uncertain: they can help connection if the captured pieces are off-center. Here f7 is not in my way and it is far from the center of mass of Kerry's formation. Combinations starting by capturing on f7 and involving similar captures would get Kerry dangerously close to connecting. I prefer to increase my presence in the middle.

15…. f7:d7

(Perhaps 15….h2e5 would have been better, but I think not. At the time this game was being played I was heavily analyzing every move, looking for any way to wriggle out of the coming defeat. For example, if 15….h2e5 then 16. d7:f7, threatening c8:e6. White now has a number of possible moves, including e6g4, d1:f3, d1d3, and b3d3. None of them works. If for example, 16….e6g4, then 17. f3e4 , and black will continue to cut white to pieces in the center while holding off a2 and b3.)

16. c5e5

I did not want h2 to move into my very center. Furthermore, the line c8-c5-c4 was a bad pattern, preventing the move of c8.

16…. d6c5

This offer to trade allows h2 to move right where I did not want it, but maybe 16….d1d4 would have been better. (*I do not think 16….d1d4, works either, because of 17. c8c6+ h2h1, 18. g6f5 d6c5 -- preventing 19. g5d5, after which white is defenseless -- 19. f5e4+ d7d5, 20. c6b5++ and white has no defense.)*

17. c8:c5 h2:e5

My formation is getting more compact, flexible and energetic than Kerry's. Kerry's three pieces in my convex hull are easily attacked by one of my six pieces after one move, while c4, one of my two pieces in Kerry's convex hull, is more solidly anchored on Kerry's populated diagonal.

18. f3e4

This is a double threat, and brings one more of my pieces between Kerry's pieces. The game is over.

18…. f4:f6

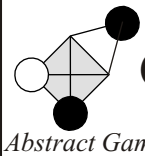
19. g6g4 d1d3

20. g5f4+ e5:c5

21. f4e3++ b3b4

22. g4f3+ Resign

(These stark differences in style -- the importance of the center and a uniform distribution of pieces -- are indicative of the flexibility and depth of LOA.) ■



Game Tournaments

Abstract Games will be conducting tournaments in the following games:

Kyoto Shogi (rules of play in *AG1*)

Onyx (rules of play in *AG4*)

(A printout of an Onyx board can be sent by regular mail or email if required.)

Entry to either of the tournaments is free to subscribers of *Abstract Games* and is US$5.00 for non-subscribers.

Play is to be conducted by email or by regular mail. Players using regular mail should reply within one or two days of receiving a move. Players using email are expected to reply to a move within one week.

Organization of the tournaments will depend on the number of players, but the maximum number of games played concurrently in either of these tournaments will not exceed six.

The deadline for entry is 15 March, 2001.

Any disputes will be arbitrated by *Abstract Games.*

Entries should be sent to:

Abstract Games Tournaments
Box 33018, 1583 Marine Drive
West Vancouver, BC, Canada V7V 1H0
email: conniekerry@sprint.ca

The winners will receive a small prize

Kyoto Shogi and Friends

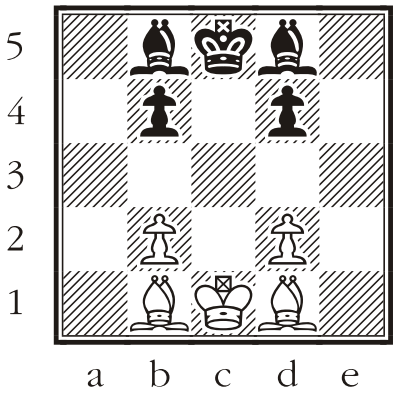
by Michael Sandeman

[See AG1 for Kyoto Shogi rules.]

Since beginning this series, I have had the chance to correspond with and meet the inventor of Kyoto Shogi, Tamiya Katsuya. Accordingly, a few additions and corrections need to be made to the existing material. Before dealing with these I will introduce four games that have a resemblance to Kyoto Shogi and, as I feel the inventors are inseparable from the games, make a few remarks about the designers of these games. I wanted to find a psychological characteristic that I could point to as common to the various inventors, but the best I can do is to say that they all enjoy walking in the mountains.

The literature of these games is necessarily small, but I have been fortunate in receiving game scores from the various inventors and from enthusiast Giuseppe Baggio, so I will offer one sample game of each variant.

In 1996 Rob Nierse of the Netherlands published a small Chess variant with features of Kyoto Shogi on Hans Bodlaender's Chess Variants website at http://www.chessvariants.com/small.dir/patricia.html. The game was composed with no awareness of Kyoto Shogi. Rob's idea was to try to design a game for the smallest possible board. Patricia, named after Rob's wife, is played on a 5x5 checkered board, black in the corners. Each side has three species of piece, one royal piece, two major pieces and two minor pieces. By utilizing the transformation principle, that a piece changes value every time it moves, Rob has managed to include all Chess values. Royal pieces transform king/queen; major pieces transform bishop/rook; the minor pieces do not transform, but promote (pawn to knight), optionally at the fourth rank, compulsorily at the fifth. The objective is to capture the opponent's royal piece. The following diagram shows the opening position:

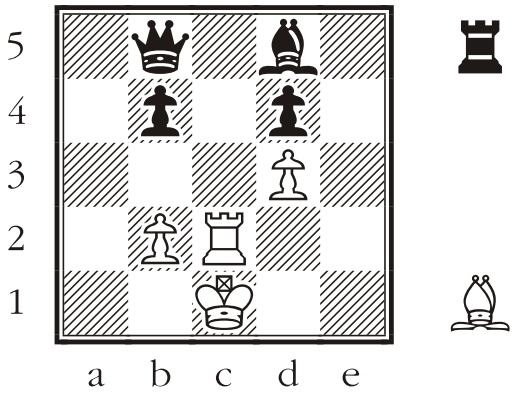


Captured pieces change color and are available to be dropped by the capturer as a subsequent move. (If Chess pieces are used to play Patricia, two Chess sets may be required.) The game differs from Kyoto Shogi in that captured pieces must be dropped in the same state as they were in when captured. Rob has adopted the Shogi convention that it is not illegal to move into or leave a king (royal piece) in check, and a stalemated player will therefore lose. There are no restrictions on the placement of pieces when dropped. Patricia has the extraordinary feature that the royal piece (queen) of the player may safely check the royal piece (king) of the opponent.

Rob has some remarkably original ideas for game variants, but recently, from lack of opposition with whom to play-test new games, he has been concentrating his creative energies, instead, on constructed languages, or 'conlangs.' Conlanging is the practice of devising languages, often for purely personal pleasure. It is an idea that I particularly like, devoting years to building up a language that nobody (usually not even the inventor) will ever really speak. The creative possibilities in conlanging are fascinatingly attractive.

Here is a sample game of Patricia. The notation used for Patricia is that of Chess.

1. Bd1-c2=R	Bb5-c4=R
2. P-d3	Rxc2=B
3. Bxc2=R	K-b5=Q (diagram)

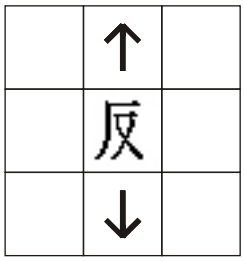


Position after 3....K-b5=Q

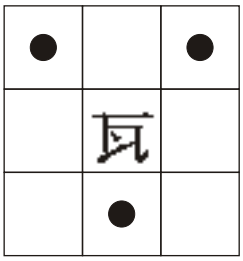
4. K-d2=Q	P-b3
5. B*c4	Bxc4=R
6. Rxc4=B	Q-c5=K
7. R*b5 mate	

Nana Shogi was published by Georg Dunkel on his personal website at http://www.kolumbus.fi/geodun/welcome.html in 1999. From around 1980 Georg has been experimenting with the idea of producing the smallest possible playable Shogi variant. Georg employs three pieces per side, one king, one orthogonal piece, and one diagonal piece, on a 3x3 board. The pieces are cube-shaped. Apart from the kings the pieces transform cyclically through four stages. The piece values used are taken from various

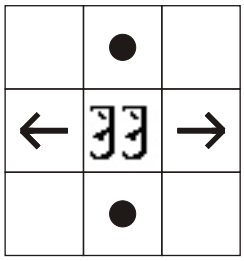
older forms of Shogi. The orthogonal piece transforms in the order rook, chariot, swallow's wings, go-between, then back to rook. It will be noticed that all these pieces display symmetrical moves. The diagonal piece transforms in the order bishop, tile, cat sword, dog, then back to bishop. Readers will be familiar with the moves of the king, rook, and bishop. The others have the following moves, where an arrow represents any number of unobstructed squares in that direction, and a dot represents one square in that direction.



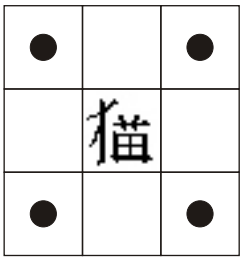
Chariot



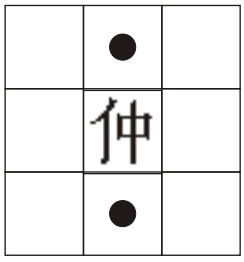
Tile



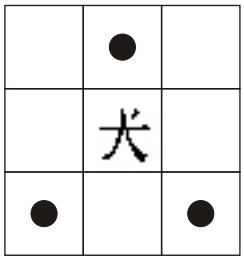
Swallow's Wings



Cat Sword



Go Between

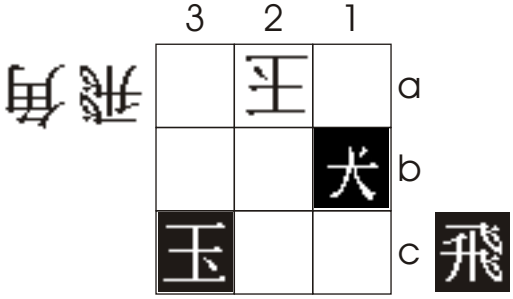


Dog

Nana, named after Georg's daughter and in line with the descending sequence mini, micro to nano, but femininized, has several striking features. Initially, the board is empty and the first move by each player is the drop of his king. After this a piece on the board may be moved or a piece may be dropped from hand. Pieces may be dropped in whichever state is desired, the only restrictions being that pieces cannot be dropped on the center square or to give check. The only other rule is that checkmate may not be effected when the mating player has anything in hand. As the game is so small, it has very little positional structure, but the multiple transformations and possibilities for drops can lead to difficult and amusing play.

Georg recommends that Nana be enjoyed with a friend while drinking beer or coffee under a tree in the sunshine, attracting curious strollers to engage in this mysterious pastime. Georg Dunkel can be considered to be the main promoter of small Shogi variants in the English language. (It was by Georg's introduction that I first became aware of Kyoto Shogi.) At his website it is possible to play both Nana and Poppy Shogi. Georg also launched the Helsinki open email championships in these games in January 2000. Perusal of Georg's website will introduce the range of his activities and interests, from gardening to cluster headaches, though some sections will be difficult for those unfamiliar with Finnish. Here is a sample game of Nana Shogi.

1. K*2c	K*3a
2. T*1b	B*1a
3. GB*3c	Bx3c=T
4. Kx3c	C*1a
5. CS*2c	R*1c
6. Tx1c=Cs	Cx1c=SW
7. SW*1b	SWx1b=GB
8. CSx1b=D	K-2a (diagram)

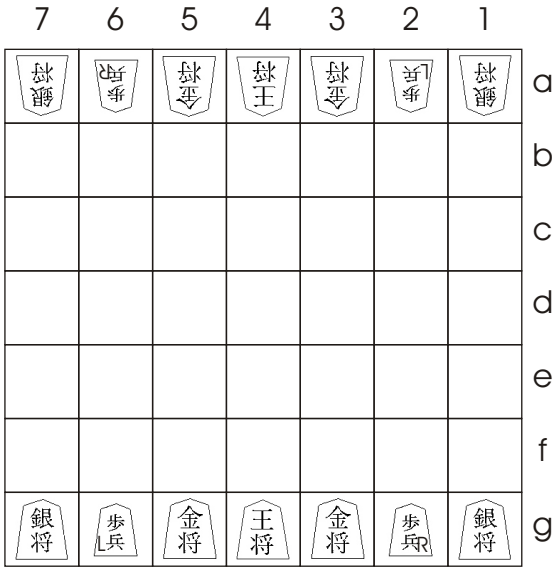


Position after 8....K-2a
(The black and white colors used in Nana Shogi diagrams are for clarity -- actual Nana Shogi pieces are all the same color.)

9. SW*3b	T*1c
10. D-2c=B	R*1a
11. SW-2b=GB	K-3a
12. B-3b=T	T-1b=CS
13. GB-2c=R	CSx2c=D
14. Kx2c	GB*1b
15. K-3c	GB-1c=R
16. D*2c	R1a-1b=C
17. Resign	

In 1999 the rules for Renge Shogi were published by me on Pieter Stouten's Shogi discussion list. I designed Renge Shogi under the influence of Kyoto Shogi and incorporated some ideas that had come up in discussions with Georg Dunkel. I had been struck by the breadth of positional type available in Kyoto Shogi despite the small board and small number of pieces. I concluded that, apart from the transformations, a major factor in this breadth was the low piece density of 40%, compared to 50% in Poppy Shogi and 48% in Mini-Shogi. I wanted to extend this feature. Also, in an attempt to reduce the possibility of one-sided games, I wanted to experiment with shared pieces.

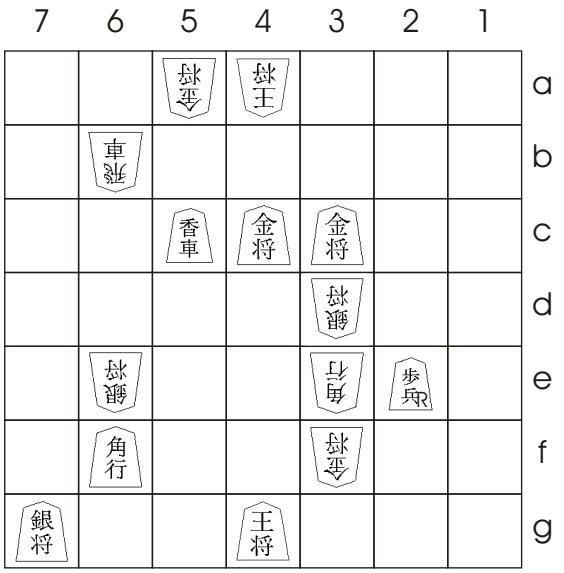
Renge, named after a small village in Japan, and incidentally meaning 'lotus,' is played on a 7x7 board with seven pieces per side. The pieces are initially arranged as in the diagram. The rules are basically those of Kyoto Shogi, but with the transformations silver/lance, gold/knight, left pawn/bishop, and right pawn/rook. The Shogi restrictions on mate by pawn drop, the number of pawns per file, and pieces being placed into positions from which they have no further move do not apply. I have chosen to make draws by repetition illegal: if a player, by the same move, persistently brings about the same position, the opponent can, after issuing a warning, claim a win. The distinguishing feature of Renge is that pieces may be dropped from either hand, subject only to the restriction that a mate may not be immediately effected by dropping a piece from the opponent's hand. This feature entails a rethinking of the nature of threat. A material advantage can still be gained by capturing pieces with check, but in many situations capturing a piece is disadvantageous as the piece will immediately



Renge Shogi starting position: silver -> lance, gold -> knight, left pawn -> bishop, right pawn -> rook.

be dropped by the opponent. Although there are generally less moves available than in other Kyoto-type games because pieces do not accumulate in hand, there are plenty of moves to consider as conventional threats can be ignored. In the notation I indicate a drop from the player's hand by '*' and a drop from the opponent's hand by '#'. Here is a sample game.

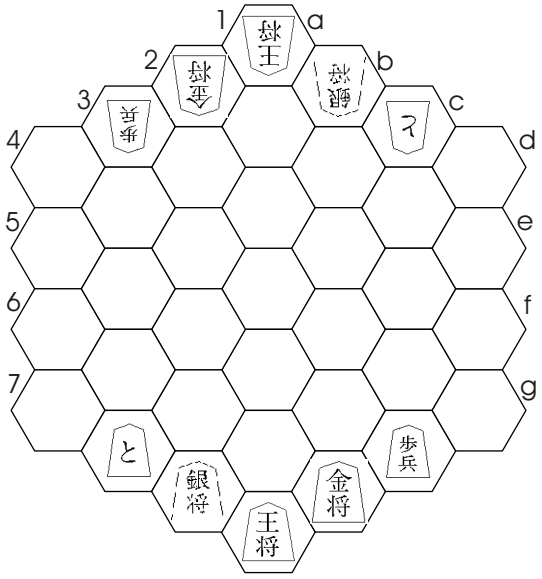
1. S-2f=L	P-2b=B
2. Lx2b=S	B#3e
3. G-2f=N	G3a-4b=N
4. N-3d=G	Nx3d=G
5. G#4c	Sx2b=L
6. L#5c	S-6b=L
7. P-6f=B	L-6e=S
8. P-2f=R	L-2e=S
9. G-5f=N	P-6b=R
10. N-4d=G	G-2d=N
11. Rx2e=P	S#4e
12. Gx4e=N	S#3d
13. N-3c=G	N-3f=G (diagram)



Position after 13....N-3f=G

14. Kx3f	G#4f
15. K-2g	Sx2e=L
16. K-1f	R*1c
17. Kx2e	S#2d
18. K-3d	Sx3c=L
19. Gx3c=N	Rx3c=P
20. Kx3e	B#2d
21. Kx2d	B#1c
22. Kx1c	L#1b
23. K-2c	B#3d
24. K-2d	G*2e
25. Resign	

In 2000 Jochen Drechsler of Germany published, independently on the Internet, his Hexagonal Kyoto Shogi. As the name suggests, this game is inspired directly by Kyoto Shogi. Jochen has placed the original Kyoto Shogi pieces on a regular hexagonal board. The opening position is shown in the diagram.



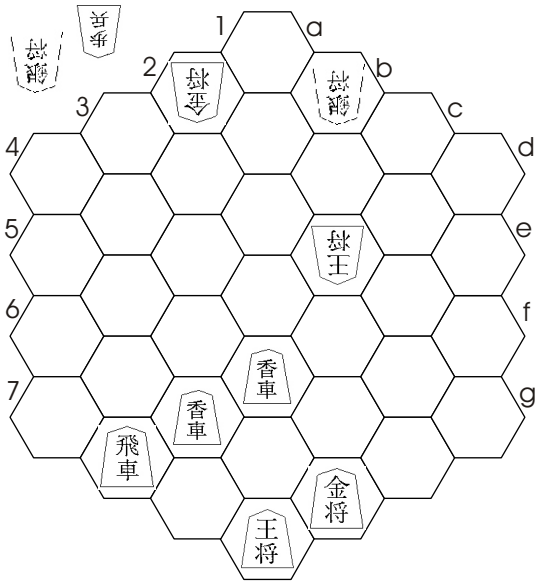
Jochen employs a simple operation to translate piece function from the square to the hexagonal environment. Kyoto pieces are used with full connections along the sides of a cell considered to be orthogonal, and radial connections from the angles of a cell considered to be diagonal. For example, a knight on 4d can move to 2a or 1b; a silver on 4d covers the cells 3b, 3c, 2c, 5c, 3e, 6e, and 5f; and a gold on 4d covers 3c, 3d, 4e, 5e, 5d, 4c, 3b, and 2c. Only the knight may jump, but diagonally active pieces may sneak between orthogonally adjoining pieces. Thus, if there were enemy pieces on 3c and 3d, the silver on 4d could move to 2c unobstructed. [*This system is the same as that used for Glinski's Hexagonal Chess. -- Ed.*] Jochen has a web page for his game at http://home.nikocity.de/galgenberg/Hexagonal-Kyoto-Shogi.html.

It is a beautifully conceived game and the only hexagonal version of a chess-type game that I have yet found to be worthwhile. The board seems rather large, but this is compensated for by the greater mobility of the pieces. The total number of moves available to optimally placed pieces in Kyoto Shogi is 68% of that available to Hex-Kyoto pieces, while the board is 67% of the size, a remarkable correspondence. The piece that gains most by conversion to the hexagonal is the *hifu*, second is the king. This greater activity of the king gives the game a further distinct feeling.

Jochen is not new to game design; he has had two games, Rhombix and Die Eroberung von Morundir, published in the

German magazine *Spiel und Autor*. Jochen also has invented a large Shogi variant for play on an 11x11 Wa Shogi board. Named Dragon Shogi, it draws on Wa Shogi, Chu Shogi and regular Shogi. Details of these games will be appearing on Jochen's website at http://home.nikocity.de/galgenberg/. Here is a sample game of Hexagonal Kyoto Shogi:

1. T-6e=L	P-4b=R
2. S-5e=B	T-2c=L
3. L-5d=T	L-4e=T
4. P-4f=R	Tx5e=L
5. Tx5e=L	K-3b
6. Rx4b=P	Kx4b
7. R*7e	K-4c
8. L*6e	K-3d (diagram)



Position after 8....K-3d

9. Lx2a=T	Sx2a=B
10. R-7f=P	B*5c
11. G*6e	B-4b=S
12. Gx5c=N	Sx5c=B
13. S*6e	K-4e
14. Sx5c=B	G*5f
15. K-6e	R*5d
16. K-7e	T*6d mate

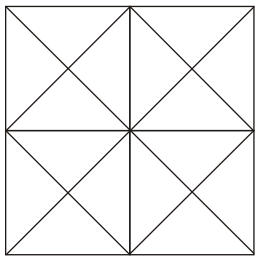
Kyoto Shogi was published in 1976 by Tamiya Katsuya in the magazine *Shogi Puzzle*. *Shogi Puzzle* was a private publication of Tamiya's that ran from the mid-seventies into the eighties. Kyoto Shogi sets were initially produced to be awarded as prizes to successful solvers of the magazine's puzzles.

Since writing the first article of this series, I have been able to consult with Tamiya on the specifics of the rules as he intended them. I claimed that repetition of position would lose for the player bringing about the repeated position. However, Tamiya prefers that such a case would be a draw. This rule is subject to review if playing experience suggests it is better changed. Another rule concerns the kings: Tamiya writes, "Exposing the white belly loses," meaning that inverting the king, intentionally or otherwise, acts as resignation.

When designing the game, Tamiya wanted each piece to have both a single-step move and a long-range move, with the short-step form active in the initial position. Apart from this constraint the primary consideration in the design was that the game have a name that would function as a mnemonic sentence. It seems quite fortuitous that we ended up with the game as it stands. In my explanation of the piece names in *AG1*, I was at a loss to deal with the *hifu*. It turns out that my source had given a different, homophonic ideogram, or *kanji*, from that used by Tamiya. My source gave *hi* with the implication of 'secret,' whereas Tamiya intended the implication 'flying.' *Kinkei* also has its intended meaning in *kinkeichou*, a golden bird from Chinese mythology. The full name *kyoutoginkakukinkeihifu,* therefore, suggests watching a *kinkeichou* flying in the grounds of Ginkakuji, a famous temple in Kyoto. Having become somewhat better acquainted with Tamiya over the months, this way of constructing the game now strikes me as rather typical.

Tamiya has designed several other games, notable among those mentioned to me being Go variants played on grids with three- and six-point connected intersections. As I am not a Go player, I was unable to test these games and cannot comment on them. Tamiya has also devised a simple dice Shogi, with four piece values on each face of a conventional die.

Many of Tamiya's creative endeavors seem to be directed towards amusing children. He has made an interesting three-in-a-row game on the following 13-point board:

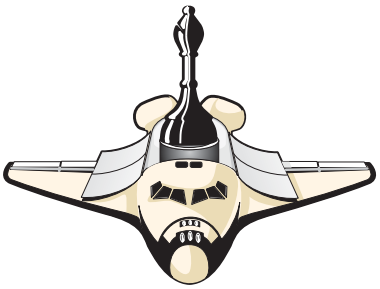


Each player has three pieces which begin on the back ranks and are initially considered to be sleeping. A turn consists of moving a piece to an adjacent intersection. Once a piece has made a move it is considered to be awake and can be used to form a line of three, the game's aim. Sleeping or waking states are indicated by inverting the pieces. Once awake a piece remains in that state for the rest of the game. The game is a win for the first player unless the first move is of the middle piece to the central point, after which, according to Tamiya, the result is undecided. The game therefore commences with this compulsory move by the first player.

Tamiya is well known in Japan as a composer of various puzzles, including *tsume* Shogi. He seems to be the only composer of puzzles currently active in at least two genres. His most distinctive puzzles are perhaps the 'knight's tours.' These are knight's tours on a Shogi board, but with obstructing pieces with idiosyncratic powers (marked on each piece) that can either be taken or moved depending to which side they belong. The puzzle concludes with the capture of a specified 'opponent's'piece. On the way between the start and finish positions, the various pieces line up to form the *kanji* of the name of the dedicatee of the puzzle.

Amongst Tamiya's other many and varied activities, he has founded an 'international cultural New Year's card exchange group.' As puzzles for these New Year cards he has composed long multiplication and division alphametics in the form of *kanshi*--poems restricted to Chinese characters. Two examples of these are at http://www.geocities.com/Athens/Agora/2160/Tamiya.html.

It's been fun writing these articles, but this is the end of the series. I look forward to hearing about any new additions to the Kyoto family. ■



(See AG4 for rules.)

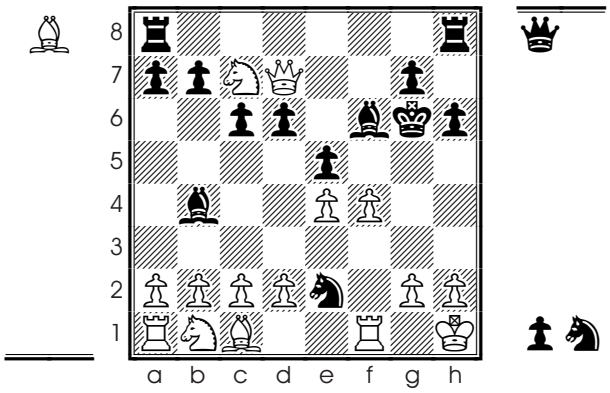
HOSTAGE CHESS

Part 2 — More Games

by John Leslie

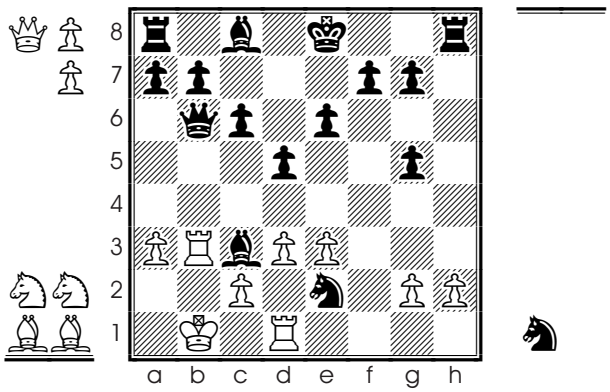
As explained in my earlier article, Hostage Chess uses the Western Chess board and pieces but has much of the flavor of Shogi, in which captured men can reenter the game. Players of the Western game might like to try Hostage Chess in preparation for moving to Shogi itself, a superb game enjoyed by millions in Japan and with a large literature. On the other hand, the large literature could be something that typical Western players would like to avoid: dismayed with how the openings in Western Chess have been analyzed so exhaustively, they may not want to move to Shogi, where the same situation is found! Hostage Chess, in contrast, is territory still awaiting detailed exploration. What is more, it seems fairly sure that, as is the case with Shogi, writing computer programs to play a strong game of Hostage Chess is much more difficult than it is with Chess. The possibilities of parachuting give such richness to Shogi that the experts rely on intuition as much as brute analysis. In Hostage Chess parachuting is almost as important.

Here is parachuting (or "dropping") in action. Try to find a mate in two for Black in the situation below, with Black to move.



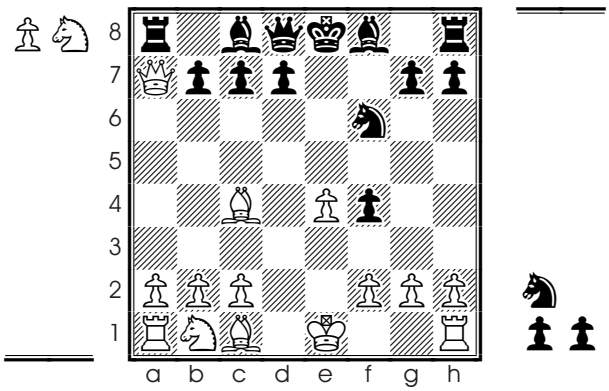
This is a case of what Western Chess players call "smothered mate": 1...Q*g1+, 2.Rxg1 (B-N)N*f2 mate.

Here is something just a bit harder. Black mates in two.



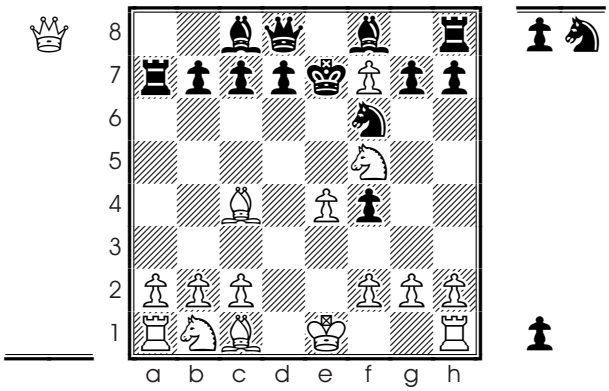
The solution involves what my usual opponent, Roger Smook, calls "a rampaging queen." When one player's queen has been captured, the other player's queen quite often can rush around the board wreaking destruction with impunity. If captured, it simply parachutes back with fatal effect. In the present instance the sequence was 1...Qxb3+, 2.cxb3 (Q-Q)Q*b2 mate.

Next, here comes a brief game. 1.e4 e5, 2.Nf3 Nc6, 3.Bc4 f5, 4.d3 f4, 5.d4 Nxd4, 6.Nxd4 exd4, 7.Qxd4 Nf6, 8.Qxa7 (diagram)



Position after 8. Qxa7

Is White mad? No, as the sequel shows: 8. ..Rxa7, 9.(P-P)*f7+ Ke7, 10.(N-N)N*f5 mate (diagram).

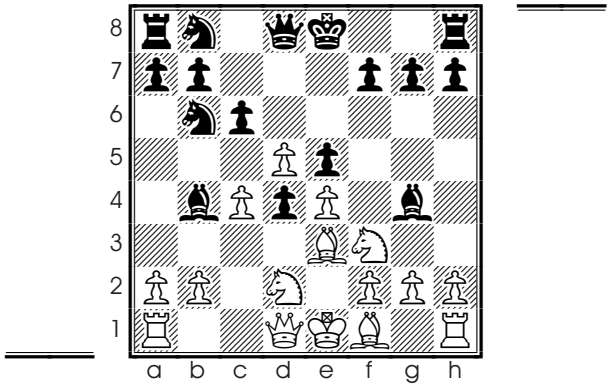


*Position after 10. (N-N)N*f5 mate*

Notice that after sacrificing the queen, White has a piece (namely, the queen) in his opponent's prison, a piece to which the pawn on square f7 could promote if it moved forward. This means that Black's king cannot escape by moving to that square.

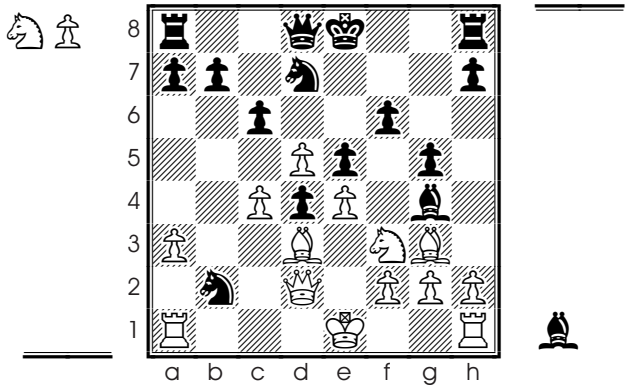
And now for a longer game in which, playing Black, I would have managed to beat Roger with the line shown. (In fact, I missed the simple mating sequence and suffered defeat.) 1.e4 d5, 2.exd5 Nf6,3.Nf3 Nd5, 4.(P-P)*e4 Nb6, 5.d4 Bg4, [White has fine

development, but Black's pawn on his airfield is worth more than it would be on the board.] 6.Be3 e5 [daring White to take the pawn, after which an exchange of queens could lead to such complexities that Black, although the weaker player, could well snatch a victory, particularly since Hostage Chess is like Shogi in the importance it gives to launching an attack] 7.d5 c6, 8.c4 Bb4+, 9.N(b)d2 *d4 (diagram). The black pawn reenters the game powerfully.



*Position after 9....*d4*

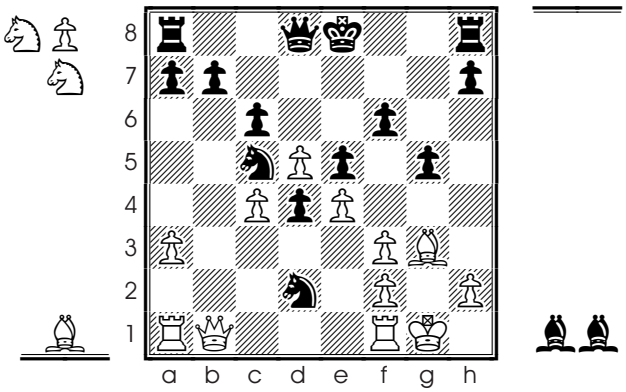
10.Bg5 f6, 11.Bh4 g5, 12.Bg3 N(8)d7, 13.a3 Bxd2+, 14.Qxd2 Na4 [White can now rescue and drop a knight at any time whereas Black can only rescue and drop a bishop. Since knight drops tend to be stronger than bishop drops, White may have profited here.] 15.Bd3 Nxb2 (diagram). A poor white move has been punished by a strong black one.



Position after 15....Nxb2

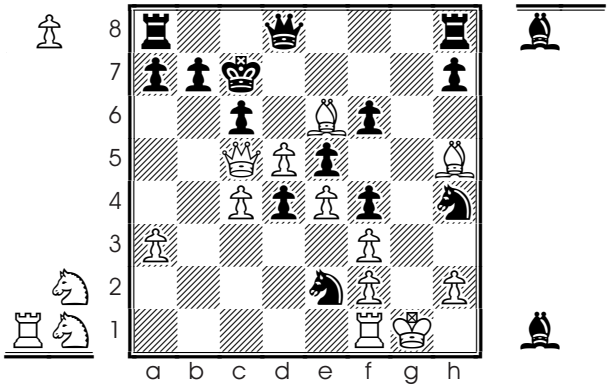
[White cannot now play Qxb2 without losing the queen through (N-B)B*c3.] 16.0-0 Nxd3, 17.Qxd3 Nc5, 18.Qb1 Bxf3, 19.gxf3 [Through this exchange Black has built up the numbers in White's prison so that he can now think of three pieces as available to him as parachuters whenever he feels inclined to "buy them back" by releasing the two knights and the bishop in his own prison. This puts him in a position to attack strongly, as his next move shows.] 19. ..(B-N)N*d2 (diagram).

> "...one dreamt about it afterwards, and the foul little pieces came and cursed you in your sleep and moved about all night with their crooked moves."
>
> "The Three Sailors' Gambit" -- Lord Dunsany



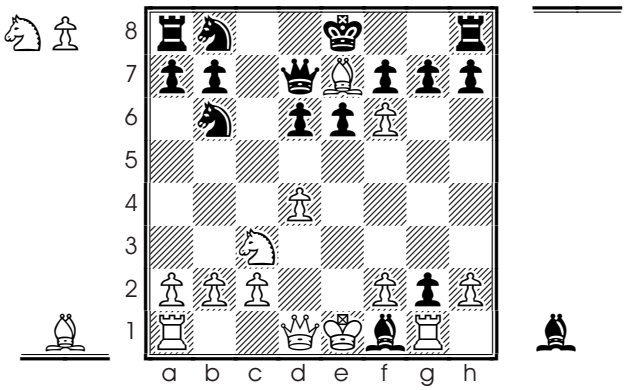
*Position after 9....(B-N)N*d2*

20.B*h5+ Kd7, 21.Qb4 Nxf1, 22.Rxf1 (N-N)N*e2+, 23.Kg2 Nf4+, 24.Bxf4 (N-N)N*h4+, 25.Kg1 gxf4, 26.(B-B)B*e6+ Kc2, 27.Qxc5 [a seemingly good move, regaining material equality, but in fact disastrous because the captured knight can at once return to kill the king] 27....(R-N)N*e2+ (diagram) 28. Kh1 B*g2 mate.



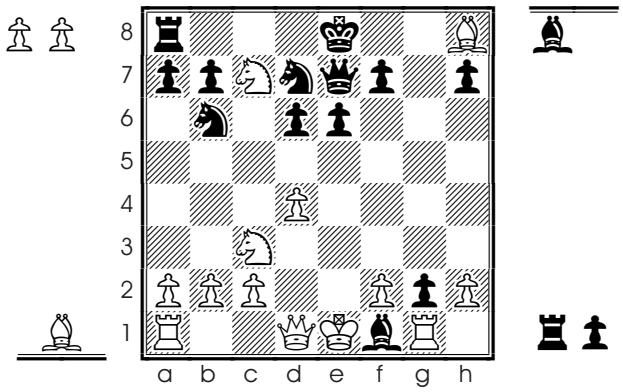
*Position after 27....(R-N)N*e2+*

Now for a game I truly did win against Roger. This time I had White.1.e4 Nf6, 2.e5 Nd5, 3.d4 d6, 4.exd6 cxd6, 5.Bc4 Nb6, 6.Bb5+ Bd7, 7.Bxd7+ Qxd7, 8.Nc3 e6, 9.Nf3 Be7,10.Bg5 (P-P)*g4, 11.Bxe7 gxf3, 12.*f6 fxg2, 13.Rg1 (B-B)B*f1 (diagram).



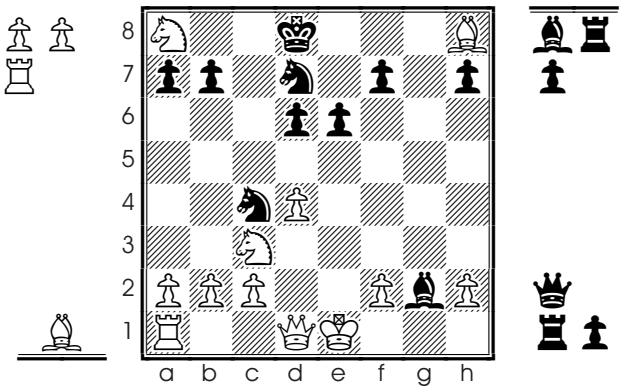
*Position after 13....(B-B)B*f1*

[As a result of parachuting, both kings are under strong attack.] 14.fxg7 Qxe7, 15.gxh8=B [the pawn advances to h8 but then at once changes places with the imprisoned bishop to which it is being promoted: remember that you can promote only to a piece in the opponent's prison] 15....N(8)d7 16.(B-N)N*c7+ (diagram).



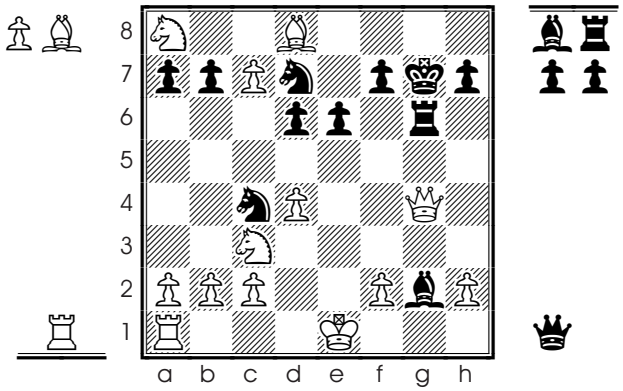
*Position after 16. (B-N)N*c7+*

16....Kd8,17.Nxa8 Nc4,18.Rxg2 Bxg2,19.(P-P)*c7+ Kc8, 20.(R-R)R*d8+ Qxd8, 21.cxd8=R+ Kxd8 (diagram).



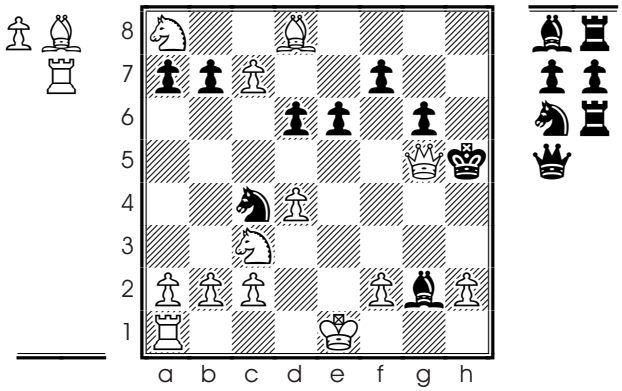
Position after 21....Kxd8

[White is well ahead in material after capturing the queen. But with the black knight and bishop near his king, and with a bishop, *two rooks* and *two pawns* (some of these purchasable by releasing prisoners) available to Black as paratroops, White's position is perilous. He must keep up the attack, therefore. There have been three checks in a row so far; a row of eleven more will now follow.] 22.(P-P)*c7+ Ke7 [not Kb8, which would be answered by (R-R)R*d8 mate] 23.B*d8+ Kf8, 24.Bg7+ [must keep attacking!] ...Kxg7, 25.Qg4+ (R-R)R*g6 (diagram).



*Position after 25....(R-R)R*g6*

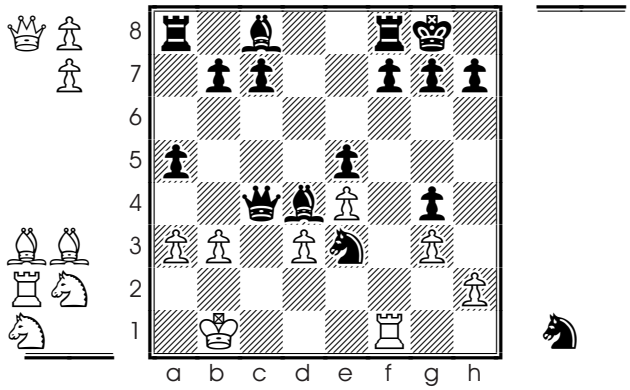
26.Qxg6+ [attack, attack, even if it means losing the queen!] ...hxg6, 7.(R-B)B*f6+ Nxf6, 28.Bxf6+ Kxf6, 29.(N-B)B*d8+ Kg7 [Black might be tempted to interpose something instead of moving his king, for instance (P-P)*e7, but the white bishop would then simply capture the interposed man. If Black's king then captured the bishop, White would play (Q-Q)Q*d8 mate.] 30.(Q-Q)f6+ Kh6, 31.R*h5+ Kxh5, 32.Qg5 mate (diagram).



Position after 32. Qg5 mate

Looking at the huge force which was being built up on my opponent's airfield, one hates to think what would have happened to me if my attack had failed. The situation is reminiscent of Shogi, which often ends in a king chase whose failure would mean immediate defeat. In fact, a Shogi mating problem usually demands that the attacker's every move shall be a check.

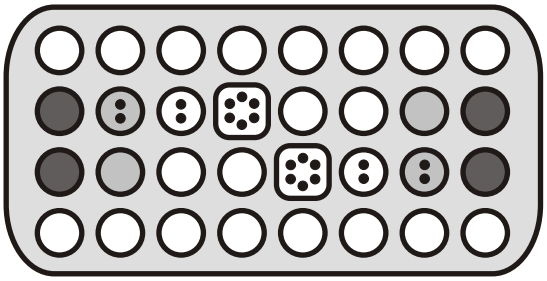
I have just been sent a game in which Black seems to be having everything his own way, but White's weakness may be only apparent. In Hostage Chess, just one or two poor moves can put even the best of players in great difficulty. Here, anyway, is the game for you to look through on your own. 1.e4 e5, 2.Nf3 Nc6, 3.Nc3 Nf6, 4.d3 d5, 5.exd5 Nxd5, 6.Nxd5 Qxd5, 7.(P-P)*e4 Qe6, 8.Bd2 Bc5, 9.a3 *g4, 10.Ng1 0-0, 11.g3 Nd4, 12.Be3 (N-N)N*f3+, 13.Nxf3 Nxf3+, 14.Ke2 (N-N)N*g1+, 15.Rxg1 Nxg1+, 16.Kd2 Nf3+, 17.Kc1 Bxe3+, 18.fxe3 (B-B)B*d2+, 19.Kb1 Bxe3, 20.b3 (R-N)N*c3+, 21.Kb2 Nxd1+, 22.Rxd1 a5, 23.c3 Nd2, 24.c4 Bd4+, 25.Kc2 Nxf1, 26.Rxf1 (B-N)N*e3+, 27.Kb1 Qxc4 (diagram).



Position after 27....Qxc4

28.Resigns. [If White captured the queen, it would just come parachuting back.] ■

Since I plan a book some day, I would be happy to get your comments on any of the games recorded here. (I could easily have overlooked all sorts of tricky points.) I would be happier still if you sent me some of your own games, perhaps with commentaries. My address again: 64 Forbes Avenue, Guelph, Ontario, Canada N1G 1G4.



(See AG4 for rules.)

Strategy in Bao

-- notation and the house

by Alex de Voogt

In a Bao move a player chooses a particular starting hole and often, a playing direction. The choice of playing direction may mean either that seeds are picked up from the player's own hole and sown *toward* the left (L) or right (R), or captured from one of the the opponent's four central holes and sown *from* the left or right *kichwa*, the hole at the end of the row. With one exception, a move related to the house, or *nyumba*, knowledge of the starting hole and, if necessary, direction is sufficient for communicating a Bao move. (Although the term '*nyumba*' was used in the last article, we will use it interchangeably with the English equivalent 'house.') The notation system for the holes is shown below. The two houses are A5 and a5.

87654321

	b	00000000	b	
Right	a	02260000	a	Left
Left	A	00006220	A	Right
	B	00000000	B	

12345678

This system of recording moves has certain redundancies, which may be eliminated for reasons of brevity or included for clarity:

1. If a capture is made from a *kichwa* (A1, A8, a1, a8) or *kimbi* (A2, A7, a2, a7), the direction of sowing is fixed, and the left or right designation is redundant and may be omitted.
2. The letters A/a do not have to be mentioned in the first 22 moves since playing from the back row is not an option.
3. It is not necessary to mention a forced move, i.e. a move where there is only one obligatory capture possible from only one direction. Eliminating this redundancy, however, adds little to the brevity of the notation, while reducing its clarity.
4. In many cases it is advisable to identify *takasa* and *takasia* moves by (*tak*) and (*takasia*), respectively. (The former is discussed in this article, the latter will be the subject of a future article.) This helps the interested reader replay the game and double-check the correctness of the moves.

In the previous article a short summary of the Bao rules was given. The rules may appear complex because of their interaction. In other words, in each move a series of rules is applied, often according to a hierarchy. The following example shows the workings of a complex capturing move in the initial stages of the game, the so-called *namua* stage, when seeds are being entered from the stock. It leads to a win, in which the front row of the opponent is completely cleared. The whole complex move would be designated just by A6R according to our notation system.

00000000
12323231
01100**2**10
00000000

One seed is added to A6, and the two seeds from a3 opposite A6 are then captured and sown from the right into row A, reaching A7. Three seeds from a2 opposite A7 are captured and also sown from the right into row A, reaching A6. There are no seeds opposite A6, so the four seeds of A6 continue to A2, capturing the two seeds opposite A2, but this time (obligatorily) sowing into row A from the left side, reaching A2 again. Since there are now no seeds opposite A2, the three seeds in A2 continue, reaching A5, and capturing three seeds from a4. These are again sown from the left into row A, as the direction has now been fixed, reaching A3. The three seeds from a6 are captured and sown into row A from the left, and then the five seeds in A3 are picked up and sown to A8. One seed is captured from a1, but this time (obligatorily) it is entered from the right and sown into A8. Since a1 is now empty, the four seeds in A8 are sown, reaching A4. The two seeds from a5 are captured and sown, again from the right, reaching A7. There are no seeds opposite, so the six seeds in A7 are sown, reaching A1. The one seed in a8 is captured and (obligatorily) sown from the left into A1. The five seeds from A1 are sown, reaching A6, and the four seeds in A6 continue to B7, finishing the turn. Meanwhile all the seeds from the opposite front row have been captured, and the game is over. The final position is as follows:

00000000
00000000
04266012
00000011

The house (*nyumba*)

The rules for the house reveal some of its special attributes that in many cases will dominate the strategies in the *namua*.

The house can be defined as the fourth hole from the right on the A/a row, unless a) it contains, at any moment, less than 6 seeds, or b) there is no stock left.

A house, therefore, only exists in the first part of the game. [*This supercedes the rule implied in* AG4 *that the house could exist throughout the game. -- Ed.*] The rules of Bao allow for the house to be preserved in certain circumstances when we *cannot* capture. The reason for this complexity is that the house is central to the capturing strategies at the start of the game. Keeping the house from being captured and using the house to make multiple captures are important skills in Bao. The rules that preserve the house when no captures are possible are welcomed by experienced players.

Let us examine the rules for the house in the situation where no captures are possible. A move made when a capture is not possible is called a *takasa* move. In the first part of the game a seed is taken from the stock and placed in an occupied hole in one's

inner row. This seed is not allowed to be played in the house. If there is still a house, holes with one or more seeds may be chosen; if the house is gone – captured or played – only holes with two or more seeds may be chosen, unless there is no other option and only holes with one seed remain in the front row. [*This supercedes the rule implied in* AG4 *that a seed could be placed in a hole with only one seed even when a capture is not possible. -- Ed.*] Even though this first seed from the stock may not enter the house, a subsequent sowing of seeds may indirectly reach the house, after which the move should continue by sowing the seeds of the house. Instead of emptying the house in this indirect way or disallowing the move, the Bao rules state that such a move stops at the house if it reaches the house with the last seed.

In general, we can state that a *takasa* move of the house is not allowed. In one situation we may have no choice. If the front row has no occupied holes except the house, then how should we make a *takasa* move? There are a few solutions we could think of, such as playing the back row, skipping a turn, or actually emptying the house. In Bao the solution is found in the other exception mentioned, that of the hole with the single seed that can be played only if the house is in place. If the house is on its own, a *takasa* move consists of placing one seed in the house and removing two seeds and sowing them in the chosen direction: the house is therefore played as if it were a singleton.

Observe the following situation in which the two possible moves by (A) will result in another *takasa* move for (A). If (A) plays a seed into the house, and then sows the two seeds to the right, A5R, then (a) will play a2; if, on the other hand, (A) plays A5L, then (a) will play a5R. The reader should verify this for himself.

00000000
11190111
00009000
00000011

The definition above said that a house stops being a house with less than the six starting counters in place. In a situation where the house is forced to be played in this way as though it contained a single counter, the house may end up with five counters. It can still count as a house unless the next move is again a *takasa* move, at which time it is emptied as if it were any other hole. It is no surprise that some variations to this rule exist. In some areas the house reduced to five seeds is no longer a house even if the next move is not a *takasa* move.

Finally, the situation in which we can capture also has an exception for the house, and again this rule of exception preserves the house. Whenever the house is reached after a capture, the move should continue with the seeds of the house if the hole opposite is empty. In Bao one is allowed to choose: one may continue by sowing the seeds of the house and perhaps make many captures, or one may end the move by leaving the last seed of the move in the house, thereby allowing the house to grow. This extra choice in the game of Bao needs to be accounted for in the notation system, and since the house can only be emptied once, the choice of emptying it should be indicated rather than the choice of preserving it. Therefore, a5R> would mean a capture which started at the house, and reached the house again, after which it was emptied. ■

The superb artwork at the top right was produced by Daniel Bauer. It shows a black cardinal and a white marshal. In future, stylized representations of these pieces will be used in our diagrams rather than the sideways bishops and rooks used previously. -- Ed.

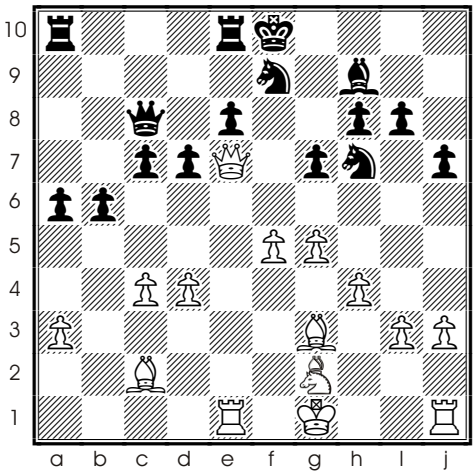
The Grand Chess Corner

(See AG3 *for rules.)*

by Tony Gardner

As of this submission, the Schmittberger-Vehre 1999 World Cyberspace Championship playoff is still underway. The first game, lacking flair, ended in a draw; a second game, hopefully more vibrant, is now in progress. Here are two NOST battles:
Graham Allen-Larry Waite (1998-2000) 1.d5 g7, 2.e5 f6, 3.e6 Nh7, 4.Nc4 b7, 5.g4 Ba7, 6.Mh1 d7, 7.exd7 cxd7, 8.Kf1 Rje10, 9.Bg1 Kf10, 10.Cf4 Bc9, 11.Bb6+ Kg10, 12.Kg2 a7, 13.Ba5 b6, 14.Bb4 e7, 15.Bxh7 Cxh7, 16.Cxj8 Cxj8, 17.Qxj8 Nc7, 18.d6 Na6, 19.dxe7 Nxb4, 20.axb4 Bxe7, 21.Nh4 Qb7, 22.Nf5 Bh10, 23.Qd2 Ra9, 24.Rae1 Rae9, 25.Mf2 g6, 26.Nh4 Mg7, 27.Rxe9 Rxe9, 28.Qh6 Bg9, 29.Nxg6 Mg8, 30.Qh5 Me8, 31.Qj5 b5, 32.Nd2 Me3+, 33.Kg3 Qb8+, 34.Kh4 Bf7, 35.Ni5 Qf4, 36.Ng6 Bxg6, 37.i4 Qg5+, 38.Qxg5 fxg5+, 39.Kxg5 Be7+, and WHITE RESIGNS in view of 40.Kxg6 Me5+, 41.Kh6 Bh4, and either 40.Kf4 or 40.Kh6 can be answered by 40....Bh4.

Larry has quickly taught me the hard way the true value of the cardinal. In the following game I sacrificed mine for a knight in order to retain a pawn advantage and perhaps win another pawn. That did not succeed, but I did manage to procure a dangerous passed-pawn on the b-file. However, Larry finished with a nice combination which not only bagged my queen but threatened checkmate in all ensuing lines!
Larry Waite-Tony Gardner (1999-2000) 1.f5 Nh7, 2.e5 d7, 3.Rae1 Bg5, 4.Qd1 f6, 5.h4 Bi7, 6.Nc4 fxe5, 7.g5 Cc5, 8.d4 exd4, 9.cxd4 Ca6, 10.Kf1 c7, 11.Ng3 j7, 12.Kg1 Cxc4, 13.bxc4 Qa6, 14.Qe2 Nd10, 15.Me4 Re10, 16.Nh5 Bj8, 17.Mc5 Qc8, 18.Nf4 Bh10, 19.Mb3 Kf10, 20.Ng6 g7, 21.Bg3 b6, 22.Me3 a6, 23.Ne7 Bxe7, 24.Mxe7 Mxe7, 25.Qxe7 Nf9 (diagram)



Position after 25....Nf9

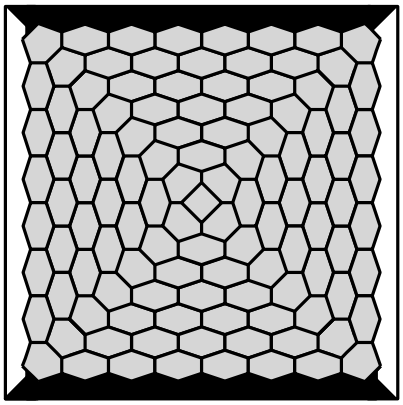
26.Qe2 c6, 27.Kh2 b5, 28.c5 a5, 29.Rb1 b4, 30.a4 Rab10, 31.Bb3 Bxb3, 32.Rxb3 e6, 33.Qc4 Kg10, 34.fxe6 dxe6, 35.Bd6 Ne7, 36.Bxe7 Rxe7, 37.Ce4 Rf10, 38.Rf1 Rxf1, 39.Qxf1 Rd7, 40.Cc2 e5, 41.Rf3 Qc7, 42.Kh1 Rxd4, 43.Cg6 Qd8, 44.Rf10+ Qxf10, 45.Ce8+, BLACK RESIGNS. ■

Three Hex Variants

(See AG1 for rules of Hex.)

by Larry Back

In this article I would like to present three Hex variants that I have developed. The first of these variants I call Square Hex. The following diagram shows a Square Hex board. The rules of Square Hex are just like the rules of Hex, only the board differs. Players alternate turns by placing a piece of their color on one of the board spaces. Black is trying to connect the top and bottom sides of the board with an unbroken chain of black pieces, while White is trying to connect the left and right sides of the board with an unbroken chain of white pieces. The four corner spaces of the board each belong to both a black side and a white side. As in Hex, someone must win.



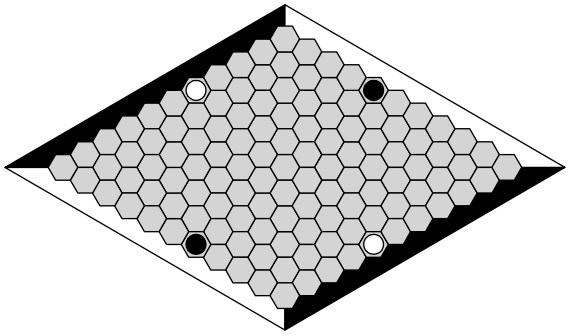
Square Hex

The different board used in Square Hex has an interesting effect on strategy. Notice that the shortest path of black pieces that can connect the top and bottom sides of the board is one that is made along the left or right side of the board. Similarly, the shortest path of white pieces that can connect the left and right sides of the board is one that is made along the top or bottom side of the board. This attribute of Square Hex means that the corner spaces and edge spaces are much more important to occupy than they are in Hex. At the same time, however, a path made along the edge is still the most easily blocked. So the middle of the board is also strategically important, but less important than it is in Hex. Also, notice that the middle space on a Square Hex board is a square itself and is only adjacent to four other spaces. Consequently, it may be the least important space to occupy, whereas, in Hex, the middle space is the best space to occupy to start the game.

The result of all this is that each space on a Square Hex board, unlike a Hex board, is relatively equal in importance, so the decision of where to move next may be a little trickier at times than it would be in Hex, especially early in the game.

Next, I would like to present a variant I call Head Start Hex. The following diagram shows a Head Start Hex board with the initial position.

The idea of Head Start Hex is very simple, and it is similar to that of Square Hex. The rules are exactly the same as in Hex, except that in Head Start Hex each player gets a head start in constructing a path along the sides because each player starts with one piece along the opponent's side of the board. This means that,



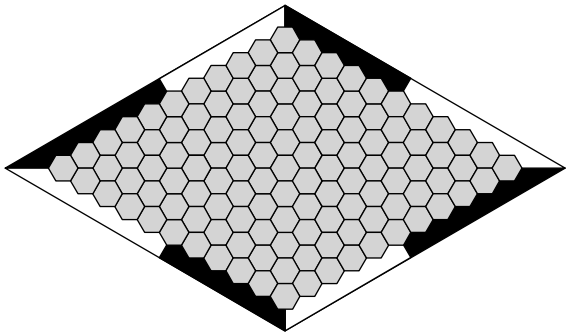
Head Start Hex

just as in Square Hex, the middle of the board, when compared to Hex, is no longer as important, and the corner and edge spaces are more important. So, once again, the spaces in Head Start Hex are more equal in strategic importance than they are in Hex.

In Hex the moves are generally made around the middle of the board to start off and then to the side and corner regions. However, in Head Start Hex, because of the greater equality of the spaces, this sequence of moves may be somewhat reversed. It may be more important to secure corner connections first before trying to gain influence over the whole board by playing to the middle.

Notice the piece placed along each side of the board to start the game is not placed in the middle edge cell along the side, but one space closer to the obtuse corners. Through experimentation this seemed to be the optimal place for these pieces.

Finally, the last variant I would like to present is the one that I call Eight Sided Hex. The following diagram shows an Eight Sided Hex board. The size and shape of an Eight sided Hex board is the same as a Hex board. The difference is that in Eight Sided Hex each player has four sides to connect instead of two.



Eight Sided Hex

In Hex the corner cells belong to the sides of both players. In Eight Sided Hex not only the corner cells but also the middle cells along each board edge belong to the sides of both players. To win at Eight Sided Hex, a player must make connections between two pairs of the player's four sides. The two pairs of connected sides can share one side in common, but they do not have to.

For example, suppose White's four sides are labeled A, B, C, and D. Then one way that White can win is by having one chain of pieces connecting side A to side B and another chain of pieces connecting side A to side C. These two chains do not have to be connected to each other, although they may be.

A second way for White to win is by having one chain of pieces connecting side A to side B and another chain of pieces connecting side C to side D. Again, these two chains do not have to be connected to each other, although they can be.

In each of these two cases Black will necessarily have been

prevented from connecting more than one pair of the four sides of the board. Consequently, Eight Sided Hex has the same property as Hex in that someone must win. Therefore, just as in Hex, thinking about how to stop your opponent from winning may make your best move more apparent than thinking about how to construct a win for yourself.

I should mention that in all three of these Hex variants the game should start with one player placing a black piece on the board and the other player choosing to play the rest of the game as Black or White. The player who becomes White then makes the next move, and the players alternate moves for the rest of the game. This is the fairest rule for ensuring that neither player starts out with a meaningful advantage. Hex is usually played with this rule, except that the first piece placed on the board in Hex is not necessarily black.

Those are my three Hex variants. I present them not necessarily as improvements over Hex, but as, I hope, interesting alternatives to Hex. ■

This article was written before Larry read Mudcrack Y & Poly-Y *by Craige Schensted and Charles Titus (Neo Press: Maine, 1975). Larry would like to give credit to Schensted and Titus as Eight Sided Hex is clearly a variety of Poly Join. Although Schensted and Titus also give a similar board to that for Square Hex, they intended it for playing Poly Join; I believe that Larry's ideas about Square Hex are quite original. -- Ed.*

Solutions to Kyoto Shogi Puzzles in *AG4*

Problem 1: 1. Lx1c=T Kx1c, 2. T*1d Nx1d=G, 3. Px1d=R Kx1d, 4. R-1e=P K-1c, 5. G*1d Gx1d=N, 6. Px1d=R Kx1d, 7. B-1e=S Kx1e, 8. G*2e mate.
Problem 2: 1. G-2c=N Tx2c=L, 2. L-2a=T Kx2a, 3. N-3a=G Kx3a, 4. B-3b=S Rx3b=P, 5. Rx3b=PK-4a, 6. P-3a=R Kx3a, 7. R*4a Kx4a, 8. Sx2c=B K-5b, 9. B-4a=S Kx4a, 10. T*4b mate.
Problem 3: 1. S-5a=B Kx5a, 2. N-4a=G Kx4a, 3. N-3b=G Kx3b, 4. P-2b=R Kx2b, 5. Lx1b=T Kx1b, 6. T*2c K-2a, 7. R*1a Kx1a, 8. S-3c=B K-2a, 9. B-2b=S mate.
Problem 4: 1. N-3c=G K-1a, 2. Gx2c=N K-1b, 3. Bx1c=S Kx1c, 4. S-3a=B Tx3a=L, 5. R*1b Kx1b, 6. N-1a=G Kx1a, 7. R*2a K-1b, 8. L-2c=T Kx2a, 9. Nx3a=G Kx3a, 10. T*3b mate.
Problem 5: 1. Gx2d=N K-1a, 2. T*1b Tx1b=L, 3. Nx1b=G Kx1b, 4. L*1c Bx1c=S, 5. Rx1c=P Kx1c, 6. S*2b Kx1d, 7. R-1e=P Kx1e, 8. Sx3c=B K-1d, 9. B-1e=S Kx1e, 10. G*2e mate.
Problem 6: 1. Tx4e=L K-3a, 2. L-4b=T Kx4b, 3. P-5b=R Kx5b, 4. G-4d=N K-4a, 5. B-5b=S K-3a, 6. N-3b=G Kx3b, 7. S*3c K-3a, 8. L-2a=T Kx2a, 9. S-4c=B K-1a, 10. Rx1b=P Kx1b, 11. B-2a=S Kx2a, 12. G*2b mate.
Problem 7: 1. Sx2a=B K-2b, 2. L-3c=T Kx3c, 3. Px3a=R K-4d, 4. B*3c K-5c, 5. N*4e K-5b, 6. L-4b=T Px4b=R, 7. N-5c=G Kx5c, 8. Bx4b=S Kx4b, 9. G-3d=N Kx3a, 10. R*3b Kx2a, 11. N-2b=G mate.
Problem 8: 1. Tx1c=L Kxlc, 2. T*2d K-1b, 3. T-1d=L R-1c=P, 4. Lx1c=T Kx1c, 5. B-2d=S Nx2d=G, 6. R*1b Kx1b, 7. Gx2d=N K-1c, 8. N-1b=G Kx1b, 9. G*2c Kx2a, 10. B-2b=S mate.
The winner of the competition, with seven correct solutions out of eight, was Jochen Dechsler, who receives the prize of the Kyoto Shogi pieces.

Correction to Onyx Puzzle 2 Solution from *AG4*

In my original analysis I failed to consider a White reply of 2.D2 to Black's 1.C5. With a piece at D2 White has a powerful threat to connect that piece to the East by playing EF23, which will break the potential connection of the black pieces at F1 and E4. White also threatens to link the piece at D2 to the white piece at B1 with a move to C1. These threats are powerful, and if Black responds to them, then White has other ways to win. So 2.D2 wins for White. Here are four winning continuations for White:

1C5 D2, 2.C4 C1, 3.EF23 B5*, 4.C5 B6, 5.DE56 E5, 6.D5 D4, 7.D3 E3*
1.C5D2, 2.C2 B5*, 3.C5 B6, 4.DE56 E5, 5.D5 C4, 6.D4 EF23, 7.D3 C3*
1.C5 D2, 2.EF23 B5*, 3.C5 B6, 4.DE56 E5, 5.D5 D4, 6.C4 C1, 7.D3 E3*
1.C5 D2, 2.C3 EF23, 3.C2 C4, 4.D3 E5, 5.D4 D5*

-- Larry Back

Games Covered in *AG* by Issue Number

Anchor 5*	Hex Variants 5*	Pentagonia 2
Bao 4*, 5*	Hex Kyoto Shogi 5*	Phutball 3*
Bashne 1*, 3	Hijara 5	Plateau 3
Bosworth 2	Hostage Chess 4*, 5	Poppy Shogi 4*
Camelot 1	Kimbo 5	Renge Shogi 5*
Cathedral 3	Kyoto Shogi 1*, 2, 3, 4	Renju 5
Chebache 3	Lightning 5*	Ricochet Robot 5
Chu Shogi 4	LOA 1*, 2, 3, 5	Strat 4*
Colors 3*	Mem 2*	Tamsk 4
Congklak 2*	Mentalis 1*	Trax 1
Epaminondas 3*	Nana Shogi 5*	Twixt 2*, 4
Gipf 1	Octi 2	Zertz 4
Grand Chess 3*, 4, 5	Onyx 4*	
Hex 2*, 3, 4	Patricia 5*	* = complete rules

EXPLORE MARTIN GARDNER'S WORLD

Puzzler's Tribute

David Wolfe, Tom Rodgers, editors
Spring 2001; hardcover; approx. 350 pp.; tent. $34.00, £33.00

This collection brings together offerings in tribute to Martin Gardner. The contributions vary in form and content, ranging from puzzles to poems, and from brainteasers to brief biographical accounts of the greatest puzzler of all.

Here's to The Game Master!

A Gardner's Workout: Training the Mind and Entertaining the Spirit

Martin Gardner
Spring 2001; hardcover; approx. 250 pp; tent. $30.00, £21.00

Truly a treat for Martin Gardner fans. With features written for popular magazines and academic journals, this volume presents a new collection of problems and puzzles not previously published in book form. This collection's blend of topics is both educational and entertaining.

It will give your brain a workout!

Find these and other great A K Peters titles for the game enthusiast at

www.akpeters.com

Mention Abstract Games and receive a 20% discount!

A K Peters, Ltd.
63 South Ave, Natick, MA 01760-4626
Tel: (508) 655-9933
Fax: (508) 655-5847
service@akpeters.com