Abstract Games

... for the competitive thinker

- Onyx: a brilliant new connection game
- First of a new series on Hostage Chess
- Bao: the King of Mancalas
- More Twixt, Hex, Grand Chess
- New series on Chu Shogi
- Plus the usual news and reviews

Front Cover

When I was in Japan in 1989, a Japanese colleague of mine introduced me to an executive of the company Dai Ichi Seimei (Life Assurance) he had been to school with. It turned out that Dai Ichi had commissioned the famous *manga* artist Akatsuka to invent a small Shogi variant for the company to use for marketing purposes. Advertising flyers had been printed on one side with a board and pieces that could be cut out to play the game. Dai Ichi had also commissioned a craftsman to make a small number of high-quality wooden sets that they would use for corporate gifts. They gave me one of these sets, shown on the front cover. You can see the name of the artist who made the set on the base of the king.

In 1995, the NOST magazine *NOSTalgia* printed an article that I wrote about this game. It was subsequently picked up by the gaming community and achieved a certain measure of popularity. Tournaments have been held by both NOST and AISE. There is a website put together by Georg Dunkel that is devoted to the game: http://www.kolumbus.fi/geodun/poppy/shogi.htm Georg also organizes regular tournaments. Dai Ichi Seimei had called the game Five-Minute Poppy Shogi, but I tentatively renamed it Micro-Shogi on the basis that it is even smaller than Mini-Shogi. Today it is known under both names, some people preferring one and some the other.

In the *NOSTalgia* article I claimed that the great Shogi player Yasuharu Oyama had invented the game. Thanks to research by Mike Sandeman we now know Akatsuka was the inventor and how this misunderstanding arose. A Dai Ichi employee, Masaiki Miyamoto, had introduced the game to the writer Hisashi Nagata, who in turn mentioned it to Yasuharu Oyama. The Shogi giant expressed approval of Poppy Shogi, and Nagata subsequently wrote an article about it, published, we think, in the magazine *Kindai Shogi*. I had misinterpreted the content of this article when I was shown it during my visit to Dai Ichi Seimei.

For those who know Shogi, I will briefly give the rules. Like Kyoto Shogi, the reverse of the pieces differs from that in regular Shogi. Underneath the silver is a lance, under the gold is a rook, under the bishop is a tokin (to distinguish it from the gold-rook piece), and under the pawn is a knight. Unlike Kyoto Shogi the pieces reverse only upon *capturing* rather than every time they move. The king, of course, always remains constant. A piece may be dropped either side face up. Unlike Shogi two pawns are permitted on a file, as is mate with a pawn drop. Perpetual check is a loss for the checking player. For such a small game, Poppy Shogi holds surprising depth.

Kerry Handscomb

Contents

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

Editorial

With this issue, the first year of *Abstract Games* comes to a close. I hope the readers will have noticed a positive progression in the development of the magazine.

This issue is the same size as the previous one, but not for lack of material: if the magazine were only one page more postage costs would more than double. Rather, we have had to postpone some articles until the next issue. The concluding article in Mike Sandeman's series on Kyoto Shogi will have to wait until *AG5*, as will an article on Renju by Ants Soosyrv which explains the beauty of the game in a way that can be understood by beginners or even non-players of Renju. Readers may also notice that my regular Lines of Action article is missing from this issue. Lines of Action will return in *AG5* in the form of an article by Claude Chaunier, a strong player who has some strategic ideas quite different from mine.

Two chess-type games make their debut in this issue. Chu Shogi has been requested by subscribers from the beginning, and it is finally here in the first installment of what we hope will be a regular column. It nicely complements the Grand Chess Column, giving two splendid larger chess games from East and West, respectively. The classical sense of the term "chess variant" is a chess-type game played with the Western Chess board and pieces. Many readers, I know, are enthusiastic about this type of game, and for them we have begun a series on Hostage Chess, which is reputedly one of the best variants to have been invented in recent years. Hostage Chess is similar to Shogi in some ways because of its reuse of captured pieces. It may give those who are put off by

Shogi's Japanese characters a hint of what the great Japanese game is all about.

Two of the goals mentioned in *AG1* were coverage of a larger chess variant and investigation of one of the more strategic mancala games. The second of these objectives is met in this issue, too, as the first article on Bao is included. The author, Alex de Voogt, is probably the foremost authority on Bao outside of Africa.

The connection games Twixt and Hex are both back in this issue, and they are complemented by Onyx, an original connection game that has fascinating, different tactics. Since Larry Back introduced me to Onyx some months ago, I have probably played this game more than any other. I strongly recommend everyone to give it a try. In addition, Larry's description of the genesis of his game may give aspiring game designers some valuable insights.

Speaking of inventing new games, the official rules are given on page 12 for the game design competition mentioned in *AG3*. We have received considerable feedback about this competition already, and we are looking forward to presenting some of the best games in these pages.

We promised in the first issue to do our best to respond to readers' requests as to the content and direction of *Abstract Games*. (After all, in a real sense the magazine does belong to the subscribers.) Within the constraints of space, time and finances we intend to continue to serve the readers to the best of our ability. Please help us to do this by continuing to give us feedback .

I would like to extend my sincere thanks to all those who have read and subscribed to this magazine and everyone who has contributed. Special thanks are due also to my lovely wife Connie, who has helped in so many unique ways with the progress of this venture.

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.*

I've just received the first three issues of *Abstract Games* magazine. I want you to know how glad I feel! It's just like meeting a member of your family you haven't seen for years (all the way from France).

Vincent Everart, France

Thanks for another great issue of *Abstract Games* magazine. I have read the first three with great interest, and hope to read many more. For your reference, Shogi and Grand Chess don't interest me, but there is plenty in the magazine that does.

I've been spurred to write a response to John McCallion's letter in *AG3*: "Draws ought to be discouraged in any game." Now, when I play an abstract game I play for the challenge, to pit my wits against the game and my opponent. The mark of a good game, to me, is not who won, but how hard I had to fight, and how much I learned whilst playing. So, a long, vicious Chess match ending in a draw would be a lot more rewarding than a swift massacre.

I would concede that any game where a human player can force a draw from the starting position (like Abalone) is inherently flawed, but no more so than the many abstract games that have been released which have a known forced win for either player. Indeed, in some senses, games where draws are impossible are often less interesting than games with draws. Very often in games without draws it's easy to see that one player has a forced win with best play (Hex being the classic example). In these games, I'd always take the losing side in preference, so that if I do win, I know that I beat my opponent fairly, rather than just being the agent of an inevitable outcome

Even in competition I see no reason why two players, both of whom fought well, should receive different results. But then I have always entered competitions to play strong opponents, rather than to win.

Stephen Tavener, England

Congratulations on your fine magazine! I have been particularly impressed with the Lines of Action articles.

I had the opportunity to play over the game in *AG2*, using my program, Mona. I

am pleased to report that the level of play and the analysis of this game are of the highest standard I have seen (among humans, that is). I will add only a few additional points:

(i) The move order 17....a4:c4, 18. d1:d6 c8f5 may be a bit more precise, as it avoids the troublesome move 18. c6e4 (or perhaps even b6b4).

(ii) Black still holds the advantage at this point, and can win with 19. g6g5!, when h5h4 loses to d3:d7, and h5g4 is met with d3:f5 (connecting in 11-ply and 13-ply, respectively).

(iii) The natural-looking 19. d3:d7 allowed the very strong reply c4e2!, but all is not lost. After 20. d5f3 e7f6 Black can still win with 21. c6e4! the best try is then f6g5, stretching the mate to 13-ply after 22. d6f4.

Darse Billings, Canada

Darse's program, Mona, is now probably stronger than any human player. -- Ed.

I disagree with you about Grand Chess being a good game for a match between Kasparov and Habu. Surely Kasparov would have the advantage and win, the game being so similar to Chess. Pawn formations and the absence of drops give Grand Chess a different feel from Shogi, and Kasparov, could draw upon Chess intuition in situations where brute calculations do not suffice. I think Xiangqi or Changgi would be more suitable for creating a level playing field between the two titans. Kudos to Connie for the attractive cover photo.

Graham Allen, USA

Good point, but I don't think Xiangqi or any other traditional game would do the trick. -- Ed.

Despite your comment in *AG3* about Chess being "in trouble," I for one still enjoy it, as do millions of others. I think it's a little early to talk about the demise of Chess.

Mark Maclure, USA

Perhaps my comment was a little melodramatic, although I think I made some valid points. No offense was intended to enthusiasts of the Royal Game. -- Ed.

I am mostly interested in games that (1) have simple and nice rules and (2) enjoy wide popularity. (1) is clearly my priority.

Carl Ragnarrson, Sweden

We'll do our best with (1), although most of our coverage is going to be of games little known by the general public. - - Ed.

Mini-Reviews & News

by Kerry Handscomb

Variant Chess

Variant Chess, the quarterly journal of the British Chess Variants Society, is this year celebrating its first decade of existence. Guided by President David Pritchard and Editor Paul Byway, this publication has regular articles on Modern Courier Chess, Xiangqi, Alice Chess, and many other variants. It is an excellent publication for all abstract game players whose tastes lean toward chess variants.

Annual subscription is UK GBP8, Europe GBP9, Rest of World GBP9 surface and GBP11 by air. Checks payable to 'British Chess Variants Society' can be mailed to Paul Byway, 20 The Finches, Hertford, Herts SG13 7TB, UK.

The American Chu Shogi Association

Recently established by Joseph Peterson, the ACSA intends to raise awareness about Chu Shogi as well as to provide a body to make decisions and recommendations for tournaments and establish rankings. Membership is free and is available to anyone, no matter what country of residence. The ACSA will be sponsoring tournaments both across the board and on-line. The first on-line tournament is expected to take place February 2001.

Anyone interested can check out their website at http://www.chushogi.org. Alternatively you may email Joseph at jeepeterson@yahoo.com.

Out of the Box

Bosworth, the interesting chess variant with cards, published by Out of the Box, was reviewed in *AG2*. They also publish Apples to Apples, a very funny party game, and most recently introduced Shipwrecked, an excellent game of bluff with an ingenious bidding system. We have had great fun playing both these latter games, and they are highly recommended as a light-hearted break from the more serious abstracts. Company president and game designer Mark Allen Osterhaus is clearly a blossoming new talent.

Mind Sports Olympics

The fourth annual Mind Sports Olympics, held at Earl's Court, London, was concluded successfully on 28 August. There were over 5,000 tournament entries.

Game Reviews

Project Gipf

Designed by Kris Burm

The excellent game Gipf was reviewed in *AG1*. As indicated in that article, Gipf is the central game of a proposed larger structure called Project Gipf. To the regular Gipf game are added pieces called "potentials." A potential rides on top of a basic Gipf piece, and under certain circumstances the power of this potential may be released. So far two types of potential, Tamsk and Zertz, have been introduced. Tamsk and Zertz are also two other games by Kris Burm, which are each complete games in their own right.

For a Tamsk potential to be activated the pair of pieces with the Tamsk potential on top must reach the central intersection of the Gipf board. The potential is then removed from the basic Gipf piece and reentered onto the board exactly as you would a basic piece when making a move. In other words, the power of the Tamsk potential is equivalent to an extra move in a limited sense.

To activate a Zertz potential it is not necessary for the pair of pieces to reach the center of the board. Instead of entering a piece onto the board in the regular way, a player may remove the Zertz potential from its basic Gipf piece and jump the potential over any number of adjacent friendly or enemy pieces in a straight line onto the first vacant point beyond.

Once the use of a potential is announced and before its power is actually activated by moving it, the opponent may challenge in an attempt to nullify the potential. In this case, the players abandon the game of Gipf for the time being and play a game of Tamsk or Zertz, respectively. If the player wishing to use the potential wins, he goes ahead and uses the potential as planned. If he loses, then the potential is nullified and, effectively, he misses a turn.

Gipf, Tamsk and Zertz are the first three games of the proposed series of six game known collectively as Project Gipf. Other games in the series will involve other types of potential .

Kris Burm makes it quite clear that other games or even other forms of contest may be associated with the various potentials. Thus when the use of a Tamsk potential has been challenged, the players need not necessarily play Tamsk, but, depending on prior agreement, may elect to play some entirely different game, such as Chess. (It brings up the possibility of even playing a second Gipf game with its own set of potentials, and then another game of Gipf....)

Project Gipf is an interesting and original concept. I personally find the tournament game of Gipf in itself to be sufficiently complex, although I can appreciate the fact that experienced players may like to spice up the game by using potentials. A more serious objection, as I mentioned in the Gipf review in *AG1*, is that the games associated with the potentials have to be as good as Gipf itself, otherwise why interrupt a superior game to play an inferior game? In other words, the other games of Project Gipf have to be able to stand on their own as good and interesting games in themselves.

Tamsk

The Tamsk board consists of a hexagonal arrangement of 37 cylinders. Each player has a set of three hour glasses and a rack of

rings. The hour glasses fit inside the cylinders and the rings fit outside the cylinders. In the basic game, a turn consists of moving one of your hour glasses to an adjacent unoccupied cylinder and dropping a ring over it so that it fits over the newly-occupied cylinder. The cylinders are different sizes, those toward the center of the board being taller, which means that some cylinders can accomodate more rings than others. The cylinder in the center of the board can hold four rings, and those on the edges can only hold one ring. You may not move an hour glass to a cylinder that is already full. The objective of the game is get rid of more rings from your rack than your opponent, which effectively means that you have to trap your opponent so that he cannot move.

So far so good, and on this level the basic game of Tamsk is quite an interesting tactical battle. In my opinion it is not as deep as Gipf, but it might prove to be a light break from the more serious and challenging game of Gipf.

A time element is introduced to the basic game with the active use of the hour glasses. After each move the player must turn the hour glass upside down. If the sand in an hour glass runs out, it is frozen and can no longer move. Since the game is not overly complex, this ought not to present any problems as long as a player moves fairly briskly. There is an added complication, however, as a player whose turn it is to move may fiendishly delay moving until his opponent is no longer able to save an hour glass that is running out. In order to prevent such gamesmanship an additional, fifteen-second hour glass is used, so that the players may restrict each other to a maximum of fifteen seconds per turn.

It has to be said that in our opinion the active use of the hour glasses was a distraction. Certainly time as a factor has its place in party games or in tournament games where clocks are necessary, but built into a game of this type, it appears somehow to be incongruous. If we play this game in future, we will stick to the basic game. Having said that, the hour glasses do keep the game moving at a brisk pace, and this I suspect is the reason that Kris Burm designed the game this way: when using a Tamsk potential in Project Gipf, you can quickly finish the Tamsk game and get back to the serious game of Gipf.

Zertz

Just as the Gipf board consists of a hexagonal array of 37 points and the Tamsk board consists of a hexagonal array of 37 cylinders, the Zertz board consists of 37 lose, small saucers that are initally arranged in a hexagon shape. The pieces are marbles which fit into the saucers—ten black, eight grey and six white.

A regular move consists of picking a marble of any color, placing it on an empty saucer, and then removing an empty saucer from the edge of the board provided it can be pulled away without disturbing any other saucers. If, however, it is possible to use a marble already on the board to jump over one or more other marbles then this jump must be performed instead of a regular move. Jumping is similar to Checkers, and a number of marbles may be jumped in succession by the same marble. Marbles which are jumped are removed from the board and captured by the player performing the jump. The color of the marbles is irrelevant both for regular moves and jump moves. Saucers which have previously been removed are used for storing captured marbles. "You've already lost your marbles!" quipped my playing partner.

If an island of saucers loaded with marbles becomes completely isolated form the main body of the board then these marbles are captured by the player accomplishing this isolation. When the board becomes reduced to a few saucers all containing marbles then these last marbles are captured as a special case of

this rule.

The objective of the game is to capture either three of each color, or four whites, or five greys, or six blacks. It can be seen that before all the marbles are captured one player must satisfy one of these winning criteria, so that the game cannot be drawn.

Zertz is a fun game. Opening strategy is mysterious, but once the game has been going for a while, and there are a few marbles on a reduced board, there is plenty of opportunity for tactical maneuvering. I can much more readily imagine playing this game than Tamsk as a welcome break from the hard cerebral activity of Gipf with potentials. In our opinion, therefore, after the splendid first game of Gipf, Project Gipf faltered a little with Tamsk, but has come back strongly with Zertz. I look forward to seeing Dvonn, the next game in the series.

Book Review

Popular Chess Variants by David Pritchard
(B.T. Batsford, London, 2000, 142 pp., GBP14.99)
Available from Batsford, 9 Blenheim Court, Brewery Road, London N7 9NT, UK, email: btbatsford@chrysalisbooks.co.uk

David Pritchard is well known as the former editor-in-chief of *Games & Puzzles* and writer of many book on games. One of his previous books, *The Encyclopedia of Chess Variants*, has become the bible of chess variant enthusiasts. This latest book selects 20 popular chess variants for more in-depth treatment. The games covered are Extinction Chess, Racing Kings, Displacement Chess, Randomized Chess, Marseillais Chess, Double-move Chess, Losing Chess, Progressive Chess, Kriegspiel, Alice Chess, Triplets, Avalanche Chess, Hostage Chess, Co-ordinate Chess, Knight-relay Chess, Magnetic Chess, Dynamo Chess, Ultima, Chinese Chess (Xiangqi) and Japanese Chess (Shogi).

All except the last two games are played with the standard Western Chess board and pieces (although both Kriegspiel and Alice Chess require two boards). In this respect, the large majority of games in this book may be regarded as chess variants in the classical sense of the term, and the two Oriental games seem to me to be a little incongruous in this company. For something a little different my personal preference would have been to include Grand Chess and Glinski's Hexagonal Chess, which are, respectively, chessic forays into alternate board size and geometry, and both use pretty much exactly the same pieces as Western Chess. (Both games, too, would have qualified under Pritchard's primary selection criterion of popularity since Hexagonal Chess still has a following in eastern Europe, while Grand Chess is growing in visibility.) The two Oriental games are nevertheless excellent choices, and their inclusion may encourage some enthusiasts of the classical variants to be more adventurous in investigating this fascinating area.

That aside, this collection of games offers a remarkable variety of game-playing experience. Two of the games, Racing Kings and Losing Chess, although played with the standard equipment, are strictly speaking not even chess-type games as their objectives are not to capture, or checkmate, the enemy king. I was particularly happy to see the inclusion of Alice Chess and Ultima, both marvelously unusual conceptions. Pritchard himself strongly endorses Alice Chess.

When introducing a game, the author's method is to give some historical or background information, followed by the rules, and a selection of sample games. The sample games enable him succinctly to give some tactical or strategical pointers. I found this more in-depth treatment of the games to be very refreshing, as it is often the case that collections of games are simply a rehash of the rules from earlier collections. I found the comments to be both interesting and useful.

In conclusion, this book makes excellent reading both for the committed chess variant enthusiast and for someone who simply wants a change of pace from the standard game. It is highly recommended.

Kerry Handscomb

Guide des échecs exotiques et insolites by Jean-Louis Cazaux (Chiron, 2000, 224 pp., 148 French francs)
Available from Chiron Editeur, 10, rue Leon Foucault,
78180 Montigny-le-Bretonneux, France   *(published in French)*

On the one hand, the general public knows very little about chess variants, Chess being almost universally identified with the classical orthodox FIDE game. On the other hand, it is difficult not to get lost in the plentiful world of chess variants. Jean-Louis Cazaux's book is designed effectively to remedy this state of affairs. Indeed, it is a clear and well-organized introduction to non-orthodox chess.

Games are classified in ten groups according to several viewpoints. The first, and most important, perspective is historical. This perspective helps us to understand the development of orthodox Chess from its successive precursors and indicates variations which have been discarded along the way. In these chapters I sensed a kind of Darwinian evolution of chess. Such considerations may create a bridge to the future of chess by suggesting directions in which new forms may develop. This is very apparent in the book.

Two other chapters deal with geographical variations, mainly Asiatic ones. Those who like giant chess will be interested in the descriptions of some Japanese monsters, but variants from several countries of the Far East are presented. I was especially interested to see Burmese Chess, which is very poorly known, at least to my knowledge, as it contains some original mechanisms.
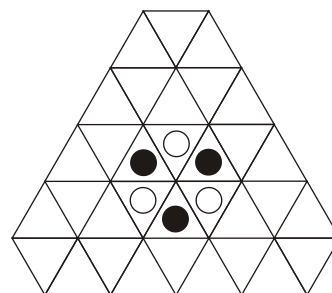
These temporal and spacial views logically lead to the modern inventions, which are ranged according to two kinds of changes. The first type of change concerns the board: increase or decrease in size, use of an alternate geometry (circle, triangle, hexagon), or different number of dimensions. The other changes concern the rules, which are progressively remote from the traditional game. In each group the author has selected the games which are probably the best and most representative. The rules are clearly given and commented on in an interesting way. Sometimes the variant is introduced in the chapter dealing with the historical or geographical aspects in which it is rooted.

Some few but popular variants such as Avalanche Chess and Dynamo Chess are lacking, but these are minor omissions, all the more so because the book is not intended to be exhaustive. Actually it quite justifies its title in being a guide. It is indeed a good guide book, giving access to a new, large and beautiful country, allowing everyone to acquire quickly a broad overview of the landscape so that he can choose the areas which he may wish to explore in greater depth. This further exploration will be facilitated by the list of related books, publications and Internet links given at the end.

Patrick Mouchet

TWIXT TACTICS

PART 1

by David Bush

(See Abstract Games Issue 2 for the rules.)

Twixt is very sharp. Unlike Go, where mistakes may not be properly punished until many moves later, a small slip in Twixt can result in "instant death." The only way to see ahead clearly is to be familiar with the tactics. To borrow a term from Go, this article presents some of the basic *tesuji*, or tactical patterns, that occur repeatedly.

A board, or some kind of visual aid, is highly recommended. Graph paper and a pencil might be sufficient. The base of a Lego set happens to be the right dimensions, 24x24 with the corners missing!

The first and most important thing to realize is that you should *look at the whole board* instead of just some local position. Time and again, I have seen players get drawn into one brief battle, ignoring the possibilities the rest of the board may have to offer. There is a psychological barrier here: once you have put some pieces down, it is difficult to consider abandoning them just for the sake of an extra tempo elsewhere on the board. But sometimes, that is the best way to play. This topic will be explored more fully in future articles, but it's important to have the proper mind-set right from the start.

With each move, you should strive to make more threats than your opponent can stop, or defend against as many of your opponent's threats as you can. There are many weapons available to help you accomplish this. For example, the term "setup" refers to a pattern of two pegs of your color, placed so that you can connect them in one move, in two different ways. Four setups are mentioned in the game description that comes with most sets manufactured in the USA. Actually, they missed one. There are five setups, not four, as shown in Figure 1.
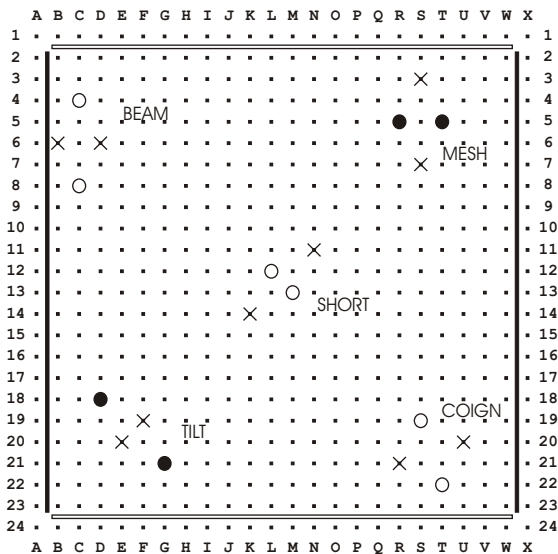
Each of the setup types is shown here. The X's show where a peg can be placed to form a double-link connection. Another way of categorizing peg relationships is with a pair of numbers: the horizontal and vertical distance between the pegs. The first value is conventionally larger than or equal to the second. A beam setup is a 4-0, mesh is 2-0, coign is 3-1, and tilt is 3-3. The fifth setup type is a 1-1 pattern, which I call a short setup. It may not go very far, but it usually can't be blocked, and is often useful in a close fight.

In the following analysis the *defender* is the side with a peg or pegs between the *attacker's* pieces and the attacker's border row. Of course, there are plenty of positions where both sides are blocking each other, so this dichotomy is not always very clear cut. Hopefully, the meaning will be clear from the context of the battle involved.
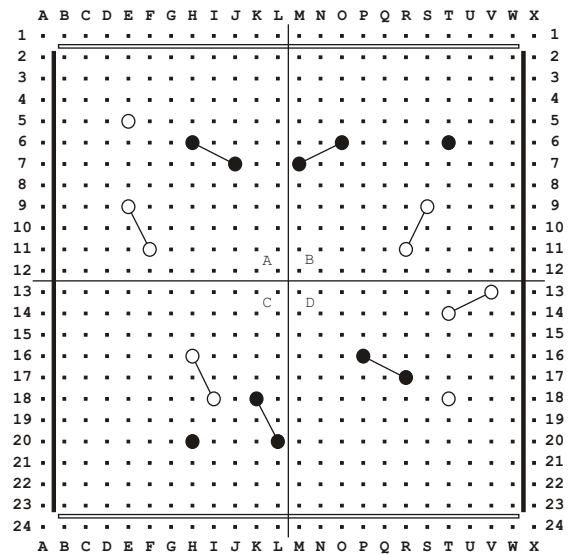

Figure 2

We will examine each of the corner battles in Figure 2 separately. In 2A Black to move can "hammer" White's E5 peg by playing 1.F5*. White has no defense against the threats of D4* or D6*.

In 2B Black has one more row in which to stage a defense, and that makes all the difference. White to move cannot win with 1.T7* because Black can answer with 1....S4*! Now 2.S5* is stopped by 2....Q5* or 2....R6*, and 2.U5* runs into 2....U3*, 3.V3* W2*. White may not play in Black's border row, X, so Black cannot be stopped from playing and linking to X4. This is an example of the importance of the "crucial diagonal," which refers to the line of holes W2-U3-S4-Q5.... Black wins this battle because he is able to reach the corner hole W2. There are eight of these diagonals on the board, two for each corner.

In 2C Black's H20 peg is said to be in "linking opposition" to White's I18 peg. White to move can win by playing 1.H21! This is a coign setup with I18, and it threatens to link past Black's H20 peg on

Figure 1

one side or the other, at either G19 or J20. Play might continue 1.…I22*, 2.G19** G21*, 3.F21*, and White is on the crucial diagonal that leads to B23.

In 2D, with Black to move, the defender (White this time) is one row closer to his goal. The coign attack with 1.U18 loses against 1.…V17*, 2.S19** U19*. But Black has another way to attack: 1.S18! This might be called a "short hammer attack" because S18 forms a short setup with R17, and it "hammers" the T18 peg. Now If 1.…R19*, 2.U17* S17*, 3.T16**, or if 1.…S16**, 2.U19* R18*, 3.Q19**. The short setup is unstoppable here. In that last variation White may try for a draw with 2.…Q19, but then 3.S19* V19*, 4.W20* T21, 5.U20* V20*, 6.W19-U19/W20+U20/W19 makes a continuous chain.

What if White tries a short hammer attack in 2C? 1.H19 does not work because after 1.…G18*, 2.I21* Black can double link with 2.…I19**, cutting through White's short setup. If White varies with 2.G17**, then 2.…J21**, 3.F19* E21, and now both the short hammer and coign attacks fail: 4.E20 D19*, 5.F22* F20**, or 4.E22 F23*, 5.D20** D22*. Another possible attacking pattern is 4.D22, but it loses after 4.…D19*.
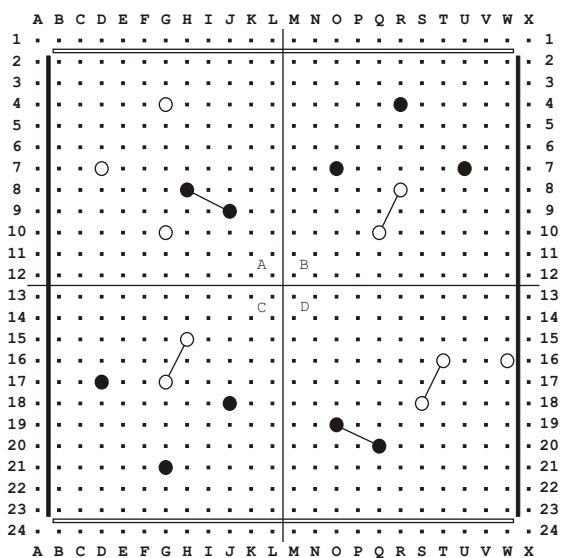

Figure 3

In 3A Black has the simple and direct 1.F7*, which threatens D6* or D8*. White has no room to defend. This is another type of hammer attack. If 1.…B7, 2.D6* B5, 3.C4* C3*, 4.B6*.

In 3B White, to move, cannot win with a linking move. Instead, 1. R6 might be called a "mesh hammer attack." If 1.…S6**, 2.Q4* Q7*, 3.P7**, or if 1.…Q6**, 2.S4* S7*, 3.T7**.

In 3C White is to move. Black's position might at first glance look weaker than 3B, but in fact it is stronger. 1.G19 fails against 1.…H19**, 2.F21* F18**. White could try 1.E20 D20, and now 2.G19* H19** or 2.C19* E22**, 3.B21* C23*. This is an example of how a more distant peg can give you a stronger position than a closer peg. 3B is bad shape for Black, but 3C is good shape. "Shape" basically means how well all your pegs work together. You should strive for good shape in every move you make. As these examples show, a setup pattern isn't necessarily always the best shape.

In 3D Black is to move. A direct link looks tempting, but 1.S21* loses to 1.…W21, 2.U21 (or 2.U20* V19*, 3.V18* W17*, or 2.X21 U22*) U22*, 3.T23** (stopping T20**) V19*, 4.V22* V23*. A beam setup would be bad shape. If 1.U20 U19*,

2.T22* V21*, 3.V23* W23*. A 3-3 tilt would also fail: 1.T23 S21!, 2.R22** (or 2.U21* Q22*, 3.S19* T19*, 4.U18* V18**) V22, 3.W22 (or 3.U22 T21*, 4.W23* U23*, or 3.U23 U22*) U22*. The coign setup 1.T21 gets hammered by 1.…T20*. The mesh setup 1.S20 loses to 1.…S22. If 1.S22 U21. If 1.U22 U21, 2.V20* (or 2.T20* T19*, 3.W21* S21*, or 2.S21** V23*, 3.U20* V19*, 4.V18* W17*) S22*, 3.R22* T20**, 4.T23* U23*. If 1.U21 T21, 2.R22* V20*, 3.T23** W22*.

So, what does work for Black in 3D? About the only move left: 1.T20! This 3-0 defensive pattern is often the right way to go, particularly if one of the pegs is linked (as Q20 is here), and the other peg is in linking opposition to the opponent's peg (as T20 is here). If 1.…T19, 2.U18* S21*, 3.S19**. If 1.…T21, 2.S22* U19**, 3.U21*. If 1.…R20, 2.S21* T21*, 3.U22*. A sneaky try would be 1.…V22, and if 2.V19*? R20*, 3.S21* T21** cuts through; but Black can hold with 2.U22*.

In each of these positions so far, a common theme has been to attack a single unlinked peg. That is frequently the only way to make a double threat in a local battle. Sometimes, however, a double threat that reaches around both sides of a linked group is possible.
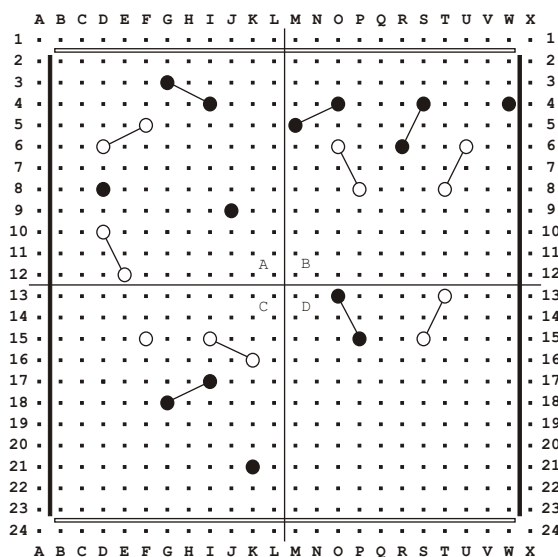

Figure 4

In 4A Black can threaten both gaps at once with 1.C6*! If then 1.…E8**, 2.D4* E3*, 3.E2**; or if 1.…B5*, 2.F9*.

In 4B White has 1.R3!, and now 1.…Q3**, 2.T4** or 1.…R2*, 2.P4** P3*, 3.O2*.

In 4C White, to move, can play 1.C18! This "beam defense," or placing in 4-0 opposition to an enemy peg, is often a strong move, particularly if a nearby peg supports you, as C18 is supported by F15 here. C18 is on the "wrong side" of the crucial diagonal B23-C21-D19-E17…, but White will be able to gain time by threatening to cut Black off on the right. If now 1.…D20, 2.D19 E18*, [or 2.…B19*, 3.F20* E17*, 4.D16** E19*, (or 4.…D18*, 5.E18**) 5.C17-C18/D16+C17/D19 B15, 6.D15*] 3.E17*** B21*, 4.H20! F20**, 5.J19*. Now Black still has one more trick to play: 5.…J20!, threatening H21** or K18**, but White can finesse right back with 6.L20*! H21**, 7.K22*. If 1.…E18, 2.E17** is essentially the same. If1.…D22, 2.F21 produces almost the same pattern I criticized as "bad shape" in 3B, but shape depends on *all* the pegs that can affect the tactics of a battle. Here the K16 peg gives White a tempo with H20, as examined above, which turns this pattern into a very good shape for White. If Black tries 1.…C21, 2.I21* J19**, (or 2.…H22, 3.G22*) 3.E19*.

4D is an important *joseki* position. *Joseki* is another Japanese Go term, meaning a local battle, usually in the corner. Black is to move. White's S15 peg is on the crucial diagonal leading to W23. Black has several choices here: for example, 1.S19 would move the battle over to the left, which might be good or bad, depending on what sort of support both sides have on the left. 1.R19 is in 4-1 opposition to S15, which is a very common way of trying to outflank a peg. White might then play 1.…Q17, leading to a very complicated battle that would again depend on what the board looks like outside of this corner. However, Black has a much stronger move here: 1.S18! Now if White tries a diagonal hammer attack with 1.…T17*, 2.R20*! covers both threats at once. If 2.…R18*, 3.Q18* is connected to P15 by a coign setup. Or if 2.…U19*, 3.U23! U21, 4.V21*! threatens to cut through White's mesh setup by double linking at T20. If then 4.…W20**, 5.S22** V22*, 6.W22*, and Black takes the corner. This pattern would also work if Black's P15 peg were linked to Q13 instead of O13, for example, or if White's S15 peg were linked to R13 instead of T13. The essential point of this *joseki* is that Black has a linked peg on P15, and White has a linked peg on S15.

All these corner battles so far have been chosen so that the battle can be resolved within that corner. In an actual game, however, any given battle is likely to "spill over" into another part of the board. Many games between beginners look like a sort of bar-room brawl, starting in one place, then wandering off to the left, then down, for example, each move relatively close to the opponent's last move. Of course, the correct way to choose a move is to look at the whole board, and recognize the potential of open space, and the *influence* you might gain by putting your peg far from where your opponent just played. Figure 5 is identical to Figure 3, but it's no longer divided into four corners.
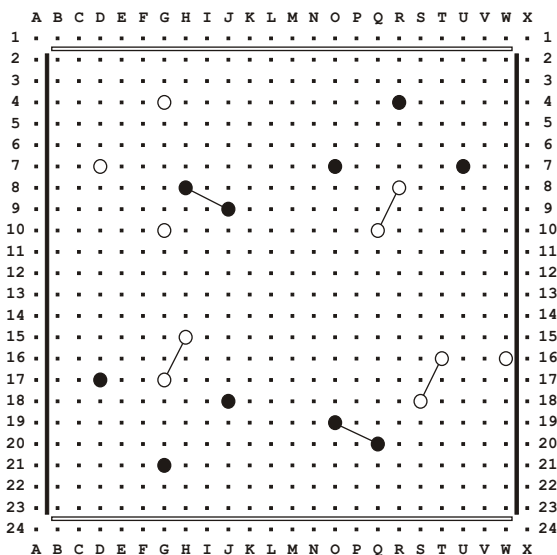

Figure 5

Suppose it is White's move here. How would you put all the tactics of the individual battles together? This is actually quite a complex position, but there are some basic features that an experienced player would recognize. For one thing, Black has a strong threat along the bottom of the board. It has already been established that White cannot punch through strictly between Black's J18 peg and the A wall. That leaves just two other places to stop Black: between J18 and O19, or between Q20 and the X wall. White might be tempted to immediately play 1.T20*, but

that would be ignoring another basic feature: there is a lot of empty space in the central region. Whoever plays there first is likely to gain a lot of influence. If White does play 1.T20*, then 1.…O11 makes a double threat of connecting to the X wall with either P5** or Q12*, and also makes a double threat of connecting to the A wall with either F7*, or L17*. For example, if 1.T20* O11, 2.D12 L17*, 3. N13 L12. Instead, White should play something like 1.M16, threatening either T20* or I21 along the bottom, and either M10 or maybe D12 to punch through to the top. Here is one possible line: 1.M16 T20 2.I21 J12 3.K15* H13* 4.O9*. There are many strong alternatives for both sides here, so it is not certain White can win, but it is important to recognize the best chance for victory lies in grabbing central influence with a move like 1.M16, rather than responding to one local battle with 1.T20*.

If you have any questions or comment, and you have internet access, please email me at twixt@cstone.net. *(Or mail enquiries will be passed on to David if sent to* AG. *-- Ed.)* ■

The next game, Onyx, is an original creation. Within my first couple of games of Onyx I was captivated by it. Strategy is probably comparable to other connection games, but the special geometry of the board and the capture rule give rise to some fascinating tactics. In particular, enemy pieces may form an essential part of your connection, and friendly pieces may even be a liability! This is illustrated by the simple shape given at the top left of the page opposite. As you will see, because of the white piece the two black pieces are connected; without the white piece the two black pieces may be disconnected.

In addition to the geometry of the board and the capture rule, Onyx differs from most (all?) other connection games in that in the official rules the players start with some pieces already on the board. This is not strictly necessary, and the game works extremely well, too, with an empty-board starting position. According to the game's designer, Larry Back, the official starting position leads to a more complex and interesting battle. In my experience this is true, but my personal preference is still for the empty-board starting position as it seems somehow more natural for this type of game. Players may make their own choice which they prefer. It does raise the interesting question of whether other connection games could possibly be improved with some pieces on the board in an initial starting position.

Although experience provides strong circumstantial evidence that stalemated positions are impossible in Onyx, it has yet to be mathematically proven that there must always be a winner. A consequence of the capture rule is that the proofs usually applied to show that Hex is always decisive cannot be adapted for Onyx. Perhaps some kind of inductive proof would work with Onyx. Also, because your own pieces may contribute to your opponent's connection, the strategy stealing argument will not work to show that the first player must (theoretically) have a winning strategy. There is plenty of scope here for investigation by mathematicians.

There are great opportunities, too, for the average gamer to investigate this wonderful new game. I am certain that some fiddling around with different patterns could easily lead to new tactical discoveries. What could be better?

Larry is a computer consultant who lives in Toronto. Apparently he became inspired to invent games 18 years ago after reading an article about the invention of Pente by Gary Gabrel. Larry says he has been inventing games in obscurity ever since. Onyx is his first published game. Larry was an avid Chess player in high school, where he participated in tournaments. Later he switched his attention to Othello and has since represented Canada in three World Othello Championships. -- Ed.
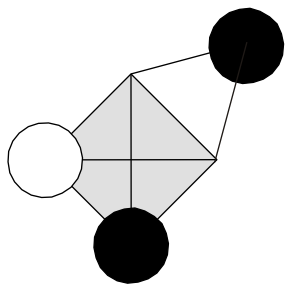
ONYX

An Original Connection Game

by Larry Back

The June 2000 issue of *Games* magazine featured an excellent article by R. Wayne Schmittberger describing the various connection games in existence along with the history of their invention. Some of these games are played by placing pieces down on spaces or intersections of lines in order to form an unbroken chain that links up various sides of the board. The very first connection game, Hex, is one example of this; the Game of Y is another. Other connection games, such as Bridg-it ot Twixt, involve the use of bridges to form connections. Still others, such as Trax or Kaliko, are played with tiles that have different colored paths printed on them. None of these games, however, has a capturing rule.

I realized back in 1984 that there was a dearth of connection games with a capturing rule so I decided to see if I could invent one. I understood that anyone could add some contrived capturing rule to a connection game and claim to have invented something new, but I also knew that, to have any merit, a capturing rule should pass certain tests: the capturing rule should actually improve the game; the capturing rule should be consistent with the theme of connection; positions should not repeat; the game should end; and finally, someone should win.

It took me eleven years to achieve this goal, but I believe I finally succeeded. In this article I would like to explain not only the rules of my game but also the process by which I developed them.

After doing some experimentation with Hex I came to the conclusion that Hex is not improved by adding a capturing rule to it. Therefore, I decided to create a unique connection game on a unique board. Since connection games that use pieces tend to be played on boards with hexagonal spaces or triangular grids, I decided to devise a connection game with a board that would be square in overall shape and would also be comprised of squares.

Now, a connection game on a square board would never work without some rule to break deadlocks, but since I was going to have a capturing rule I thought it could serve this purpose. Diagram 1 shows what I mean by deadlocks. Neither of the two black pieces or the two white pieces are connected to each other. Because of this deadlock, a connection game played on a square boards would normally end in a draw.
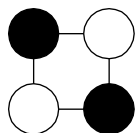

Diagram 1

Since my capturing rule would need to prevent this kind of deadlock from occurring I decided to adopt a rule stipulating that placing the last piece on a deadlocked square would result in the capture of the two opponent's pieces on that square. The nice thing about this rule is that after the captured pieces are removed

there are two ways to connect the two remaining pieces. So connection of those two pieces is assured.

Once I drew up a board and started testing my idea it did not take me long to discover a flaw. It is very easy to arrive at a stalemate position where neither player wants to be first to move to either of two points. In Go this is called a *seki*. For example, in Diagram 2, if a player places a piece on one of the 'X' points then that piece, along with another, would get captured by the opponent's move to the other 'X' point. As a result, both players would have to avoid these points and so neither player would make a connection.
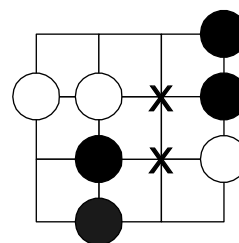

Diagram 2

Because of this problem I decided the game could not work, and I forgot about it. Then, two years later, I was experimenting with different boards when I came up with the design in Diagram 3.
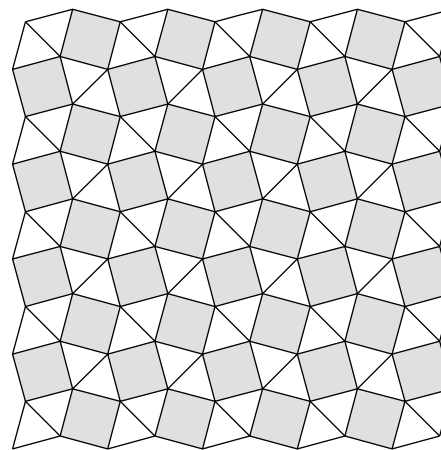

Diagram 3

As I was trying to figure out what kind of game I could develop for this board I suddenly remembered my connection game with the capturing rule. I realized that since this board had squares I could retain the same capturing rule and yet, since no two squares were joined at the side, it would not be possible for the stalemate position to occur as on the original square board. So I thought that perhaps my connection game could work on this board. Unfortunately, once again, I soon discovered that it was still possible to arrive at a stalemate position, albeit a different one. Disappointed, I shelved the

game and forgot about it once more.

Then, nine years later, in 1995, I came across this board in a drawer, and I started thinking about it again. I became convinced that as long as there were squares on the board then a stalemate position could probably always occur. Then it hit me: I could draw two diagonal lines connecting opposite corners of each square so as to divide the squares into four triangles and create a new point at the center of each square. Now this new board would be comprised of nothing but triangles, and yet it would retain the squares. So the capturing rule could still be used. I was now anxious to find out if turning the squares into four triangles would prevent the old stalemate position from arising, but as nine years had passed I first needed to recall what that position had been. After a bit of trial and error I finally managed to recreate the stalemate position on the old board, shown in Diagram 4.
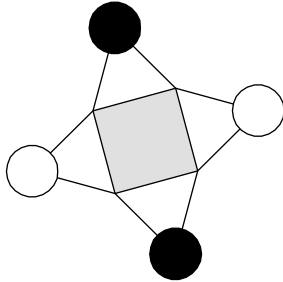
Diagram 4

Let us say it is Black's turn. An attempt by Black to connect the two black pieces by moving to one of the corner points of the square merely results, three moves later, in White making a capture on that square. Diagram 5 shows the sequence. White's move '2' blocks Black from connecting and forces Black to play '3' to stop White from connecting; but then White's move '4' captures the two black pieces on the square.
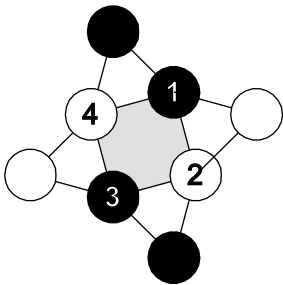
Diagram 5

So neither player wants to be the first to move to one of the corner points of the square. Yet, if both players avoid the square then neither the black pieces or the white pieces will become connected. Does dividing the square into four triangles help break this stalemate? Yes, it does, and in a most elegant way!

With a move to the midpoint of the square, shown in Diagram 6, Black now has two ways to connect the piece on that point to each of the other two black pieces. So connection is assured, and there is no stalemate. At this point I realized I had achieved my goal: I had invented a connection game with a capturing rule. Furthermore, the capturing rule seemed to pass all my tests: positions were not repeated; the game was definitely more interesting with a capturing rule; and someone had to win. I just had to make one amendment to my capturing rule: because the squares now had midpoints, I had to specify that a capture can only be made on a square where the midpoint of the square is
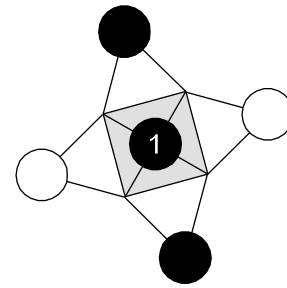

Diagram 6

unoccupied.

After some more experimentation I decided one more rule was needed. In Diagram 7 Black is threatening capture on the upper square. White has two ways to defend: White can move to the midpoint of the square, or White can move to the corner point of the square. However, a move to the corner point of the upper square results in a capture by Black on the lower square, so the midpoint move is safer. Since safer midpoint moves result in fewer captures, they also result in games that are less interesting. Therefore, I decided to have a rule that restricts moves to the midpoints of squares.
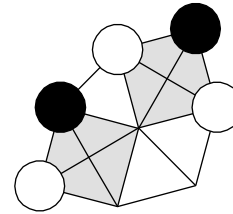

Diagram 7

After a while I started to notice that, except for the above situation or when there are no pieces on the corner points of a square, if a move to the midpoint of a square is a winning move then a player has at least one other winning move that does not involve moving to the midpoint of a square. Therefore, it is never necessary to move to the midpoint of a square except to avoid a capture or when there are no pieces on the corner points of that square. I cannot quite prove this, but it seems to be true. So, for simplicity, I decided that the rule restricting moves to the midpoints of squares should state that a player cannot place a piece on the midpoint of a square unless there are no pieces on any of the four corner points of that square. Diagram 8 illustrates this rule.
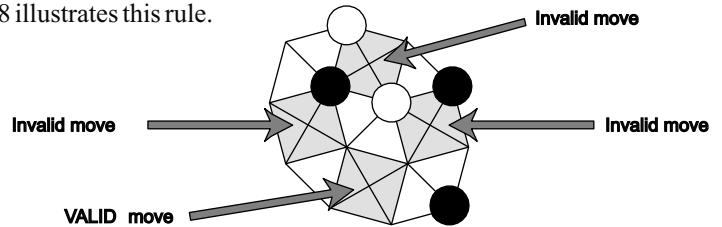

Diagram 8

Also, although it would rarely occur, it is possible to capture two pairs of pieces on two different squares with one move. For the sake of completeness, it is important to have a rule stipulating that, in case of double capture, all four captured pieces are removed from the board.

After some more experimentation I decided to have the game start with four black pieces and four white pieces along the sides of the board. Diagram 9 shows the opening position.
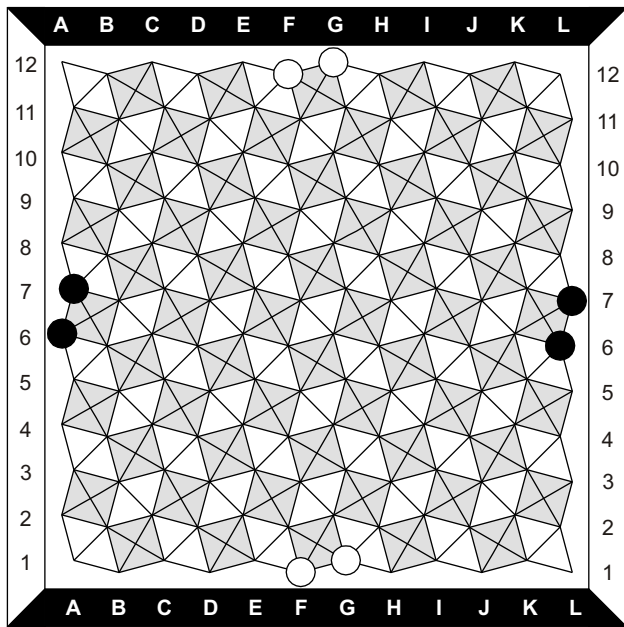
Diagram 9

In the game, Black is trying to connect the top and bottom sides of the board with an unbroken chain of black pieces; White is trying to connect the left and right sides of the board with an unbroken chain of white pieces. Black starts with two pieces along each white side, and White starts with two pieces along each black side. Of course, the game can be played with different starting positions, including having no pieces on the board at all. However, I find that having two pieces along each side of the board in this way tends to sharpen the play and results in more interesting positions.

As with all connection games, board size is arbitrary. A larger board results in more strategic depth but also a longer game. It seems a board of this size with twelve points along each side is ideal for this game.

Finally, this game uses the same rule that most connection games use concerning the first move. One player starts by placing a black piece on the board and the other player decides to continue playing the game as either White or Black. The player that becomes White 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.

Since pieces can be captured in this game, is it really true that positions cannot repeat? Well, no, actually they can, but only if both players conspire to bring this about. If either player is trying to win then a repeated position would not occur. Therefore, I see no reason to have a rule to deal with repeated positions or to stipulate that the game can be won with a certain number of captures.

Having decided what the rules were, there was only one thing left to do: I needed to come up with a name for this game. The black glass pieces I was using to play the game reminded a friend of onyx gemstones. I liked the sound of that, so I have named the game ONYX. One nice thing about that name is that each of the letters 'N,' 'Y,' and 'X' is embedded in the board lines, and the letter 'O' is represented by the pieces.

The only other thing I needed to do was publish the rules of the game so that more than a handful of people would know about it. It took five years, but now I have finally done this. If you like connection games I think it is worth the time to draw up a board and give Onyx a try. The capturing rule adds an extra element to the tactics that you will not find in other connection games.

The Official Rules of Onyx

●Onyx is a game for two players.

●The equipment of Onyx consists of an Onyx board and a sufficient set of both black pieces and white pieces.

●One player, Black, plays with the black pieces; the other player, White plays with the white pieces.

●Before the start of the game, four black pieces and four white pieces are placed on the board. Black pieces are placed on the two outside corners of the middle square on both the left and right sides of the board. White pieces are placed on the two outside corners of the middle square on both the top and bottom sides of the board. (See Diagram 9, opposite.)

●The Onyx board consists of interlocking squares and triangles. The squares are further divided into four triangles forming an intersection at the midpoint of the square. A move always consists of placing a piece on the midpoint of a square or on one of the corner points of a square or triangle. However, a piece cannot be placed on the midpoint of a square if there are any pieces on the four corner points of that square. (See Diagram 8, opposite.)

●Once placed on the board, pieces are never moved from one point of the board to another. However, a piece must be removed from the board if it is captured. Captured pieces are returned to the player from whom they were captured.

●If the midpoint of a square is unoccupied, and a player places a piece on the corner point of the square with the result that both players have two pieces occupying diagonally opposite corner points of the square, then the two opponent's pieces on that square are captured and removed from the board. (See Diagram 10.)
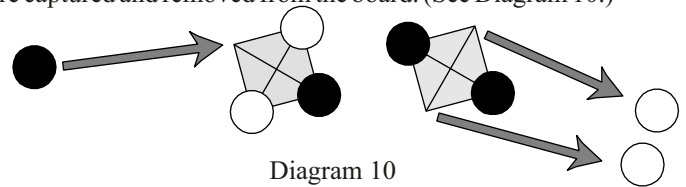

Diagram 10

●It is possible to capture two pairs of pieces on two different squares with one move. In this case all four captured pieces are removed from the board. (See Diagram 11.)
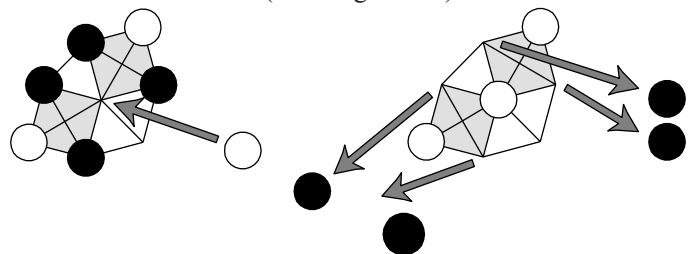

Diagram 11

●At the start of the game neither player is assigned the black or white pieces. One player makes a move by placing a black piece on the board. After this first move has been made the other player then chooses to either continue playing the game as White or continue playing the game as Black. The player that becomes White makes the next move, and players alternate moves for the rest of the game. On each move a player must place a piece on the board. Black always places a black piece on the board and White always places a white piece on the board.

●Each one of the four sides of the board is comprised of twelve edge points. The four corner points of the board are considered to be part of both the adjacent edges that meet at that point. The object of the game for Black is to construct an unbroken chain of black

●pieces that includes at least one piece on one of the top edge points of the board and includes at least one piece on one of the bottom edge points of the board. The object of the game for White is to construct an unbroken chain of white pieces that includes at least one piece on one of the left edge points of the board and includes at least one piece on one of the right edge points of the board. Once either player accomplishes this goal the game is over. (See Diagram 12.)
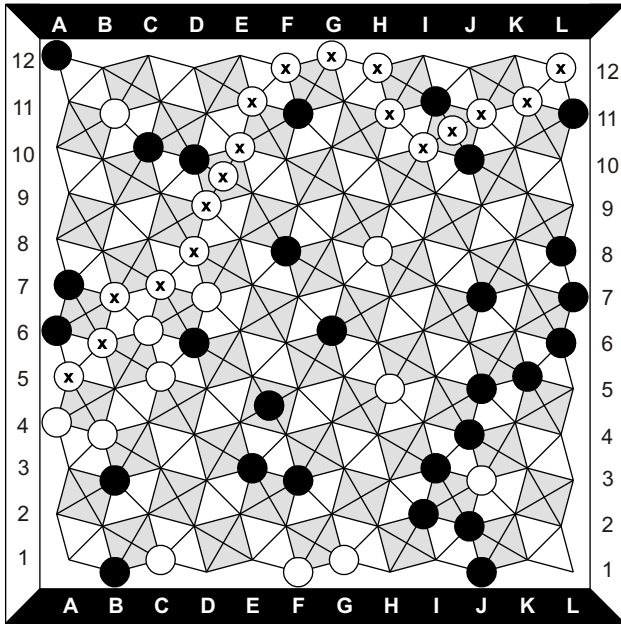

Diagram 12 -- White wins

Notation

Aside from the midpoints of squares, each point on an Onyx board can be represented unambiguously by a letter and number according to a zig-zag coordinate system. In Diagram 12 above, for example, the first four X-marked white pieces from the left are on points A5, B6, B7 and C7. The midpoints of squares are represented by the four letters and numbers that uniquely determine the corners of the square. In Diagram 12, for example, the two X-marked white pieces on the midpoints of squares are on points DE910 and IJ1011. A move that captures one pair of pieces is followed by an asterix '*'; a move that captures two pairs of pieces is followed by two asterixes '**.' ■

Mini-Onyx Puzzles

The following two Mini-Onyx puzzles will demonstrate some of the tactical complexities of the game. In both puzzles Black is to find the only move that will win.
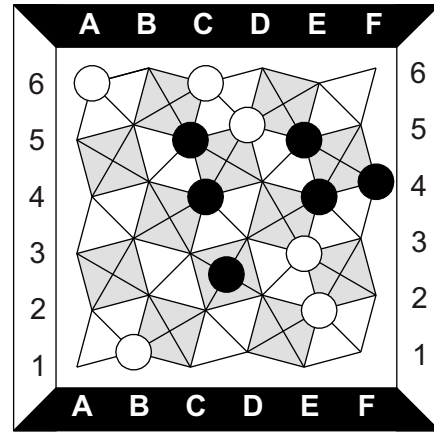
Puzzle 1
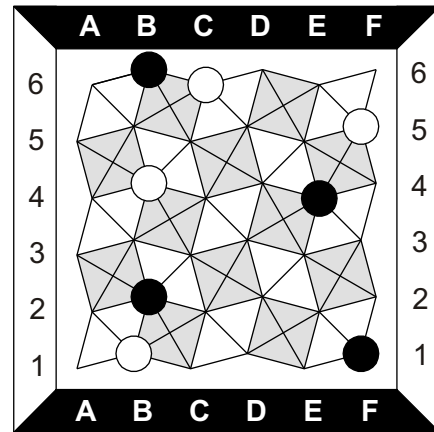
Puzzle 2

Solutions are given on page 25.

The First Annual 8x8 Game Design Competition

Game designers and hopefuls, put on your thinking caps! About Board Games, together with the Strategy Gaming Society and *Abstract Games* magazine, is sponsoring the First Annual 8x8 Game Design competition. The goal is simple: design a great two-player game that can be played on an 8x8 playing surface using pieces most people are likely to have around the house . Prizes will be awarded to the top two games, as chosen by a panel of judges spread around the world. First prize is a trophy, a one-year membership in the Strategy Gaming Society, and a one-year subscription to *Abstract Games*. The top two finishers will be submitted to a variety of game publishing companies for their consideration. In addition, the top two games will be published on About Board Games, in *The Strategist* (the Strategy Gaming Society newsletter) and in *Abstract Games*. Additional games may also be published in the same outlets. About Board Games, The Strategist and *Abstract Games* retain non-exclusive rights to publish any entry in the contest.

Official Rules

1. Games must be designed for play on a standard 8x8 chess board, for two players only, using checkers, go stones, chess pieces, poker chips, and other items likely to be found in the average gamer's collection. No cards are allowed.
2. Entries will be judged by gamers chosen by About Board Games, the Strategy Gaming Society and *Abstract Games*.
3. Winners will be determined using the same system employed by the Strategy Gaming Society to determine the winners of the Gamers Choice Awards. For more information visit this page: http://pages.about.com/strategygames/wizzh.html.
4. Entries must be received by email (plain text, please -- no attachments will be opened) at boardgames.guide@about.com no later than December 31, 2000, at noon eastern US time. Any entries received after that time, regardless of reason, will not be considered.
If you have any questions, please post them on the Board Games Forum at http://boardgames.about.com/games/boardgames/mpboards/htm.
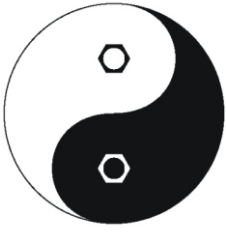
Hex Strategy

Part 3: Ladders

by Cameron Browne

(See Abstract Games Issue 2 for rules.)

Last issue we developed a method for analyzing Hex board positions relative to each player, indicating the minimum number of moves required for a win. This issue we look at ladders. Ladder handling is a key component of Hex strategy and is where the game is usually won or lost: a badly played ladder leads to a hopeless dead end, while a well played ladder may force a winning connection.

Ladder Basics

A *ladder* occurs when one player makes a series of forcing moves that result in a progression of pieces along a row or column. Go players will be familiar with the concept of laddering.
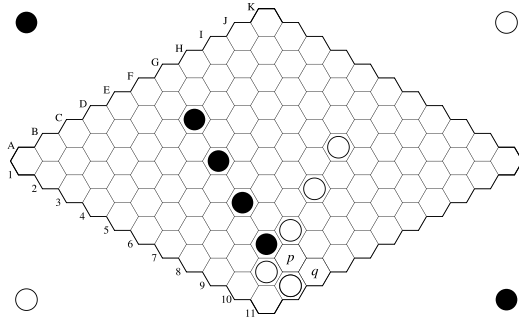
Figure 1. Black to move.

Figure 1 shows a typical situation in which a ladder is about to form. Black's obvious move is point *p* which cuts White's impending connection. This in turn forces White to play *q* to cut Black's impending connection. Black can continue making such forcing moves, but this leads to an unhappy result as shown in Figure 2.

Black has blindly played the ladder to its conclusion and lost the game. This ladder is described as a *2-row ladder* indicating that the attacking line of pieces is two rows from its target. Ladders generally occur in relation to edges, but may also occur in relation to a line of pieces within the board. (See the solution to puzzle G.)
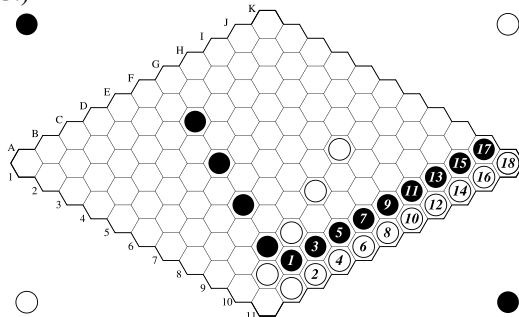
Figure 2. Black forces a ladder and loses.

Figure 3 shows a pattern which commonly results in a ladder:

(i) *Bottleneck:* a narrow gap is open to the attacker (Black),

(ii) *Push:* the attacker pushes through the gap in the direction shown, and

(iii) *Plug:* the defender plugs it.

This particular case results in Black being able to force two ladders: one to the left from point *p*, and one to the right from point *q*. Potential ladders are described in the diagrams by arrows leading from the ladder formation point.
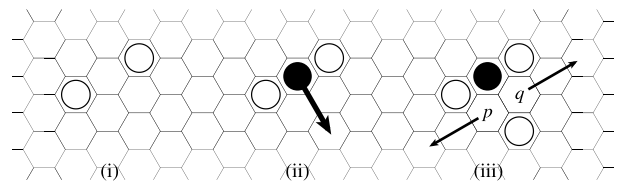

Figure 3. Ladder formation.

Ladder Escapes

Now consider what happens if Black has an additional piece on the board along the projected ladder path at J10, as shown in Figure 4. Again Black forces a ladder along row 10, but this time the extra piece allows him to jump ahead of the progressing ladder front to complete his connection and win the game. This is described as a *ladder escape*, and the extra piece as the *escape piece*.
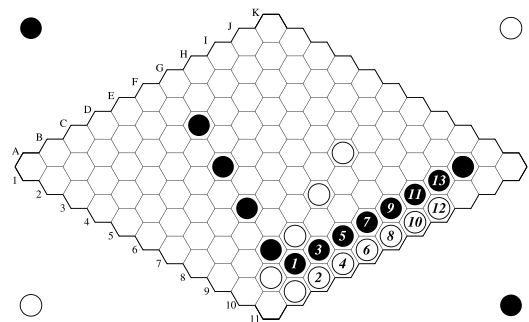

Figure 4. The extra piece at J10 lets Black "jump off" the ladder to win.

As a general rule, the escape piece must be safely connected to the target edge, such as one of the safe edge templates described last issue. Not all friendly pieces along or adjacent to the ladder path are useful as escapes. Figure 5 shows an *embedded* piece **b** that does not help the ladder from piece **a**--by the time the ladder reaches point *p*, the ladder itself is adjacent to point *q* so no advantage is achieved.
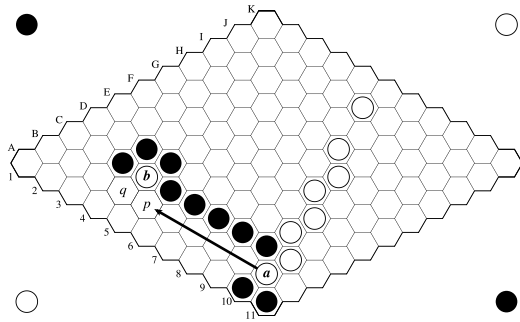
Figure 5. Embedded piece **b** does not help this ladder.

Ladder Escape Templates

A *ladder escape template* is an existing pattern of pieces along the ladder path that provides an escape. 2-row ladders can use any of the ten safe edge templates (described last issue) to escape. For simplicity, only single piece ladder escape templates are discussed here. Note, however, that they constitute only a fraction of the number of possible ladder escape structures formed by multiple pieces.
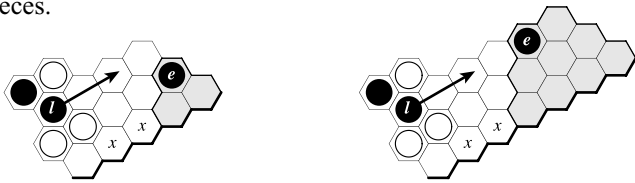

Figure 6. Single-piece 3-row ladder escape templates.

There are only two single-piece escape templates for 3-row ladders, and only one single-piece escape template for 4-row ladders. Points marked *x* in the diagrams play no part in the ladder escape. The trend is obvious: the further a ladder is from its target, the harder it is to connect.
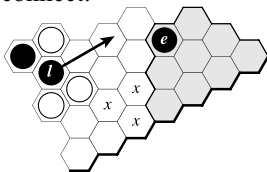
Figure 7. Single-piece 4-row ladder escape template.

Ladder Escape Forks

We have seen that it is possible to escape ladders using existing support pieces. What if no convenient escape pieces are present? An escape must be engineered, and the surest way to achieve this is to play a forking move. As in Chess, a *fork* is a move that poses two or more simultaneous threats that cannot be answered by a single reply.
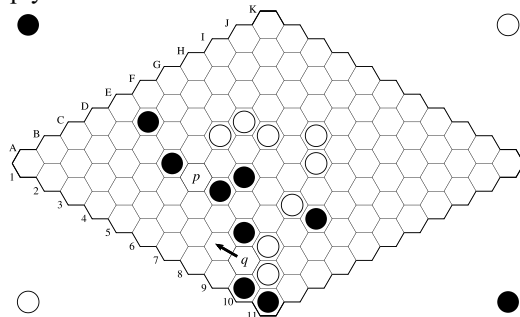
Figure 8. White to play and win.

Consider the situation shown in Figure 8 with White to move. White has forced a ladder from point *q*, and also threatens to connect through the vulnerable point *p*. White can combine both of these threats into the forking move **17** B6. Black can play **18** D5 to block White's immediate connection, but piece **17** now provides an escape that guarantees the success of White's ladder.
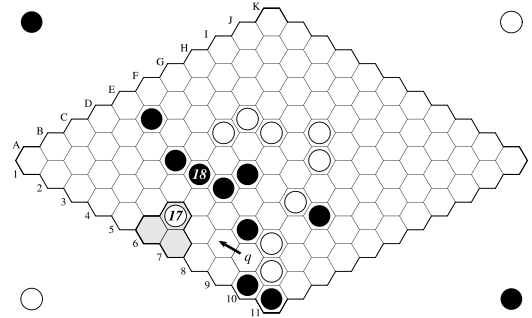

Figure 9. Ladder escape fork.

Alternatively, Black could choose to block the ladder along column B with move **18**, but this would allow White to play at D5 and complete his connection. The key point is that the forking threats *do not overlap at any point*.

This leads to a general principle for good play: *the player should strive to make every piece serve at least two purposes*.

Ladder Escape Foils

The ladder escape templates described above are generally safe, but can be *foiled* by the defender if he is able to make a move that intrudes into both:

> (i) the ladder escape template, and
> (ii) the ladder's path.

Figure 10 shows a situation where White has forced a ladder that looks set to escape via piece **e**. Note, however, Black's piece **a** adjacent to both the ladder escape template and the ladder path where they overlap at point B5.
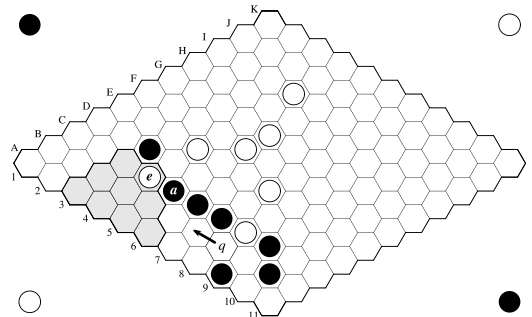

Figure 10. Piece **a** is adjacent to potential ladder escape piece **e**. Black to move.

It is straightforward for Black to play the *foiling move 1* B5 which intrudes into both the template and the ladder path. If White attempts to keep the threat alive by reconnecting *e* to the edge with a move such as *2* B4, Black is able to sever this connection with *3* D4 to put the win beyond doubt.
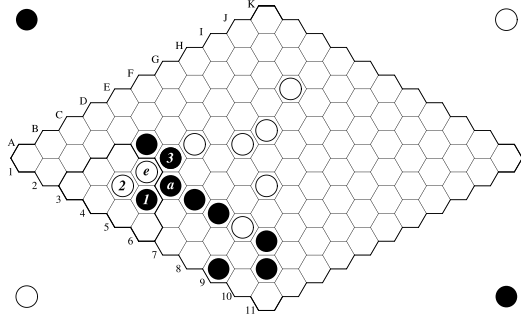

Figure 11. Black foils the escape with adjacent intrusion *1* B5.

This escape was vulnerable because the escape template and ladder path overlapped at point B5. Finding and exploiting such points of overlap is central to the game of Hex.
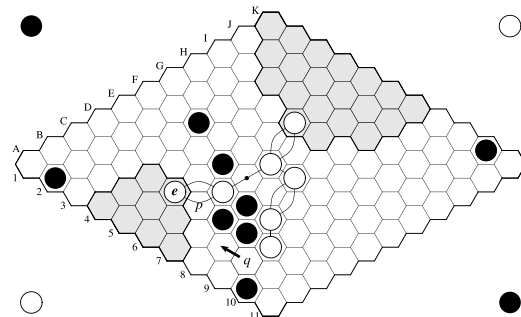
Figure 12. Piece *e* threatens a potential escape. Black to move.

Figure 12 shows Black in a similar situation, but this time he has no convenient piece adjacent to the point of overlap B6. Luckily, White's connection has a weakness at point *p* which Black is able to exploit.
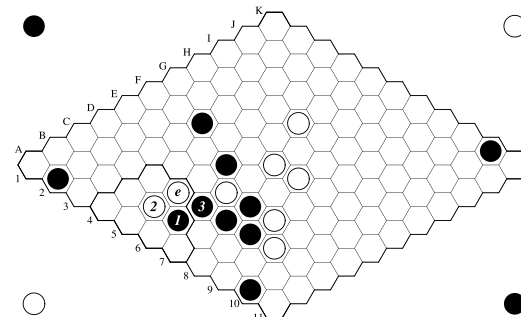

Figure 13. Non-adjacent ladder escape foil.

Move *1* B6 intrudes into both the escape template and the ladder path, but White's reply *2* B5 is more threatening in the absence of an adjacent block. However, Black is able to neutralize this threat and win the game with move *3* B6 which both:

  (i) blocks the ladder path, and
  (ii) intrudes into a bridge along White's best spanning
       path.

Notice again how moves which achieve more than one goal combine to win the game.

Partial Ladder Escapes

Escape templates that do not in themselves provide a guaranteed escape may still be useful if they provide a *partial escape* that lets the attacker force the ladder closer to the edge. An example of this is shown in Figure 14, where Black has forced a 3-row ladder heading towards edge templates *e* and *f*.
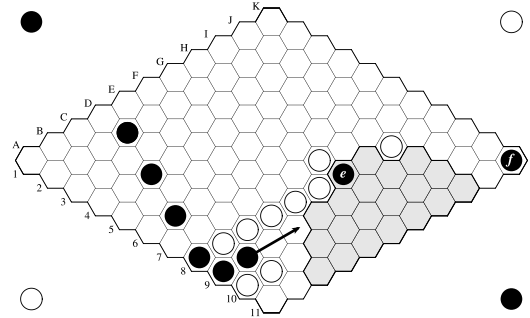

Figure 14. Partial ladder escape.

Neither of these templates provide an escape for a 3-row ladder in its own right. However, Black is able to exploit piece *e* to convert his attack into a 2-row ladder which escapes via piece *f* to win the game.

This is an example of a *cascading* escape that pushes closer to the edge along the original ladder direction. A partial escape that pushes closer to the edge but returns against the original ladder direction is described as a *foldback escape*.
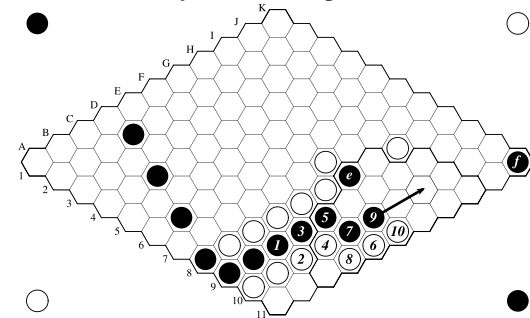

Figure 15. Cascading escape.

When defending against a ladder, it is generally wise to keep the ladder as far from its target as possible.

Ladders and Path Analysis

If a piece *x* forms a ladder and a safe escape template exists to guarantee its success, then these elements can be considered as a closed system which define *x*'s safe connection to the edge. The path analysis algorithm outlined last issue can now be enhanced so that both safe edge templates and safe ladder escapes define direct connections to each edge, and recursive path growth from these starting points reveals each player's best spanning path.

It is the goal of each player to identify and exploit key points (points of most overlap) in both his and his opponent's spanning paths and to predict where future key points may develop and prepare for them.

This covers the basics of laddering. More involved discussions of ladder handling techniques can be found in my book *Hex Strategy: Making The Right Connections*. Next issue we look at a simple algorithm that plays a surprisingly good game of Hex, complete with C code.

Solutions To Last Issue's Puzzles
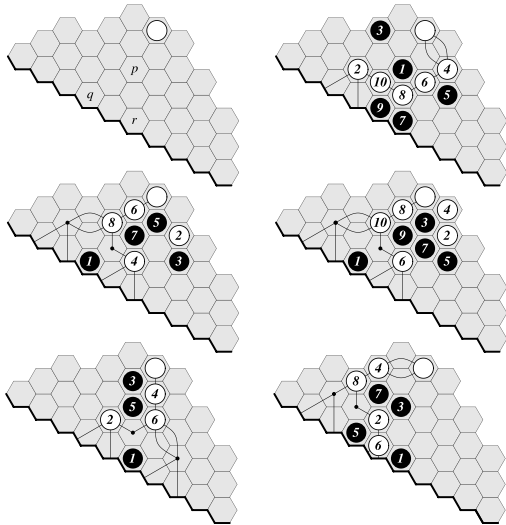
Solution E: The key points within template Va are *p*, *q* and *r* as shown in the first diagram. If Black intrudes anywhere else, then White is able to play an edge template that connects safely to his existing piece, guaranteeing the template's success.

White's defense against an intrusion at *p* is shown at the top right. The middle two diagrams show White's defense against an intrusion at *q*, and the bottom two diagrams show successful defenses against an intrusion at *r*. These sequences show the key lines of defense and assume that Black plays optimally. Variations on these themes are possible.

This defense can be reflected to guarantee the safety of template Vb. However, it is not yet been proven that Va and Vb are in fact the most compact templates from the fifth row. Can you find a better template, or prove that no better ones exist?
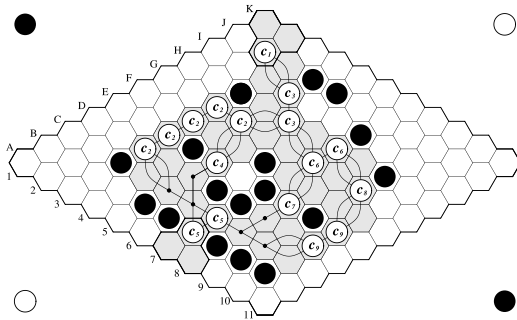
Solution F: White's best spanning path is 0-connected as shown. He has already won the game. The two White pieces at B7 and C7 are connected to the bottom left edge by edge template II. All other White pieces form a safe group that is connected to the top right edge, also by edge template II. These two groups are safely connected by the path shown, which involves two levels of step consolidation.
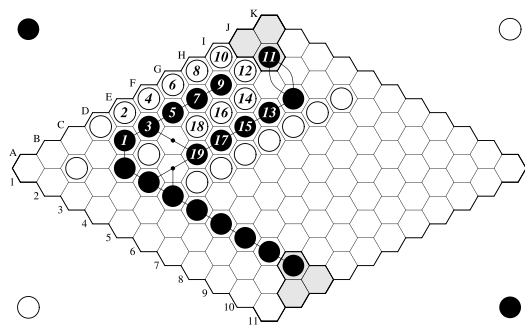
Solution G: Black wins with *1* D2 and the sequence of play shown. This forces a ladder along row 2, then killer move *11* J2 forces a separate ladder along row 4 that eventually connects with Black's main body of pieces.
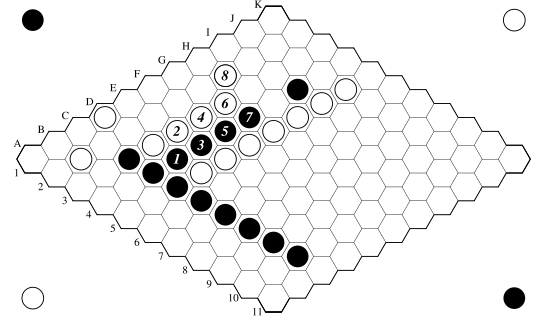

1 D4 looks like another promising line of play, but White is able to foil this attack as shown.

This solution is of particular interest as it demonstrates that laddering can be as useful against a solid line of pieces as against an edge, and it reverses the usual trend of events: the ladder travels *away from* the edge connection and *towards* the main body of pieces.

Puzzles

Puzzle H: What is the maximum number of pieces that can be played on an 11x11 board before the game is won by either player? What is the maximum number for a general *n*x*n* board?
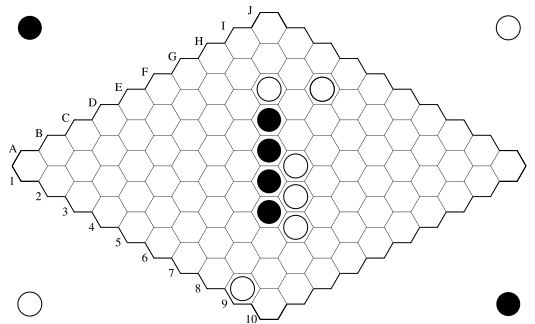

Puzzle I: Black to play and win. Don't be fooled by the fact that this puzzle is based on the smaller 10x10 board--it's difficult! Puzzle designed by John Tromp. ∎

Cameron Browne is the author of Hex Strategy: Making the Right Connections *(reviewed last issue) released by AK Peters (ISBN 1-56881-117-9). This book discusses the above topics in greater depth, as well as additional points of strategy and other interesting aspects of the game. Note, however, that this series of articles does contain some supplemental material not included in the book.*

.... But however full a man may fill his leisure with chess and start fresh next morning on another kind of work, one cannot so easily fit chess in with literature, because literature has not its regular hours, and so one can never say when chess may not interrupt it: chess is a mighty rival, the only art I know that is also a science, calling almost equally upon fancy and reason. Chess has been to me like a wonderful country into which I travelled when young and left, and have afterwards moved outside its borders, crossing them now and then, and soon coming out again.

The Sirens Wake, Lord Dunsany
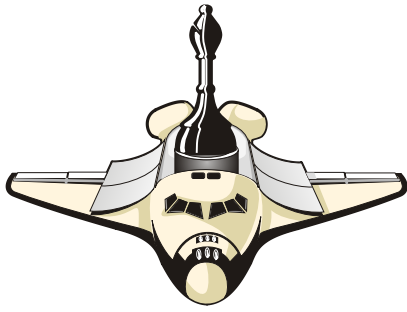
HOSTAGE CHESS

Part 1 — Introducing the Game

by John Leslie

In Japan's era of competing warlords, prisoners often changed sides as an alternative to being slaughtered. This is reflected in Shogi, the magnificent chess game played by perhaps a million Japanese today. Shaped like spearheads, Shogi pieces are all the same color, but they show who they fight for by pointing towards the enemy. Captured, they can parachute back onto the board to attack their former allies.

Shogi is said to be a deeper game than Western Chess. Shogi battles are always exciting and hardly ever lead to draws. Typically they culminate in one side parachuting several men in swift succession to attack the enemy king. Meanwhile the enemy is accumulating paratroops to take revenge if the attack fails.

Among variant chess games—David Pritchard's Encyclopedia of Chess Variants describes over a thousand—"Chessgi" is one of the finest. As you have guessed, this is Shogi of a sort, using western chessmen. Whenever a man is captured, it changes color: not through repainting, but by being replaced by a man of the other color from a second chess set. It is then available for parachuting.

Chessgi suffers from its unpredictability. Since western pieces tend to be more powerful than those of Shogi, when they change sides there can be huge swings of fortune. Also, the game is hurt by the inconvenience and confusion of having to replace men of one color by men of another. Besides, you may not own two identical sets of chessmen. Might it not be better to have a game playable with just a single set, with all the excitement of Shogi but with more predictability, more room for skill?

It now exists. In his Popular Chess Variants *(reviewed in this issue -- Ed.)*, Pritchard has selected not Chessgi but Hostage Chess, a game he thinks is much superior. Captives are held hostage until ransomed by being exchanged for other captives, after which they can parachute onto the board as in Shogi. A mighty hostage (a rook, say) can always be exchanged for one of equal value, but also for one which seems less powerful (perhaps a humble pawn) but which could be just what is needed for a mating attack. That makes for a very subtle game.

Rules

Normal rules of Western Chess apply, except these:

(i) Each player owns two areas by the board: a "prison" for captured men near the player's right hand, and an "airfield" near the left hand. In any turn you may be able to rescue a man from your opponent's prison. You must choose between this and using the turn in some other way. Only one man per turn can be rescued.

(ii) To rescue a man, release a man of equal or greater value from your own prison, pushing it forwards into your opponent's airfield. [Values run from pawn upwards to knight or bishop (equal in value), then rook, then queen.] Afterwards, pick up the rescued man.

(iii) In the turn in which it is rescued, a rescued man must be parachuted (or "dropped") onto a vacant square. This ends the turn. The only restriction is that pawns cannot be parachuted onto first or eighth ranks. Parachuting may therefore make your bishops stand on squares of the same color.

(iv) A man in an airfield stays there until the airfield's owner chooses to use a turn just for parachuting the man.

(v) Castling and pawn jumps from the second rank can involve parachuted men, no matter what they did before being captured.

(vi) "Pawn promotion": A pawn can move to the eighth rank only if it can then at once change places with a queen, rook, bishop or knight in the opponent's prison. [Until there is a prisoner with which it could change places, a seventh-rank pawn does not give check to a king standing diagonally ahead of it. You of course cannot make any capture that would cause such a pawn suddenly to give check to your own king.]

In addition, please note the following:.

Rule (ii) says you can always rescue a man (queens, too, being "men") by releasing one of equal or greater value. Your opponent can never refuse such an exchange of hostages.

Rule (iii) says that whoever initiates an exchange of hostages has to parachute the rescued man at once. The opponent, on the other hand, now has a new paratrooper. As a rule, paratroops are more powerful than men on the board since they can jump to so many different places. [In the chess variant "Pocket Knight," each player starts with an extra knight which can parachute into the game at any stage. A knight in one's pocket is worth about as much as a rook on the board.] In trying to estimate who is ahead in a game of Hostage Chess, do not count each paratrooper as pure profit, forgetting that he is a man missing from your army on the board. However, do count each man as worth rather more when he is a paratrooper.

Rule (v) means that you do not have to keep notes about what rooks or pawns did before being captured. If a rook dropped into a corner has not moved since being dropped into it, then it's available for castling, just as if it had stood there since the start of the game.

Rule (vi) means you sometimes need not worry much when your king seems to be in check. If it is on the first rank, and if the pawn which appears to attack it could not "promote" by moving forwards because there is no imprisoned piece with which it could be exchanged, then the king is not really checked by the pawn. Still, do start to worry, since as long as your king sits diagonally ahead of that pawn, you can capture pawns only! Capturing a knight, for instance, would be putting your king in check. It would be a knight to which the enemy pawn could be promoted.

Remember, the rules tell you that in any turn you can do just one of three things. Move ordinarily, or else rescue a prisoner and then at once parachute it, or else parachute a man from your airport.

Not a rule, but immensely helpful: Saucers or small plates for the airfields! I feel lost without them.

Normal Chess notation is used, with the Shogi "*" for drops. A hostage exchange is noted in parentheses before the move. Thus (B-N)N*c7 means a released bishop goes to the opponent's airfield, and a knight is rescued, the knight then parachuting onto c7.

Tactical hints

— The player with the larger store of "drops" (parachutable men) will tend to be able to launch a decisive attack, unless the opponent has already launched one. Do not reduce your supply of paratroopers in order to secure slight advantages on the board! Hostage Chess is a game of surprising sacrifices and sudden aggression. Your king can be astonishingly vulnerable even when castled. Strengthen its defenses in good time, perhaps by dropping men near to it.

— When queens, for instance, have been traded on the board, the player who initiated the trade may at once rescue his imprisoned queen and drop it. The other player can then drop a queen, too, but may find this insufficient compensation. The first queen to be parachuted can often win the game. [After winning the opposing queen, you can often commit mayhem with yours, the enemy not daring to capture it. Captured, it would return at once through exchange of hostages, and checkmate would follow.]

— A disadvantage, sometimes, of initiating a hostage exchange is that you do have to parachute your rescued man straight away. In contrast, your opponent now has a newly released man. This man may have joined a group of paratroopers which is growing dangerously large.

— Often an imprisoned enemy should be considered nearly as threatening as an enemy waiting to be parachuted. Remember, after a hostage exchange the rescued man is parachuted immediately. Think of the men in your prison not only as useful "cash" for "buying back" your men from the enemy prison at a time of your choice, but also as bombs liable to explode at a time chosen by your opponent.

— The situation is not as in Shogi, where capturing a rook, for instance, means you at once have a new rook to drop, a rook that has "changed sides." If you want a rook to drop, you must get your opponent to capture one of your own rooks, after which you must rescue it. A man can sometimes be sacrificed simply so that it can then be rescued and dropped.

— Correspondingly, there is a danger in capturing anything: it can give your opponent the chance of rescuing and then dropping it. A man you capture might return to mate you immediately. You have to be careful even about capturing undefended pawns.

— To stop your opponent parachuting on some square, just parachute there yourself. [That's a Shogi proverb.]

— Knight drops can be extremely powerful, while bishop drops tend to be less useful even though a bishop can be dropped on any empty square, black or white. The point is that a dropped bishop's attack can be blocked by an interposed man, quite often another dropped one. You cannot interpose anything to stop a knight. "Smothered mates" become easy: drop something by a king to help smother it, and then make use of a dropped knight. Capturing an enemy bishop at the cost of a knight of yours, a knight which you can rescue and drop, is often a good idea, while capturing a knight at the cost of a bishop is often a bad one.

— A rook may be little more useful than a knight as a droppable piece, or even as a piece on the board (since the game will never reach a stage comparable to the endgame in Western Chess, in which rooks become very powerful). But the fact that the rook is "officially worth more" means it really is worth more to you as a prisoner. Knights cannot be released in order to rescue rooks, whereas rooks can be released to rescue knights.

— Even a pawn can be powerful if dropping it leads to a mate. Rescuing a pawn in exchange for releasing an enemy knight could often make sense. So, occasionally, could rescuing a pawn in exchange for releasing an enemy queen.

— Dropped pawns can be very useful when they threaten to promote soon, and also for double attacks ("forks"), or for trapping unwary pieces, or for disordering a king's defenses. An exposed king may even have a pawn dropped in front of it just so that the king will be forced to capture the pawn, becoming still more exposed. Dropping two or more pawns in swift succession can be devastating.

— In one game, White dropped a pawn onto the seventh rank, forking two rooks and threatening to promote by capturing one or the other of them. Black replied by rescuing a man, "buying the man back" by releasing the only white piece which could be used for the promotion. The rook capture was then impossible.

Some quick examples

Here are some early results from a postal tournament organized by the British Chess Variants Society. First, a contest ending in unusually swift resignation:

White **P.C.** *Black* **P.Y.**   1. d4 d5, 2. c4 dxc4 [the pawn goes into Black's prison] 3. e4 Nc6, 4. Be3 b5, 5. a4 Ba6, 6. axb5 Bxb5 [there are now pawns in both prisons, making a hostage exchange possible] 7. (P-P)*e6 [hostage exchange followed by drop] h5, 8. Bxc4 [see diagram; the lines beside the board remind you where the airfields are]
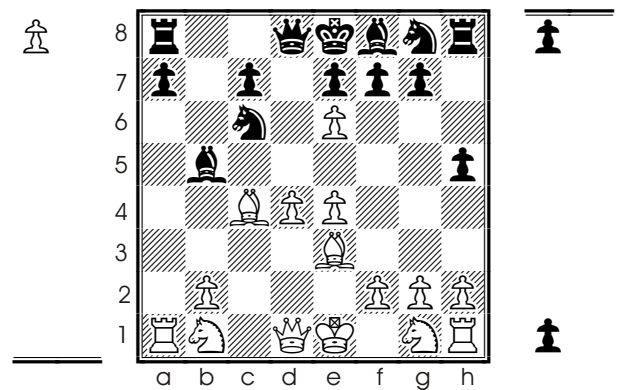

Position after 8. Bxc4

8....Resigns. [The need to do something about the threatened (P-P)*d7+ means that Black's bishop is in trouble. For a start. 8.....Qb8 could be answered by Bxb5. If Black's queen then takes the bishop, White can play (B-B)B*d7+ or (B-B)B*a4.]

In the next game I had Black against a player who would have thrashed me at ordinary chess. He seems to have been taken aback, though, by the violence of my onslaught. In Hostage Chess you have to keep on attacking. The finale is a classic example of sacrificing a piece so as to "buy it back" and parachute it. As is often the case, most of this game's moves are ordinary Chess moves, but the possibilities of parachuting influence them all.

White **G.J.** *Black* **J.L.** 1. c4 Nf6, 2. c5 d5, 3. cxd5 *en passant* exd6 [an unusual opening, but in Hostage Chess pawn drops ruin many commonplace plans] 4. Nc3 Nc6, 5. e4 Bd7, 6. Bc4 Nd4, 7. d3 (P-P)*c2 [diagram below; a pawn dropped near your king and

near its promotion line is a nasty threat, but this black pawn cannot move forwards yet — there is no piece in the enemy prison to which it could be promoted — so the queen is not under immediate attack]

Position after 7....(P-P)*c2
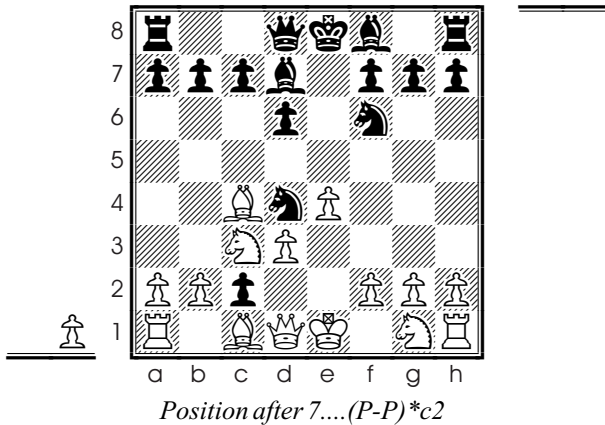
8. Bg5 Bh3 [the bishop is safe, for if White took it then the pawn would at once become promotable] 9. Qh5 Nxh5 [diagram below; surely White will now take the queen?]

Position after 9....Nxh5
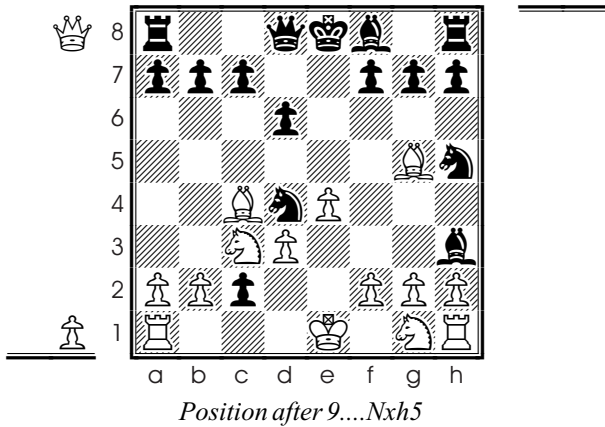
10. Nxh3 [No, White got cold feet when he saw my postal-chess provisional move Bxg2 in answer to the expected queen capture. He feared that if he took the queen then there would be an exchange of hostage queens, soon followed by his getting mated, as his king is more exposed than mine.] Be7, 11. g4 Bxg5, 12.*e3 Bxe3 [that shocked him; it is very aggressive] 13. fxe3 Nf3+, 14. Ke2 Qh4, 15. Nf2 (B-B)B*g2, 16. R(h)c1 Qxh2 [diagram]

Position after 16....Qxh2
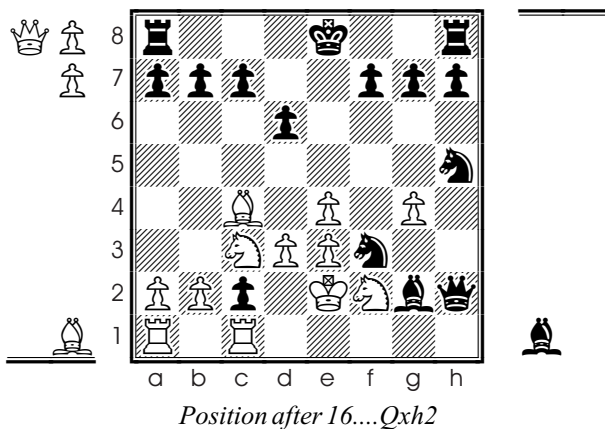
17. d4 [White cannot capture the knight which is threatening to mate him, for Black's reply would be (Q-N)N*g3 mate] Qg1 [if White took the queen, then (Q-Q)Q*d2 mate would be the reply] 18. Kd3 Qxf2, 19. Rxc2 [see diagram below; disastrous, but Bxf7+ only delays defeat] Nf4+

Position after 19. Rxc2
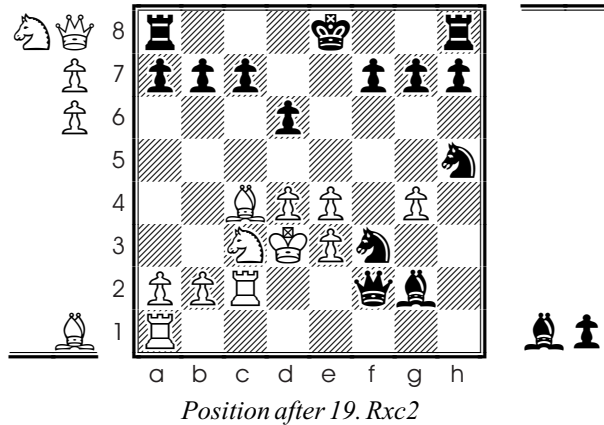
20. exf4 (N-N)N*e1+, 21. Rxe1 Nxe1 mate. [There was also 20....Qxd4+, 21.Ke2 (N-N)N*g3 mate. Or, if he had seen it, Black could even have mated immediately with 20....(N-N)N*b4. That Black knight was definitely dangerous!]

Here is one last game from the tournament. *White* **A.B.** *Black* **P.C.**
1. e4 e5, 2. Nf3 Nc6, 3.d4 exd4, 4. Nxd4 Nxd4 5. Qxd4 Nf6, 6. Nc3 d6, 7. Bg5 Be7, 8. Bc4 (N-N)N*e6, 9. Bxe6 Bxe6, 10.N*f3 O-O, 11. (P-P)*h6 gxh6, 12. Bxh6 *g7 [refutes White's castle_busting, which has now lost him a tempo] 13. Be3 c5, 14. Qd3 (P-P)*d4, 15. Nxd4 cxd4, 16. Bxd4 d5, 17. O-O dxe4, 18. Nxe4 Qxd4 [diagram]

Position after 18....Qxd4
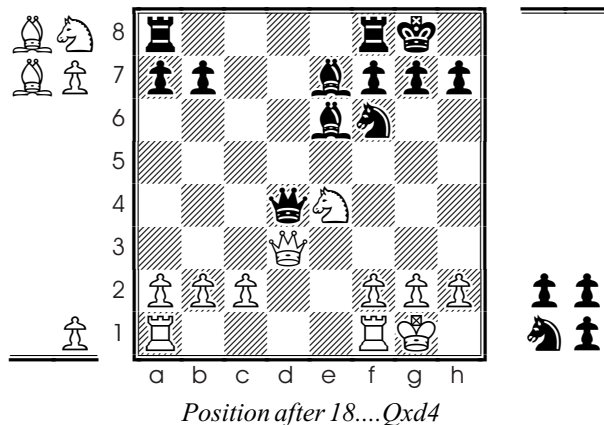
19.Resigns. [If Qxd4, then Black replies (N-N)N*e2+ to win the queen. Still, "Hostage" is so rich in its resources that I would have played on.] ■

John Leslie is a philosopher whose latest books are The End of the World: the science and ethics of human extinction *and the edited collection* Modern Cosmology and Philosophy. *Elected to the Royal Society of Canada, he persuaded his wife to let him take early retirement so as to do more writing. He plans a slim volume on Hostage Chess some day. Please record your games, then send them to him at 64, Forbes Avenue, Guelph, Ontario, Canada N1G 1G4.*

Kyoto Shogi Problems

by Kazuo Nakajima

(See Abstract Games Issue 1 for the rules.)

The following eight Kyoto Shogi mating problems, or tsume, were devised by Kazuo Nakajima and first published in the magazine Shogi Puzzle.

Black, playing up the board, has to checkmate White. In accordance with the Japanese conventions, every Black move must be check, and White must survive for as long as possible for a correct solution. Black will finish with no pieces in hand.

In Problems 2 and 5 the Black king is an essential part of the attacking force; in the other problems the Black king is not used. In all of the problems, neither player has any pieces in hand initially.

Solutions will be published in AG5. The person submitting the best solution(s) before then will win a set of Kyoto Shogi pieces. --Ed.

Problem 3 -- "Lasso"

Problem 6 -- "Daikiri"

Problem 1 -- "Revision"

Problem 4

Problem 7 -- "Forward!"

Problem 2 -- "Tobacco"

Problem 5 -- "Whirlwind"

Problem 8 -- "Googly"

Strategy in Bao
-- an introduction

by Alex de Voogt

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

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

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

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

RULES OF PLAY

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

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

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

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

00000000	Stock 22
02260000	
00006220	
00000000	Stock 22

Phase I – Playing from the Stock

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

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

It is only allowed to sow a seed from the stock into the *nyumba* if a capture is possible or if there are no other occupied holes in the front row. In the latter case just *two* seeds are removed from the *nyumba* and sown either clockwise or anticlockwise. If the *nyumba* (via another hole) is emptied and spread (or captured by the opposite hole), special rules for the square hole are discounted for the remainder of the game.
Capturing:
If there is a choice between sowing a seed from the stock that makes a capture and one that does not, then the capturing option must be chosen. When capturing the seeds from an opponent's

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

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

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

Phase II – Once the stock is exhausted

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

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

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

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

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

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

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

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

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

Twixt Puzzle by Klaus Hussmanns

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

The solution is given on page 25.

Chu Shogi
by Colin Adams
with editing by Nixon Bardsley

The Grand Chess Corner by Tony Gardner

After Black opens the game with 1. Ln-6h (or, indeed, 7h, 5h and 8h), White cannot prevent the Lion from reaching the key square of 6g (better than 7g). This is known as the 'High Lion' and creates a significant space advantage in the center for Black. Despite this, it still makes a real difference where White plays his first move.

Possible candidates for White's first move are:
Ln-7e, Ln-6e, Ln-5e, Ln-8e, P-5e, P-8e, P-3e, P-10e
All other legal moves are also available, but these represent the most promising.

1....Ln-5e is bad as it blocks the development of the Phoenix. Black can cautiously reply 2. P-3h (to prevent Ln-3g, though this may not be necessary), and then after (for example) 2....P-8e, 3. P-8h, P-10e, 4. Ln-6g, Black has the advantage. He will gain a move when he plays DH-2h. 1.... Ln-8e is similar.

1. ... P-5e aims at developing the Phoenix swiftly, on the principle that as it has only one sensible square to move to, you may as well move it there as soon as possible, so as to maintain maximum flexibility. But this move has an Achilles heel:
2. Ln-8f, Ln-6e, 3. P-5h is unpleasant (2....P-8e, 3. Lnx9e-9f is not nice either). 1....P-3e and 1....P-10e (along with the also-rans) can be answered in similar fashion.

1....Ln-7e is a natural answer (symmetry), but it too has a (lesser) disadvantage. On 7e, the Lion is exposed to attack from Black's Kylin. Because of this, Black is able to launch an effective quick attack on the fifth file, aiming at the Phoenix. (This will be the subject of next issue's column.)

Due to this, 1....Ln-6e is a better answer. Here it cannot be attacked by the Kylin, and it serves to defend against a Pawn advance on the fifth file. It does, however, leave the problem of how to advance the sixth-file Pawn.

1....P-8e is White's most flexible response. He has the choice of transposing to the Ln-6e setup, or holding back the Lion, intending to sacrifice the sixth-file Pawn. If Black should answer with 2. Ln-5f, then 2....P-5e, 3. Lnx4e-4f, Ln-6e, 4. GB-4g, Ln-8g, 5. Lnx!5e, P-6e. (diagram)

After this, Black is a Pawn ahead but, as shown, White can be well satisfied with his lead in development.

Update: Larry Waite has earned at least a share of the 1998 NOST title, and with either a win or a draw in the remaining game he takes first place. Future contents of this column are not yet settled. The 1999 World Cyberspace Championship is worthy of mention, although the playoff between Wayne Schmittberger and John Vehre is still ongoing. As suggested before, the plan is to emphasize readers' submitted games. Few have been received so far, although readers have expressed support for the column.

For now, we will focus on the powers of the pieces. Specifically, queen vs. marshal: which is stronger? The queen is certainly more powerful than a rook, and the knight is no doubt the weakest piece (setting aside pawns, of course). Yet there are those (including the inventor) who purport that combining the rook with the weakest piece produces the strongest piece. On an open board from any of the four central squares, the queen controls 35 squares but the marshal just 26. However, there is much more to be considered in evaluating these giants, and the issue will not be easy to resolve. The fact that players prefer one or the other will only add to the flavor and interest of the games.

Here are two demonstrations. In the first, a queen bests an enemy marshal; and next, a marshal dominates the position:

Tony Gardner-Ben Good 1999: 1.d5 d6, 2.Nc4 f6, 3.g4 Nc7, 4.Bxd6 e7, 5.Bxc7+ bxc7, 6.Na5 g6, 7.c4 e6, 8.e4 Cc5, 9.Cf4 Cxf2, 10.Cxc7+ Kd10, 11.Cxd9 Mxd9, 12.Kxf2 Nh7, 13.Nc6 Rb10, 14.Rad1 exd5, 15.Qh6+ Mf8, 16.exd5 Bf7, 17.Rje1 i7, 18.Qj4 Kc10, 19.Re9 Re10, 20.Rde1 Rxe9, 21.Rxe9 Mg10, 22.Rxc9+ Kxc9, 23.Qh4 Mf8, 24.Qg3 Rb9, 25.Qc7 Md7, 26.Qf10 Mf8, 27.Qe9+ Kb10, 28.Qd10+ Ka9, 29.Qd6+ Kb10, 30.Na7 Me8, 31.Qh10+ Ka9, 32.Nxb9 Kxb9, 33.h4 j6, 34.Qb4+ Ka9, 35.Ng3 Nf8, 36.Ne4 h6, 37.Nxf6 Mxf6, 38.Qxf8 Kb8, 39.Bxg6 Mxg6, 40.Qxf7 Ma6, 41.Qd9 Mc7, 42. Qd6 Kb7, 43.Qxc7+ Kxc7, 44.c5 Kd7, 45.g5, BLACK RESIGNS.

D.Priddy-Tony Gardner 1999: 1.e5 g6, 2.g5 d7, 3.f5 gxf5, 4.Mxf5 Ch7, 5.Mf3 Cxg5, 6.Mxg5 Bxg5, 7.Bf4 Bxf4, 8.Cxf4 e6, 9.c5 Nd8, 10.Nc4 Nc6, 11.d4 Rag10, 12.Rag1 Rxg1, 13.Rxg1 Qxj3, 14.Nh4 Qxi3, 15.Nf3 Qd8, 16.Kd3 Ne7, 17.b5 Nh7, 18.b6 Nd5, 19.Ch2 i7, 20.Ne3 Nxe3, 21.Qxe3 Ni5, 22.h4 Bi8+, 23.Kc3 Bxc2, 24.Kxc2 Nj7, 25.Cg4 Nh6, 26.Cf6 Qd10, 27.Ng5 Rg10 (diagram)
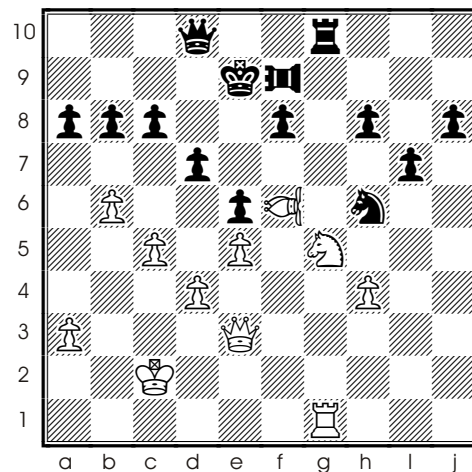
28.Ch7 Mg7, 29.Cxj8 Mf5, 30.Qe1 Mxd4+, 31.Kc3 Mb5+, 32.Kc4 Mxa3+, WHITE RESIGNS.
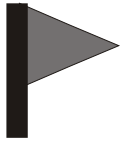
STRAT

An old game rediscovered

by David Pritchard

This game is described in three small booklets, each one different from the others, in the Rare Books Department of the British Library. The game dates from the period 1910-1930 and is probably from the 1920's to judge by the type faces used. There is no indication of inventor or manufacturer. The existence of three different booklets suggests that the game acquired a measure of popularity.

The game

Strat is a two-to-four player abstract strategy game that could be described as a Halma variant. A feature of the game is that there are a number of scenarios: two players can use two or four boards; three players use three boards (not recommended); four players use four boards, playing either in partnership or all-against-all. The game can also be played without forts. The version I describe below is the standard two-player game, each player having his own board.

Components

Each player has a square board of 15x15 cells. In the center is a 13-cell citadel with a flag on the central cell. Surrounding the citadel are eight forts, each of five cells of which two are occupied by flags to denote ownership. Each player has 17 pieces called soldiers, in contrasting colors, with an option of a further six soldiers (i.e. 23 each), which however is not recommended since it makes for an overly long game. The players also have a sufficiency of their own flags.

Initial array

The board with initial deployment is shown in the diagram. The boards are pushed together to form a 15x30 playing area with the unmanned forts at the rear.

Object

The object of the game is to capture the flag in the opponent's citadel.

Movement

Soldiers move in any direction one square at a time, like a king in Chess. They may also leap one or more pieces of either color. The leap(s), similar to those in Halma, may be in any direction or combination of directions. A soldier is under no obligation to make any leap or to continue leaping if able to do so. A soldier cannot move and leap in the same turn.

Capturing

Captures can be made in one of three ways:

[1] Displacement capture. A soldier may capture in the manner in which it moves.

[2] A soldier leaping an opponent's soldier captures it. Thus a series of captures may be made in a single turn. Captured soldiers are at once removed from play (so that they cannot be leaped over again in the same move sequence).

[3] A soldier entering a fort, or landing on a vacant cell within a fort as part of a series of leaps, whether or not the leaps

subsequently take the soldier outside the fort, captures the fort and all hostile men in it. When a fort is captured, the player replaces the flags of the opponent with his own flags. Notice that a leap over a soldier standing within a fort captures the soldier but not the occupants of the fort unless a fort cell is landed on.

Citadel

The defenders are subject to capture as in [3] above. This only applies on the first entry into the enemy's citadel not a reentry or a reentry into one's own citadel that had previously fallen to the opponent. If the occupants of a citadel are captured, the flag does not automatically change hands but must be captured. The flag can be captured as though it were a soldier; i.e. by displacement capture or by a leap. This ends the game.

Flags

These do not move, and, with the exception of the citadel flag, cannot be captured. A flag can only be leaped over by a soldier of the player who controls the fort.

Forts

The perimeters of forts are no barrier: soldiers of either side can cross them at will. A fort that is captured can be retaken immediately and may change hands several times in the course of a game.

Other versions

If forts are not used, the initial deployment of soldiers remains unchanged. In the two-player, four-board game the boards are set in a square with rival forces diagonally opposite each other. In the four-player version the boards also form a square. In the partnership game partners sit diagonally opposite each other. Deployment in the four-player game (solo or partnership) has the soldiers of each player facing the two fronts, with three unoccupied forts in the rear corner. In this version all the remaining soldiers of a losing player are removed from play. In the partnership game it is necessary to conquer both opponents' citadels to win.

Observation

Occupants of a fort are in danger of being captured *en masse*. The only advantage in defending a fort would seem to be that the flags can be used to leap over. ■
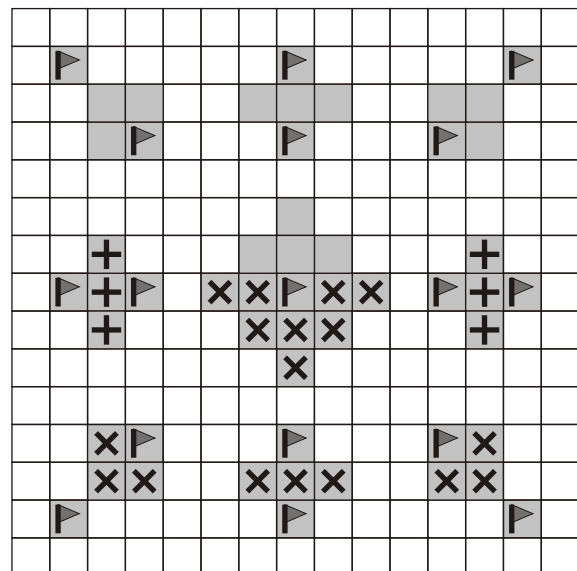
x = soldier, + = optional soldier, ▶ = flag

A Dawning Reality
by Connie Handscomb

I was just getting to know him. Occasionally I would see him playing an odd-looking game on a small square wooden board. He told me he was playing a game by mail. I admired the game pieces, and he graciously explained what the beautifully hand-carved symbols on them meant. It was all fascinating – and I promptly forgot everything he told me. Lovely as the craftsmanship was, the purpose of its use was too obscure for me. I missed the whole point of his dialogue when he told me he was playing over 100+ games simultaneously. I didn't see them, so they didn't really exist. If I caught him gazing out the window as though locked in a time warp, I just *knew* he was writing poetry, and that it was for me. The fact that a person could sit for hours intently mulling over a game move entirely escaped my logic. I noticed he got a bit nervous when he would hesitantly ask me if I would mind if he caught up on a bit of his mail so he could catch the post. Such a gentle, sweet man, so utterly considerate of me. Surely he did not think I would be jealous of *this*. We were in love. Those were only games; they could not possibly overshadow anything else. I asked him what held him to those dots and blips on the boards. He said there was such beauty there, in the patterns created. So I looked then, and still I look, but alas for me, I have yet to see a Mandelbröt set, or anything else, for trying! Curiously, he did not seem very eager to upgrade our computer system. He joked about how dangerous it could be for him to have such a powerful new tool readily at hand, although the expense involved would surely save on postage costs. When we did indulge, I saw his prior lack of interest in all things technical reverse instantly and automatically. The potential for game gratification was now immediate and immense. He learned software programs in days that took others weeks or months to master. I always knew there was more to this quiet-spoken man than met the eye. I was finally and irrevocably enlightened by the dawning reality of the importance of the game in our lives. I wondered where this would all lead. ∎