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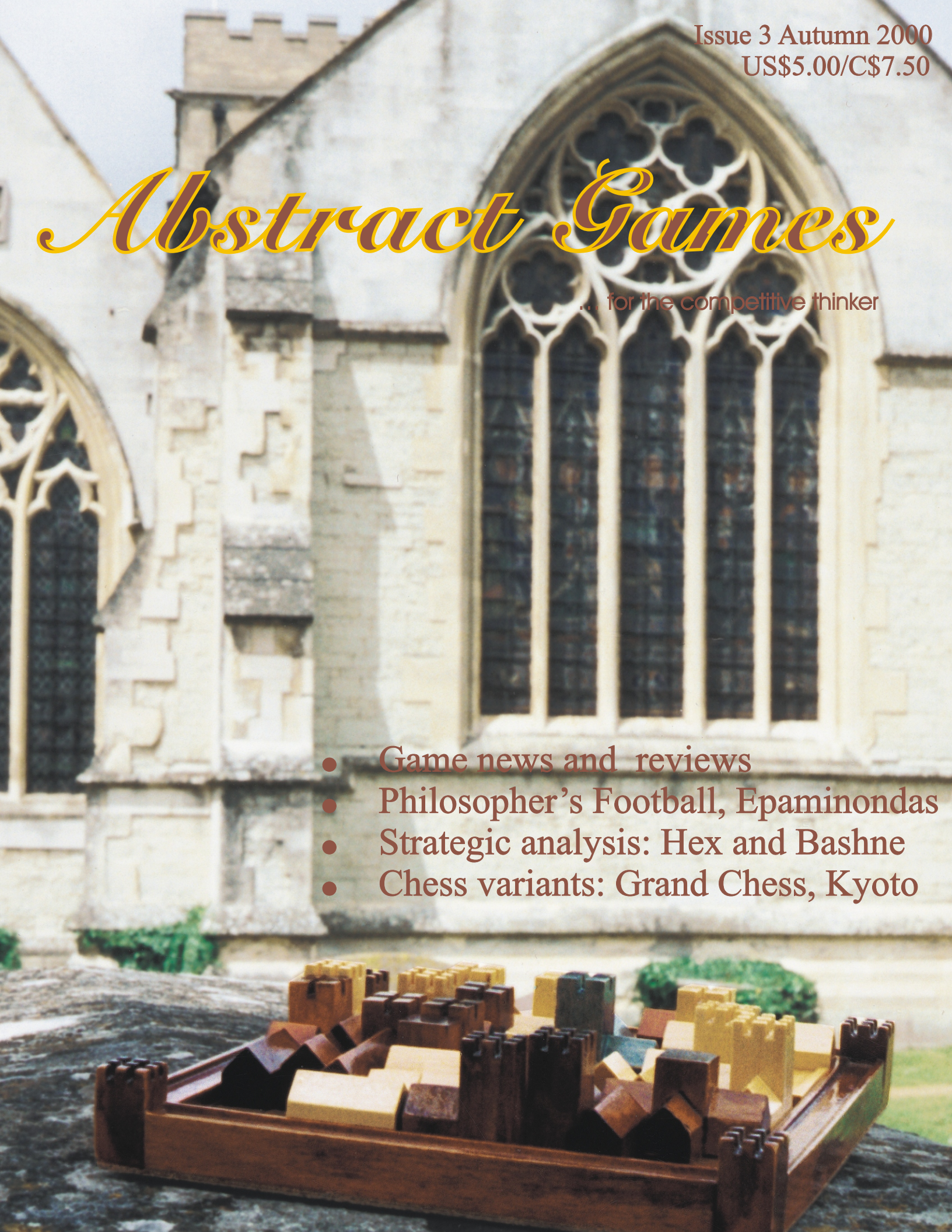
Abstract Games

... for the competitive thinker

- Game news and reviews
- Philosopher's Football, Epaminondas
- Strategic analysis: Hex and Bashne
- Chess variants: Grand Chess, Kyoto



Front Cover

Cathedral was invented by New Zealander, Robert Moore. Apparently the inspiration for the game was the city of Christchurch: when the inventor was a pilot in the Royal New Zealand Airforce in 1962, and flying training missions over Christchurch, he was fascinated with the way the buildings interlocked so neatly, and he would use Christchurch Cathedral as a landmark.

The first commercial version of Cathedral was manufactured in 1979. Although it has never enjoyed a huge popularity, the game has survived and slowly prospered. It is currently produced and distributed from a number of locations around the world. The game on the cover was made by Family Games Inc. of Canada.

The board is a 10x10 square representing the area surrounded by city walls. There is a neutral cathedral piece, which covers six squares, and each player has 14 buildings of different shapes, which cover between one and five squares each. The winner is the first player to place all of his or her buildings within the city wall. An area completely enclosed by one player's buildings and the wall is out of bounds for the other player's buildings. Also, if a single opposing building or the cathedral is trapped within such an enclosed space, it is removed.

The game obviously contains strong elements both of Pentominoes and Go. Cathedral may have a richer strategy than the former, and the feel of the game is quite distinct from either. Many otherwise good abstract games seem to be trivialized by having an arbitrary theme grafted onto them. Cathedral, however, is enhanced by its theme of the medieval city and the attractiveness of its playing equipment.

The cover photo was taken at St. Mary's Church, Reigate, Surrey, England.

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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

This issue sees *Abstract Games* slightly expanded from the previous issue. We have managed to return to Lines of Action, Kyoto Shogi, Hex and (at last) Bashne from previous issues, and a small, regular feature on Grand Chess has been introduced. The articles on Philosopher's Football and Epaminondas are stand-alone features with no plans to give them more coverage in the near future—we had to slow down the rate of introduction of serialized articles to ease the pressure on space. Due to popular demand we may be starting a small, regular feature on Chu Shogi in the next issue. Twixt had to be postponed, but should make a reappearance in Issue 4. Surprisingly many people have expressed interest in a strategic four-rank Mancala—we are hot on the trail of Bao, and should have some excellent material for the next issue. By the next issue also we hope to broaden our perspective a little and include more information about people—game inventors—in addition to their creations.

In a previous issue I had said of David Parlett's *Oxford History of Board Games*, "Game books like this come along just once in a generation." Quite rightly I was pulled up for my dreadful Anglo-centrism, and it was pointed out to me that there are, of course, many good game books of a similar type to Parlett's that have been published in recent years in languages other than English. A review of two excellent books which are published in French is included in this issue. I suspect that most English speakers know a little French, making these books quite accessible with the aid of a dictionary.

A specialized journal such as this may survive, and in a small way thrive, in the relatively tiny market provided by abstract games enthusiasts. On a larger, more commercial scale, however, with significant costs, it becomes increasingly difficult to make a go of it. This was illustrated recently when The Fourth Mind Sports Olympiad, to be held in London in August this year, was almost canceled when a major sponsor pulled out. Luckily director David Levy was able to secure alternate financing at the last minute.

Clearly it is very difficult to run a commercially successful event based on non-standard abstract games. It is well known, in addition, that new abstract games have a very low probability of achieving commercial success. Nevertheless, year in year out new abstract games are published—many of them, in a triumph of the human spirit, put out by single-game companies established by inventors fired with enthusiasm for their creations. The two games reviewed in this issue, Plateau and Chebache, fall into this category.

There are probably a number of aspiring game inventors among our readership. Together with Erik Arneson's excellent About.com website at http://boardgames.about.com/games/boardgames and The Strategy Gaming Society we will be organizing a game inventing competition. We will be looking for two-player abstract games; the playing area will be limited to the standard 8x8 Chess board; and the pieces must consist of easily available items such as checkers, Chess pawns, or Poker chips. It will be very interesting to see what variety of original games are devised from these simple, basic elements. The winner will receive a plaque and lots of kudos. In addition, the winning games will be presented to some of the game publishers. Full rules for this competition will be given in the next issue.

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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 have received the second issue of *Abstract Games*, and the impression I had at the first issue is confirmed: the review is really wonderful. Aesthetic aspects are very important to me and *AG* has the kind of presentation I like much. I should be happy if you could continue in this beautiful style. As to the content, since connecting games are currently among my preferred ones, I did enjoy it much, too. To my taste the small size is not a problem, but I have seen that some readers wish an increase. What I really wish is a long life for the review.

Patrick Mouchet, France

Got the magazines last week—a brilliant little publication! I think Jochen Drechsler is correct—it would be a big help if each diagram also had the column and row numbers to help follow through plays. Even if one is familiar with the notation, having it there speeds up the "reading" of the diagrams. In the same vein, I think it would be a good idea when using diagrams to illustrate games which are given in detail to put "Situation after move …." under each diagram. This would make following games on a move-by-move basis easier.

Roger Hare, Scotland

These changes will be made in the next issue. –Ed.

LOA and Drawn Games

I would like to express my opinion about the double-connection rule in LOA. Actually, the victory goes to the player making the move. I can understand a solution like this if a double connection is the only way for a draw, but unfortunately a draw by repetition is also possible, and we cannot avoid it with an elegant rule. In any case, double connection and repetition are both very unlikely, and I believe these situations should be drawn.

But this does not mean that I am in agreement with all the rules at MSO because I cannot accept a draw by agreement between players. I can understand this rule in games like Chess or Checkers, but in others like Othello, Go, Shogi or LOA a draw by agreement loses all sense. Therefore, the only reason to accept a draw in these games is reciprocal cowardliness, and I consider that this is unsporting.

Jorge Gomez Arrausi, Spain

I totally disagree with David Pritchard's decision to revert to the original LOA format which allowed draws. Draws ought to be discouraged in any game. When Phil Cohen said that the only possibility for a draw in Triplets Chess was by agreement, I informed him that such gutless curs ought to be boiled in oil…. You have my permission to repeat my opinion. Anyway, Claude Soucie decided on the "anti-draw" rule, and Pritchard's reversion must be seen as an unofficial variant.

John McCallion, USA

Pentagonia

We got your magazine—it looked great again. That said, I must say we were a little disappointed in the review. While we agree that the game is "not terribly original," we felt that the rule changes we have made in Pentagonia have produced a game that is much more fluid and dynamic and fun than its Men's Morris ancestors. Taking out the "three button rows are sacrosanct" rule did a lot to make the game more fluid and dynamic. In addition, as those who play Men's Morris games a lot know, the first move advantage in these games is quite significant. The player to move second is rarely able to make the game close, let alone win, even when he is able to jump with but three buttons remaining. In our game the second player can win quite often.

Jacob Zunti, Canada

News

Any interesting information is welcome.

Chu Shogi

Colin Adams has established the Chu Shogi Library Project. It is a collaborative effort to pool information and research on Chu. It has the multiple goal of encouraging new people to play Chu and raising the standard of play of existing players. All material will be published in forms suitable for browsing on the Web and for printing high quality documents. For more information take a look at http://www.colina.demon.co.uk/chulib.html . Version 2.6 of Colin's Chu Shogi program, which now fully supports live games over the internet, can be downloaded from http://www.colina.demon.co.uk/chu.html.

GIPF

The third game in the GIPF Project has been published. This game, Zertz, is an interesting game in its own right, but, allied to the metagame concept reported on in the review of GIPF in *AG1*, it may allow GIPF pieces to jump.

Nine Men's Morris

This is quite old news, but to answer some enquiries, Nine Men's Morris has been solved—with perfect play, it is a draw. Ralf Gasser, who did this research, has written, however, that "examination of mid-and endgame databases has repeatedly shown optimal play to be beyond human comprehension." Peter Michaelsen further reports that a perfect-playing program will often get fewer points in tournament play than very strong human players, as the program plays less offensively, preferring lines leading to a draw.

Octi

All players are invited to join the Octi ladder at http://clubs.yahoo.com/clubs/octiclub. The Octi website at http://www.octi.net, which supports online Octi games, will be upgraded to include more variants, including the four-player version. Several programmers are currently competing to create the best artificial intelligence Octi robot. The robot competition will take place at Yale University in October. Interested parties should contact octimon@yahoo.com.

LOA

Dave Dyer reports that the fourth annual email LOA tournament was won in April by Jorge Gómez Arrausi, a player previously unknown to the community. The competitors in the final round included winners of previous years' email tournaments, as well as winners from MSO. The overall level of play in the tournament was superb. The games from the tournament can be replayed online at http://www.andromeda.com/people/ddyer/loa/tournament-4/

As always, the complete LOA story is available on the LOA web site, www.andromeda.com/people/ddyer/loa/

Corrections

The article in *AG1* stated that Lasca was invented in 1913. It appears that although Lasca was trademarked in that year the first rules were actually printed in 1911.

Graham Allen's name after his letter, p. 2, *AG2* was misspelled.

Game Reviews

The two games reviewed in this issue both come from single-game companies. They are the creations of designers who had sufficient faith in their inventions to invest their own time and money to bring them to a public that is often indifferent to abstract games. Games that originate in this way are often idiosyncratic, and these two are no exception. Both games, although quite different, are characterized by the way that they integrate elements from a number of different games into a new and original structure.

Plateau

Invented by Jim Albea

Plateau is played on a 4x4 board with twelve pieces per player. Some of the pieces are blank on both sides, but most have a colored ring on at least one side. The pieces are entered onto the board one at a time, and pieces on the board may be stacked up and moved. Enemy pieces may be trapped under your own pieces or captured. A stack of pieces moves with the power of movement of the top piece, which is indicated by its color, and may drop off and pick up pieces as it traverses its movement path. A blank piece moves like a Chess queen, but is not able to trap or capture enemy pieces. A piece with a red ring moves like a rook, a piece with a blue ring like a bishop, and a piece with an orange ring like a knight. A piece that has a color on one side and is blank on the other may be entered onto the board with the blank side up. On a later turn a player may flip this piece before making a regular move with it on the board. This adds a welcome element of bluff and surprise to the game.

The objective of the game is to achieve a stack of six pieces of your own color on the board, or alternatively to capture six of your opponent's pieces. Each captured piece is given a point value, and a player may choose, instead of making a regular move, to exchange a group of prisoners with a group of equal value from his opponent. You lose a turn by initiating a prisoner exchange, but if your opponent only needs one piece to win, and you cannot defend against a capture, this may be your only option.

As inventor Jim Albea tells the story, the development of Plateau started with a dream of people playing a game. Jim set out to codify the rules of this game, a long process stretching over thirteen years. The game underwent a series of major transformations, remaking it into something completely altered from the original dream. The evolutionary process can be detected in the rules, which combine elements of a number of different games, including Focus, Column Checkers, Chess and Mancala.

The result is a game that reminds me of the offspring of a rhinocerous and a camel. The most bizarre graft is the prisoner exchange mechanism, which looks as though it should belong to Escape from Colditz. Nevertheless, the inventor's long years of tinkering have paid off: Plateau is a very good little game in which there are clearly a number of varied strategical and tactical elements. We enjoyed it. It even comes in a video cassette case, which make it portable and easily stored—a big plus in our home.

Kerry Handscomb

Plateau, PO Box 143, Madison AL 35758, USA
http://www.plateaugame.com
The cost is $20 (+ $5 shipping for orders from outside the USA)

Chebache

Invented by Scott Pardee

It is difficult to avoid comparing Chebache with Backgammon. Although the inventor has integrated elements of Checkers, Backgammon and Chess into this game, it is primarily a race game in which the players use the throws of two dice to move their men around a track from start to finish. I found the appearance of Chebache to be immediately appealing: the board is a bold abstract design, consisting of an enlarged 4x4 checkerboard with symbols indicating the special function of some of the squares.

Unlike Backgammon, the two players use different tracks, which intersect each other only on every second space. Where the tracks intersect the players can attack and send back opposing pieces with a mechanism similar to hitting blots in Backgammon. In order to attack pieces located on the other spaces where the two tracks do not intersect it is necessary to form a "chebache," in which the space attacked is partially surrounded by enemy pieces.

Four spaces on each player's track are "tivit" spaces, from which it is possible to move pieces backwards. Each player also has one special piece called a "king," which can always move backwards, whether it is on a tivit space or not. An alternative method of winning is to trap your opponent's king in a chebache.

There are a number of other elements to the rules, including a prohibition on stacking more than four pieces on a space, and provision for a "jump" phase after the normal dice moves. Chebache is definitely more elaborate than Backgammon, and complexity for its own sake is to be avoided, but I believe the inventor has made some valid choices—each non-essential rule adds significantly to the strategic interest of the game. It is quite possible, for example, to play without the kings (and this is in fact recommended in the rules as an option for beginners), but the greater attacking power and flexibility conferred by the kings is nicely balanced by their vulnerability to chebache attacks.

One of the great things about Backgammon is that a player can compensate for poor rolls of the dice by shifting his strategic stance. A player who falls behind in the race early on, for example, can go into a back game. In this sense Backgammon transcends the dice. In Chebache this is true, too, as a Chebache-style back game is a definite strategic option. Rather than relying on your opponent to hit your blots, however, you also have the option of sending your men backwards through the tivit space system in order to block opposing men approaching the finish.

Chebache may reward aggressive play more than Backgammon because it is not necessary to use a die roll to re-enter a man that has been hit and because the track is only 18 spaces long rather than 24. One rule with interesting ramifications is that once you have begun to enter men into the finish square (or "bear off" in Backgammon terms) you have to vacate the start space or forfeit your dice roll if unable to do so. Your opponent achieves a big strategic advantage in this situation if he can block you from leaving the start square.

It is possible that Chebache is a strategically richer game than Backgammon. Some practice is necessary to get used to the rules and the board, but the effort is well worth the reward. This is an attractive and interesting game.

Kerry Handscomb

Pardee Games, PO Box 69, Ithaca NY 14851, USA
http://www.chebache.com. Cost $29.95

Book Reviews

Le Livre des Jeux de Pions by Michel Boutin, (Bornemann, Paris 1999. 139 pp.)
Le Livre du Jeu de Dames by Philippe Jeanneret/Thierry Depaulis, (Bornemann, Paris 1999. 129 pp.)

These two recent French game books will certainly interest many *Abstract Games* readers. Both books belong to the series "L'Univers du Jeu" in the collection "Livres de jeux," published by Éditions Bornemann, Paris, under the direction of Thierry Depaulis and Pascal Reysset.

The French language does not have a term strictly equivalent to the English "board games," as defined in H.J.R. Murray's classical work, *A History of Board Games Other Than Chess* (Oxford, 1952). In his highly original game book, *Le Livre des Jeux de Pions*, Michel Boutin proposes "jeux de pions" as the best name for these games, also known as "abstract" (board) games. Here he follows a newer French game book tradition. While Murray consciously omitted newer, commercial games and concentrated on traditional board games, Boutin deals with both kinds of games. After some short chapters on nomenclature and educational aspects of board games, there follows a long chapter, in which Boutin presents 57 board games in a concise, very systematic way. The game descriptions are very short, just long enough to allow the readers to be able to play the games. Each game description is followed by some useful historical comments.

The games selected are as follows: Abalone, Agon, Agora, Alcazar, Amazone (Amazons), Atride, L´Attaque, Avalam Bitaka, Awélé, Billo, Bridg-it, Camelot, Castello, Cogito, Contactic, Dames (International Checkers), Dames Chinoise (Chinese Checkers), Èchecs (Chess), Fanorona, Focus, Force 3, Gipf, Go, Halma, Havannah, Hepta, Hex, Invers, Isola, Kinesis, Le jeu du Labyrinthe, L-Game, Lignes d'Action (LOA), Marelles (Merels), New Entropy, Othello/Reversi, Parcheesi, Phalanx, Ploy, Le Plus Malin, Press Ups, Puissance 4 (Connect 4), Quandary, Quarto!, Quoridor, Renard & Poules (Fox-and-Geese), Rythmo, Shogi, Tablut, Taktik, Tantalus, Teeko, Territoires, Tonkin, Troke, Turnabout and Xiangqi.

Several of these games are probably unknown to most abstract board games enthusiasts. Very different kinds of games are represented. All in all, I think this is a very nice collection of games which deserve to be much better known.

In the last part of his book, Michel Boutin makes a very convincing classification of board games. He uses the games mentioned above as examples, but also includes several other games, which I would have liked to see described in detail, too.

The author has a remarkable knowledge about new board games, combined with historical, pedagogical and systematical interest and insight. The result of this blend of talents is a very useful handbook, which I highly recommend to all who can read just a little French.

The other French book, *Le Livre du jeu de Dames* by Jeanneret/Depaulis, likewise fills a gap in board games literature. It seems that most books about International Checkers are written for rather advanced players, but this new book is probably the only one which covers all important aspects of the game in one volume: the history of checkers, its rules, tactics, combinations, strategy,

play style of famous champions, competitions, psychology and computer play. Everything is presented in a very appetizing way, and with up-to-date information, including internet web sites.

About the first 25 pages of the book are devoted to the history of checkers. This part is written by Thierry Depaulis, card and board games historian and member of the editorial board of the magazine *Board Games Studies* (CNWS, Leiden University, 1998 ff). He has earlier published *Le Livre du Mahjong* (with Pascal Reysset) and *Histoire du Bridge,* both in the same Bornemann series. In my opinion this historical section is excellent. The author presents a very complicated subject in a clear, pedagogical way.

Being only a beginner at this game, I am not able to make a proper evaluation of the rest of the book, but I suppose that this is equally good. The author of this larger part of the book is Philippe Jeanneret, a young, promising player who writes articles on checkers strategy for *L´Effort*, the official magazine of the Féderation Francaise du Jeu de Dames.

Peter Michaelsen

Hex Strategy: Making the Right Connections
by Cameron Browne
(AK Peters, Massachusetts, 2000, ca. 300 pp.; ca. $30)

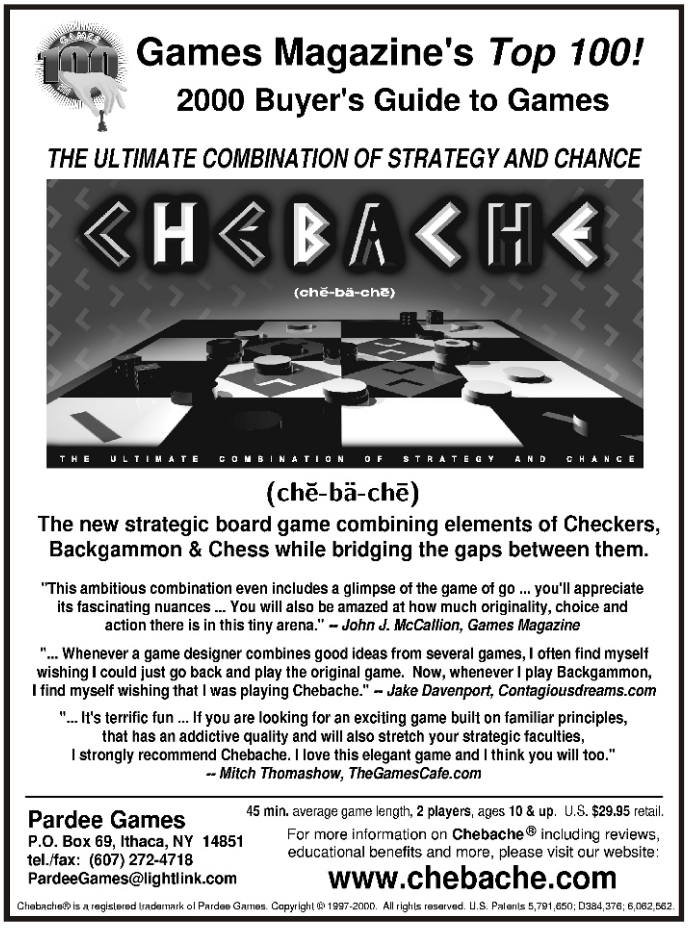
Hex Strategy is one of those very rare books that is entirely devoted to a single game that is not Chess, Checkers, Go, or any of the other games with a mass following. Even better is that it is aimed primarily at the *player* of Hex rather than the mathematician, although the mathematician will find much of interest here, too. This book should enable even experienced players of Hex to deepen their understanding of the game, improve their play, and thereby increase their enjoyment. It is quite the best single-game book I have seen. If you love abstract games it is essential reading.

In the first few chapters the author introduces some necessary concepts such as connectivity and bridges. He continues through gradually more advanced ideas such as templates, ladders and multiple threats to construct a sophisticated strategic framework for the game. I found the chapter on ladders to be particularly fascinating. For those who wish to improve their play immediately there is a single chapter that summarizes the essential elements of strategy. The author also includes many annotated games, puzzles and several appendices giving additional mathematical backup and information on variants and programs.

For no good reason I had always assumed the seminal connection game of Hex to be perhaps less sophisticated, and even inferior, to some of its descendents, such as The Game of Y or Havannah. In particular, I had always believed Schensted and Titus' claim in *Mudcrack Y and Poly-Y* that Y was the more interesting game because it was a generalization of Hex. The author gives several reasons for perhaps considering Hex the better game: firstly, in order to bring the corners into the game, the Y board is distorted and non-homogeneous, detracting from its elegance; secondly, and more importantly, Hex contains two types of corners (acute and obtuse) and two types of edges (yours and your opponent's), and the different strategies applicable to the these different regions of the board add to the game's variety and interest.

Having read this book I have a new respect and appreciation for Hex. The author, quoting David Boll that playing Hex is like a "knife fight in a phone booth," admirably communicates the excitement and interest of Hex. This book is highly recommended.

Kerry Handscomb



Hex Strategy

Part 2: Board Analysis

by Cameron Browne

(See Abstract Games *Issue 2 for rules.)*

Last issue we introduced the game of Hex and described some fundamental points of strategy. This issue we build on those concepts to develop a method of analysing board positions to determine each player's relative strength.

Groups

Recall from last issue that a *chain* is a contiguous or adjacent set of pieces. To be more precise, a chain is a *maximal* set of adjacent pieces. We now define a *group* as a connected set of chains, and the minimal set of empty points required to guarantee the connection. The connectivity value of a group indicates the number of moves required to safely connect the most weakly connected pair of chains within the group. 0-connected groups are described as *safe*, all other groups are *unsafe*.

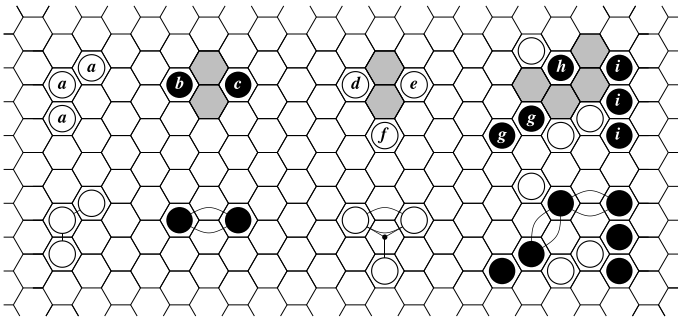


Figure 1. A singleton group (chain), a safe group (bridge), an unsafe set of chains, and a safe group.

Figure 1 shows various types of groups with structural links shown. On the left is a *singleton* group composed of a single chain <***a***>. No empty points are required for this group. The second group <***b***, ***c***> is 0-connected, and forms the *bridge* pattern which you may recognise from last issue. Group <***d***, ***e***, ***f***> is 1-connected as piece ***f*** is one step removed from the safely connected ***d*** and ***e***. The vulnerable point of overlap is obvious. The rightmost group <***g***, ***h***, ***i***> is safe as all pairs of chains within the group are safely connected to each other via bridges.

The empty points associated with a group are critical to its connectivity. For instance, pieces ***d***, ***e*** and ***f*** may form a safe group with the addition of two more empty points. On the other hand, including superfluous empty points beyond the *minimal* set required to define the connection is incorrect.

For board analysis we're only interested in safe groups, and further use of the word *group* will refer to safe groups only. Two groups *overlap* if they share any chains or if their empty point sets have any points in common.

Steps

A *step* from a group is an adjacent or bridge move taken from any chain within that group. The point at which the step lands is called the *pivot point*, as further steps may be launched from there. Figure 2 shows safe group <***a***, ***b***>, an adjacent step from it, and a bridge step from it. Pivot points are indicated by dots, and links for each formation are shown below.

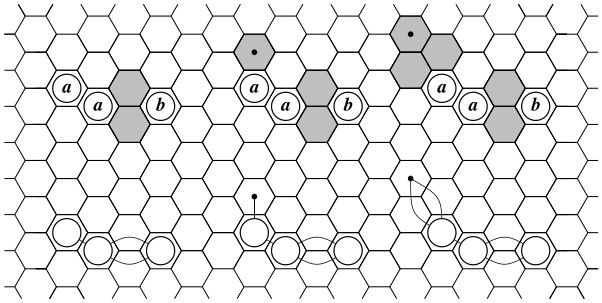


Figure 2. A safe group, an adjacent step from it, and a bridge step from it. Pivot points are shown.

Steps may be *extended* in series, increasing the measure of connectivity by 1 with each step. This is shown in the top row of Figure 3, where a second bridge step is taken from the first step's pivot point. The first step is of connectivity 1 and the second step is of connectivity 2.

Alternatively, dual 2-connected steps may be *consolidated* in parallel to form a combined 1-connected step if they start from a common group, arrive at a common pivot point, and do not overlap. This is shown in the bottom row of figure 3, where two steps from the same White group arrive at a common destination.

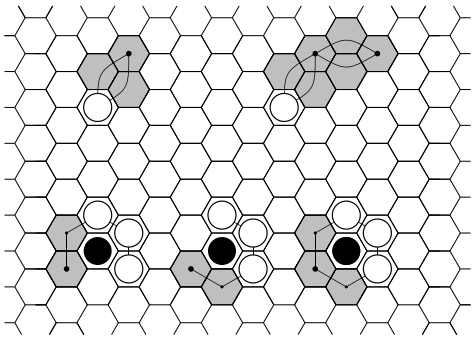


Figure 3. Step extension (top) and step consolidation (bottom).

Paths

Steps do not necessarily have to land on empty points. If a step reaches another group that does not overlap with its source group,

then a *path* between the two groups is formed. The connectivity of this path is 1 less than a step to an empty point would have required, reflecting the fact that an existing piece has been reached so one less move is required to secure the connection.
Paths consist of the following elements:

Two terminal groups (and their empty point sets) ,
An empty point set (composed of the steps required to form the path and including pivot points), and
A set of intermediate chains (used as stepping stones).

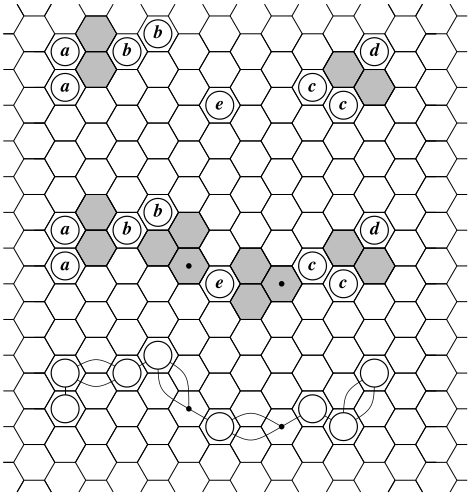


Figure 4. Two safe groups joined by a 2-connected path through intermediate chain **e**.

The top row of Figure 4 shows two safe groups <***a***, ***b***> and <***c***, ***d***> and an intermediate chain ***e***. The middle row shows a series of steps from <***a***, ***b***> to <***c***, ***d***> via chain ***e***. Pivot points indicate that a bridge move is taken from <***a***, ***b***>, then an adjacent move to piece ***e***, then another bridge move, then a final adjacent step to reach <***c***, ***d***>. A total of four steps were taken, but the path's overall connectivity is 2 as it passed through a piece at ***e*** and terminated at a piece upon reaching <***c***, ***d***>.

This combination of steps is only one of several 2-connected paths between these groups. Also note that piece ***e*** itself forms a singleton safe group <***e***> but this fact is not relevant to the example.

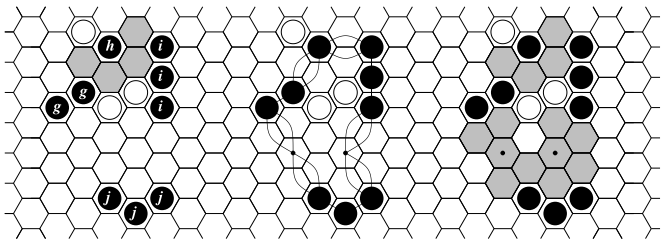


Figure 5. Steps between two safe groups form a 0-connected path, that in turn defines a new safe group.

Dual 1-connected paths may be consolidated to form a single safe path if they do not overlap, as shown in Figure 5. The resulting 0-connected path forms a new group from which further steps may be taken.

This cycle of group->step->path->0-path->group->step->path etc. provides a recursive mechanism for generating spanning paths across the board. This is discussed in greater depth in my book, *Hex Strategy: Making the Right Connections*, which introduces a path algebra that allows a precisely defined algorithm for generating spanning paths.

Connection Templates

Now that the basics of path generation have been introduced we can examine *connection templates*, which are predefined patterns of known connectivity. *Interior templates* are patterns that do not involve an edge, and are simply the adjacent and bridge connections as shown in the leftmost two items of Figure 1.

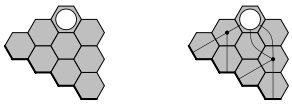


Figure 6. A three-row edge template with interior links shown.

Edge Templates define patterns of known connectivity relative to a board edge. For instance, you may recognise the pattern shown in Figure 6 which featured in a couple of last issue's examples. The White piece is safely connected to the White edge as demonstrated by the dual links shown. However, it's convenient to wrap this set of links up into a discrete unit that we know is safely connected without requiring further analysis.

This template is described as template IIIa, reflecting the fact that it's a minimal edge template three rows from the edge. The empty point set associated with each edge template must be the minimal set for the template to be correct.

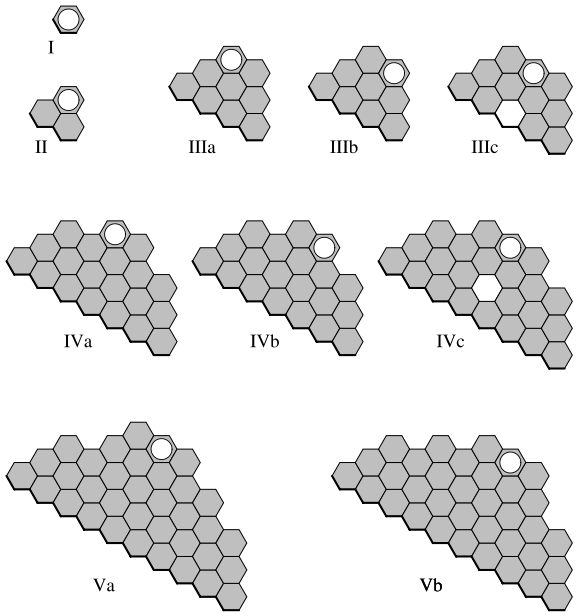


Figure 7. The ten minimal safe edge templates.

Figure 7 shows the ten minimal templates that provide safe connection to the nearest edge. Proving the safety of these templates is straightforward with path analysis except for Va and Vb, whose solution is nontrivial and is left as an exercise for the reader (see puzzle E). In fact, it's difficult to prove that Va and Vb are even the minimal templates for a fifth row connection!

Putting It All Together

We now incorporate connection templates into the path generation algorithm by showing the derivation of a spanning path for a simple board position. Figure 8 shows a typical game in progress.

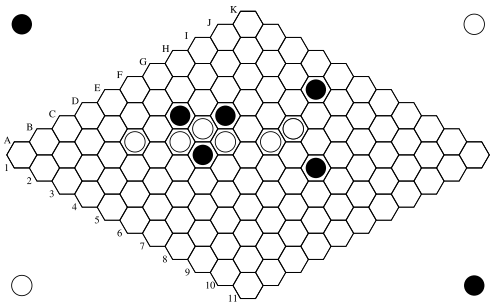


Figure 8. A typical game. Who is winning?

Figure 9 shows that White is safely connected to the bottom left edge via template IVb and is safely connected to the top right edge via template IVc. For the purposes of board analysis, edge templates are a special case of safe group, and White is able to form a 0-connected path between these two edge connections through iterative path growth using bridge moves.

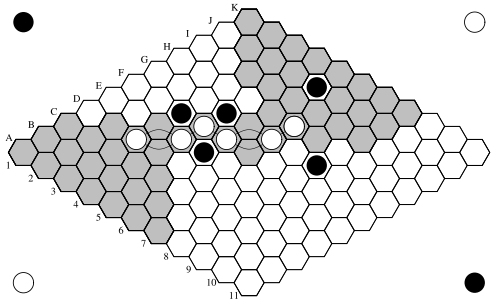


Figure 9. Template analysis reveals that White has a winning spanning path.

White therefore has a safely connected spanning path and has already won the game, even if it is Black's turn to move.

This method of developing spanning paths does not solve the game, or even necessarily reveal the best move - it just indicates a level of guaranteed connection for each player. It's up to the player to improve his or her best spanning path until it is safely connected, then defend that connection.

Both players cannot have a 0-connected spanning path at the same time, reflecting the fact that it's not possible to draw a game of Hex. In fact, due to the rules of path generation, if one player has a 0-connected spanning path then the best spanning path that the opponent can achieve is 2-connected.

It's interesting to note that Vadim Anshelevich, author of the strongest known computer Hex player, has arrived at similar principles for board analysis from a different perspective. His program Hexy uses the analogy of the Hex board as an electrical circuit (inspired by Claude Shannon's experiments in the 1950's) to determine virtual connections based on AND and OR deduction rules which closely correspond to the extension and consolidation operators described above. Vadim's excellent article on Hex programming can be found at the Hexy web site, where the program can also be downloaded.

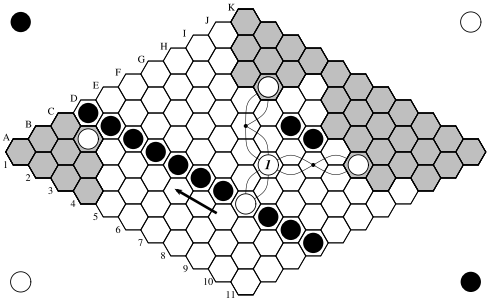
Next issue we'll look at ladders. Ladder handling is probably the single most important aspect of Hex strategy and generally decides where a game is won or lost.

"The Master of the Universe had the first move, and played an opening that I had never seen played before."

While the Sirens Slept, Lord Dunsany

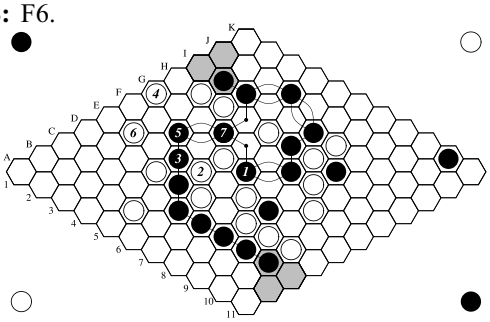
Solutions To Last Issue's Puzzles

Solution A: F7.



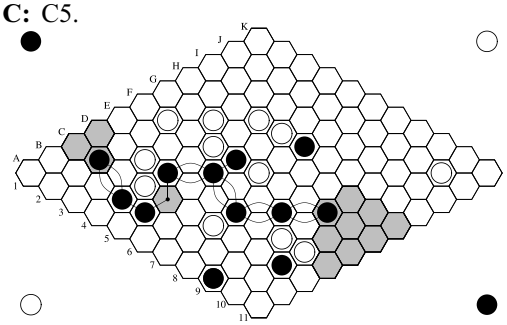
After move ***1*** F7 White has safe non-overlapping dual paths to the upper right edge. White is also safely connected to the lower left edge, via a ladder along the direction shown which escapes at edge template IIIb. Ladders will be defined and discussed more thoroughly in the next issue - in the meantime you may wish to demonstrate for yourself that this connection is indeed safe!

Solution B: F6.



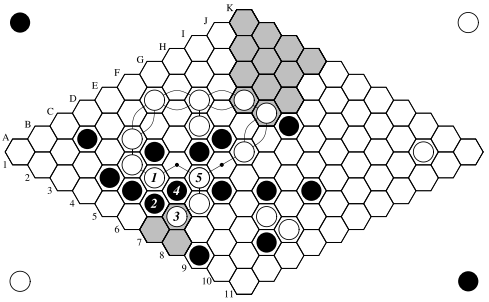
Move ***1*** F6 forces White to reply ***2*** E5 to avert the threatened connection at E6. ***3*** E4 forces ***4*** G1 to avoid a connection to the top, then ***5*** F3 forces ***6*** E2, setting up move *7* G4 for the *coup de grace*.

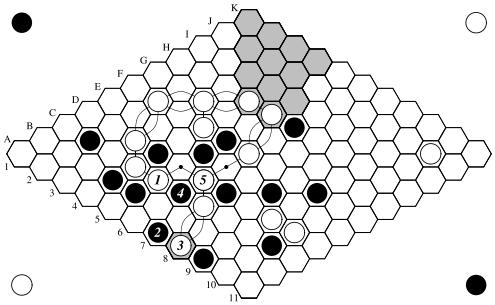
Solution C: C5.



C5 is the most vulnerable point in Black's best spanning path (shown above). Black has two main lines of defense against this move, ***2*** B6 and ***2*** A7…

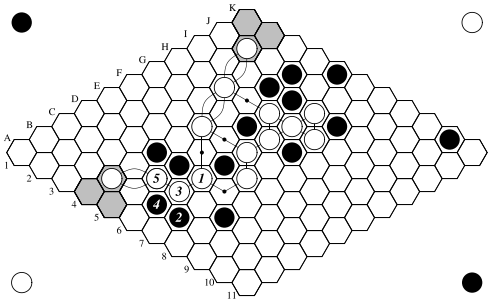
…however both of these defenses fail.





Note the use of a multi-piece edge template to the top right edge in both of White's winning spanning paths. Multi-piece combinations provide a much richer variety of edge templates, but are too numerous to catalogue here. You might like to demonstrate that this template is safe as a simple exercise.

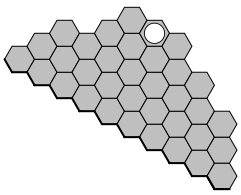
Solution D: D6.



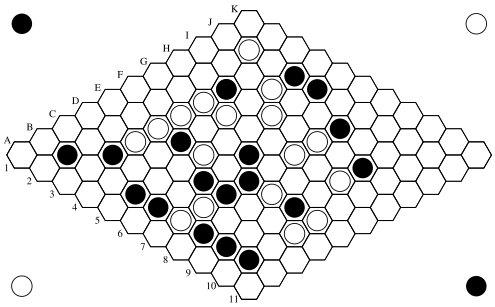
White's move ***1*** D6 forms a group that is safely connected to the top left edge via edge template II at J2. This example demonstrates why it's necessary to build paths between groups rather than simply between piece chains – the pieces at J2, H3 and F4 must be treated as a single unit (i.e. a safe group) for the path to connect safely.

Black must reply ***2*** at A8, B7 (shown) or C6 to avoid immediate loss. However, White is able to force a ladder with moves ***3*** and ***5*** that escapes via edge template II at B4. Ladders are discussed next issue.

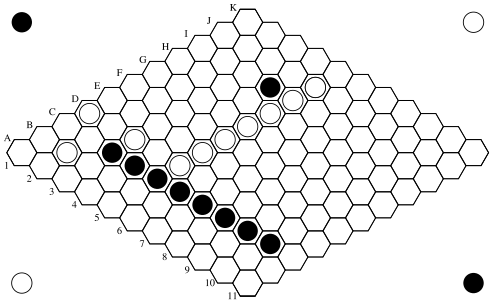
Puzzles



Puzzle E: Show that template Va is safe (hence by reflection also Vb).



Puzzle F: What is White's best spanning path in this situation?



Puzzle G: Black to play and win. Puzzle designed by Leonid Gluhovsky. ■

References

Anshelevich, V. (2000) "The Game of Hex: An Automatic Theorem Proving Approach to Game Programming", http://home.earthlink.net/~vanshel/.

Browne, C. (2000) *Hex Strategy: Making the Right Connections*, AK Peters, Massachusetts.

Shannon, C. (1953) "Computers and Automata", *Proceedings of the Institute of Radio Engineers*, Vol. 41.

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

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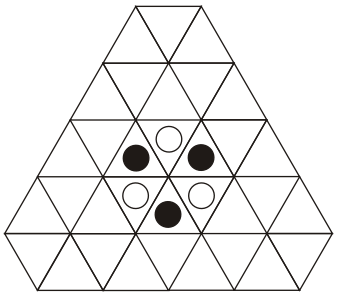

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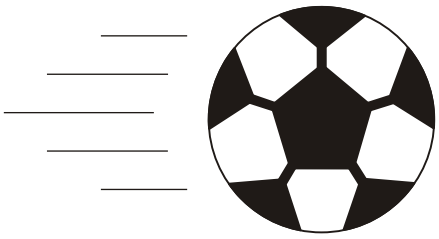


Philosopher's Football

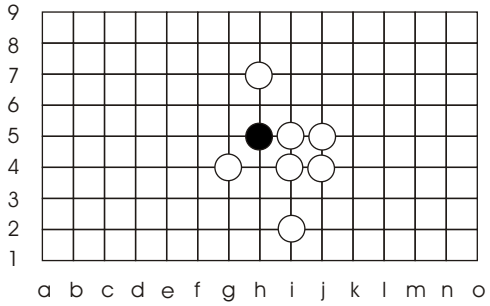
by John Williams

Philosopher's Football, or simply Phutball, was first described by John Conway in the book *Winning Ways: For Your Mathematical Plays*. The article in that book gives a thorough explanation of the rules and an introduction to the strategies used at the beginning of the game. This article is intended to be a more in-depth exploration of various strategies used in Phutball by analyzing an entire game from start to finish.

Phutball is a game with simple rules. It can be played on a Go board, but Phutball usually uses a 19x15 board, so you must cover or ignore two columns on each side of the Go board. To begin, the phutball is placed on the center spot of the board. There is only one phutball and all the other pieces used in the game (men) are identical, so you could use a black Go piece for the phutball and white Go pieces for the men. All pieces are common to both players, and indeed both players always have the same legal moves although their aims are different.

The two players alternate turns, in which they may do one of two things: they may place a man on the board in any unoccupied space; or they may move the phutball by making a series of jumps over adjacent men, removing the men from the board immediately after they are jumped over. No man can be placed on the board in a jumping move.

In a single jump, the phutball can jump over one or more adjacent men in a straight line, landing on the first vacant point in that direction. A player may make several consecutive jumps in various directions in a single turn. Because the men are removed instantly, no man can be jumped over more than once in a move. The diagram below will help to illustrate some legal jumps .



Examples of legal jumps are h5:j3, h5:k5, h5:j3:h1, h5:k5:i3:i5 (notice that we land on i5 because the man which was there was removed by the first jump). Some examples of illegal jumps are h5:h6, h5:h8, h5:e2, h5:k5:i3:i6:g8.

It is legal for the phutball to land on any of the goal lines or sidelines. It is also legal for the phutball to leave the board, but only by jumping over a man on the goal line, and only as the last move of the game. In fact, the object of the game is to arrange that at the *end* of a move the phutball is *on or over* the row closest to your opponent (his goal line). In our diagrams the first player to move will be aiming for his opponent's goal line at the top of the board, while the second player to move will be aiming for the goal line at the bottom of the board. A defender can sometimes use his own goal line by jumping the phutball onto and off it in a single move.

In spite of the simple rules, Phutball has many rich and varied strategic possibilities. Below I present a full game which I recently played on Richard's PBeM Server. Some of the strategies to watch for are blocks and reverses.

When the path a phutball will take has a turn in it, such as h3:j3:h1 in the diagram above, a man can be placed at j3 to block the path. Now the phutball must jump h5:k2 and cannot reach h1. Blocking is especially effective at the beginning of a long path.

A reverse is when you move the phutball toward your own goal, and then back toward your opponent's goal. This can be devastating because it removes a lot of men which your opponent was hoping to use to reach your goal. Because it is so effective, the threat of a reverse is also a potent weapon.

One other thing to watch for is the positioning of the phutball in relation to the men. A man placed a knight's move away from the phutball is almost worthless. Can you see why? Similarly there may be a long path toward your opponent's goal, but you might have a difficult time using it if the phutball is positioned badly. So now on to the game: "Play Ball!"

John Williams	Joe Kisenwether
1. h11	i9
2. h13	k7

I am building a path straight toward the goal; Joe is building a path at an angle. Whoever jumps first will have an opportunity to block at the turn in the path if the other player tries to build a path back the same way in order to take advantage of the existing men.

3. h15	h10:j8:l6

My path is getting dangerously long, so Joe jumps first.

4. k7	

One disadvantage of jumping is that you do not place a man. Your opponent places the first man after the jump, so a jump over a single man could be immediately countered by the opponent's next move. Here Joe has made a series of two jumps, and I respond by starting a path back immediately. Now I only need to place one more man to create a very long path.

4....	k5

Joe's response is to prepare a short path, but in a different direction, in order to be able to block me more easily.

5. i9	l6:j4

I have created a long path, but Joe jumps again before I can use it.

6. j5 (Diagram 1)	

I could play k5 to make a long path, but Joe would block it easily by placing a man at l6. That would point my path for the phutball toward the side of the board, making it difficult to get back to the center, where all the men are. Instead I am trying to use a shorter set of jumps which is less easily blocked, by jumping j4:j6:l8 and then placing a man at k8.

6....	k3

Notice how close Joe is to my goal now. This is why my line of

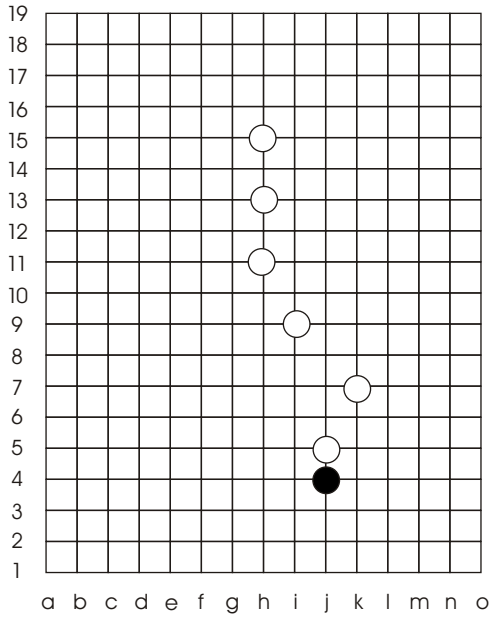


Diagram 1

three men forced him to jump back with move 3.... h10:j8:l6.

7. j4:j6:l8 k7

8. k8

Joe cannot block at j8 because I can still jump l8:i8:i10:g12:i14:g16. At the beginning of the game, men are almost always placed in an alternating fashion with an empty space between each man because that is the fastest way to build up a long path of men. Notice that alternating men in a straight line like the ones at h11, h13, and h15 have three paths which can be used to jump along them. (1: h10:h12:h14:h16, 2: g10:i12:g14:i16, 3: i10:g12:i14:g16.) Stones placed a knight's move from each other, like h11 and i9, allow two paths to jump along them. Stones placed in a diagonal line only allow one path along them. Nevertheless, diagonal path is often used defensively because it allows one to move the phutball farther from the opponent's previously strong position. In this position the earliest effective block for Joe is at h10. If I were then to jump l8:j8:g11, the phutball would be in a bad position to use the rest of the men.

8.... l8:j6

Joe jumps instead of blocking. If I play k7 I get blocked at l8, and if I play j7 I get blocked at j8.

9. j7 j8

I decide j7 has better possibilities because it keeps me closer to the center, where all the men are.

10. i10 g12

I like it when my opponent plays on my half of the board. This block is far enough down the path that I can get almost as good a position by continuing from where the path was blocked.

11. e14 j6:j9:h9:j11

Joe has no good blocks left, so he makes a jump. This jump is in the direction I want the phutball to go, but at least it is not as far as I would have jumped. Also the man left at k8 gives him the chance to make a path quickly by placing a man at j10 or k10.

12. i12 g13

Now things are finally getting interesting, with some reversal threats. j11:g14:g11:i11 would cripple my position because I would have to place two men to take advantage of the men at e14 or h15, while Joe only has to place one man to reach the man at k8.

13. i13

I prepare to be able to easily build a path after that jump.

13.... j10

Joe threatens an even better reverse: j11:g14:g11:i11:k9:k7.

14. g11

I could block his reverse at g14, but the move I choose threatens a kind of double reverse: j11:g14:g10:i12:i14:g16.

14.... g10

I think the general buildup on my half of the board is giving me an advantage.

15. h17 j11:j9:l7

j11:g14:i16:g18 is a very direct threat, so Joe has to do something. Moving the phutball is always a good idea when the opponent's position has become too strong. The reverse j11:g14:g9 allows me to recover too quickly by playing g10, so he chooses this jump.

16. k8 k6

17. i9

I have quite a few different paths, which makes blocking difficult, so Joe jumps to a place from which it will be easier to block.

17.... l7:j5

18. k6 l7

19. j5:m8

I have a choice on move 18 similar to the one I had in move 6, but the men were set up so I can get back from the edge this time.

19.... h9

20. l8 m8:j8:h10:h12:h14:j12:h12:
f14:d14

This is good, since after placing a man at e13 Joe will have a path back in his direction, but I think m8:j8:h10:h12:h14:f12:h12:f10:
h10:h8 might have been better. When fighting in your own territory, even if your opponent manages to move the phutball in his direction, you can usually arrange to leave a few spare men behind, which will make it easier for you to move the ball back.

21. h13

This prevents e13 by giving me a better jump: d14:f12:h12:h14:
h16:h18.

21.... h12

22. d15

Neither one of us can play e13 now because it would give the other a good jump. I decide to start a new path.

22.... e15

This looks like a minor reversal threat (d14:d16:f14), but is actually more subtle.

23. d17 g16

This move was a surprise. He can now jump d14:f16:h16:h14:h11:
f11:i8, which is rather difficult to block for long. If I had seen Joe was planning this when he played 22....e15, I might have played 23. h18, which would probably have made the game a lot shorter.

24. f16 h14

25. i15

This doesn't entirely block Joe's path, but it forces him to leave some men behind, which is about all I can salvage from the situation .

25.... j8

I still cannot block effectively, so Joe makes his path even longer.

26. h18

This forces Joe to jump before he can extend his path any more. If he does not jump now, playing g17 will block his path for good.

26.... d14:g17:g15:i13:g13:
g9:i9:k7 (Diagram 2)

The phutball is in the middle of an empty area now, so we use strategies similar to those employed at the start of the game, but notice how the men we have each left behind are used to make threats (moves 28. i10 and 29....j4) which force the other player to move the phutball.

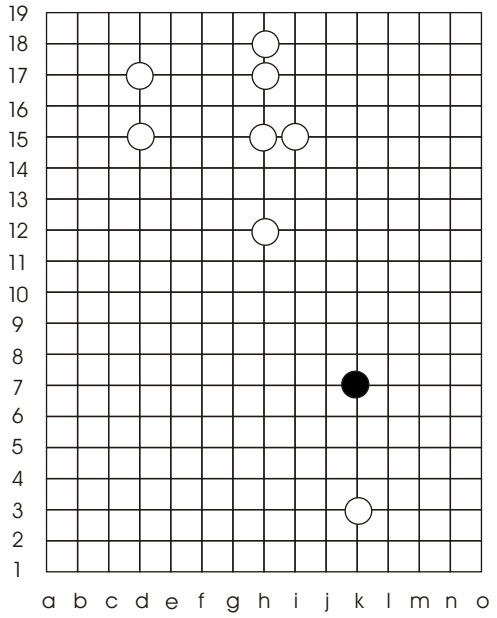


Diagram 2

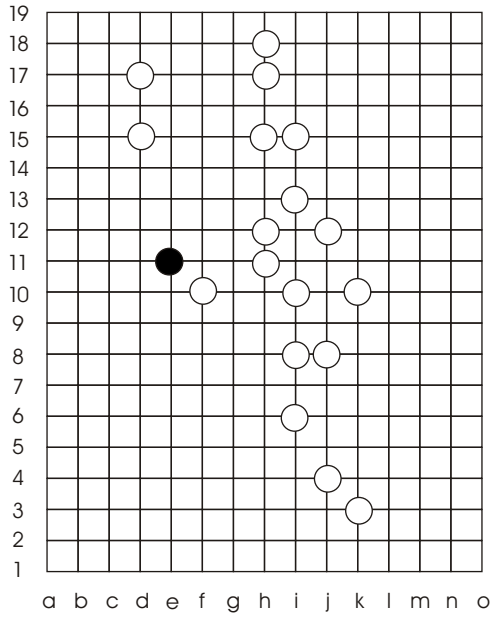


Diagram 3

27. j8 j6
28. i10 k7:i5
29. i6 j4
30. i5:i7:k9 j8
31. j9 i9
32. j12 h9
33. f10

Joe's blocks at i9 and h9 have now largely cut me off. If I try to rebuild a path by playing at g10, for example, he has good reversal threats, and I only have one move before he plays i6. So instead I played the lateral move f10 to get the phutball away from his path.

33.... i6
34. k9:g9:e11 f10
35. k10

This prevents h8 by threatening e11:g9:i7:k9:k11. I would not choose to continue to i13 because the position is much worse for Joe on k11; i10 is a knight's move away from k11, but from i13 he can play i12 and have a good path started. There are more examples coming up of how it can be advantageous to stop jumping early.

35.... i8

This is a nice counter threat. After I jump to k11 or i13, Joe only needs to place a single man to reestablish his path.

36. i13

Now if Joe plays h8 I will have a path all the way to the goal.

36.... h11(Diagram 3)

It often occurs that the phutball ends up to the side of a line of men leading both ways, as in this position. Neither player dares to place a man to make a path to the line of men in the center because the other player will have a killer jump. It can be difficult find a way to connect to such a group of men so that your opponent does not have a good jump. I often choose to start a new path. In this case I can also try to use the men at d15 and d17.

37. e12 g8
38. e13 e11:g9:g7
39. g8 f6
40. f10 g7:e5
41. f6

It's interesting to note about my path up the left side that if I jump all the way to e18, Joe can play f18 to create immediately a path back (e18:g18:i16:i14:i12:g12:j9:h7:j5:j3:l3) which would be difficult to block and probably lose me the game. The correct way would be to stop at c16, still one man away from a winning jump, and if he tries to make a path with f18 I can block at e18.

41.... g7

Joe is again using the strategy which we first saw at the start of the game, where one jumps, builds a path in a different direction, and jumps again. Because the other player places an extra man each time you jump, he usually ends up with some path leading back and can counter attack. Since you changed directions, you can usually do some blocking and hopefully force him to leave some men behind when he jumps out. These extra men may come in useful later when you have an opportunity to build a path.

This block at g7 is a very effective one. If I play g9 to try to use the path on the left, Joe will reply e5:h8:f8:h10:h13:j13:j11:h9:j7:h5. I can play k9 to try to use the path on the right, but that can easily be blocked. So it looks like I am not going to be able to use either one of my paths. Since his block at k8 is practically forced after k9, however, I plan another mostly lateral movement (e5:h8:l8:j10:l10) in order to make it just as difficult for him to use his path. After the jump I can in addition play at k11 to make a threat almost immediately.

42. k9 k8
43. e5:h8:l8:j10:l10 k9
44. k11 l10:j8

k11 threatens to win with l10:h14:h16:h19, so Joe has to jump. Because he set up the jump at an angle to my path, he will have a good chance to block me, which he does at l10.

45. k9 l10
46. l12 (Diagram 4)

Considering the number of men on the board, it's rather surprising that Joe does not have a good jump, but it is a good circumstance for me to exploit. m11 is forced because it is the only good block, and after jumping to n12, m12 threatens to give me good jumps.

Let us examine why m11 is the only good block. My threatened path is j8:m11:k13:i11:g11:j14:h16:h19 with a turn (and potential block) at every step. k13 creates a more direct path for me (j8:m11:j14:h16:h19); i11 is better, but leaves me the option of rebuilding an even more direct path with h14 or jumping with j8:m11:k13:h10:j10:l12, which looks even worse

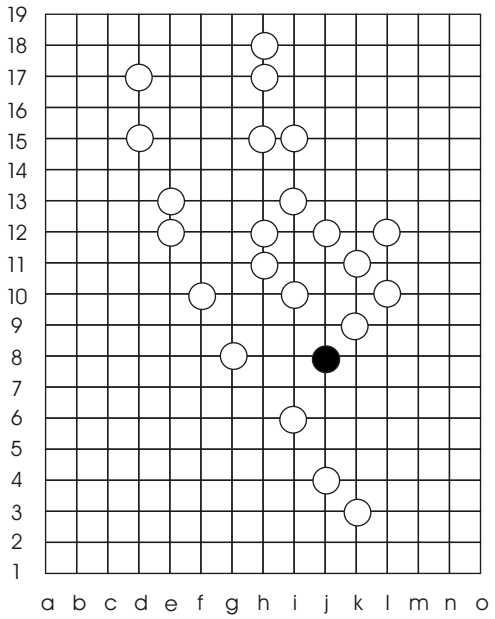


Diagram 4

for Joe positionally than the current situation; g11 allows me to jump up the left-side path; j14 allows me to win with j8:m11:k13:h16:h19; and h16 allows the win j8:m11:k13:i11:g11:j14:g17:i19.

46.... m11
47. j8:n12 j8

This prevents m12 by threatening n12:k12:i12:g12:j9:j7. Continuing with :h5 would allow me to counter attack too quickly with h6. It is often better to stop short if your opponent needs two or more men to make a path back because it gives you time to play an extra man farther along on your path.

48. g12 g13

g12 blocks Joe's threat and opens a path to the left side as well. g13 makes another threat, this time including a reversal (n12:k12:i12:f12:h14:h16:j14:h12:h10:j10 or n12:k12:i12:f12:h14:j12:l10) for even better position.

49. n13

It looks like both paths are no longer usable, so I start a third path. This also gives Joe time to make a path. Notice that he has to play at l10 before m11 to block n12:l10:h14:h16:h19.

49.... l10
50. n15 m11
51. n12:n14:n16

I do not realize it immediately, but this position is almost certainly a win for me. In order for Joe to get out of this corner he has to go through all the men in the middle. So all I have to do to stop him from getting out is ensure that I have a better path out of the middle.

51.... m15
52. h6

Joe's next move would have to be l14, k13, l13, or m13. l14 and k13 create a winning path for me (n16:l14/k13:i11:g11:j14:h16:h19). l13 creates a path for him on the left side (n16:l14:l11:j11:j13:h13:f11:f9:h7:j5:j3:l3) and m13 creates a path on the right side (n16:l14:n12:k9:i7:i5:l2); h6 creates a reverse for me on both paths.

52.... i5

This frees up the right side path n16:l14:n12:k9:i7:i4:k4:k2, so now I only have to worry about Joe playing m13.

53. i8 i7

I make another threat to reverse if he plays m13, so Joe blocks it. If he plays m13 and jumps n16:l14:n12:k9:g5, I will be able to respond with g6 and have a path which would be difficult to block. However, the right side path is still effective because if he stops short at k9, I won't be able to respond before he can extend his path far enough to win or at least threaten to win. Unfortunately I cannot find a way to force him to play k9, so I decide to jump and block.

54. m17 m13
55. n16:l18 l17

At this point I could try a big reverse (l18:l16:n14:j10:h10:h13:f11:f9:h7:h5:j5:h7:j7:h9), but the resulting position is not as good as I would like, and by now I really like this position in the corner surrounded by men. I also wish there was a man on h14.

56. n14(Diagram 5)l18:l16:o13

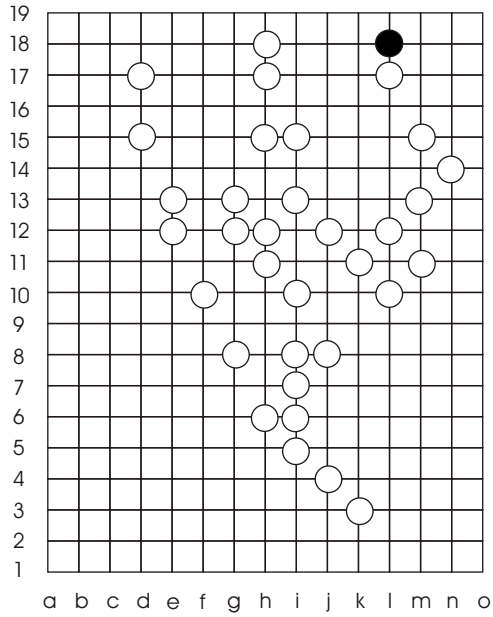


Diagram 5

I think placing a man at l16 would have been better for Joe here. My reply would have been l18:l15:n15:n13:l13:l11:j11:j13:h13:f11:f9:h7:h5:j5:h7:j7:j9:g12, which still gives me an excellent position, but he probably would have been able to fight for a while longer. The above jump is not immediately obvious from looking at the board. At first it seems that there is no good way across the 14 row because from j9 it looks like I must jump to f13 and can get no farther without a man on h14. The key is that the man at g12 was already removed earlier in the series of jumps (h13:f11), so from j9 it is possible to jump j9:g12:g14:i16:g18. In this case also I would choose to stop early because from g18 Joe could play h17 or f18 to make a path using men left behind after my jump. From g12 it looks like he will have to place two men to build a good path, during which time I can place the one additional man I need to reach the goal.

57. n14 n12
58. o13:m15

If Joe tries to rebuild the path with n14, I will block at o13, which would ruin the path, since he cannot jump out of bounds.

58.... i11

This threatens to allow Joe to build a path by playing l14. (m14 would give me a winning path.) I could do a reverse, but again I see that a man on h14 would be very helpful--it would even give me a winning path if he played l14.

59. h14 h10
60. m16

This forces Joe to take some kind of action because after m18 I will have an unblockable path to the goal.

60.... n14
61. o13

This block forces the path out of bounds. Watch (out) for this type of block when the path gets close to the sideline.

61.... l14

Joe has to do something to jump because I still threaten to have an unblockable jump to the goal after playing m18. Unfortunately there are no good jumps left.

62. m15:k13:g9:e11:e14:c16

As I mentioned earlier, if I continued to e18, Joe could counterattack with f18 and probably win because he has multiple paths which he could use. From here I can win in at most 4 moves (62....d15, 63. d19 c16:e14, 64. e15 e16, 65. e18 any, 66.e14:e17: e19).

62.... Resign

I hope this example game has shown that there are a wide variety of strategies and tactics available in Phutball. This single game has by no means exhausted all the possibilities. You may have noticed that the game gets more complex as it progresses. As more men are placed on the board, there are more possible paths, and it gets harder and harder to be sure that the next man you place does not actually give the other player a better jump or reverse. Indeed there is always the possibility that a small mistake may suddenly turn the tables against you. A good example of this is if I had jumped to e18 at the end of move 62, which probably would have cost me the game. Also notice how some simple moves can affect the entire board. For example, in move 52 the placement of a single man far from the phutball creates reversals in two paths which reach to opposite sides of the board.

Handicapping is simple and effective in phutball. If two players of different skills are playing, the phutball's starting position can be moved one or more rows toward the stronger player. This makes it so that the stronger player has farther to go than the weaker player and both can enjoy a challenging game.

Like many games, the player who moves first in Phutball has a noticeable advantage. For this reason many players will play two-game matches, so that each player has the opportunity to move first. I do not know if anyone has investigated this, but it would be interesting to see if a one row handicap for the first player would make the game more balanced. One could even create a half-row handicap by adding an extra row to the board on the side the first player is trying to reach. ■

John Williams lives in Utah with his wife Becky and three boys. They are not vegetarians, he says, but they do a lot of other strange things. Professionally he works with all things Unix. In his spare time he enjoys advocating Linux, hacking on Richard's PBeM Server, playing the cello, or juggling, but not all at the same time. Richard's PBeM Server is, of course, an excellent place to play Phutball (http://www.gamerz.net). John is the top ranked player there by a large margin.

Phutball is very rare among strategically interesting games in that for any given board position the set of moves available to both players is the same. Phutball was invented by mathematician John Conway and first presented in the book Winning Ways: For Your Mathematical Plays*, cowritten by Erwin Berlekamp and Richard Guy (Academic Press, 1982). This book is soon to be reissued in a new edition by AK Peters, and it is with their permission that we are printing the following paraphrase of part of Conway's description of his game (pp. 689-691). -- Ed*

Philosopher's Football: Standard Opening

The standard opening is as follows:

1. h11 i9
2. h12 k7
3. i16

The second player is now frightened by the first player's threat to make a long jump h10:h13 and later establish a path through i16. He therefore jumps first himself.

3.... h10:j8:l6
4. k7 k5
5. i9

The first player is trying to reestablish his chain while the second player is preparing a sideways jump to defend against this. If it were the first player's turn, he could jump l6:j8:h10:h13. (It would probably be better not to make this last jump: a threat is often more powerful than its execution.) However, it is the second player's turn.

5.... l6:j4
6. j5

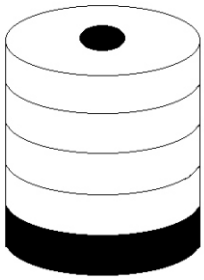
This is much better than replacing k5, which would be too easy to block with l6. (After the jump j4:m7 the first player would find it very difficult to reestablish a useful connection with the rest of his chain.)

6.... i5

This move is even more subtle! A direct threat to win at this point would force the first player to jump j4:j6:l8 and arrive at a commanding position. 6....i5 provides a way back after this jump and also prepares the way for a move at i3, followed by the reverse j4:j6:h4:j2, which gets the second player near to the first player's goal line and removes some pieces useful to his opponent. The move 6....i5 has even more hidden secrets: if the first player plays i7, the *second* player can make the jump j4:j6:l8, and then any threat by the first player to connect with his old chain equally helps the second player to connect with i7 and i5.

Almost all these moves have become standard, but from now on experts differ, and we'll offer only a few hints.

Try not to jump until you really have to, and then only as far as you really must. If you will have a piece within three of the place your opponent will jump to, but *not* a knight's move away, you can probably use it to get back and needn't be too frightened by his jump (which he probably shouldn't be making!). Remember that a piece a knight's move away from the ball is almost always useless. A threatened path becomes much more useful if it can be jumped along in several different ways. Don't forget that the piece you place may be useful to your opponent--possibly in a devastating reverse. ■



BASHNE

Basic Opening Theory and Problems

(See Abstract Games Issue 1 for rules.)

by Anatholy Zbarj

The game of Bashne is more than 120 years old. It probably was developed from Russian Checkers due to the flatness of the pieces used to play that game. Mikhail Chigorin, Emanuel Lasker and other famous Chess players were fond of Bashne.

Bashne is a very dynamic game. The action can swing rapidly from one flank to the other, and very often complex, volatile situations arise. Combinations can last five to ten moves or longer, making accurate computation challenging in over-the-board play.

A column with four or five checkers can play a more important role in the game than a king. It is possible, for example, to set up a winning position while your opponent is forced to spend time jumping back and forth over a tall column. The king's mobility can even be a liability: many pieces may be sacrificed to it, which can then be liberated to form a powerful column. On the other hand, big columns can also be a liability if due to accurate play by the opponent they become trapped and immobilized.

Basic Opening Theory

In the opening both players try to create strong columns as fast as possible. There are many methods to create columns, but in the first five to eight moves the players usually will be able to create columns of two or three checkers (called "doubles" or "triples," respectively). With these columns the main battle will then be engaged, leading to complex and interesting combinations.

If white moves 1. e3f4 or 1. g3f4, black can create a triple and thereby immediately gain the initiative. (For example, 1. g3f4 h6g5, 2. f4:h6 f6g5, 3. h6:f4 d6e5, 4. f4:d6 e7:c5.) With any other opening move by white, if black engages in fighting right away—an "open" variant—white will be able to create powerful columns faster than black and will therefore be able to dictate the game. For this reason, black frequently does not start an exchange immediately but replies on the opposite wing or moves one of his checkers into contact with the white checker so that no capture is necessary. In this way, black forces white to initiate the exchanges. This may be called a "closed" variant.

Let us consider one closed variant opening that has a long history of use: 1. c3b4 b6c5 *(black threatens 2…d6e5, 3. b4:d6:f4 f6e5, 4. f4:d6 e7:c5 creating a triple)*, 2. b4a5.

This is a move which has brought success to white in many games. It allows the creation of a double by black and temporary capture of the center, but white can rapidly destroy black's position. The following game shows how this happens.

Zbarj-Luppo: 1. c3b4 b6c5, 2. b4a5 c7b6?, 3. a5:c7:e5 f6:d4, 4. g3f4! e5:g3, 5. h2:f4 g3:e5, 6. e3:g5 h6:f4 (Diagram 1)
White has been able to draw five black checkers away from the main group. The checker at c5 is preventing white's planned attack, so he decoys it to a3 first, and then develops a strong attack

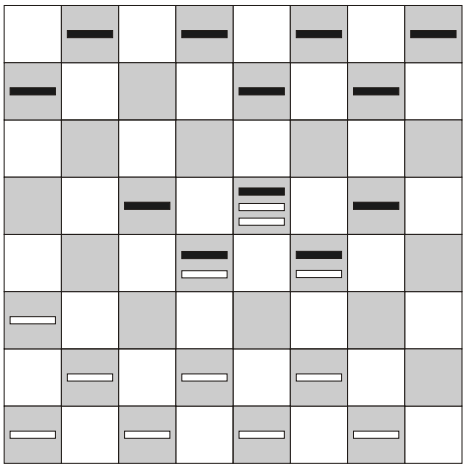


Diagram 1

that leads to the destruction of black's position and black's subsequent defeat.
7. a3b4! c5:a3, 8. f2g3! f4:h2, 9. d2e3 d4:f2, 10. e1:g3 h2:f4, 11. f2:h4:f6:d4 f4:d6, 12. e5:c7 (Diagram 2)

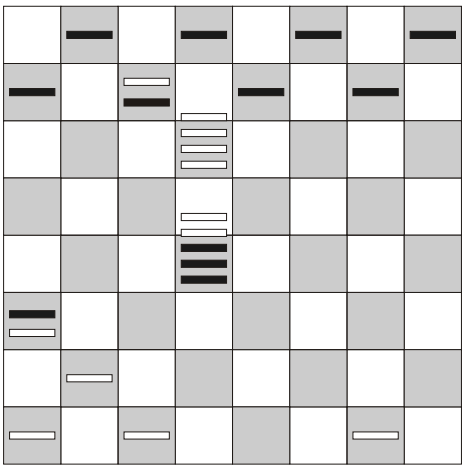


Diagram 2

White has destroyed black's center; he has a powerful column of four checkers; and three black checkers are held prisoner under a white double.
12.…d8:b6, 13. b2c3 e7:c5:e3, 14. d4:f2 c7:e5, 15. d6:f4 g7f6, 16. e5:g7 f8:h6 (Diagram 3)
It has become a joyless endgame for black.
17. e3d4 b6a5, 18. d4c5 g7f6, 19. c3b4 a5:c3, 20. c5b6 a7:c5, 21. b6:d4:b2 Resigns.
Another effective way of finishing the game from Diagram 3 is 17. c3b4 a3:c5, 18. f4g5 h6:f4:d2, 19. g5h6 d2:f4, 20. h6:f8+:a3

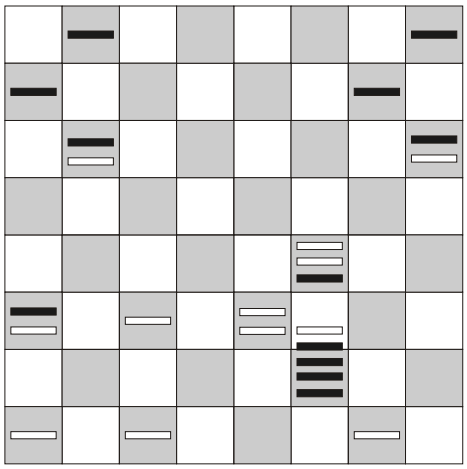


Diagram 3

b6:d4, 21. c5:e3:g5.

With the closed variant 1. c3b4 b6c5, 2. b4a5, the move 2….a7b6 to trap the white checker at a5 seems to offer black better chances than 2.…c7b6. In order to activate his own pieces and possibly create a column, however, white can sacrifice the checker on a3 and prepare a subtle trap. This idea was played out in the following game.

Zbarj-Cherepanov: 1. c3b4 b6c5, 2. b4a5 a7b6, 3. a3b4!? c5:a3, 4. d2c3 b6c5?? (Diagram 4)

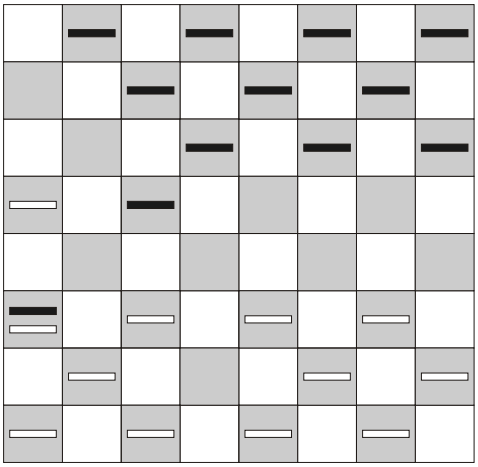


Diagram 4

Now black falls to a powerful combination.
5. c1d2!! a3:c1+, 6. e3f4 c1:e3:g5, 7. g3f4 g5:d2:b4, 8. a5:c3 c5:a3, 9. f2e3 a3:c5, 10. h2g3 c5:a3, *(Notice the use of the big column to gain time for an attack. -- Ed.)*11. c3d4 a3:c5, 12. d4:b6 c7:a5:c3, 13. c5:a7 c3:a5, 14. a7:c5 d6:b4, 15. c5:a3 a5:c3, 16. a3b4 c3:a5, 17. g1h2 a5:c3, 18. b4:d2 (Diagram 5)
After several more moves black resigns.

We have seen two attempts by black fail against the variant 1. c3b4 b6c5, 2. b4a5. However, this variant is far from being unbeatable. Here is a game in which white ran into difficulties.

Zbarj-Pakhomov: 1. c3b4 b6c5, 2. b4a5 c5d4 *(a different attempt by black)* 3. e3:c5 d6:b4, 4. a5:c3 c7d6 (Diagram 6)
With this move or 4….e7d6, white has problems.
5. d2e3? d6e5, 6. b4:d6:f4 f6e5, 7. f4:d6 e7:c5, 8. a3b4 c5:a3, 9. c3b4 a3:c5, 10. e3d4 c5:e3, 11. f2:d4 (Diagram 7)

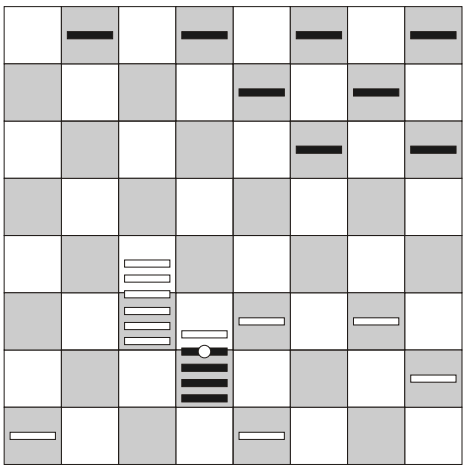


Diagram 5

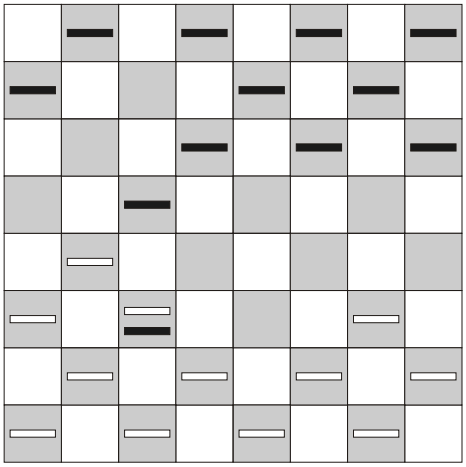


Diagram 6

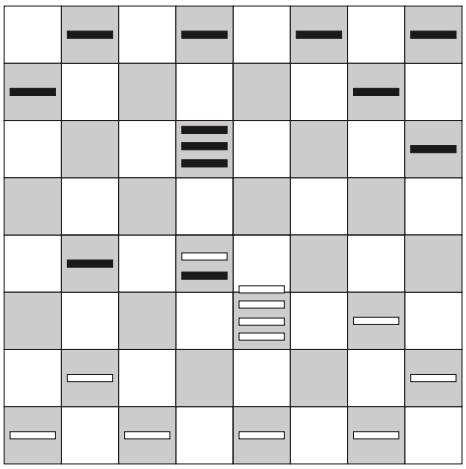


Diagram 7

It seems that white has solved all his problems—he has a column of four checkers and no visible weaknesses. Black, however, has a nice combination.
11.…d6c5, 12. d4:b6 g7f6, 13. b6:d4 b4c314. d4:b6 a7:c5, 15. b2:d4 f6e5, 16. d4:f6 c5d4, 17. e3:c5:a7 (Diagram 8)
17.…b6c5, 18. d4:b6 f8g7, 19. b6:d4 g7:e5:c3, 20. Resigns.
In this game it is clear how a powerful column can be trapped.

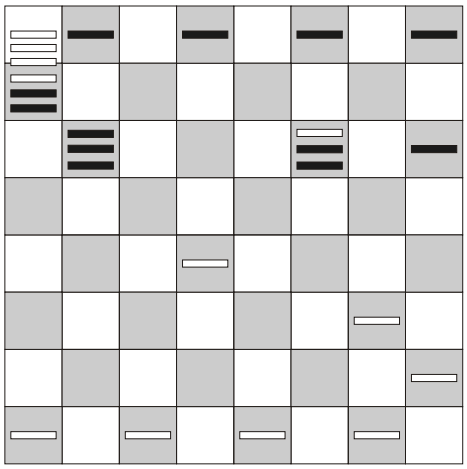


Diagram 8

A hopeless situation develops similarly for white if he tries 5. f2e3? in Diagram 6. Black continues 5.…d6e5, 6. b4:d6:f4 f6e5, 7. f4:d6 e7:c5, 8. a3b4 c5:a3, 9. c3b4 a3:c5, 10. e3d4 c5:e3, 11. d2:f4 h6g5!, 12. f4:h6 b4c3!, 13. b2:d4 d6e5!, 14. d4:f6 a7b6, 15. f6:d4 e5:c3, 16. e3:c5:a7 c3d2!? and white may resign.

Nevertheless, from Diagram 6, white still has chances. Instead of the moves we have looked at, 5. d2e3? or 5. f2e3?, he can try 5. c3d4. After 5.…c5:e3, 6. d2:f4, the opening has finished and the middle game will begin with unforeseeable combinations.

Our analysis of these games demonstrates some of the possibilities inherent in this remarkable game.

It was mentioned in the first Bashne article in AG1 *that Bashe was the first of the column games, dating back at least to 1875. Lasca followed in 1911, Pasta in 1956, Focus in 1974, and probably a number of others more recently, including Plateau, reviewed in this issue.*

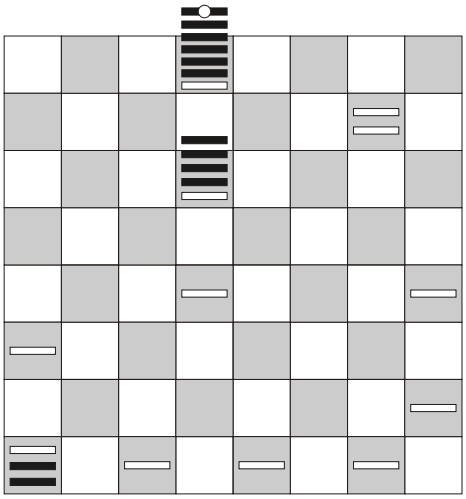
One game, dating from the mid-1980's, deserves special mention: Emergo, and its variant Hexemergo, invented by Christian Freeling and Ed van Zon. According to Freeling, "Lasker made a classic mistake: he left a great idea where he found it, which was in the game of Checkers. Thus he hooked it up to three interrelated principles of this game: an initial position*, a* forward orientation*, and* promotion*. None of them is needed to implement the essence of his idea, and applying them makes Lasca an over-complicated game." Presumably the same reasoning would apply to Bashne, the precursor of Lasca.*

Certainly Emergo is a superb game, but I do not think its superiority is necessarily so clear cut. Another of Freeling's games, Chad, strips Chess to its essence, as Emergo does for Column Checkers. It turns out, however, that Chad, while still an excellent game, seems to have discarded something of the essential character of the parent game. The same is true of Emergo, and a preference for one over the other is surely a matter of taste. To my mind, for example, forward orientation and promotion gives Bashne a pleasing focus that is lacking from Emergo. Somebody else might prefer to have the interesting strategy emanating from Emergo's shadow piece.

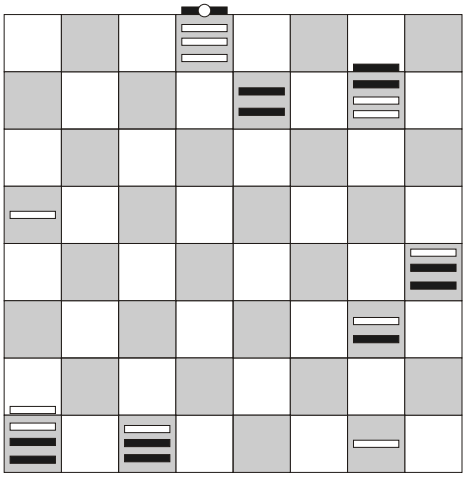
In any case, the column concept is particularly engaging because it confers a kind of pseudo-three-dimensionality on a game. No doubt there are many developments yet to come. It might be interesting, for example, to look at a Column Chess, in which a column had the combined movement power of each of its members. Maybe this has been done already.... -- Ed.

Bashne Problems

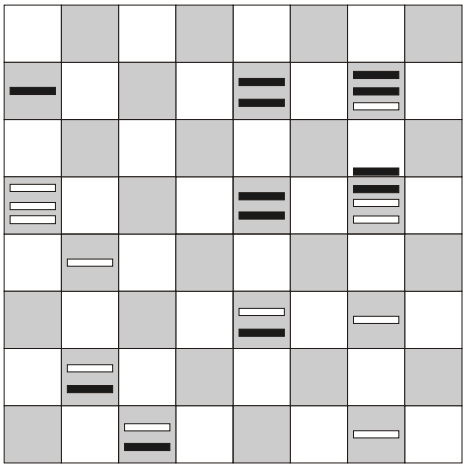
The importance of problems cannot be exaggerated. By solving problems, we can perfect our combinatorial thinking and appreciate beautiful ideas. Problem-like situations occur frequently in actual games. In each of these problems white starts and wins. Solutions are given on page 25. ■



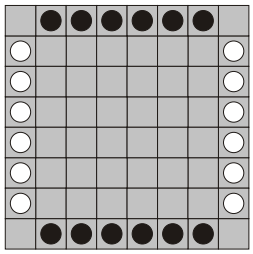
Problem 1 -- Trap



Problem 2 -- Roundabout



Problem 3 -- Roundabout and Capture



Lines of Action

Strategic Ideas -- Part 3

by Kerry Handscomb

(See Abstract Games *Issue 1 for rules.)*

In games like Chess the benefits of a material advantage are quite clear: even the loss of a pawn without compensation can be decisive between experienced players. With LOA, on the other hand, it not obvious that a material advantage is necessarily good: fewer pieces on the board surely means fewer pieces to connect. In this article I intend to look at the topic of material in LOA, broadening the concept of flexibility introduced in the previous issue with respect to compact groups. Before looking at material, however, I would like to mention some early flawed LOA strategies to put the discussion into context.

Early Strategies

One of the earliest strategies used by players of LOA was The Bridge, whereby players tried to string together a loose connection across the middle of the board between their two opening groups. This strategy can be beaten easily because the bridge structure is a strung-out position which can be cut to pieces by a player using the compact focal group strategy outlined in the previous issue.

Another early strategy was the Cross-Board Rush. The reasoning behind this strategy is that one group of six pieces starts off connected, so the player should rush his other six pieces across the board to join them. In fact the fastest constructed game uses a Cross-Board Rush: 1. d1b3 h5g4, 2. b1b4 g4:g1, 3. b4e7 a3:c1, 4. b3e6 h3:f1, 5. e1e5 wins (devised by Mannis Charosh, 1973). Of course, in a real game your opponent will not be so accommodating; the Cross-Board Rush is seen to be a flawed strategy as soon as you realize that the initial group of six pieces is a strung-out position which can easily be attacked: it can be broken up by cross-corner captures or by longer-range attacks.

Material Advantage

Perhaps the most primitive LOA strategy involved sacrificing as many pieces as possible with the reasoning that the fewer pieces you have the less work it is to connect them up. I call this the Suicide Strategy. The fact of the matter is that with a smaller force it is more difficult to attack because you may lack the manpower to block your opponent's pieces or threaten captures to break his connections. It also is more difficult to defend because you have fewer pieces to shift around to foil threatened blocks and captures. Just as importantly, having a large number of pieces allows you to connect over a broader area of the board. What these observations boil down to is that with a material advantage you have more options to defend, attack and connect—in other words you have greater flexibility.

Most players these days are careful not to lose too many pieces, but I would go further and emphasize the primary importance of material. In an otherwise closely contested game a two-piece advantage in the endgame usually is decisive. Often the marginal advantage in flexibility conferred by even a one-piece difference can be enough to swing the game.

It is surprisingly difficult to construct artificial positions to illustrate this point. Even in an actual game in which the player with a small material advantage wins it is not easy to directly attribute the win to the extra flexibility conferred by the larger force. For this reason, attributing such great strategic importance to material is likely to remain controversial, with many players believing that a one- or two-piece difference is unimportant provided their remaining pieces remain maneuverable. Nevertheless, from my own experience, small differences in material are important, and I am sure that statistical analysis of a large database of games would bear this out.

The following is a game in which I think the advantage conferred by the difference in material is fairly obvious.

Kerry Handscomb vs. Philip Cohen, by email, Oct. – Nov. 1999

1. d1b3 h3e3

This move is questionable because of black's next move: a threat that can be defended by improving position is not a threat.

2. c1c3 a2c2

3. b1b4

Already black has a strong compact formation.

3…. a5c7

This move threatens c7:c3 and could be the beginning of a block of black's top-row pieces, but again black can defend by improving his position.

4. f8c5 h4e4

White threatens e4:c4, but provokes an exchange which removes the possibility of white's blockade of the top row. The quiet strategic move 4….a7d7 is another alternative.

5. e8:e4 h7:e4

6. c8:a6

Black tries a cross-corner capture, looking at a6c4, which then makes g8d5 a strong move. If white had moved 4….a7d7 this would not have been a good move as a3:a6 would recapture and get a white piece from under the black blockade.

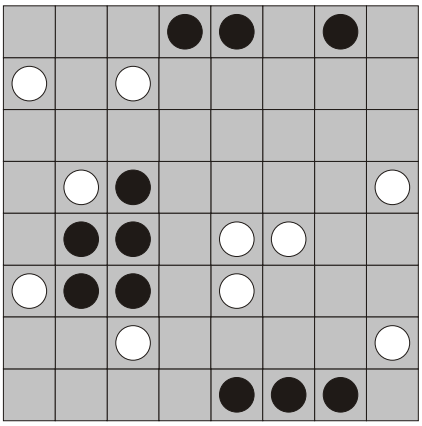
6…. h6f4

Again this is a threat which allows black to improve his position. Moving 6….a4b5 right away is another alternative, blocking b8b5 and a6c4 and looking at a3:a6 while getting a piece from under the blockade. Play may proceed 7. f1c4 a3:a6, 8. b3:e3 (threatening b8:b5, which white blocks) a6b7, and white has chances.

7. a6c4 a4b5

8. b8e8(diagram) h2e5

This move defends against the threat of e8:e4, but allows black to achieve a two-piece advantage. Other possible defenses are h5e5, c2e2, e3e7 and e4:e8. None of them look particularly good. After 8....c2e2, for example, play may proceed 9. e1b1 (threatening b1:b5 and e8:e4) b5d7, 10. e8:e4 h2f2, 11. g8d5 a3a5 threatening h5:d5,



which is difficult to defend against. White is still two pieces down, but he has chances for counterplay while black extricates his stragglers from behind white's pieces.

9. c3:e5

Black is now two pieces up—a winning advantage, especially with his tight formation. He's now looking at e1c3 to improve his cohesion.

9…. b5d7

Capturing with 9….e3:b3 is another possibility for white, although it allows g1d4. White's actual move leaves black with the option b3:e3, but black prefers to consolidate, perhaps still tempting white to capture e3:b3.

10. g8d5 f4d2

This is a good move, blocking e1c3 and threatening c7:e5, but black simply captures, putting him three pieces up.

11. e5:c7 h5e5

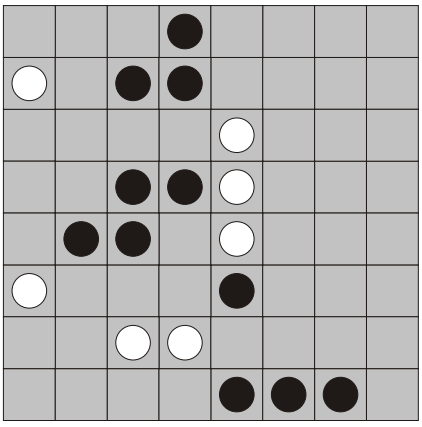
White is tempting black to capture again with 12. c7:e5. At this stage, however, black does not mind e5:c7—instead he intends to work on connecting his three pieces on the first rank.

12. b3:e3

Black is four pieces up.

12…. d7e6

13. e8d7 (diagram)



This prevents a7:c7 and sets up the good move d8d4. Black's material advantage and compact group together with white's strung-out position give black an unassailable advantage now, but it is interesting to watch how the game finishes.

13…. e5d4

White's flexibility is severely constrained now. This defensive move allows black's next move (otherwise e5:c3 would be good).

14. c7c3 c2e2

This move prevents f1d3.

15. d7c6 e4d3

White defends against d8:d4.

16. c6:e6 a7b7

Black could even allow b7:d5 now—for example, 17. e6:e2 b7:d5, 18. c5c2 a3a4, 19. g1:d4 a4:c2++, 20. b4e4, and white cannot win because black's extra pieces give him a solid block. Black's extra material also affords him a number of ways to defend against b7:d5.

17. g1g2 a3b2

If White defends against e6:e2 with 17….d3e4, then 18. d8:d4. White's few defenders are spread too thinly.

18. e6:e2 b7:b4

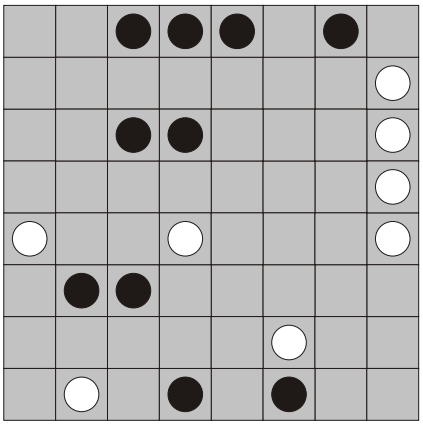
19. e1e4 Resigns

White cannot prevent the piece on d8 connecting in two moves and has no connection threat himself which is fast enough. Note how black's ten remaining pieces have allowed his final connection to be spread over a large part of the board.

One warning should be given about the strategy of pursuing material gain: you can carry it too far. It is quite possible to thoughtlessly capture so many pieces that your opponent suddenly has a quick winning connection. Consider the following game.

Kerry Handscomb vs. Ragnar Wikman, by email
Jan. 2000 – Mar. 2000

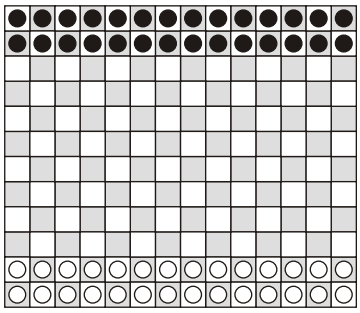
1. d1b3 h3e3, 2. c1c3 a6c6, 3. c3:c6 e3:b3, 4. b8d6 a3:d6, 5. f8:d6 h2f2, 6. b1:b3 a7d4, 7. g1d1 (black is already two pieces up and by this move he aims to win the exchange 8. d8:d4 a4:d4, 9. d1:d4 and go three pieces up) a5c3, 8. e1:c3 a2b1 (diagram)



Rather than defending against black's attacking 7. g1d1, white has cleverly sacrificed another piece, setting a trap for black. Now if 9. d8:d4 a4:d4, 10. d1:d4 b1d3+, white has a winning series of threats. For example, 11. b3d5 h7h3+, 12. d5f3 d3:f1+, 13. d4d2 h6h2++, and black cannot defend.

Black saw the danger, and the game continued 9. e8b5 a4a5, 10. d8:d4 (now this is safe because white has the isolated piece on the a-column) a5:c3, 11. f1d3 h7h3, 12. d3d7 f2:d4, 13. d1f3 b1c1, 14. f3d5 c1e3, 15. b5c4 Resigns. Black's material advantage won him the game eventually anyway because of crucial blocks he was able to make and because of the spread of his connection. Note how white's row of pieces on the h-column was very weak because he had few options to move without disconnecting them.

In conclusion, although it is necessary to be careful, pursuing a strategy of material gain has real merit. There are still some questions to be answered, however, such as when to make cross-corner captures purely for material gain. I am not sure. This investigation will have to continue another time. ■



Epaminondas

...a game of classical elegance

by Kerry Handscomb

Epaminondas is named after the Theban general who invented the phalanx, a formation he used to defeat the Spartans in 371 B.C. The term "phalanx" is used in the game to describe a certain arrangement of pieces that can move and capture as a single unit. The game was invented by Robert Abbott and published by him privately in 1975. It was also released in England around the same time by Philmar Ltd. of London. Epaminondas is an expanded and improved version of Crossings, a game published in Sid Sackson's *A Gamut of Games*.

Although Epaminondas was described inWayne Schmittberger's book, *New Rules for Classic Games* (John Wiley & Sons, 1992) and praised highly by David Parlett in his book, *The Oxford History of Board Games* (OUP, 1999), few people play it these days. This is a pity, because it is a superb game.

Robert Abbott used Epaminondas to illustrate his concept of *clarity*. The clarity of a game is the practical measure of its depth, as defined to be how far you can see ahead in the game. Epaminondas is a model of clarity. To quote Robert Abbott from his article in *Games & Puzzles*, May 1975, "Epaminondas is clear because the magnitude and direction of the forces are shown by the size and direction of the phalanxes. Thus the patterns that develop during the game graphically display the confrontation of power."

In addition to clarity, Epaminondas has simplicity and elegance. Robert Abbott writes in the rules of the Philmar edition, "The equipment is fairly simple, and you should also find the rules to be simple; yet these elements combine to allow for strategies of surprising depth. And the changing patterns that develop during a game often exhibit a certain beauty."

So why did this beautiful game not achieve greater popularity? One factor that cannot be entirely discounted is that the name is too awkward to remember and pronounce. Robert Abbott himself says that the only thing he would do differently about the game if it were published again today would be to change the name.

Overview

Epaminondas is played on a 14 x 12 board with 28 black pieces and 28 white pieces. A checkered board is helpful for visualizing diagonals. The pieces are flat, like checkers. The board is set up in the starting position shown in the top left corner of this page. Black and white take turns to move. White moves first. Broadly speaking, white moves his pieces up the board to occupy black's back rank, and black moves his pieces down the board to occupy white's back rank.

An interesting point about Epaminondas is that its game system could be applied to almost any size of board; in fact the parent game, Crossings, uses an 8x8 board. According to Robert Abbott, however, the 14x12 size is optimal: increasing the depth of the board to 12 rows gives far greater scope for strategic development, while making the board a little wider than it is deep adds variety by increasing the importance of diagonal play.

Phalanxes

A phalanx is defined as a connected group of two or more pieces in a straight line, either orthogonally or diagonally. A piece may belong to several phalanxes in different directions.

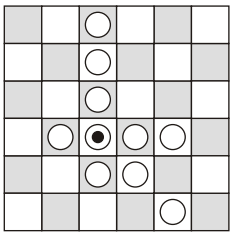


Figure 1 -- Phalanxes

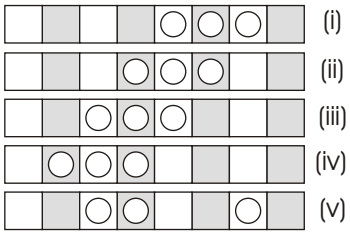


Figure 2 -- Movement

The white piece with the black mark in Figure 1 belongs to a vertical five-piece phalanx, a horizontal four-piece phalanx, and a diagonal three-piece phalanx.

Movement

Each turn a player must either move a single piece one square in any direction to an empty square or move a phalanx. It is not permitted to pass.

When a phalanx moves, all the pieces in the phalanx move an equal number of squares in the same direction in a straight line. The direction of movement must be either forward or backward along the line of orientation of the phalanx. The number of squares moved by each piece must be equal to or less than the total number of pieces in the phalanx. In Figure 2, for example, the three-piece phalanx which starts in position (i) may move one, two, or three squares to the positions in (ii), (iii), or (iv), respectively. If the board extended far enough to the right, the phalanx could move in that direction, too. (For reasons of space, the only example given is of a horizontal phalanx, but the same rules equally apply to vertical and diagonal phalanxes.)

A phalanx can be split up to move. In this case, the number of squares it can move is equal to or less than the total number of pieces in the *moving* phalanx. Figure 2 (v) shows the position after a two-piece phalanx has split off from the three-piece phalanx of (i) and moved two squares. It could not move further.

A phalanx cannot move off the board or onto or over a square occupied by a friendly piece. Under certain conditions, when capturing, the lead piece of a moving phalanx may move onto a square occupied by an enemy piece. At no other time may a phalanx move onto or over an opposing piece.

It is logically consistent (and probably helpful) to think of a single piece as a phalanx of one.

Capture

Under certain conditions the lead piece of a moving phalanx can move onto a square occupied by an enemy piece. The phalanx's movement must then stop.

In order to move onto this square occupied by an enemy piece, the number of pieces in the phalanx to which this enemy piece belongs, extending back in the direction of movement of the moving phalanx, must be strictly *less* than the number of pieces in the moving phalanx.

In this case, the enemy piece is captured together with *all* pieces in the phalanx to which it belongs, extending back in the direction of movement of the moving phalanx. Captured pieces are removed from the board and take no further part in the game.

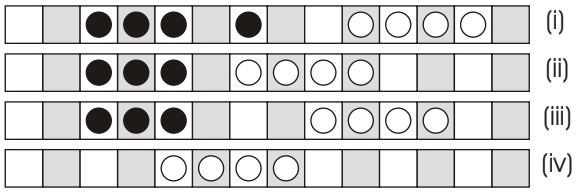


Figure 3 -- Capture

In Figure 3 (i) white can move his phalanx of four pieces three squares to capture the single black piece. The result is Figure 3 (ii). (Note that the other three black pieces are disconnected from the single black piece and therefore are not captured and do not provide any defense.) In Figure 3 (iii) white can move his phalanx of four to capture the three black pieces, resulting in Figure 3 (iv).

As a corollary of these capturing rules, a single piece, as a phalanx of one, can never effect a capture because it can never outnumber an opposing phalanx.

Objective

The objective is to move your pieces across the board onto your opponent's back rank, the row closest to him. Precisely speaking, if at the *start* of your turn you have more pieces on your opponent's back rank than your opponent has on your back rank, then you have won.

As an example, consider the situation where neither player has any pieces on his opponent's back rank. As soon as you move a piece onto your opponent's back rank, he must immediately either (a) capture this piece, or (b) put one of his pieces onto your back rank, otherwise he loses.

As another example, consider the situation where both players have an equal number of pieces on their opponent's back rank. If you capture one of the opposing pieces from your back rank, then your opponent must immediately either (a) capture one of your pieces from his back rank, or (b) move another of his pieces onto your back rank.

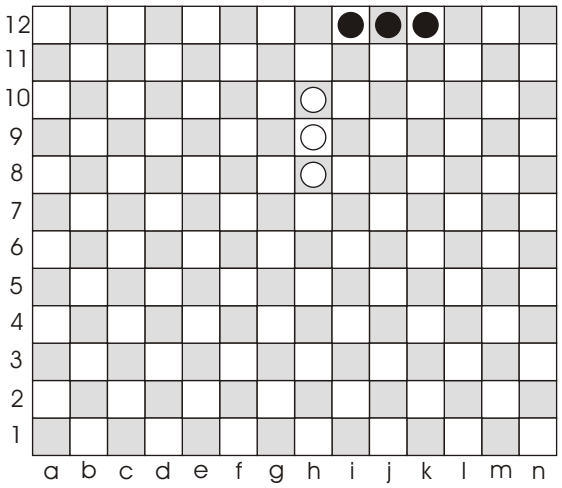
There is one final complication: black could maintain a position of perfect symmetry and thereby force a draw. In order to overcome this an additional rule is necessary: a player may not move a piece onto the row furthest from him if that move would create a pattern of left-to-right symmetry.

Notation

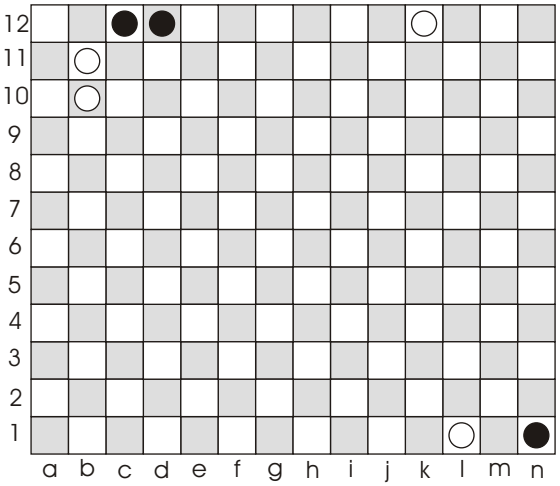
The movement of a phalanx can be unambiguously represented by giving the starting square and finish square of the *last* piece in the moving phalanx. Although it is not strictly necessary, it is probably a good idea also to indicate the pieces captured.

Puzzles

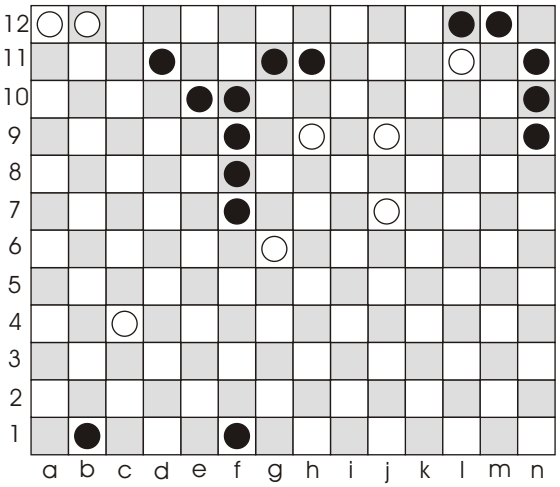
To my mind, one of the measures of a great game is the ability to construct minimalist problems. The three puzzles below, supplied by Robert Abbott himself, amply demonstrate that Epaminondas satisfies this criterion. Solutions are given on page 25. ■



Puzzle 1 -- White to win in three
(i.e. white, black, white, black, white, and black cannot defend.)



Puzzle 2 -- White to win in two



Puzzle 3 -- White to win in four

CHESS VARIANTS

Kyoto Shogi -- Part 3

by Mike Sandeman

(See Abstract Games *Issue 1 for the rules.)*

This is the last article dealing directly with play. Writing this series has been very interesting for me, not least because it has forced me to examine my attitudes not just to Kyoto Shogi but to game play in general. For some time I have been wondering about the social relevance of competitiveness as displayed in these games. It is difficult to avoid classifying certain moves as mistakes, yet we the players are not sitting an examination: hopefully we are having fun, so how can we be mistaken? Kerry has so aptly defined these games as interactive art forms, so even the so-called blunders can be interesting as they tend to lead us into entirely unfamiliar situations.

In this article I will present two entire games. I hope you enjoy these games, but they are just examples, and of course personal creations are best. As we do not have much space for diagrams, a few words about sets: those who have Shogi sets can use a system of substitution rather than inversion; or to immediately make a serviceable set you could photocopy the large pieces from the article in the first issue and paste them onto card.

The first game was played soon after I was introduced to Kyoto Shogi. I played blindfold as an enticement. It was one of the first games that I thought worth remembering. Looking at it now, I do not know what to say—it seems a little long for the number of ideas expressed, and yet….

1. P-1d=R	T-2b=L
2. G-3d=N	L-2c=T
3. T-4d=L	P-5b=R
4. L-4c=T	Tx3d=L
5. Rx3d=P	R-3b=P
6. S-4d=B (Diagram 1)	

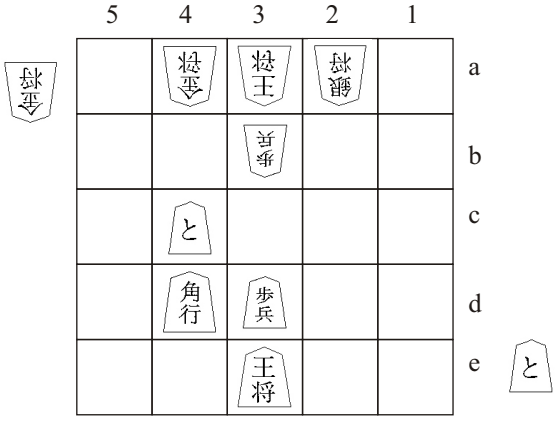


Diagram 1

I held the *gote* pieces, and in this situation I took a breath or two for thought. It seems as if I am well behind in "development" and under pressure from both sides. In truth we need to revolutionize our concept of development here, as *gote*'s generals (gold and silver) are defensively functional. Kyoto pieces do not promote, but transform—which form is functional depends on the situation. It can be posited that in the center of the board piece A has greater power than piece B, but, to overstate the case, Kyoto piece functionality is self-destructive: a piece cannot be repositioned, so the placing is critical. In this position, *gote* can be said to be "busy" (i.e. under imminent threat of immediate destruction of position), but *sente*'s position has a fragile point. For a few moves the play around 4c seems even to resemble Chess.

6….	N*5a
7. Tx3b=L	Gx3b=N
8. P-3c=R	T*4c
9. P*5b	Tx3c=L
10. Bx3c=S	N-4c=G
11. P-5a=R	R*4a
12. L*4e	Gx3c=N
13. Lx4a=T	K-2b
14. R*1d	S*1c
15. Rx1c=P	Kx1c
16. L*1e	K-2c
17. S*3d	K-2b
18. Sx3c=B	Kx3c
19. G*3d	K-2b
20. T-4b=L (Diagram 2)	

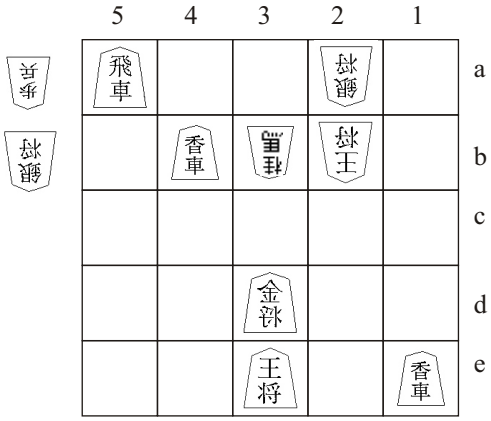


Diagram 2

It has been a long sequence, but by forceful moves *sente* has managed to staunch *gote*'s threats and finally arrive at a situation from which she threatens to threaten mate. Threatening to threaten mate is not such an illusive concept as it may first appear: in fact it is the crux of Shogi strategy, and while of less significance in Kyoto Shogi it is still a positional landmark to take note of. The threat alluded to is 21. Rx2a=P, threatening 22. B*3c, etc. *Gote*'s reply threatens mate immediately, getting one move ahead in the race.

20….	P*3c
21. Gx3c=N	Kx3c
22. R*3d	Kx4b
23. Rx2a=P	S*2d
24. Rx2d=P	G*3d
25. Kx3d	T*3c
26. K-3e	Nx2d=G
27. K-4e	T-4c=L
28. Resigns	

(Even if sente *blocks,* gote *has mate on move 30. -- Ed.)*

In fact it would have been quicker to ignore the lance and play 22….K-4c—one's hunger persists.

The second game, while shorter, is among the most exciting I have played, bristling with unfathomable potentialities. Because Kyoto Shogi is a small game there is a tendency to assume it is suited to short time limits, whereas in reality the game requires thought processes of such unfamiliarity that it is difficult to fathom regardless of the time available. This game, although played by email, was impossible to predict. Again, I played *gote*.

1. T-4d=L	S-2b=B
2. Lx4a=T	Kx4a
3. P-1d=R	T-2a=L
4. S-5d=B	L*3b (Diagram 3)

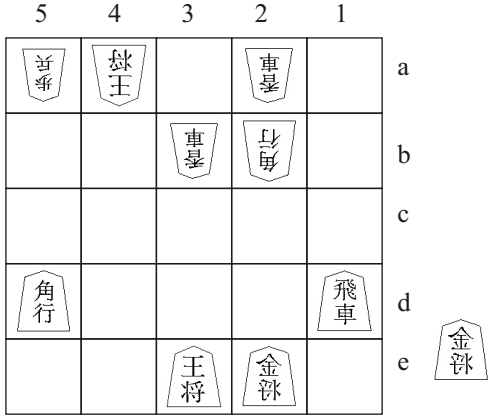


Diagram 3

5. Bx3b=S

This move is already, at move 5, one of the game's major strategic decisions. On the basis of incomplete calculations and positional (mis)judgments I did not expect this move. Seasoned reflection suggests the move was natural enough. It stresses the lead in time, brings *gote*'s king into closer range, removes what is apparently the most active piece, and keeps the king and gold in company. My tendency was to think about the ramifications of 5. K-4e. This keeps the two lances under the repression of one bishop, reduces the relevance of the lance on 2a, eyes the escape square on 5d, and keeps the kings in opposition. After 5. K-4e, *sente* threatens to fully orchestrate his pieces with 6. G-2d=N. The only drawback may be the possibility of a bishop fork on 2c. A caricature continuation might be 5. K-4e B-3c=S, 6. G-3e=N P-5b=R, 7. Bx3b=S Rx3b=P, 8. N-4c=G B*2c, 9. K-5d Bx1d=S, 10. L*3e (Diagram 4).

This is a position in which my personal choice would be *sente*. A Chess note might run to the effect, "With chances worth a piece." Chess has many drawn games so I can make sense of such

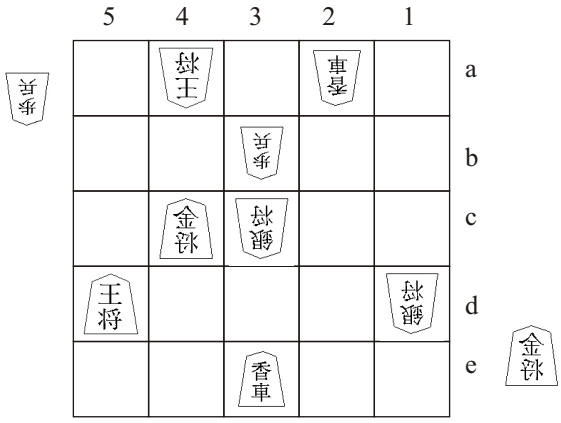


Diagram 4

nebulous equations in Chess, but a game in which the slightest features of timing and position are as decisive as in Kyoto Shogi does not readily accept, with meaning, such evaluations. In fact my plan was to respond along the lines of 5. K-4e P-5b=R, 6. G-2d=N B-3a=S, which would have been an entirely different story.

5….	Kx3b
6. N*2d	

I had neglected further consideration of this move because the reply 6….K-4c would threaten mate. When I considered the continuation 6….K-4c, 7. T*3d K-4b, 8. N-1b=G K-3a, I was surprised to find out that the vital point of the position is the lance on 2a. Even if it means making a half piece, the capture of this lance both makes *sente*'s king safe and opens up *gote*'s left court for attack. Instead of 6. N*2d, 6. T*3d, facing off to the king, also seems strong. The most consistent move might be 6. G-2d=N, a move I did not take too seriously as the reply 6….K-2c threatens both mate and the rook. However, after the solid reply 7. N-1b=G, it is another position over which one could happily brood for a few hours. After the chosen move the exact calculation of replies kept my toes to the stove.

6….	K-4b
7. G-3d=N	K-4c
8. T*4b	K-5c
9. Tx5a=L (Diagram 5)	

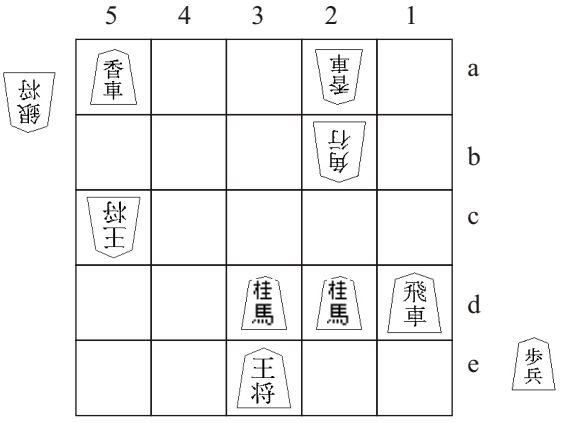


Diagram 5

This position can be considered the fruition of *sente*'s attack. Given the move, *sente* would be able to reorganise and stress the

half piece profit, but it is *gote*'s turn, and in exactly the present situation *sente*'s pieces make a pig's ear. The knights are not functional and they block the action of the rook; the sum effect of *sente*'s pieces is in *gote*'s favour as they primarily constitute targets. The difference is just one move, but that's enough for *gote* to institute an interesting attack.

9….	B-3c=S
10. R*3a	L-2c=T
11. Rx3c=P	S*4d
12. K-2e	Sx3c=B
13. S*3e	R*5d
14. N-3b=G	Rx3d=P
15. Gx3c=N	Px3e=R
16. Kx3e	S*2d
17. Rx2d=P	G*3d mate

Playing the game is more fun than reading about it, so go ahead, have fun. ■

Kyoto Shogi and the following game, Grand Chess, seem to have little in common. Yet they developed respectively from Shogi and Chess, two games believed to have a common ancestor in India or China. In both games each player controls an army of pieces which are differentiated by movement power; they battle to eliminate a single, usually royal, piece from the opposing army. Kyoto Shogi and Grand Chess are both representatives of the Chess family of games, the most psychologically violent and single-focused of all the abstract strategy games. Someone said (I think it was Lasker) that if there are thinking aliens, and if they play games, then they probably play Go. Lasker meant, of course, that Chess lacks the mathematical inevitability of Go (or Hex, or a number of other games for that matter): Chess is clearly a human construct. We can turn Lasker's statement on its head, and say that Chess is a quintessentially human abstract strategy game.

The Western game of Chess is in trouble: it is proving to be increasingly drawish, and a suffocating weight of opening theory is necessary to compete at the highest level. Grand Chess is a natural development from Chess as its new pieces, the Cardinal and the Marshal, are a logical completion of the Chess army, and its greater size and scope are likely to prohibit a large percentage of drawn games. Just as importantly, however, there is not a large body of opening theory in Grand Chess—raw Chess power comes to the forefront. Intriguingly, top players from the different forms of Chess may even be able to compete on a somewhat equal level.

It would really be something to see a Chess genius like Kasparov competing head to head with a Shogi genius like Habu for substantial prize money in a Grand Chess Tournament. Perhaps the top players from the other members of the Chess family of games, such as Xiangqi and Makruk, would also take part. Now that would be the game event of the Twenty-first Century! It would unite the Chess diaspora scattered across continents and millennia. The resulting media attention would be of incalculable benefit to the cause of non-standard strategy games as a whole. One can dream....

Onto the next article, Tony Gardner is an accountant, boardgame enthusiast, and world champion of ENPR (English Progressive Chess). In 1995, he wrote a treatise entitled Tactics and Theory of ENPR. *Tony lives in Conyers, Georgia, USA. -- Ed.*

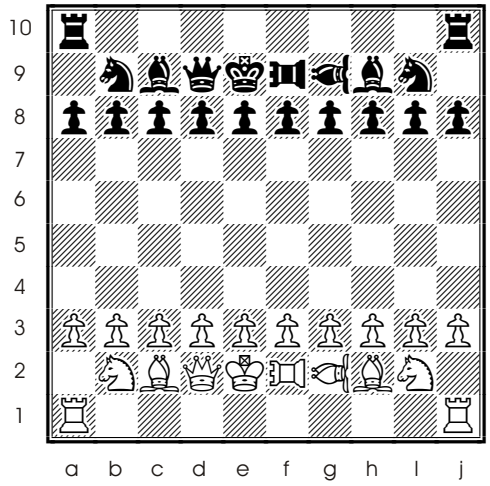
"Variants offer a wonderful field for researchers weary of the minutiae of orthochess analysis. Be it in tactics, strategy, the opening, middle-game or end-game, or in compositions, all but a handful of variants are crying out for exploration."

The Encyclopedia of Chess Variants, David Pritchard

The Grand Chess Corner by Tony Gardner

Grand Chess is a delightfully fascinating Chess variant invented by Christian Freeling. Just the name itself inspires an aura of majesty! Other game concepts involving its special pieces had been developed earlier, and even a few since, but none are as well designed or offer as much pure playing pleasure as Grand Chess. It has unique appeal because of the abolition of castling and immediate connection of rooks.

The game is played on a 10x10 board. Each side has the same components as in Chess with the addition of two extra pawns, one marshal (combined rook and knight) and one cardinal (combined bishop and knight). The object is to checkmate the enemy king. Pawns may advance two spaces on their first move and attain the *en passant* privilege on the sixth rank. A pawn may be promoted by moving to its eighth, ninth or tenth rank, but only to a friendly piece already captured. The starting position is given in the diagram below. The marshal and cardinal are represented respectively by rook and bishop rotated by ninety degrees.



There has been considerable speculation about which piece is the strongest. Everyone generally agrees that the marshal, queen and cardinal are the most valuable, but controversy has arisen in ranking them. My opinion is that the queen is strongest, followed by the marshal, then the cardinal; however, there are certain situations where each is more useful than the others. Bishops become better than knights due to increased range.

My idea for this column is that it become a regular feature, predominantly showcasing games and analyses; commentary involving the Grand Chess experience will gladly be welcomed also. So, send your scores to me at tgardner4@juno.com.

The game is widely popular, and world championships via the Internet have been undertaken. NOST has sponsored yearly tournaments since 1998. Graham Allen appears poised to become the first NOST champion, while he, Larry Waite and myself are vying for the two subsequent titles. In the following game, begun in 1998, Graham displays his formidable style:

White -- Graham Allen Black -- Richard Brown

1. d5 g6, 2. Bxg6 Mg7, 3. Nh4 f7, 4. Bi4 Raf10, 5. g4 Kd10, 6. Nf5 Mf9, 7. Bd6 e7, 8. Bb4 d6, 9. Rae1 Nh7, 10. h4 Kc10, 11. Kd1 Kb10, 12. Nd3 Nc7, 13. f4 Qd7, 14. Rjf1 e6, 15. Nxd6 Be7, 16. Ne5 Qd10, 17. Nxc8+ Resign. ■

A Cover Story

by Connie Handscomb

It really should be easy. I mean, I've got all the equipment. I want to get the camera people to give it a tuneup, though, since I'm moving into the photography habit again. Since I packed it all away, I've been using easy throw-aways, and stopped fiddling around with f-stops. Guess I'll dig out those photography books while I'm at it--what's an f-stop again? Don't worry about that deadline we have to meet; in the meantime I'll just borrow a camera from a friend. What?! I shot an entire roll of film set on "bulb" - well, that's a surprise! All the photos look like I've taken them running after a train! I'll just head out again. It has to stop raining sooner or later; it's been raining for weeks on end and that outdoor shot we want will soon become a reality. Won't it? It's tough, isn't it, trying to take a summer shot in mud. No point in getting too nervous--look here, I'm out like a shot: Sun's out! Oops, sorry Sweetheart, I didn't mean to lose those game pieces in the grass. But I found two of them. And look, you found another one when you went out searching that last time. We're bound to stumble upon the others any time soon. Oh good, I've got another roll of film to take in for developing. Isn't the one-hour service wonderful? Oh dear, that careful positioning on that mossy log just doesn't quite make the grade, does it? Look, I'll just run back to the store for more film--there's another hour of good light. And, I mean, I'll really run, because the forecast is for rain again tomorrow. Oh darn--what do you mean nothing turned out? The film didn't catch properly? When is our deadline to the printer again? Look, it's just got to turn out this time. Let's just do away with the postures--that beautiful red board on that fresh green grass is Pure Summer. There we go! Voila! Wonderful shot. Look at those vibrant colors! Rich, emerald green grass, with a smattering of fresh white daisies. We've got a winner! Everyone who has seen this loves it: and we've been boasting about the superior cover we'll have for this issue. We're going to the best pre-press in town for this one. Nothing more could possibly go wrong(!)

As you can probably guess, that wasn't the end of it.... (And I'm still missing some Halma pieces.) -- Ed.

Bashne Solutions from Page 17

Problem 1: 1. d4e5 d6:f4, 2. h2g3 f4:h2, 3. h4g5 d8:h4, 4. e1f2 h4:e1, 5. c1d2 e1:c3:h8, 6. a1b2 h8:c3:a1, 7. a3:c1 wins.
Problem 2: 1. a5b6 d8:a5, 2. c1d2 a5:e1, 3. h4g5 e1:h4:f6, 4. a1b2 f6:a1, 5. g1h2 a1:c3(or d4 or e5 or f6), 6. h2:f4:h6:f8+:a3:c1:e3:h6:f8:a3:c1:g5 c3(or d4 or e5 or f6):h8, 7. g5f6 wins.
Problem 3: 1. a5b6 a7:c5:a3, 2. c1d2 a3:c1+, 3. g3f4 e5:g3, 4. e3d4 c1:e3:c5:a7, 5. g1h2 a7:c5, 6. h2:f4:h6:f8+:d6:a3:c1:e3:h6:f8:d6:h2 d4:b6, 7. c5:a7 wins.

Epaminondas Solutions from Page 21

Puzzle 1: 1. h8h9. This is the key move. It is surprising that nothing else works. Wherever black moves now white can split his force. For example, 1....i12j12, 2. h11g12 l12j12:g12, 3. h9h11:h12 wins.
Puzzle 2: 1. l1m1. Black cannot move n1 or white immediately wins, and any move of the c12, d12 pieces allows white a winning move: Epaminondas zugzwang! For example, 1....c12d12, 2. b11a12 wins.
Puzzle 3: 1. l11k10 m12l12, 2. k10i8 h11g11, 3. i8f5 forks b1 and f1. If, for example, 3....f11f9:f5, 4. e4c2 wins.

Colors

by Gianni Cottogni

This clever little abstract game is very little known, even in Italy, although the inventor, Ennio Peres, is Italian.

Equipment

The equipment is the same as Eric Solomon's 7x7 Entropy. It consists of a 7x7 board and seven pieces each of the following colors: red, green, yellow, orange, cyan, violet, blue.

Play

Put the 49 pieces on the board at random. Each player, in turn, takes from the board one to four pieces, provided that they are in a continuous straight line, vertical, horizontal, or diagonal. It is not permitted to pass a turn. When there are no more pieces left on the board the game ends. Each player gains a point for every even-numbered group of pieces of the same color he possesses (0, 2, 4, or 6). The winner is the player who has collected most points. Since there are seven colors and seven pieces of each color, it is impossible to draw the game. ■

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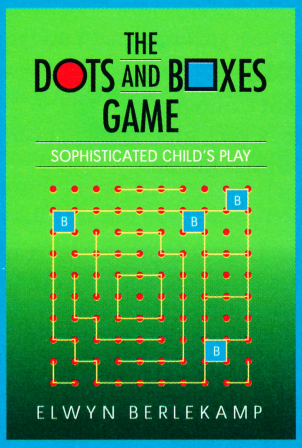

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Elwyn Berlekamp
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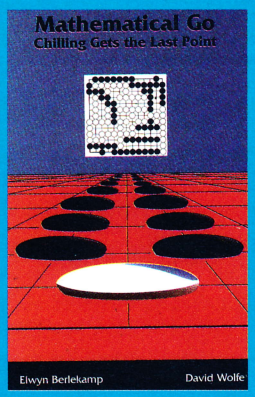

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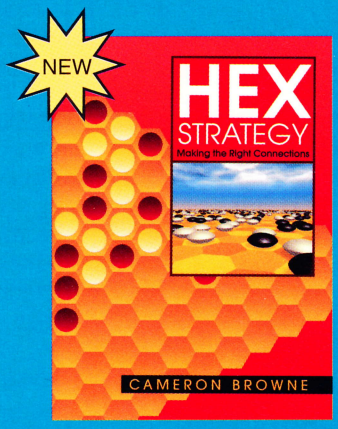

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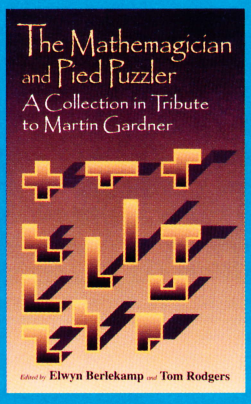

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