Othello:

A Minute to Learn...
A Lifetime to Master

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Acknowledgments

Contents

Introduction

This is the most comprehensive book ever published on Othello strategy. Authored by the 2001 World Othello Champion, this book was written for anyone, from novice to expert, who wants to get better at Othello. Starting with a review of the rules, it builds up step by step from the basics of strategy to the advanced concepts used by experts. Whether you are looking for some help to win against your family or friends, or you hope to become the next World Champion, this book will help you win at Othello.

Part I (Chapters 1-7) of the book is written primarily with beginning and intermediate players in mind. It is meant to be read from beginning to end, with each chapter building on the previous ones. **Part II** (Chapters 8-16) covers more advanced material; these chapters can be read in any order. Exercises appear at the end of most chapters. Some of these exercises will be difficult for novice players, but my hope is that the answers will provide you with further insights into good strategy. The **Appendix** shows where to find resources related to Othello on the Internet.

Chapter 1 reviews the rules of Othello and introduces the notation used in this book. While I expect that most readers will be familiar with the rules, I would encourage you to at least quickly read through this chapter, which explains the notation used throughout the book.

Chapter 2 discusses the most basic strategies in Othello, namely taking corners and making stable discs. Knowing these strategies is critical to understanding the strategies which follow in rest of the book.

Chapter 3 covers the basic strategy which can force your opponent to give you corners and stable discs. Understanding this material can immediately give a tremendous boost to your playing strength.

Chapter 4 introduces openings and expands on some of the ideas in Chapter 3.

Chapter 5 will show you how to play the edges, where making a mistake can easily cost you the game. Two critical concepts, pairs and tempos, are introduced.

Chapter 6 covers basic endgame strategy. Even for experts, the endgame is the hardest part of the game, and this chapter emphasizes winning in the easiest manner possible. The more difficult material on endgames appear in Chapters 8 and 13.

Chapter 7 discusses defensive plays, designed to prevent your opponent from making the sort of good moves that you are aiming for yourself.

Chapter 8 explores even number theory, also known as parity, which can make it much easier to find the right moves in the endgame. Using even number theory correctly is not easy, but it is important for anyone aspiring to become an expert.

Chapters 9 and 10 cover "tesuji", good moves that arise in certain positions which occur frequently enough to merit special attention. Chapter 9 discusses corner attack tesujis, while Chapter 10 examines swindles and other tesujis.

Chapter 11 discusses how to build your opening book. This chapter is designed mainly for players striving to become experts.

Chapter 12 looks at midgame strategies at an advanced level. While some of this material is challenging, intermediate and advanced players should find something useful in the chapter.

Chapter 13 goes into depth about how to count discs in the last few moves of the game. This chapter is by far the most difficult in the book, but even intermediate players should be able to understand the first section which explains how to count just the last two moves of the game.

Chapter 14 offers suggestions on how to become an expert at Othello. In particular, I highly recommend playing in over-the-board tournaments, where you can meet fellow Othello fans in face-to-face competition.

Chapter 15 contains "take-a-corner" puzzles. These puzzles are an excellent way to improve your ability to look ahead and have fun at the same time!

Chapter 16 analyzes a game from the finals of the 2003 World Othello Championship, showing how the various elements discussed in the book combine in a full game between the two best players in the world.

The **Appendix** shows where to find resources related to Othello on the Internet.

Chapter 1

Rules and notation

Diagram 1-1 shows the standard notation for Othello. The columns are labeled 'a' through 'h' from left to right, and the rows are labeled '1' through '8' from top to bottom. In this book, squares will be referenced using a small letter followed by a number, e.g., 'a1' for the upper-left corner and 'h8' for the lower-right corner. Certain squares are assigned special letters, which will be capitalized, as shown in Diagram 1-2. This notation was developed by Othello's inventor, Goro Hasegawa, and remains in use today. The B-squares are in the center of the edge, the C-squares are on the edge next to the corner, and the A-squares lie between the B-squares and C-squares. The X-squares are diagonally adjacent to the corners, with the 'X' indicating danger.

	a	b	c	d	e	f	g	h
1	a1	b1	c1	d1	e1	f1	g1	h1
2	a2	b2	c2	d2	e2	f2	g2	h2
3	a3	b3	c3	d3	e3	f3	g3	h3
4	a4	b4	c4	d4	e4	f4	g4	h4
5	a5	b5	c5	d5	e5	f5	g5	h5
6	a6	b6	c6	d6	e6	f6	g6	h6
7	a7	b7	c7	d7	e7	f7	g7	h7
8	a8	b8	c8	d8	e8	f8	g8	h8

Diagram 1-1

	a	b	c	d	e	f	g	h
1		C	A	B	B	A	C	
2	C	X					X	C
3	A							A
4	B							B
5	B							B
6	A							A
7	C	X					X	C
8		C	A	B	B	A	C	

Diagram 1-2
Square names

	a	b	c	d	e	f	g	h
1								
2								
3								
4				○	●			
5				●	○			
6								
7								
8								

Diagram 1-3
Black to move

Black and White, written with capital letters, will refer to the players, while lowercase letters (black and white) will refer to the color of the discs. For example: "at the end of the game there were more black discs than white discs, so Black won and White lost". Black and White are referred to as "he", although they could of course be "she", as many women play Othello, including Carol Jacobs, who won the U.S. Othello Championship twice in a row.

Compass directions (north, south, east, west) are sometimes used to refer to areas of the board (top, bottom, right, and left, respectively).

Rules of the game

1. The game begins with black discs on d5 and e4, and white discs on d4 and e5, as shown in Diagram 1-3.
2. Players alternate taking turns, with Black moving first.
3. A legal move consists of placing a new disc on an empty square, and flipping one or more of the opponent's discs.
4. Any of the opponent's pieces which are 'sandwiched' between the disc just placed on the board and a disc of the same color already on the board should be flipped. Sandwiches can be formed vertically, horizontally, or diagonally. To form a sandwich, all of the squares between the new disc and the disc of the same color already on the board must be occupied by the opponent's pieces, with no blank squares in between.
5. Pieces may be flipped in several directions on the same move. Any pieces which are caught in a sandwich must be flipped; the player moving does not have the right to choose to not flip a disc.
6. A new disc can not be played unless at least one of the opponent's discs is flipped. If a player has no legal moves, that is, if no matter where the player places a new disc he could not flip at least one disc, that player passes his turn, and his opponent continues to make consecutive moves until a legal move becomes available to that player.
7. If a player has at least one legal move available, he must make a move and may not pass his turn.
8. The game continues until the board is completely filled or neither player has a legal move.

Scoring

Scoring is done at the end of game. The usual way to determine the score is to simply count the number of discs of each color, e.g., if there are 34 black discs and 30 white discs, then Black wins 34-30. If both players have the same number of discs, then the game is a draw.

In tournament play, if one player captures all of his opponents discs, the game is usually scored as a 64-0 victory for that player, regardless of the number of discs on the board. Further, in certain tournaments, such as the World Championship, empty squares are awarded to the winner. For example, if at the end of the game there are 32 black discs and 29 white discs, with 3 empty squares, the score is recorded as a 35-29 victory for Black.

Examples

Diagrams 1-4 through 1-9 show a sequence of moves at the start of the game to demonstrate the rules. In Diagram 1-4, Black makes the first move of the game to f5, sandwiching the white disc on e5 between this new disc and the black disc on d5. In the diagram, the numeral 1 on the disc on f5 indicates that this is where the first move is played. The diamond-shaped black disc on e5 indicates that this disc was white before the move, and was flipped as the result of Black's move. Below the diagram, the phrase 'White to move' indicates that White will make the next move in the game. In Diagram 1-5, White plays to f6, sandwiching the disc on e5 diagonally using the existing white disc on d4. In Diagram 1-7, White plays to f4, flipping discs in two directions. The black disc on f5 is sandwiched between the new disc on f4 and the white disc on f6, while the black disc on e4 is sandwiched between f4 and d4. In Diagram 1-9, White plays to c5, sandwiching the black discs on d5 and e5 using the existing white disc on f5.
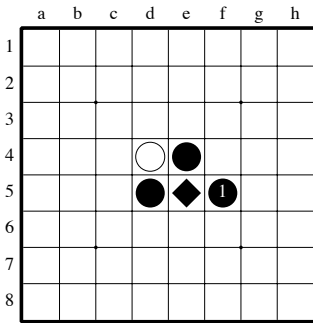
Diagram 1-4
White to move
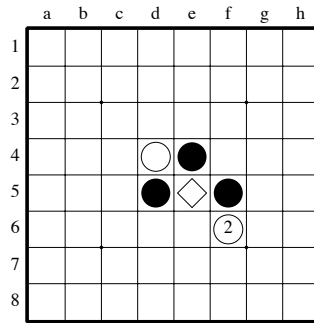
Diagram 1-5
Black to move
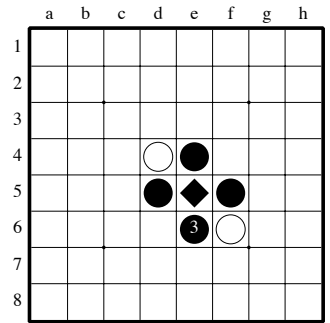
Diagram 1-6
White to move
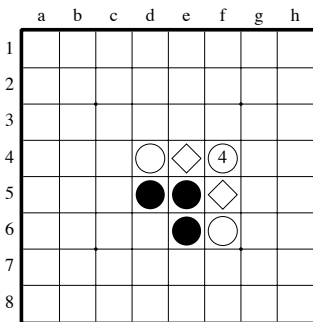
Diagram 1-7
Black to move
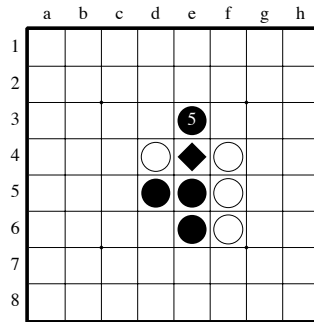
Diagram 1-8
White to move
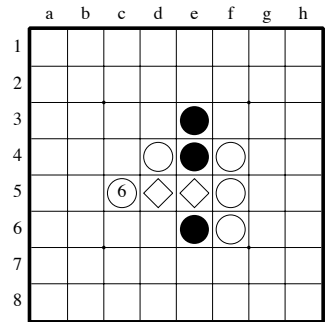
Diagram 1-9
Black to move

Suppose that in the position shown in Diagram 1-10, Black moves to f8. Diagram 1-11 shows the correct position after this move. The white disc on e6 is completely surrounded by black discs, but Black does not get to flip this disc, as it was not sandwiched by the move to f8. Diagram 1-12 shows a position in which White does not have a legal move. White passes, and Black moves again.
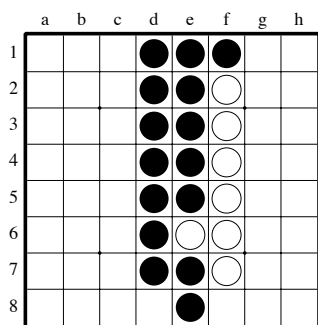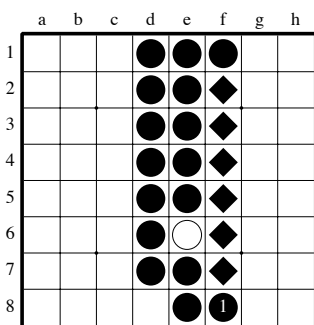

Diagram 1-10
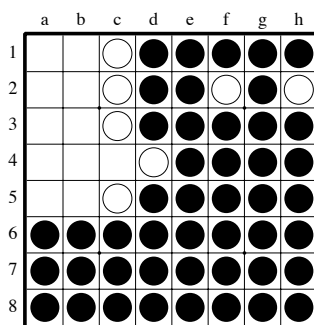*Black to move*

Diagram 1-11
White to move

Diagram 1-12
White passes

Playing through a transcript.

Diagram 1-13 shows an example of a transcript of a complete game. The numbers indicate the order in which the moves were made, but not which pieces were flipped. To replay the game, place a black disc on the square marked 1 (f5 in this case), and flip pieces according to the normal rules of the game (e5 should be flipped to black in this case). Continue by playing a move for White on the square marked 2, a move for Black on the square marked 3, etc. Diagram 1-14 shows the position created after move 30, while Diagram 1-15 shows the final position. Partial transcripts are sometimes used to indicate a sequence of moves (see Diagram 2-9 for an example).
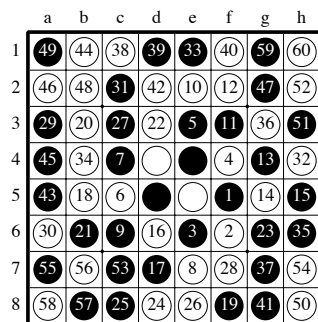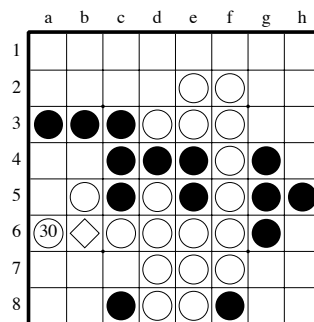

Diagram 1-13
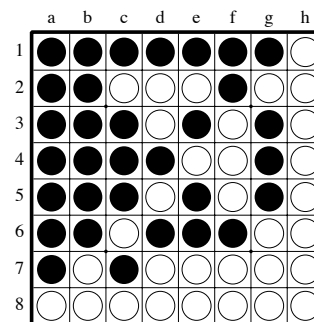*Transcript*

Diagram 1-14
After move 30

Diagram 1-15
Final position

Chapter 2

Corners and stable discs

Perhaps the most basic strategy in Othello is to take the corners. By the rules of play, it is impossible to flip a disc in a corner, so that if you are able to take a corner, that disc will be yours for the rest of the game. In Diagram 2-1, the disc on h8 must be white at the end of the game: even if Black later moves to both g8 and h7, he can not capture the disc on h8. Moreover, once you have a corner, it is often possible to build a large number of discs that are protected by the corner and can never be flipped. Such discs are called **stable discs**.
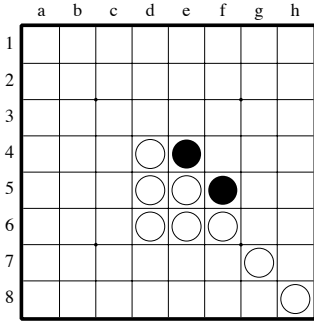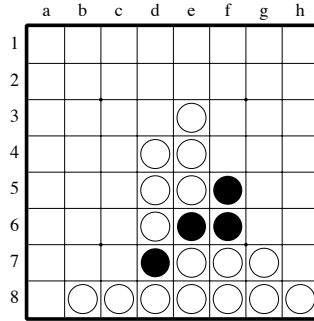
Diagram 2-1   Diagram 2-2   Diagram 2-3
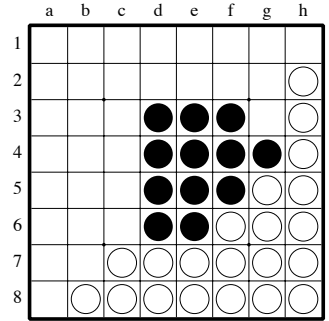
In Diagram 2-2, the discs on the bottom row are stable discs, and in Diagram 2-3, all 21 white discs are stable discs. If this is not obvious to you, then take some time now to convince yourself. Set up the positions on a board, then try to flip the stable discs by placing black discs wherever you like. There is simply no way for Black to get "behind" these discs to surround and flip them. The possibility of building up stable discs usually makes corners very valuable, especially early in the game.

If taking corners is that good, then it should be obvious that you usually do not want to give any to your opponent! Given the rules of the game, the only way for your opponent to take a corner is if you play in one of the squares next to a corner, i.e., the C-squares or X-squares. The X-squares are particularly dangerous, and a move to an X-square early in the game is almost certain to give up the adjacent corner. For example, in Diagram 2-4, White has just moved to the X-square at g7. Although Black can not take the h8 corner immediately, if he can establish even one disc on the c3-f6 diagonal, then Black will be able take the corner.
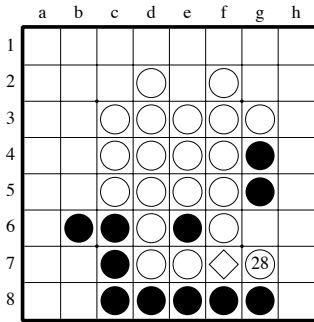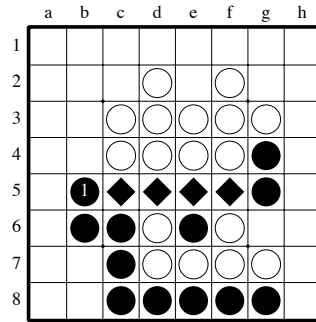
Diagram 2-4
Black to move

Diagram 2-5
White to move

One possibility is for Black to play b5, capturing the disc on e5, as shown in Diagram 2-5. No matter where White plays, he will not be able to recapture the e5 disc, and Black will be able to take the h8 corner on his next turn. Once black has the corner, all of his discs on row 8 become stable discs, and later in the game he is likely to be able to create stable discs on the right edge as well. In general, the earlier in the game a corner is taken the more valuable it is, as the potential for building up stable discs around the corner is greater. In most cases, moving to an X-square early in the game will prove to be a fatal error, although later in the book we will examine some exceptional circumstances under which early X-square moves are useful.

While moves to the X-square will usually allow the opponent to take the adjacent corner, for C-squares the degree of danger depends largely on the rest of the squares on the same edge. For example, in Diagrams 2-6, 2-7, and 2-8, Black will quickly lose the h1 corner. In Diagram 2-6, White simply takes the corner on the next move. In Diagram 2-7, White can play h3; Black has no way of capturing the h3 disc, and White will be able to play h1 on his next turn. Can you see the way that White can capture the h1 corner in Diagram 2-8?
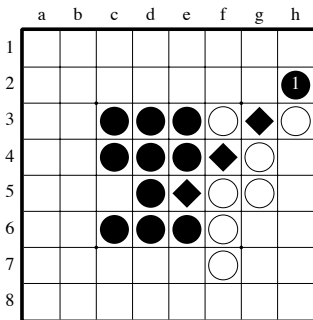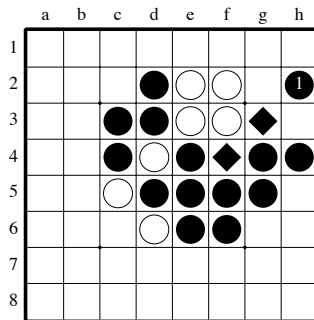

Diagram 2-6
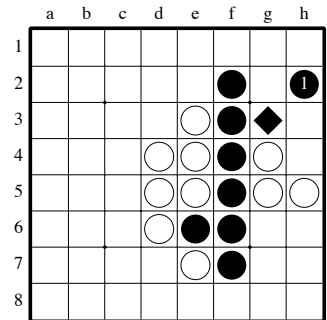*White to move*

Diagram 2-7
White to move

Diagram 2-8
White to move

Starting from Diagram 2-8, White should play h3, gaining access to the h1 corner. Even if Black captures the h3 disc by playing h4, as in Diagram 2-9, White still has access to the corner, as shown in Diagram 2-10. As these diagrams suggest, C-squares are often the most dangerous when the adjacent A-square is empty, allowing the opponent to attack the corner by playing into the A-square. We will see many more examples like this in later chapters.
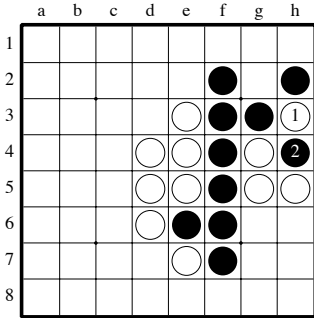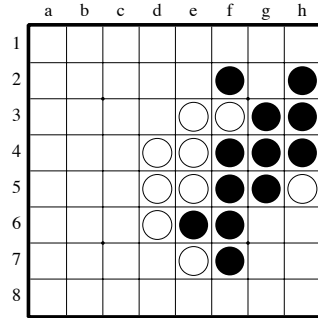
Diagram 2-9

Diagram 2-10
White to move

While there are many circumstances under which C-squares are bad moves, they are quite often perfectly good moves, and frequently they involve no danger of giving up a corner despite being adjacent to it. Diagrams 2-11, 2-12, and 2-13 all show examples where Black has a good C-square move at h2. In Diagram 2-11, h2 builds on Black's stable discs, and offers no prospect of white taking the h1 corner. In Diagram 2-12, Black must play h2 to prevent White from capturing the h8 corner. Once he does so, he is in no immediate danger of losing a corner. In Diagram 2-13, black can play h2 and later play another C-square at h7, all with no danger of losing a corner. As these diagrams suggest, the best time to take a C-square is often when you have pieces of your own color in the other squares along the edge.
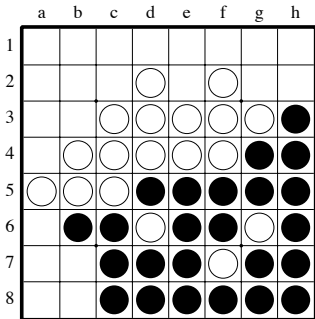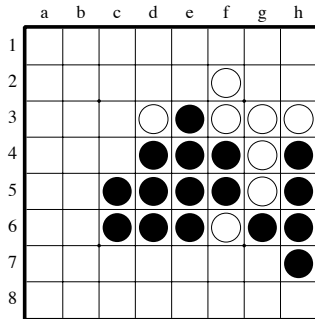
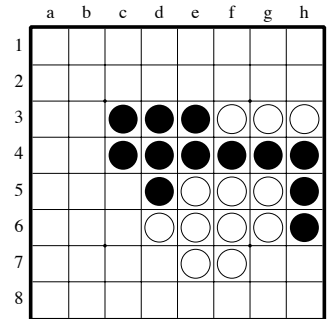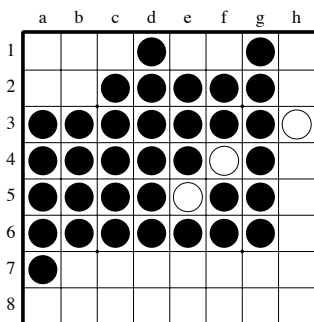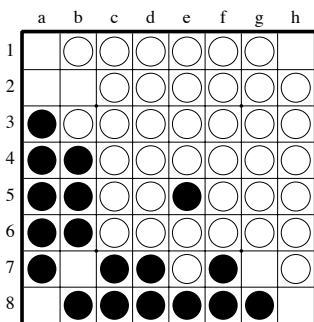Diagram 2-11
Black to move

Diagram 2-12
Black to move

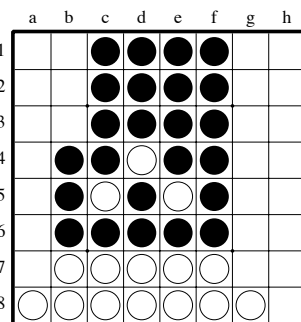Diagram 2-13
Black to move

Exercises

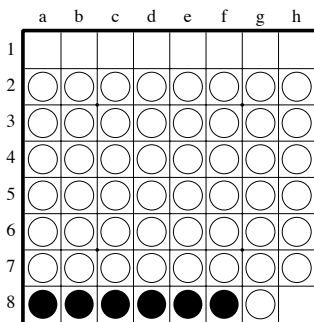In each diagram, find the best move. Answers begin on page 143.
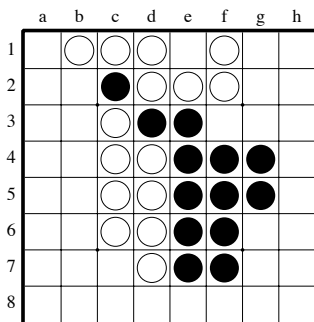
Exercise 2-1
White to move

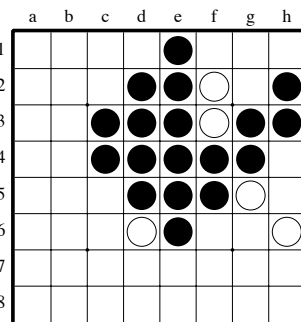Exercise 2-2
Black to move

Exercise 2-3
White to move

Exercise 2-4
Black to move

Exercise 2-5
Black to move

Exercise 2-6
White to move

Chapter 3

Frontier discs and walls

In chapter 2, we learned about the value of corners, and the danger of moving to X-squares and C-squares. While knowing this alone might be enough to let you win against a complete novice, it will not get you far against more seasoned competition. In games between players that are both aware of the strategies presented in chapter 2, neither player will voluntarily make the sort of bad X-square and C-squares moves that give up corners for no reason. If you want your opponent to make these moves, then you will have to force him to do so. That is, you want to create a situation where the *only* moves available to your opponent are bad moves. How to go about doing this is the subject of this chapter, and indeed most of the rest of the book.
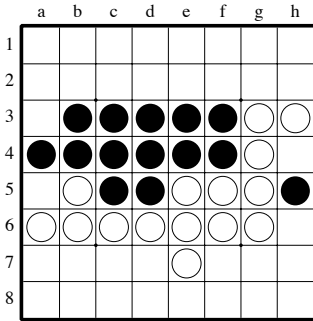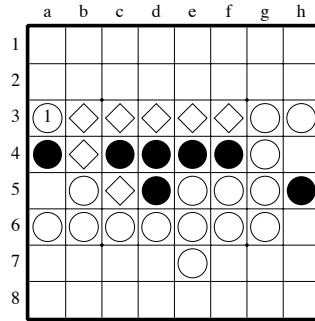

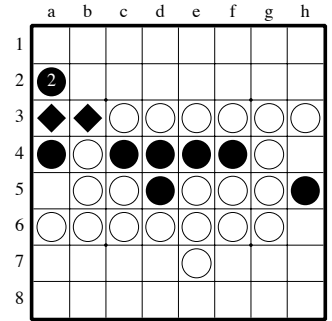| Diagram 3-1	Diagram 3-2	Diagram 3-3
White to move	*Black to move*	*White to move*

Diagram 3-1 shows the sort of position that often arises in games between an expert (Black) and a novice (White). Many novices choose their moves mainly on the basis of the number of discs that are flipped, with the more discs flipped the better. After all, the object of the game is to end up with as many pieces as possible, so it seems logical to want to take a lot of pieces at every point during the game. Following this logic, the novice chooses to play a3, flipping 7 discs, as shown in Diagram 3-2. The problem with this move becomes apparent after Black replies with a2, resulting in the position shown in Diagram 3-3.
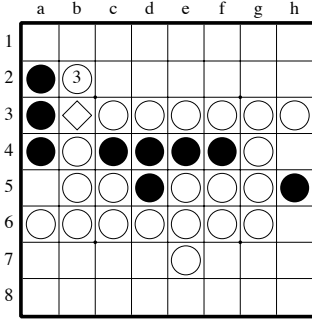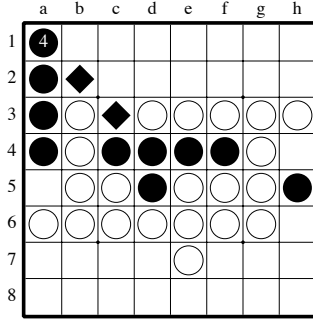
Diagram 3-4
Black to move
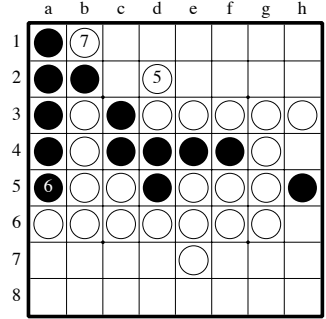
Diagram 3-5
White to move

Diagram 3-6

In Diagram 3-3, White's only legal option is the b2 X-square, which White is obliged to play whether he wants to or not (Diagram 3-4). This immediately surrenders the a1 corner (Diagram 3-5), and Black will eventually gain many stable discs attached to this corner. Further, it will not be difficult for Black to force White to play into another X-square in the near future. For example, suppose the game continues with the sequence in Diagram 3-6, resulting in the position shown in Diagram 3-7. Black can now play a7 (Diagram 3-8), which again leaves White with only one legal move, namely the b7 X-square (Diagram 3-9).

In situations such as Diagram 3-3 and Diagram 3-8, we say that White has **run out of moves**. More precisely, White has run out of **safe moves** (moves which do not concede a corner), and now must give Black the corners and many stable discs. As this example demonstrates, flipping too many discs early in the game can often lead to running out of moves. Once a player runs out of moves he is almost certain to lose, because his opponent can force him to make bad moves which give up the corners.
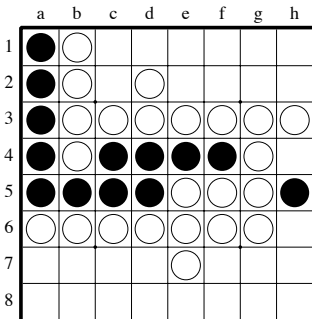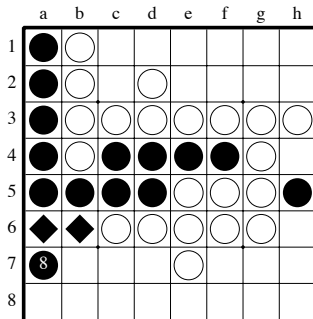

Diagram 3-7
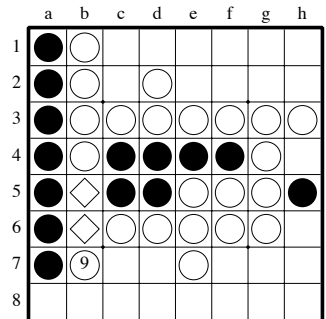*Black to move*

Diagram 3-8
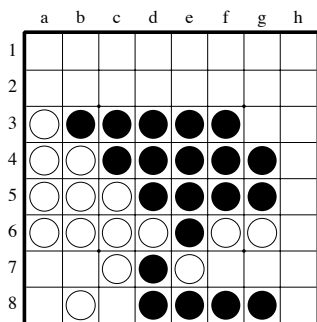*White to move*

Diagram 3-9
Black to move
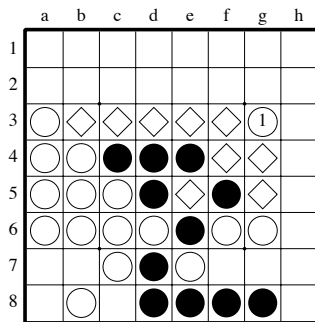
Diagram 3-10
White to move
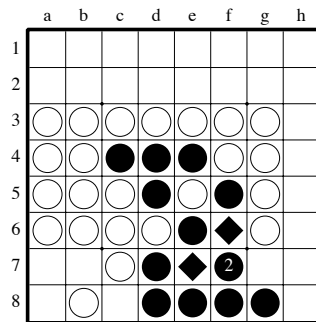
Diagram 3-11
Black to move

Diagram 3-12
White to move

This point is so crucial to understanding the rest of the material in the book that I present another example just to make sure that it is perfectly clear. Starting with Diagram 3-10, White flips as many pieces as possible with g3 (Diagram 3-11), after which Black responds with f7 (Diagram 3-12). Here again, White has run out of moves; both of his remaining legal options, c8 and g7, surrender a corner, and Black can eventually force White to give up the other corners (see Exercise 3-7).

To clarify further, I need to introduce some Othello jargon at this point. **Frontier discs** are defined as discs that border one or more empty squares. Although technically discs on the edge squares could fit this definition, they are usually not included when speaking of frontier discs. A **wall** is a connected group of frontier discs of the same color. For example, in Diagram 3-10, the black discs at b3, c3, d3, e3, f3, f4, g4, and g5 are all frontier discs and together they form a wall. Discs which are completely surrounded by other discs, such as e5 in Diagram 3-11, are called **interior discs** or **internal discs**. A move which creates many new frontier discs is called a **loud** move, while a **quiet** move creates relatively few frontier discs.

The real problem with White's move in Diagram 3-11 is not that it flips so many pieces, but that it flips the wrong pieces. Of the nine discs flipped, seven (b3, c3, d3, e3, f3, g4, and g5) are frontier discs. This is an extreme example of a loud move, flipping Black's entire wall. In Diagram 3-10, White can choose between nine legal moves (b2, c2, d2, e2, f2, g2, g3, h4 and h5), while in Diagram 3-12, White has only two options, c8 and g7. By contrast, Black's options increase from seven in Diagram 3-10 to seventeen in Diagram 3-11.

Remember that you must flip at least one of your opponent's pieces in order to move. Building a long wall leaves you with nothing to flip, cutting off your access to the squares on the other side of the wall. Meanwhile, the same wall gives your opponent a wide range of choices. Building walls and running out of moves usually go hand-in-hand.

Another example should provide further insight into basic Othello strategy. Diagram 3-13 shows an opening commonly used in expert play, leading to the position in Diagram 3-14. Starting from this position, I used the Othello playing program WZebra (more information on this program appears in the Appendix) to evaluate the position. According to WZebra, set to look 20 moves ahead, White's best move is e2, and the position is worth +1.73 for white. In other words, WZebra's estimate is that if both sides play correctly from this point, White will win by roughly 2 discs (33-31).
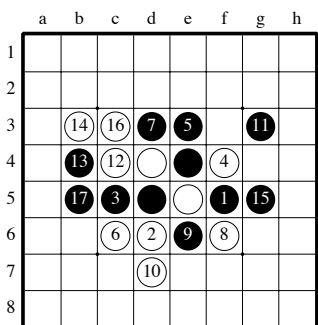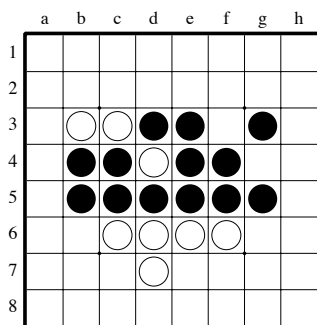

Diagram 3-13
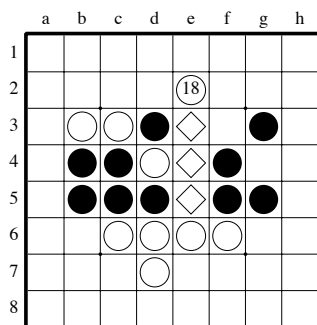

Diagram 3-14
White to move

Diagram 3-15
White +1.73

Next, I used the same position as in Diagram 3-15, but set WZebra so that it was White's turn to move instead of Black's. You might expect that White will now enjoy a bigger advantage, but WZebra values the position as -8.84 for White (Diagram 3-16). Making it White's turn to move has made the position much worse for White! If we continue to have White play several turns in a row, while Black does nothing, every White move creates more and more white frontier discs, building walls and eliminating his options. Eventually the position in Diagram 3-18 is reached. White has completely run out of moves, and is at a huge disadvantage. Getting to make extra moves would be great in most games, but not in Othello.
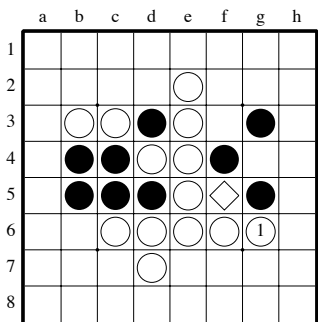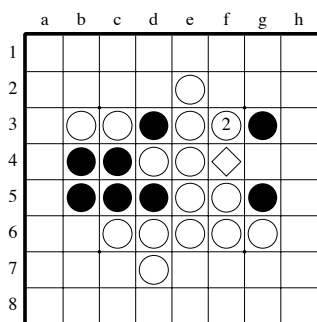

Diagram 3-16
White -8.84
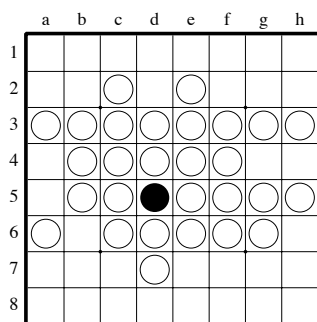

Diagram 3-17
White -10.05

Diagram 3-18
White -34.63

The idea that giving up your turn could be a good thing is so alien that many people never discover it, even after playing Othello for years. Of course, the rules of the game do not allow you to pass your turn whenever you want, and there are some circumstances under which you certainly would not want to pass, such as near the end of the game when you are trying to build as many stable discs as possible. However, it does stand to reason that in situations where passing would be ideal, we should be looking for moves which are as much like passing as possible.

In general, this means that quiet moves, which avoid creating a lot of frontier discs, are better than loud moves. For example, in Diagram 3-19, c5 would be an ideal move. It creates no new frontier discs, and no new options for White. The result is very similar to Black passing, and now White must use up his last remaining safe move (flipping the black disc on g3). In Diagram 3-20, White can make a quiet move to g3. This move gives Black only one new option, namely h2. Since h2 would be a terrible move for Black, again the effect is nearly the same as White passing, and Black will have to use up one of his other remaining options. In Diagram 3-21, Black's best move is e6. Although this is certainly a quiet move, it is not quite as good as the previous two examples, as it opens up some new safe options for White at d7 and f7.
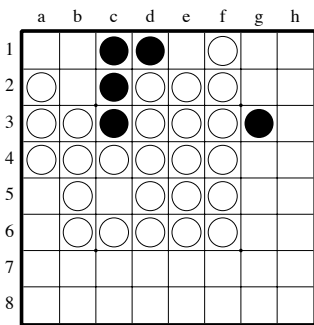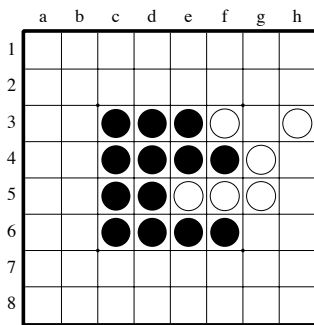

Diagram 3-19
Black to move
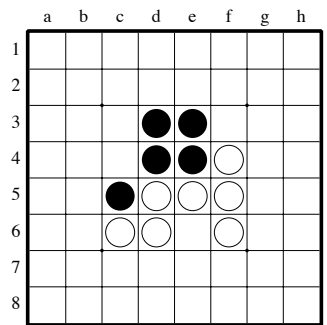
Diagram 3-20
White to move

Diagram 3-21
Black to move

One of the problems with making loud moves is that it often leads to positions where you have no quiet moves available, while at the same time your opponent can make quiet moves. The result is that one loud move leads to a spiral of more and more loud moves, which gives your opponent more are more quiet moves, until you are eventually forced to start giving up corners. A bit more jargon will help to clarify this point. A **poison disc** is a disc which turns what would otherwise be a quiet move into a loud move. The potentially quiet move which is ruined by the poison disc is said to be a **poisoned move**.
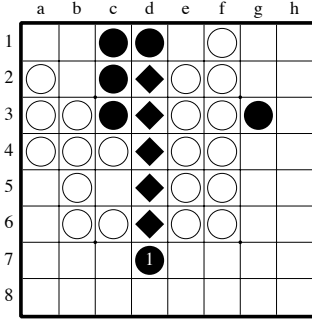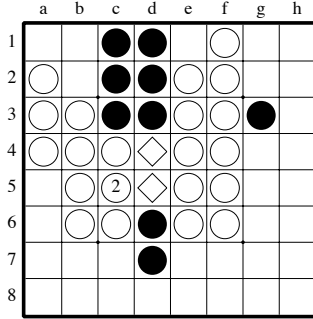
Diagram 3-22
White to move
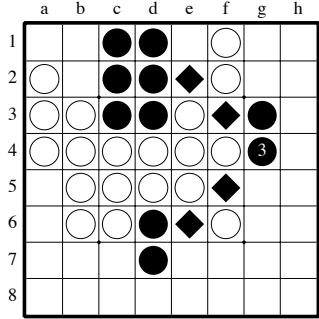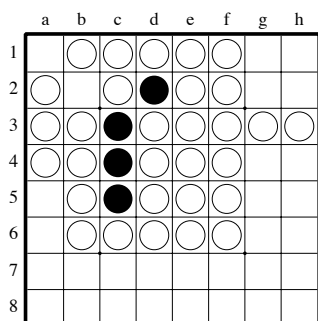
Diagram 3-23
Black to move

Diagram 3-24
White to move

For example, in Diagram 3-19 Black has a wonderfully quiet move at c5. However, suppose that Black instead plays d7, as shown in Diagram 3-22. This move may not seem that loud, because it is flipping discs in the middle of the board, but if you look at the result carefully, you will see that it creates five new frontier discs (d2, d4, d5, d6, and d7). White gratefully plays c5 himself (Diagram 3-23), a quiet move made available by Black's loud move, and now it is Black's turn to move again. Note how the extra black discs at d6 and d7 are poison discs, ruining many of Black's potentially quiet moves. If Black plays g4 (Diagram 3-24), it flips f5 and e6 because of the black disc on d7. This sets up another quiet move for White at g5. If Black tries a6 or g6 in Diagram 3-23, the black disc on d6 means that Black would have to flip some of White's frontier discs on row 6. Black does have one quiet move left in Diagram 3-23, namely c7, but the loud move to d7 has turned a complete rout into a close game.

If the ideas in this chapter were new to you, then I welcome you to the relatively small percentage of players who understand the main "secret" of Othello strategy. Armed with this information you should soon see a dramatic improvement in your play! However, as was the case with the basic strategies mentioned in Chapter 2, once you start meeting opponents who are also aware of the "secret", then you will have to dig a bit deeper in order to win. The next four chapters, on openings, edge play, endgames, and defense, cover the rest of what I consider to be the fundamentals of Othello strategy.
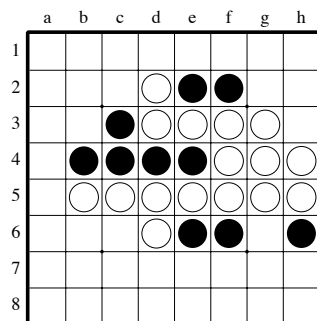
Exercises

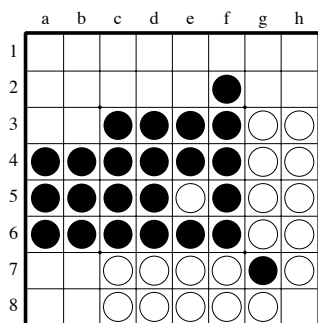In each diagram, find the best move. Answers begin on page 143.
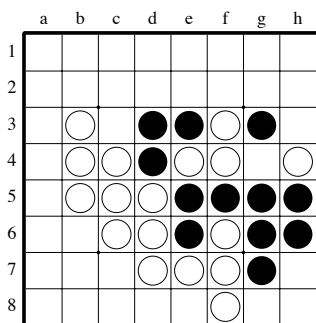
Exercise 3-1
Black to move
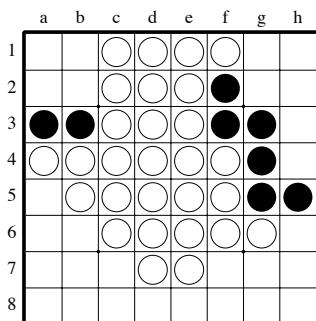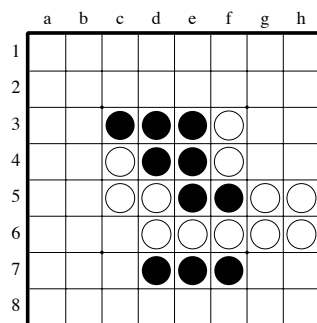
Exercise 3-2
Black to move

Exercise 3-3
Black to move

Exercise 3-4
White to move

Exercise 3-5
White to move

Exercise 3-6
Black to move

Exercise 3-7

Set up the position in Diagram 3-12 on a board. Play out the rest of the game for both sides, starting with a White move to g7. Try to find a simple sequence of moves for Black that forces White to concede all 4 corners. Do the same starting with the position in Diagram 3-7.

Exercise 3-8

Starting from Diagram 3-18, play out the rest of the game for both sides. Try to convince yourself that even though Black has only one piece, White's walls and lack of options give Black the advantage. Hint: do not start with d2! If you find that White wins the game, come back to this exercise after you finish reading the rest of Part I.

Chapter 4

Introduction to openings

This chapter provides a brief introduction to the wonderful world of openings. I want to draw a clear distinction between the opening phase of the game, which is what I will discuss in this chapter, and **book openings**, i.e., moves that are prepared and memorized before the game begins (see chapter 11). There is really no standard definition of where the opening ends and the midgame begins. Often it is defined as the first 10, 15, or at most 20 moves of the game. However, I prefer to think of the opening as being over as soon as any of the edge squares are taken.

The introduction of strong computer programs in the 1990's has had a dramatic effect on opening theory. For experts, looking to grab an advantage wherever they can, this has usually meant devoting a greater percentage of their practice time to researching and memorizing book openings. There have even been cases of people playing the entire game using memorized moves!

However, for novices, all of this opening theory leads to the opposite conclusion, suggesting that they should spend little or no time memorizing. It turns out that, contrary to the beliefs of 10 or 20 years ago, there are many different ways to play the opening, all of which lead to reasonably balanced positions. Even a lot of the moves which look terrible turn out to give only a slight advantage to the opponent, certainly not enough to worry about in a game between novices. For novice players, I feel that there is little to be gained by memorizing openings. It would be far more useful, and presumably a lot more enjoyable, to spend time playing games instead.

One other result from computer analysis is worth mentioning here. At the time of this writing, it appears that a perfectly played game of Othello would end in a draw. Thus, you need not worry too much about which color you play in any particular game; neither side starts with an advantage. I would recommend that you play roughly half of your games with each color. Having a "favorite" color that you insist on playing all the time is a bad habit to get into.

Let us begin our discussion of openings from the first move of the game. Black has four options to choose from, but from a theoretical point of view they are all the same, because the board is symmetric. From a practical point of view, however, it does make some difference where you play. Most experts always play the first move in the same place, and I would recommend that you do this as well, because positions that you have seen before are easier to recognize that way. Personally, I have always played move one at f5, and most of the diagrams in this book reflect this.

At move two, White has three choices, which are named perpendicular, diagonal, and parallel, reflecting the direction flipped relative to move one. These are pictured in Diagrams 4-1, 4-2, and 4-3 respectively. While both the perpendicular and diagonal are commonly seen in expert play, the parallel is considered to be inferior. The only time I can remember using the parallel was in a game played against Jonathan Cerf, the 1980 World Champion, with black and white cupcakes instead of regular pieces! I got into so much trouble that in desperation, I started to eat the pieces! While it certainly would not hurt to practice playing the parallel, in games where you really want to win, the perpendicular or diagonal would be a better choice.
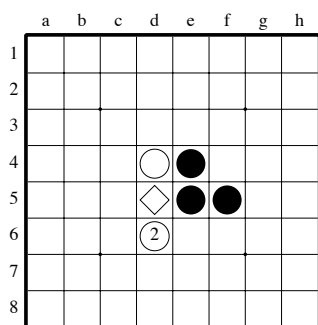
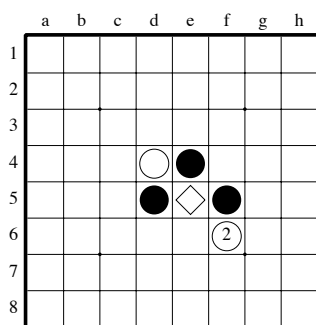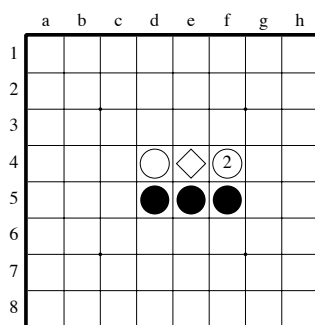| Diagram 4-1	Diagram 4-2	Diagram 4-3
Perpendicular	*Diagonal*	*Parallel*

Suppose that you are Black and your opponent has chosen the perpendicular. At move three you have five choices: c3, c4, c5, c6 and c7. How is Black to choose among them? While some experts might disagree with me on this point, I believe that the strategy for the early part of the game really is not all that different than the midgame. Chapter 3 stressed the benefits of quiet moves and the drawbacks of loud moves, and we will normally look for quiet moves in the opening phase of the game as well. In this case, the definition for quiet moves I gave in Chapter 3 is not all that useful, since all 5 of Black's choices flip exactly one disc, and both the disc played and the disc flipped will be frontier discs. Perhaps we could refine that definition and say that the quietest move would be c5, since the piece flipped (d5) is surrounded in five directions, and the c5 disc itself would be adjacent to three occupied squares. The loudest move is c7, jutting out away from the other pieces. Indeed, when I first started playing Othello in 1980, c5 was by far the most common choice for Black. It just seemed natural to cut the three white discs in the middle. Meanwhile, c7 was, and still is, the least popular choice. For the diagonal and parallel as well, the obvious choice is to play quietly in the middle, i.e., e6 in Diagram 4-2 and e3 in Diagram 4-3.

Other than loudness, what other criteria could we use to choose a move? Perhaps the biggest difference between the opening and the rest of the game is that with fewer pieces on the board, and no edge squares occupied, it becomes more important to maintain discs in the center. If one player is able to cluster his discs in the middle, that player is said to **control the center**, and many of the openings played in expert games involve battles over the center. In the opening, it is often worth making a louder move in order to capture central discs and set up quiet moves in the future.

For example, Diagram 4-4 shows one of the most common openings used in expert play, leading to the position in Diagram 4-5. Here it might appear that a quiet move much such as d1 is in order, but this does nothing to combat Black's control of the center. In fact, White often plows through the middle as shown in Diagram 4-6, establishing a presence in the center.
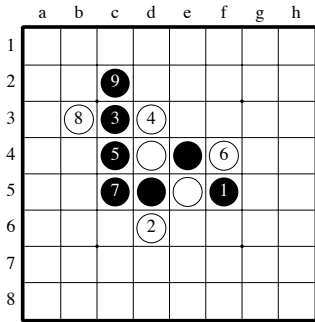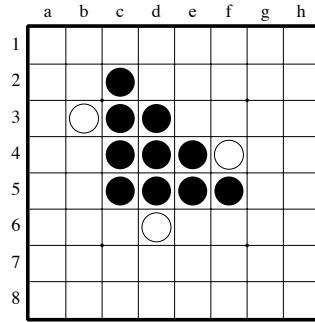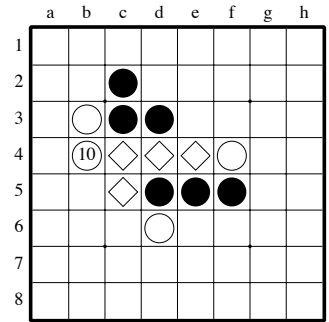

Diagram 4-4

Diagram 4-5
White to move

Diagram 4-6

Compare Diagrams 4-7 and 4-8. The positions are identical except for the color of the disc on f5. Think for a moment about which of these two positions is more favorable for Black.
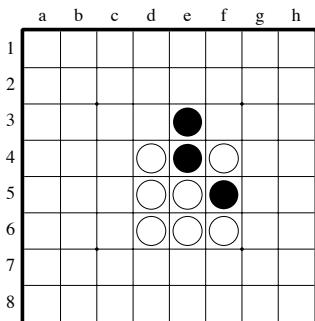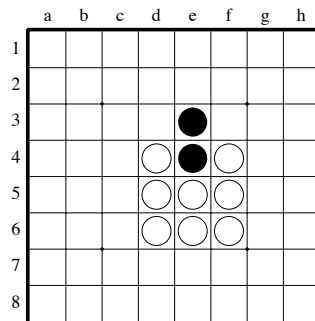

Diagram 4-7
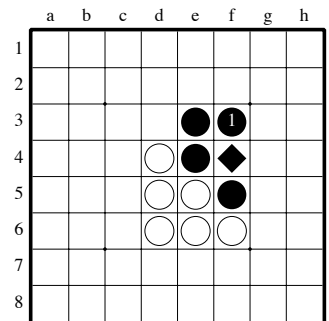*Black to move*

Diagram 4-8
Black to move

Diagram 4-9
White to move

From what we have discussed so far, it might seem that the position in Diagram 4-8 should be more favorable for Black. After all, in this position White has an extra frontier disc, and frontier discs are usually bad. However, in Diagram 4-7, the f5 disc is very valuable for Black, since it allows him to move to f3, leaving Black with a very compact position (see Diagram 4-9), and forcing White to play to the outside on his next turn. Black has a considerable advantage.
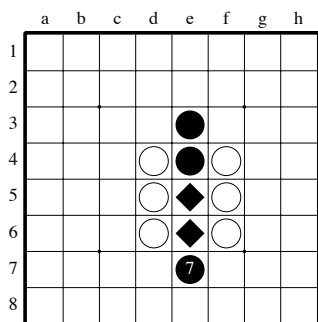
In Diagram 4-8, White has a lot of frontier discs, but Black has a bit of an awkward position. There are many reasonably quiet moves, but none of them really establishes a presence in the center. The obvious move is probably for Black to just come through the middle as shown in Diagram 4-10, but this would leave White with quiet moves at d3, f3, d7 and f7. Despite the large number of white frontier discs, the position in Diagram 4-8 is considered to be even.

Diagram 4-10

Diagrams 4-11, 4-12, and 4-13 show some common opening errors to avoid. In Diagram 4-11, White's move jutting out away from the center is bad. It is far better to play f4, taking two discs in the middle. Diagram 4-12 shows another bad choice for White. This move needlessly allows Black to grab an excellent spot at e6. In Diagram 4-13, White plays toward the outside at f6. It is better is to play f4, which looks similar, but is more toward the center.

While openings can seem difficult, if you play in the center and keep your moves quiet, you will usually have a reasonable position going into the midgame. The game becomes a lot more difficult when play reaches the edges, which is the subject of Chapter 5.
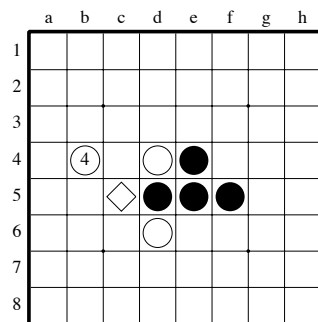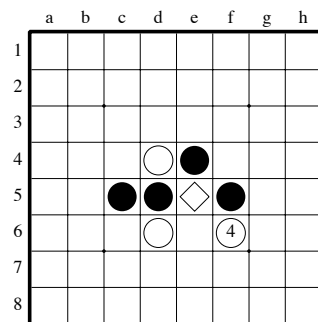
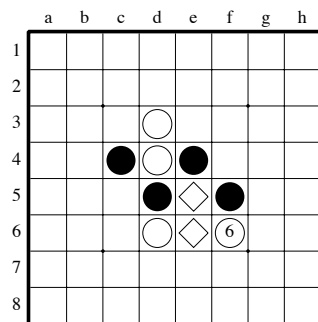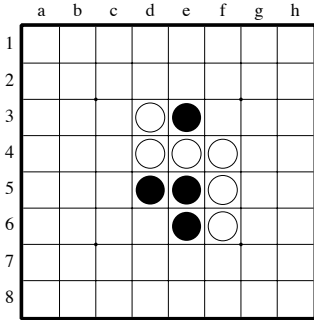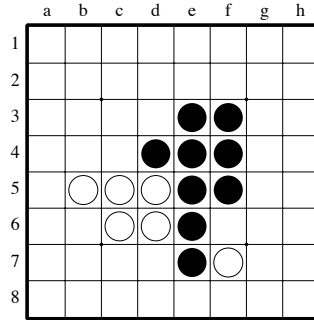Diagram 4-11
Black to move

Diagram 4-12
Black to move

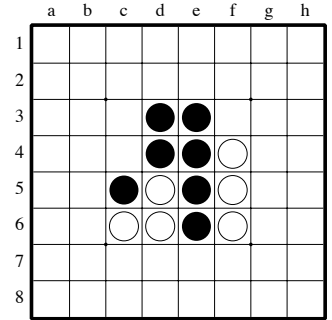Diagram 4-13
Black to move

Exercises

In each diagram, find the best move. These exercises are considerably more difficult than those in previous chapters. Answers begin on page 145.
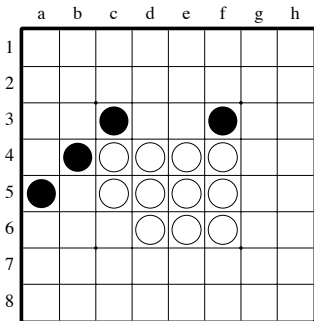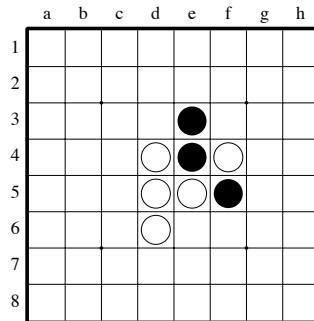
Exercise 4-1
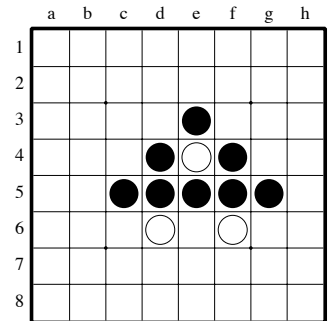*Black to move*

Exercise 4-2
White to move

Exercise 4-3
White to move

Exercise 4-4
White to move

Exercise 4-5
Black to move

Exercise 4-6
White to move

Chapter 5

Basic edge play

At the start of the game there are 60 empty squares on the board, and 28 of those squares are on the edges. Thus edge moves account for almost half of all the moves in a typical game, and I believe that the winner of most games is decided by how well both sides play the edges. As I discussed in Chapter 4, in the opening there are often many different moves to choose from, all of which result in a reasonably balanced position. On the edges, the opposite is true. Usually there is one move that is clearly better than the rest, and a mistake can give your opponent a huge advantage.

As we have already seen, quiet moves are usually better than loud moves, and this holds true for edge moves as well. If your opponent has run out of moves, then a quiet edge move is often enough to decide the game. We have already seen one example of this in Diagram 3-3. In Diagram 5-1 Black has run out of safe moves, but it is White's turn. If White could pass, then Black would be forced to move to an X-square and concede a corner. Of course White can not pass, but he can play g1, which has basically the same effect as a pass. As shown in Diagram 5-2, Black still has no safe moves and must play to an X-square. Moves such as g1 in this example are called **free moves**: Black can not prevent White from taking g1 whenever he wants, and g1 offers no new safe options for Black. While it is possible to have a free move in the middle of the board, most free moves occur on the edge. Sometimes there will be an opportunity for more than one free move along the same edge. In Diagram 5-3, White has three free moves along the eastern edge at h4, h3, and h2 (note that they must be taken in that order), and can easily run Black out of moves.
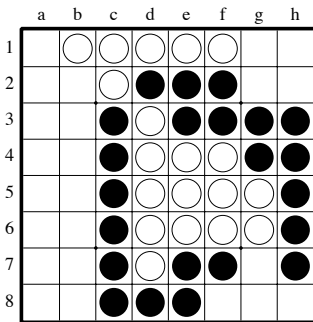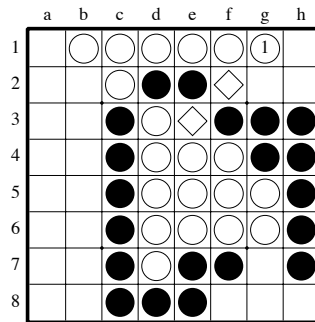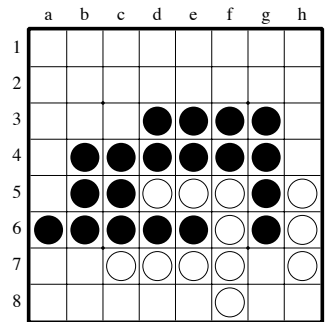

Diagram 5-1
White to move

Diagram 5-2
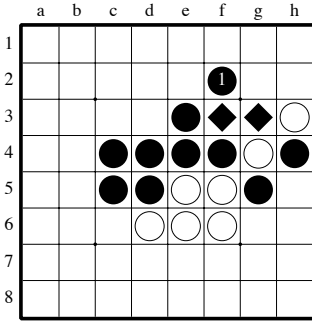*Black to move*

Diagram 5-3
White to move
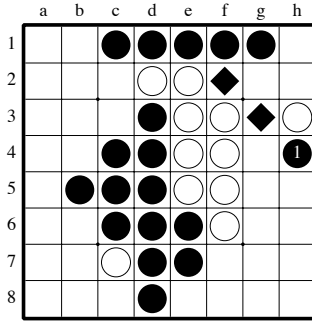
Diagram 5-4
White to move
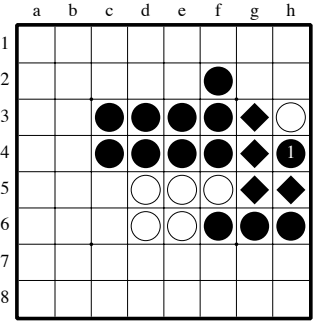
Diagram 5-5
White to move

Diagram 5-6
White to move

Given the power of free moves, it is usually a bad idea to make a move which offers one to your opponent. Diagrams 5-4, 5-5, and 5-6 show three bad moves by Black which generate a free move for White. In all three cases, White will take the eastern edge on his next turn and be left with a free move to h2.

The concept of tempo

In Diagrams 5-1 and 5-2, White uses a free move to achieve the same effect as a pass. In Diagram 5-1 it is White's turn to move, but in Diagram 5-2, it is Black's turn. White has transferred the burden of initiating play to Black without offering Black any new safe options. In English, White is said to **gain a tempo**. In Japanese, White is said to "hand over the move (to the opponent)".

Diagram 5-7 shows a position from a game in the 1992 All Japan Championship. Playing White is Hideshi Tamenori, a 5-time World Champion and generally regarded as the greatest player of all time. His opponent was Ken'ichi Ishii, himself a 2-time World Champion.
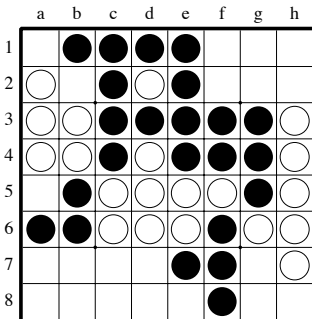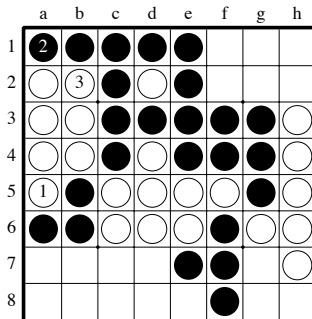
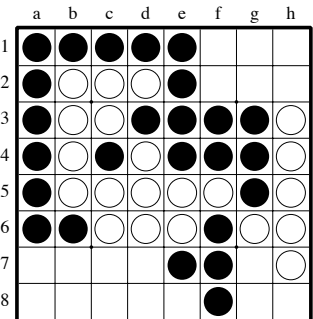Diagram 5-7
White to move

Diagram 5-8

Diagram 5-9
Black to move

In this position, Tamenori played a5!! This might appear to be a terrible blunder, but it was actually the best move. As shown in Diagram 5-8, Ishii replied by taking the a1 corner, stabilizing both the left and top edges, after which Tamenori filled in the hole at b2. The resulting position is shown in Diagram 5-9. Note that, compared with Diagram 5-7, Black has no new options, and in fact one of his safe options, namely a5 itself, is no longer available. Further, it is now Black's turn to move! Thus, by playing the sequence in Diagram 5-8, Tamenori was able to gain a critical tempo. He handed-over the burden of initiating play to Black, leaving Black in grave danger of running completely out of moves. As demonstrated in this example, it is often worth sacrificing a corner in order to gain a tempo.

In the opening, when play is in the center of the board, finding the best move may not be easy, but usually even the second or third best move would not lose a tempo. The reason that edge moves tend to be so critical in determining the winner of the game is that a mistake on the edge will often lose a tempo. Especially in expert play, one extra tempo is often the difference between winning and losing. Throughout the rest of this chapter, and indeed the rest of the book, we will see many examples of how tempos are won and lost.

Wings won't make you fly

In Diagram 5-10, Black's position on the left edge is called an **unbalanced edge** or **wing**. While the term wing refers only to this edge pattern, unbalanced can also be used to describe the top edge (unbalanced three) or the right edge (unbalanced four). Unbalanced edges are inherently dangerous as the occupied C-square could offer the opponent access to the adjacent corner. They are often vulnerable to a variety of attacks, many of which can quickly determine the outcome of a game. The pattern on the bottom edge, with all six squares between the corners filled, is called a **balanced edge** and in many circumstances is the best possible edge position to have.
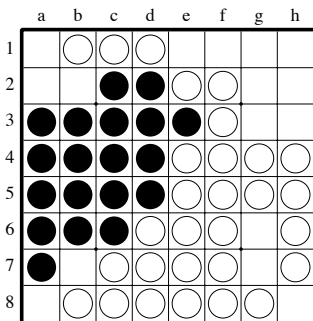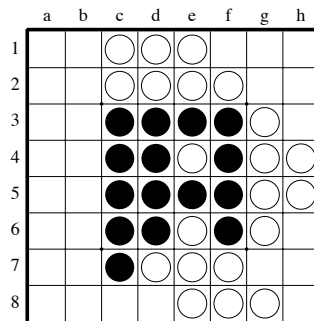
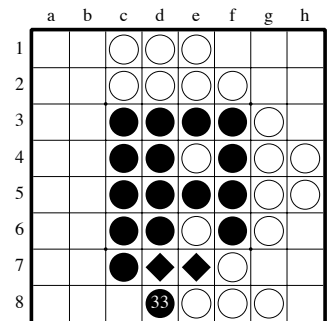Diagram 5-10

Diagram 5-11
Black to move

Diagram 5-12
White to move

Diagram 5-11 shows an example where Black can exploit White's unbalanced three on the bottom edge. Black should begin with d8, attacking the h8 corner, as shown in Diagram 5-12. This leaves White with two unappealing choices: save the corner by playing c8, flipping Black's entire wall, or play somewhere else and allow Black to take the corner. In either case, Black will have a huge advantage in the game.
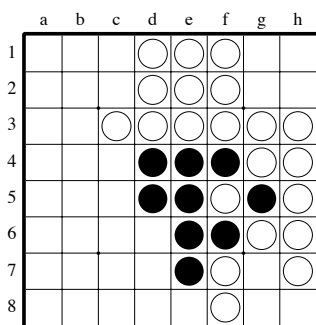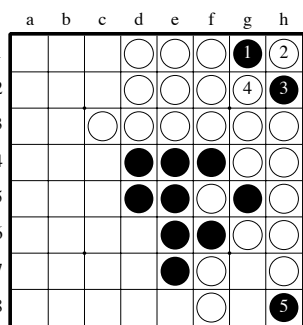

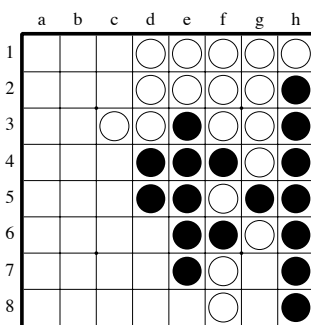Diagram 5-13
Black to move

Diagram 5-14

Diagram 5-15
White to move

In many circumstances, attacking an unbalanced edge is so powerful that it is worth sacrificing a corner to do so. In Diagram 5-13, Black can initiate an attack on White's wing by playing g1! If White takes the h1 corner, then Black can **wedge** (play between two discs of the opposite color) at h2, and then take the h8 corner, as shown in Diagram 5-14. The resulting position is Diagram 5-15. The question is, which corner is more valuable, h1 or h8? In this case, h8 is clearly more valuable. Having the h1 corner gives White stable pieces on the top edge, but that is about the end of the story. Meanwhile, Black will be able to extend out from his h8 corner, capturing most if not all of the bottom edge. In essence, Black has sacrificed one edge (the top edge), but will receive two edges (the right and bottom edges), and a tempo, in return.
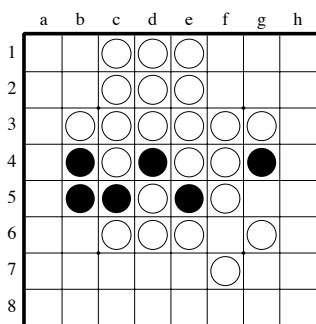

Diagram 5-16
Black to move

Since unbalanced edges are often subject to attack, you should look for opportunities to turn your opponent's edge into an unbalanced edge. In Diagram 5-16, Black should play f1, leaving the position in Diagram 5-17. If White takes at g1, Black has a quiet move at f2, gaining a tempo (Diagram 5-18) and leaving White with an unbalanced edge to attack later. If White does not take g1, then black can play b1, effectively gaining two tempos. For example, in Diagram 5-19, it is White's turn to move (Black has gained a tempo) and Black's free move at g1 is good for another tempo.
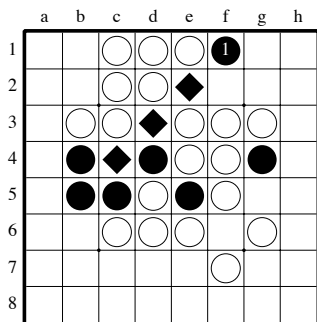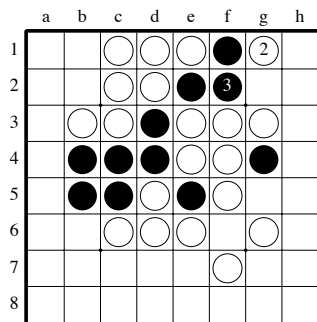
Diagram 5-17
White to move
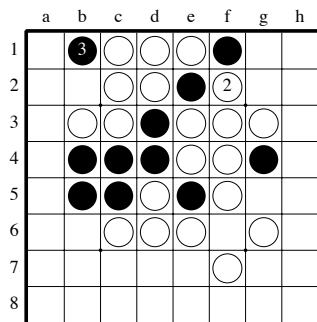

Diagram 5-18
White to move

Diagram 5-19
White to move

Mind the gap

Suppose that in Diagram 5-20, Black decides to move somewhere on the right edge, trying to gain a tempo. He could play h3, leaving a 2-square gap between his pieces on the edge (Diagram 5-21), or to h4, leaving a 1-square gap. A general rule of thumb is that it is better to leave a 2-square gap than a 1-square gap. In Diagram 5-21, the squares h4 and h5 form a **pair**. If White plays into one of these squares, Black will play into the other, after which White will have to initiate play somewhere else on the board. Thus, regardless of whether White plays into the pair or not, Black's initial choice of h3 will force White to play to the west (or an X-square), which will open up new choices for Black.

In this case the 2-square gap is between the A-squares, but 2-square gaps often occur between a C-square and (its more distant) B-square or even between a corner and a B-square. The concept of a pair is extremely useful, and we will see many more examples of it throughout the rest of the book.
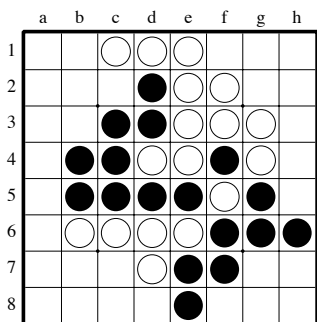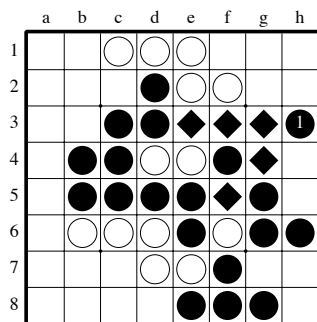

Diagram 5-20
Black to move
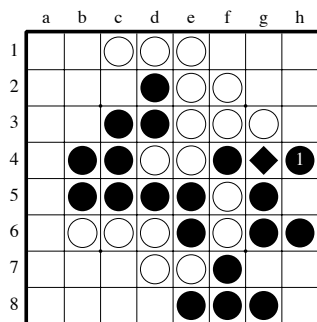

Diagram 5-21
White to move
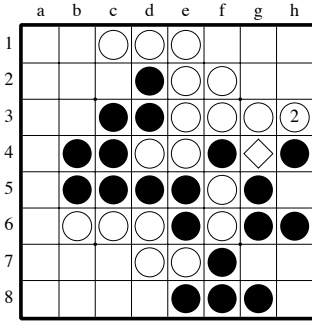

Diagram 5-22
White to move
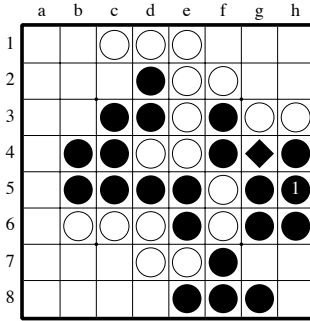
Diagram 5-23
Black to move
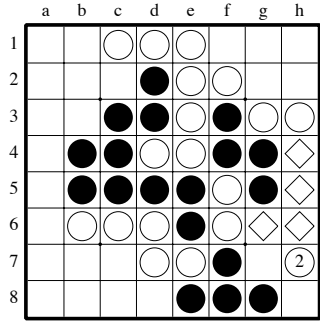

Diagram 5-24
White to move

Diagram 5-25
Black to move

Compare this to the situation in Diagram 5-22 with a 1-square gap. Here, h3 and h5 appear to form a pair. However, as shown in Diagram 5-23, if White plays h3, then Black does not have access to h5! Now, Black will have to initiate play elsewhere. Of course, there will be other times that Black could fill the hole at h5. Suppose that, starting from Diagram 5-23, we make the disc at f3 black, and allow Black to play h5. This is shown in Diagram 5-24. One possibility for White is to take the edge with h7 (Diagram 5-25), and again Black will be forced to initiate play elsewhere. In other words, going back to Diagram 5-20, playing to create the 2-square gap with h3 gains a tempo, while creating a 1-square gap with h4 does not. There are many other cases where the opponent can exploit a 1-square gap by playing into the gap (Diagram 2-7 is one obvious example). While there are certainly occasions where leaving a 1-square gap is a good move, it is usually better to leave a 2-square gap or no gap at all. That said, it should be noted that having a 2-square gap is still a liability! Another rule of thumb is that such gaps should be left untouched unless there is some reason for filling them in (this point is discussed further in Chapter 6).
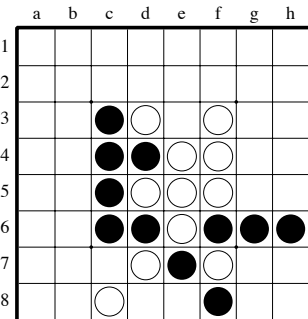

Diagram 5-26
Black to move

The most common circumstance under which it is advantageous to leave a 1-square gap is shown in Diagram 5-26. Here, both sides have taken an A-square on the south edge. White is threatening to gain a tempo by playing e8, and Black must find some means of dealing with this threat. Since e8 is too loud for Black, the best move is d8, leaving a 1-square gap at e8. If White continues with e8, Black can take the edge with b8, leaving a free move at g8.

Anchors won't weigh you down

If you follow the basic strategy of this book and make mostly quiet moves, while your opponent is grabbing as many discs as possible, then you may occasionally find yourself in a position where you are in danger of losing by wipeout. In Diagram 5-27, White has a lot of walls and very few places to move, which would normally make this an easy win for Black. However, with only one piece left, Black's options are also limited. If Black plays the "safe" move c2, then white completes the wipeout with c1. Black's only other choice is g2, which will give up the h1 corner.
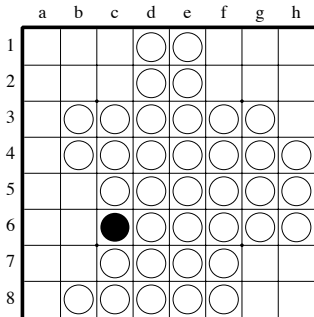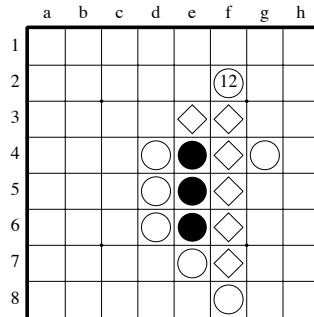

Diagram 5-27
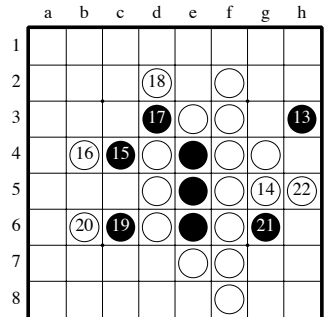*Black to move*

Diagram 5-28
Black to move

Diagram 5-29

Often the best way to avoid this situation is to take at least one piece on an edge, preferably an A-square, that you can use as your "anchor". Even if taking the edge does not look theoretically correct, perhaps because you have a quieter move elsewhere, establishing an anchor can save you from all kinds of grief later in the game. For example, suppose you are Black in Diagram 5-28. Your opponent has been grabbing pieces from the start of the game, and you already have a big advantage. However, your opponent is also one move away from wiping you out: if you get careless and play e2, your opponent grabs e1 and the game is over.

In this sort of situation, making an anchoring move at h3 will make it extremely hard for your opponent to score a wipeout. Suppose that the game continues as shown in Diagram 5-29, leaving the position in Diagram 5-30. Now the anchor disc gives Black access to d7, slicing through the middle and leaving Black with an overwhelming advantage.
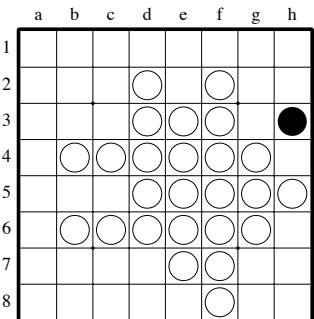
Diagram 5-30
Black to move

Exercises

In each diagram, find the best move. Answers begin on page 145.
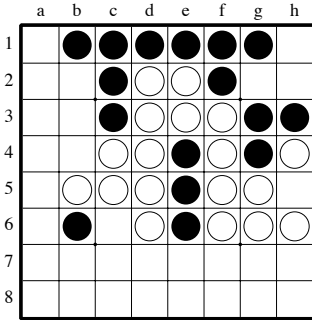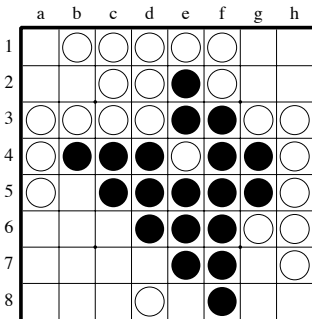

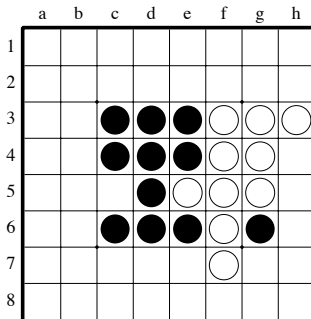Exercise 5-1
Black to move
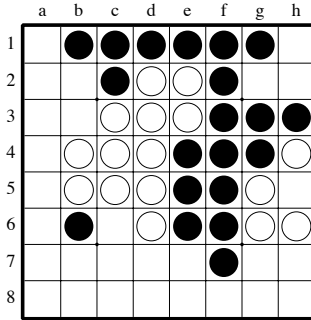
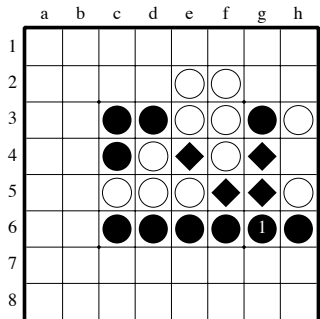Exercise 5-2
Black to move
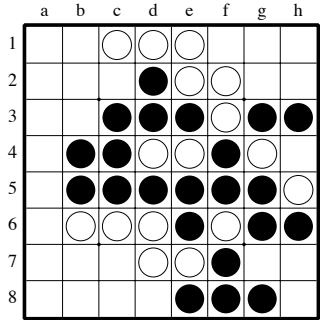
Exercise 5-3
White to move

Exercise 5-4
Black to move

Exercise 5-5
White to move

Exercise 5-6
White to move

Exercise 5-7

Starting from Diagram 5-27, play out the rest of the game for both sides, starting with a Black move to g2. Even after losing the h1 corner, Black should be able to win.

Chapter 6

Basic endgame strategy

If you are fortunate enough to build up a big lead in the opening and midgame, then the endgame can sometimes be a relatively easy mopping-up operation. However, when neither side carries this sort of advantage, the endgame can be extremely difficult. Even at the highest (human) levels of play, many games are won or lost in the last few moves. Unlike most strategy games, in Othello the board becomes more crowded as the game goes on, which results in more discs being flipped on each turn. Rapidly changing fortunes in the endgame is one of the things that makes Othello great! In this chapter we will examine some of the basic endgame strategies, saving the more difficult material for chapters 8 and 13.
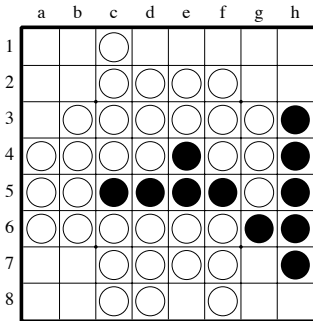
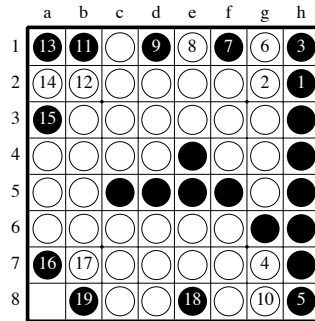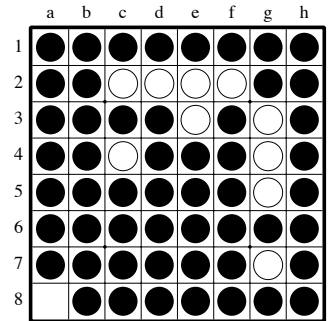| Diagram 6-1	Diagram 6-2	Diagram 6-3
Black to move		*Black 53, white 10*

In Diagram 6-1, Black has run White out of moves and has complete control of the game. Winning from here is hardly rocket science. Black can simply force White to give up the corners, and sweep around the edges. Diagram 6-2 shows one possible sequence of moves, resulting in the final position shown in Diagram 6-3. Notice that throughout this sequence, White has very few choices, and Black just keeps on accumulating more and more stable discs. In general, once your opponent is out of safe moves, you should try to keep him out of moves for the rest of the game. I have seen many examples where people let their opponent back in the game by getting too fancy in the endgame, trying to squeeze out every last disc instead of winning in the simplest way possible. With the board changing rapidly it is easy to overlook something and make a silly mistake. Always remember that in the endgame, simple is best.

Diagram 6-4
Black to move

Diagram 6-5
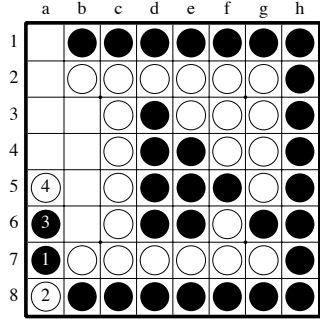
Diagram 6-6

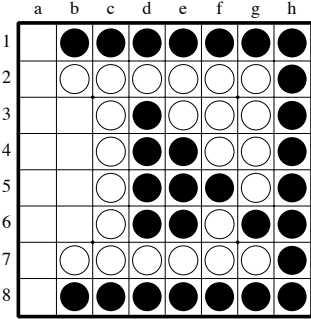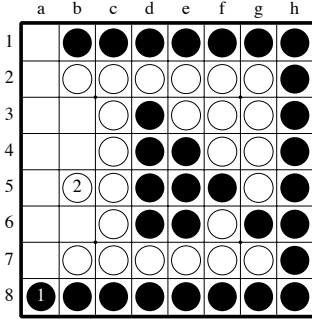Diagram 6-4 shows another example where Black has run White out of moves. Here again, Black should be looking for the simplest way to win the game. While in this case grabbing the corners is sufficient to win, it is not that easy to build from the corner. For example, in Diagram 6-5, if Black takes a8, then White plays away diagonally at b5, and Black can not extend away from a8. The easiest way to win is shown in Diagram 6-6. Black begins with a7, intentionally giving up the a8 corner, and continues with a6, allowing White to take four discs on the edge. Black can then repeat the same moves near the a1 corner, as shown in Diagram 6-7. After filling in the last four squares (Diagram 6-8) the final position is reached in Diagram 6-9. Notice how White has taken the left edge, but little else. Black has captured many discs in the middle of the board, and hence this technique is called an **interior sweep**. It is also worth noting that throughout the entire sequence, every White move was forced.

Diagram 6-7
Black to move

Diagram 6-8

Diagram 6-9
Black wins 42-22

Diagram 6-10
Black to move
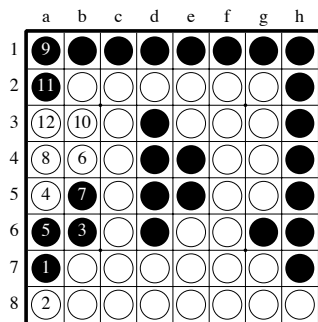
Diagram 6-11
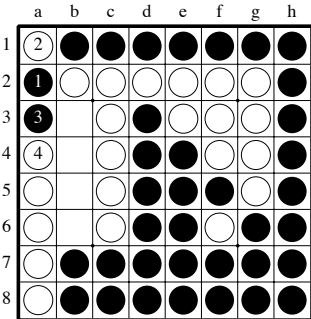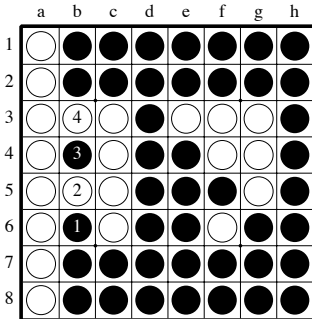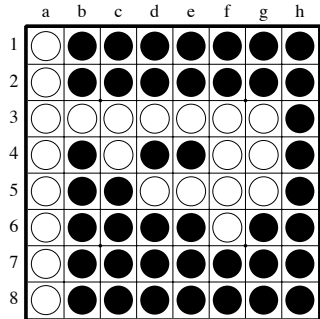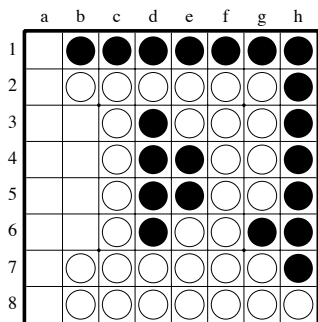*Black's a7 fails*
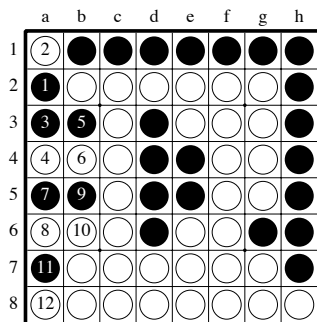
Diagram 6-12
Black's a2 wins

While there are many occasions when taking the corner is better than using an interior sweep, it is usually much easier to finish the game using an interior sweep. It is often possible to leave your opponent with no choices for the rest of the game as you build up more and more stable interior discs.

Diagram 6-10 shows another example which is similar to Diagram 6-4, except that black has a much smaller lead as the bottom edge is white. Black will again want to execute an interior sweep, but note that this time Black must start with a2 rather than a7. If he starts with a7, as shown in Diagram 6-11, then White ends up doing most of the sweeping, and Black will lose. Much better for Black is to start with a2 (Diagram 6-12), near the edge which he owns. Now Black can properly execute an interior sweep, capturing most of row 7 on his last move, when it is too late for White to recapture those discs.

Interior sweeps can also be used on two different edges. In Diagram 6-13, Black can certainly play a move such as e1 and use the disc on e4 to take the corners, but it is much easier to win with an interior sweep, as shown in Diagram 6-14.

Diagram 6-13
Black to move

Diagram 6-14

Diagram 6-15
Final position

Diagonal control

The preceding examples were relatively easy, since one side had already run out of moves. One common way to create this sort of situation is to use **diagonal control**, i.e., to capture all of the discs on one of the diagonal lines on the board. While this term could 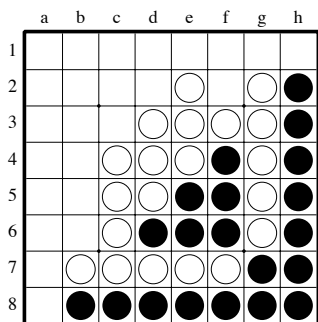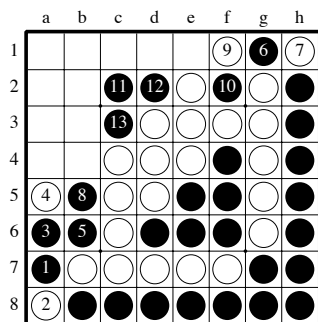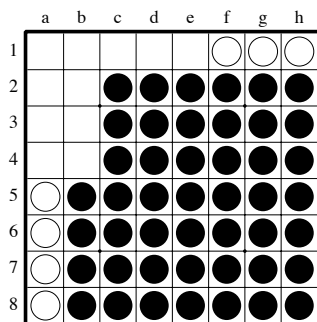be used to talk about any diagonal line, in the endgame it usually refers to the long diagonals that run from a1 to h8 or a8 to h1, as shown in Diagram 6-16. Usually these are called the **main diagonals**, although in Japan they are often referred to as the **whiteline** and **blackline** (owing to the color of the discs in the starting position), respectively.

Diagonal control often allows you to move to an X-square, or sometimes both X-squares on the same diagonal, without offering your opponent a corner. These moves usually gain a tempo, and are often enough to run your opponent out of moves. Diagram 6-17 shows an example to illustrate the basic idea. White should play to g7, controlling the main diagonal, as shown in diagram 6-18. Black has no choice but to play g8, allowing White to sweep around the edges and win easily.
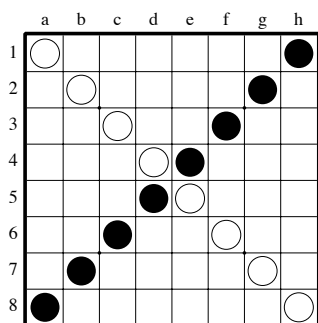
Diagram 6-16
Main diagonals
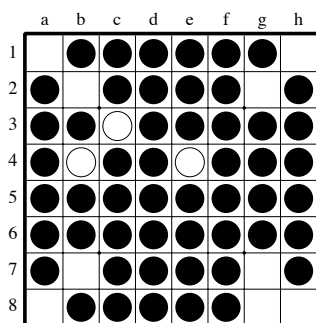
Diagram 6-17
White to move
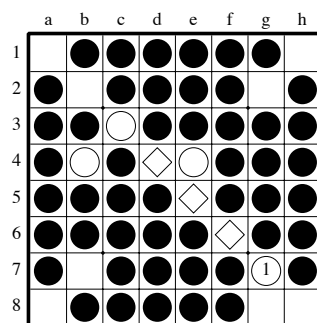
Diagram 6-18
Black to move

Positions similar to the one in Diagram 6-17 occur with great frequency in games where both players are using the basic strategy of avoiding X-squares. In such games, almost the entire board becomes filled in, with the X-squares and corners empty. If one player can control a diagonal, as in Diagram 6-18, the result is usually a lopsided victory for that player. Sometimes each player is able to grab one of the main diagonals, in which case the outcome of the game hinges on which side will run out of moves first. Having access to both X-squares on the diagonal is often critical in these situations.
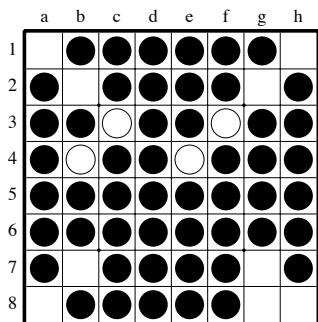
Diagram 6-19
White to move
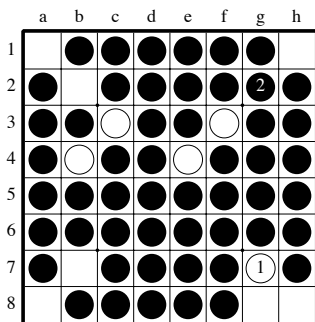
Diagram 6-20
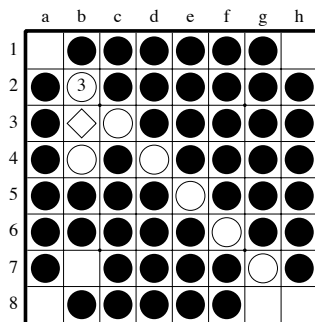
Diagram 6-21
Black to move

For example, Diagram 6-19 is identical to Diagram 6-17, except that the disc on f3 has been made white. If White controls the whiteline with g7, then Black can grab the blackline with g2, as shown in Diagram 6-20. In this case White can continue with b2, running Black out of moves and winning the game (Diagram 6-21). If White did not have access to b2 (for example if we make the disc at b4 black), then it would be White who runs out of moves first and Black would win the game. Thus, even though you might not want to play to an X-square early in the game, it is often important to have access to the X-squares late in the game. The pattern near the a8 corner in Diagram 6-19, where Black has no hope of accessing b7, is a major liability for Black. Experts are usually reluctant to create this sort of pattern, as it may come back to haunt them later in the game.

Breaking the diagonal

While in the examples above control of the diagonal was permanent, in many cases control of the diagonal is only temporary. In fact, if we are successful at running our opponent out of moves, forcing him to move to an X-square, we certainly hope to use that X-square to take the adjacent corner. If the X-square move happens to control the diagonal, then in order to take the corner, we must **break the diagonal**. That is, we must establish a disc on the diagonal controlled by the opponent. We have already seen one example of this in Diagrams 2-4 and 2-5.

Of course, the player who controls the diagonal will usually be anxious to keep his opponent off of it. Often, a move which breaks the diagonal will be followed by another move which flips the piece (or pieces) on the diagonal back again. Battles over diagonal control can sometimes continue for several turns, and even for experts it is often difficult to determine whether a diagonal can eventually be broken.
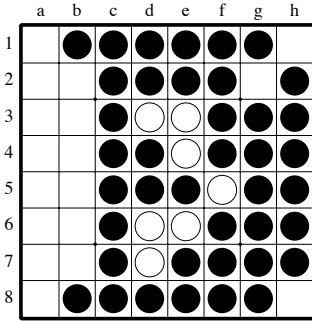
Diagram 6-22
White to move
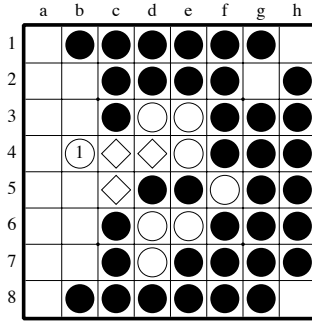
Diagram 6-23
Black to move
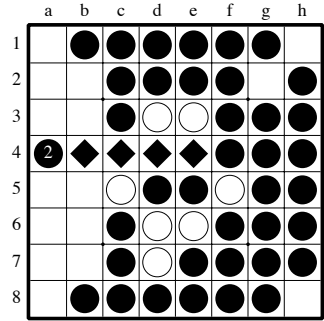
Diagram 6-24
White to move

Diagram 6-22 shows a game in which Black ran out of moves, and in desperation played to g7, taking control of the diagonal. If White can break the diagonal, then he can take the h8 corner and sweep around the edges, winning by a huge margin. However, in this case breaking the diagonal permanently is not easy. White has four moves which break the diagonal, i.e., b3, b4, b5, and b6, but in each case Black has a reply which reestablishes control (a3, a4, a5, and a7, respectively). For example, if White tries b4 (Diagram 6-23), Black will reply a4 (Diagram 6-24). Now the only move which breaks the diagonal is b3 (Diagram 6-25), but Black again takes control with a3 (Diagram 6-26). Suddenly, Black is winning the game!

When you are trying to break a diagonal, it is often best to use a move which flips diagonally. Starting from Diagram 6-22, White should play b6, flipping the piece on d4, as shown in Diagram 6-27. Black has little choice but to play a7, keeping control of the diagonal (Diagram 6-28). However, a7 is a C-square, and as shown in Chapter 2, is subject to attack.

Diagram 6-25
Black to move

Diagram 6-26
White to move
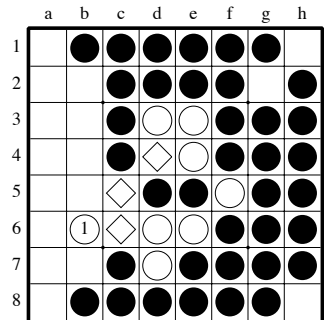
Diagram 6-27
Black to move
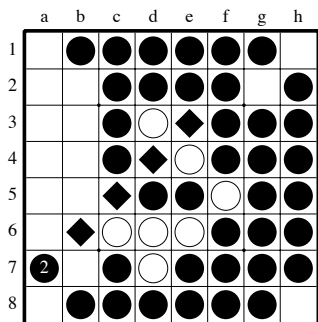
Diagram 6-28
White to move
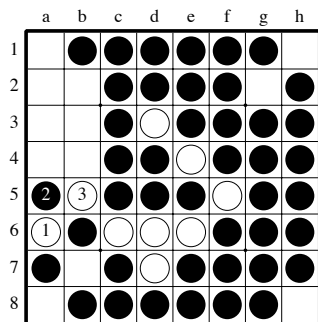
Diagram 6-29
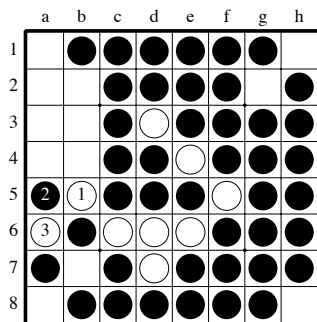
Diagram 6-30

One possibility for White is to play a6, attacking the a8 corner (Diagram 6-29). Black must take the edge at a5. Now White can play b5, breaking the diagonal by flipping the disc on e5, and since a5 is occupied, Black has no way to recapture e5. Another possibility for Whi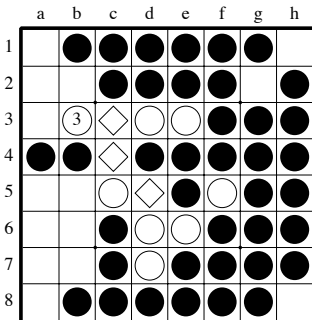te in Diagram 6-28 is to play b5, again breaking the diagonal at e5 (Diagram 6-30). Black can flip e5 back by playing a5, but now White can wedge at a6, and will be able to take the a8 corner on his next turn, winning easily.

Back in Chapter 5, Diagram 5-21 showed an example where one side leaves a 2-square gap on the edge. While this sort of move is often useful to gain a tempo, 2-square gaps can be a major handicap in an endgame which comes down to diagonal control. In Diagram 6-31, Black has just played g2, taking control of the diagonal and creating a large block of stable discs. It might appear that black has the game won, but White can break the diagonal by playing h5 (Diagram 6-32) and squeeze out a narrow victory. If the h4-h5 pair were filled in (Diagram 6-33), White has no way to win. Because of situations such as these, White should leave pairs such as h4-h5 empty until there is a clear advantage to be gained by entering the pair.
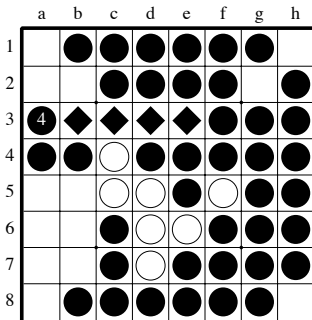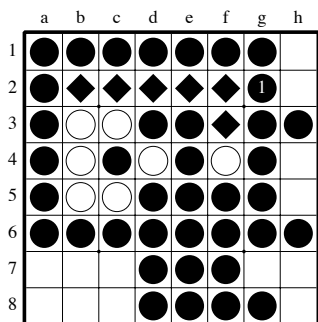

Diagram 6-31
White to move
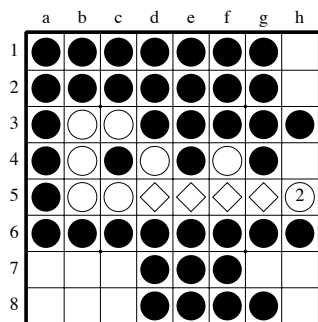
Diagram 6-32
Black to move
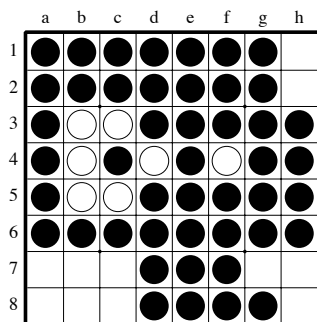
Diagram 6-33
White to move

Introduction to swindles

Chapter 5 introduced the concept of a **pair**. A **swindle** occurs when one player gets *both* moves in a pair because, following the first move into the pair, the opponent does not have a legal move to the other square in the pair. In Diagram 6-34, it might seem obvious that Black should play to h8, grabbing the entire right edge. White will end the game with g8 (Diagram 6-35), with White winning 33-31. However, notice what happens if Black plays to g8 instead (Diagram 6-36). In this case, White gets swindled; he does not have access to h8, and must pass! Black ends the game with h8, winning 36-28 (Diagram 6-37).

Diagram 6-38 shows another example of a swindle. Suppose that Black plays a1, as in Diagram 6-39. White would like to wedge at b1, gaining access to h1. However, in this case White can not play to b1 because he does not have a piece on the b column. Black will later move to b1 himself, creating many stable discs. Also note how this swindle gains valuable tempos for Black. Swindles are discussed in much greater detail in Chapter 10.
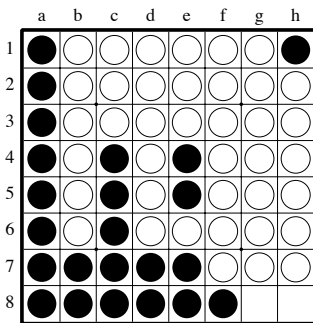
Diagram 6-34
Black to move
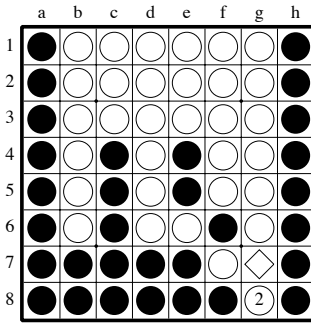
Diagram 6-35
Black h8, white G8
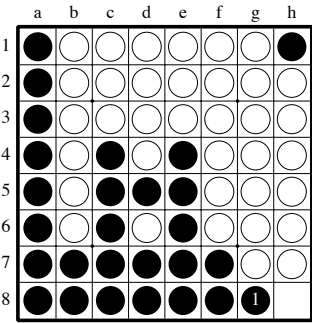
Diagram 6-36
Black to move
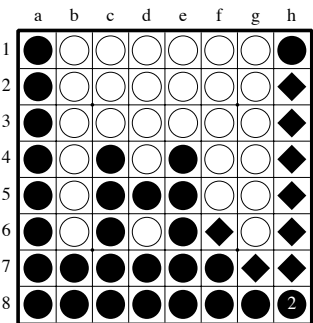
Diagram 6-37
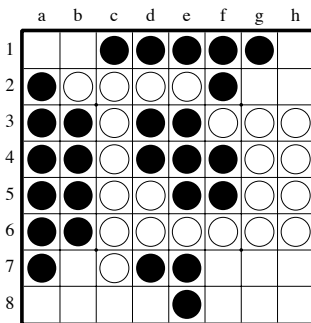
Diagram 6-38
Black to move
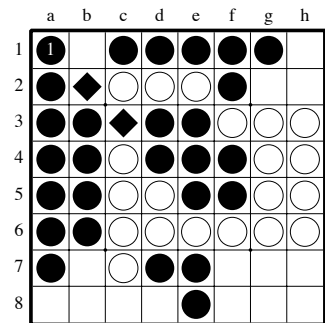
Diagram 6-39
White to move

Exercises

In each diagram, find the best move. Answers begin on page 146.
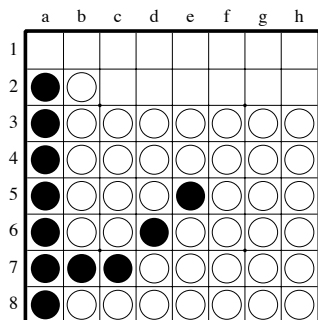
Exercise 6-1
Black to move
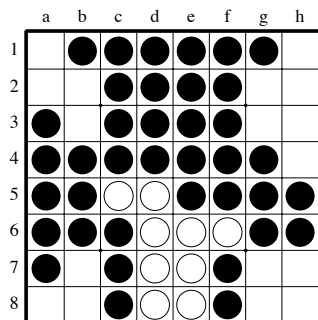
Exercise 6-2
White to move
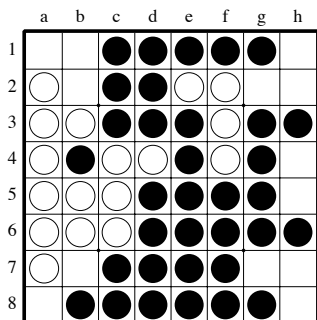
Exercise 6-3
White to move
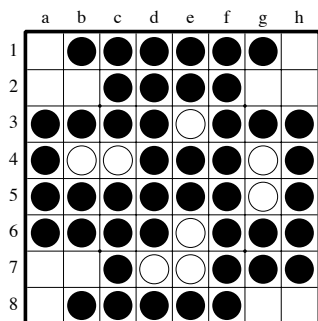
Exercise 6-4
White to move
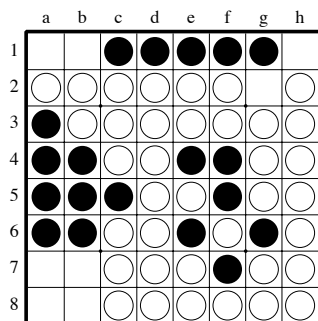
Exercise 6-5
Black to move
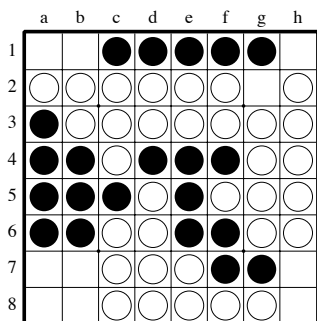
Exercise 6-6
Black to move

Chapter 7

Playing defense

The previous few chapters have concentrated on strategies for finding good moves: taking corners, creating stable discs, making quiet moves, and so on. However, there is another, equally important part of the game— preventing your opponent from making the same sort of good moves that you are aiming for yourself. In this chapter we discuss defensive plays which attempt to take away good moves from the opponent. If you play through the transcript of any game between experts, you are likely to find at least a few defensive moves.

There are essentially three types of defensive moves. The first type is to flip some of your opponent's pieces to take away access to his good move. A simple example is shown in Diagram 7-1. Here, White is threatening to take the a8 corner, which is clearly a good move. However, if Black makes a defensive play at g8, flipping the white disc on f8, he can deny White access to the corner.

The second type of defensive move is to play where your opponent wants to play. In Diagram 7-2, White would like to take the a8 corner. The only way to prevent him from doing so is for Black to take the corner himself. In this case, taking the corner is attractive for Black as well, but in other circumstances it pays to play in your opponent's spot, even if it is a relatively loud move.

The third type of defensive move is to somehow make the opponent's good move less attractive. In Diagram 7-3, White has a good move to f8. There is no way to take away White's access to f8, but Black can make the move much less attractive by playing f7. Now if White plays f8, it would flip the entire f-column.

| Diagram 7-1 | Diagram 7-2 | Diagram 7-3 |
| *Black to move* | *Black to move* | *Black to move* |
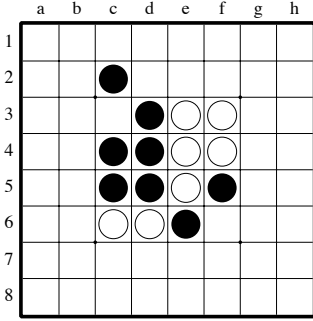
Diagram 7-4
White to move
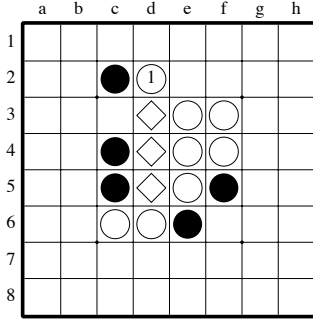
Diagram 7-5
Black to move
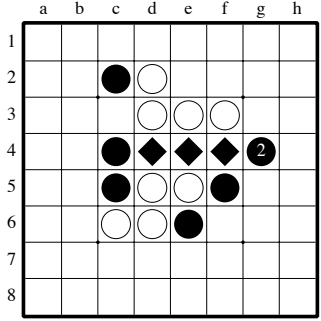
Diagram 7-6
White to move

Diagram 7-4 shows an opening position that often leads to a series of moves with White on defense and Black on offense. Note, however, that this does not mean the opening is good for Black. At each turn, Black threatens to make a very quiet move, but White can deal with these threats with defensive plays, and the opening is actually favorable for White. In Diagram 7-4, Black has a quiet move to f6, so White takes it away by playing d2 (Diagram 7-5), flipping the disc on d4. Note that an alternative is for White to play f6 himself, but this flips two frontier discs and creates a long wall, so d2 is the better move.

Black reestablishes access to f6 by playing g4 (Diagram 7-6), so White takes it away again with b6 (Diagram 7-7). Here again there are alternatives. For example, White could deny access by playing to c3 (Diagram 7-8), which is a bit loud but is not unreasonable. White could play f6 himself, but this is really too loud and would leave Black with a good move to g5. Another possibility in Diagram 7-6 is for White to play g6 (Diagram 7-9), which makes Black's move to f6 less attractive because it flips the frontier disc on f5.
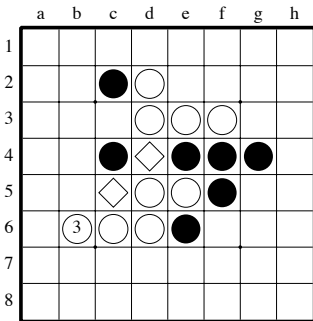
Diagram 7-7
Black to move
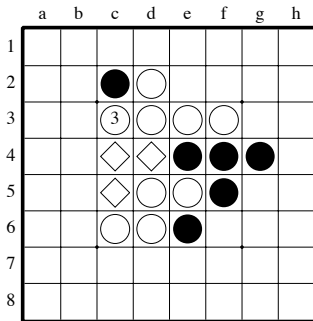
Diagram 7-8
Black to move

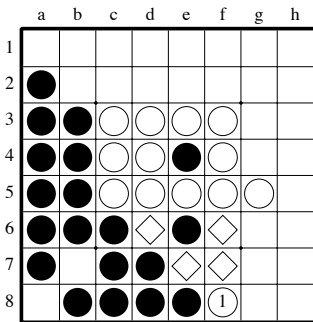Diagram 7-9
Black to move
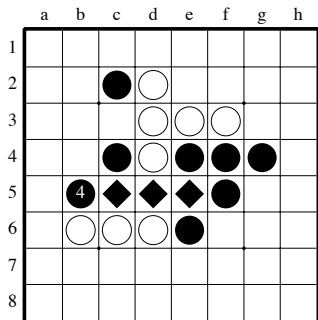
Diagram 7-10
White to move
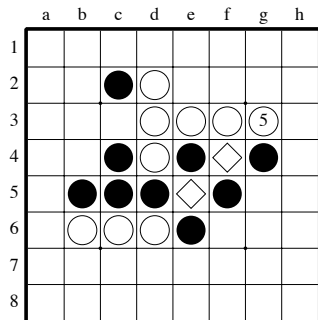
Diagram 7-11
Black to move
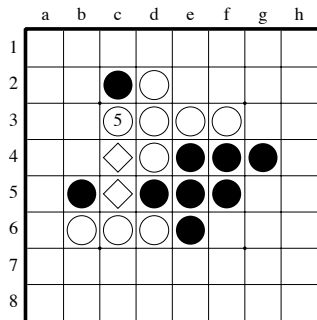
Diagram 7-12
Black to move

Continuing on from Diagram 7-7, Black usually chooses b5, setting up a quiet move to c3 (Diagram 7-10). Here again, White has two good ways to deal with this threat. In Diagram 7-11, White takes away Black's access to c3 by flipping the disc on e5. In Diagram 7-12, White plays c3 himself.

As the above examples suggest, when you opponent is threatening to make a very good move, the best move will usually be a defensive move. In a position such as Diagram 7-10, Black's move to c3 is so good that White absolutely must prevent him from moving there. It might be tempting for White to make a quiet move of his own, for example g5, but even making a loud move such as e7 (flipping the black disk on e5) would be better than letting Black move to c3.

Diagram 7-3 showed an example where it is possible to make the opponent's best move much less attractive. While that example was rather dramatic, even rather subtle defensive plays can be effective. For example, in Diagram 7-13, Black has a good move at f6. White can deny access by playing d2 (Diagram 7-14), which is a reasonable move, but most experts prefer to play g6 (Diagram 7-15). After g6, Black's
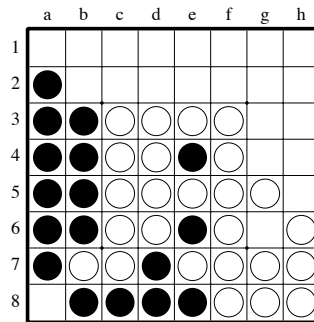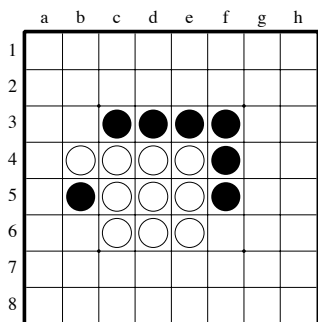
Diagram 7-13
White to move
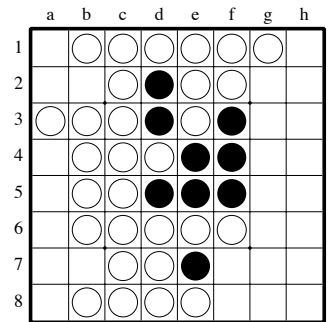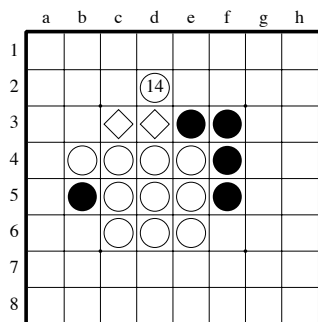
Diagram 7-14
Black to move
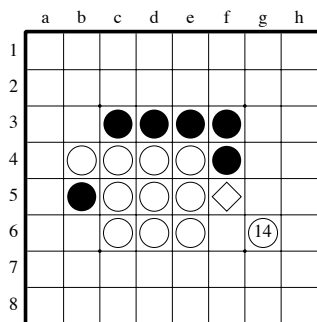
Diagram 7-15
Black to move
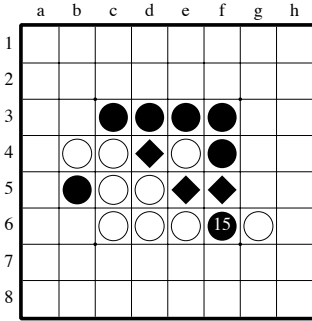
Diagram 7-16
White to move
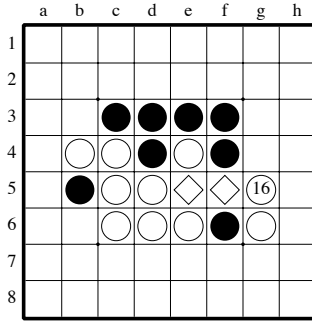
Diagram 7-17
Black to move
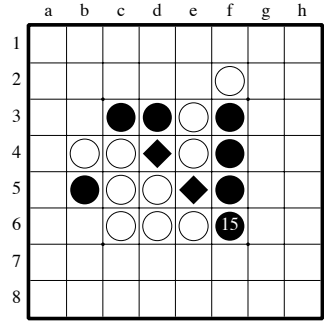
Diagram 7-18
White to move

best move is still f6 (Diagram 7-16), but now White has a good move at g5 (Diagram 7-17). If White does not make some sort of defensive move in Diagram 7-13, then Black can gain a significant advantage. For example, if White plays 14. f2, Black responds with f6 (Diagram 7-18). Now it is too late for White to play g6, because it flips the disc on f5. White will not get a move to g5 as he could in Diagram 7-16, because Black will use the f5 disc to move there himself.

Diagram 7-19 shows an example where it is important to consider both offense and defense. At first glance, c2 is the obvious choice for Black (Diagram 7-20). It is a very quiet move, flipping only internal discs, and leaves White with no new options. However, considering defense as well as offense, Black has a much better move, namely b5 (Diagram 7-21)! Although this move might seem too loud to be good, it is an excellent defensive move, as it flips the white disc on g5. This eliminates two potentially good moves for White at c1 (gaining a tempo on the edge) and g7 (attacking Black's unbalanced edge). Moreover, Black is still threatening to make quiet moves at c2 as well as c6.

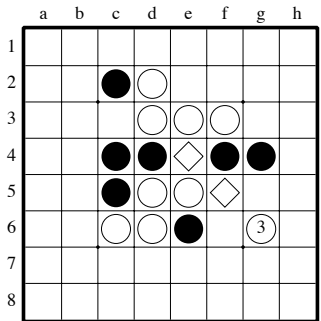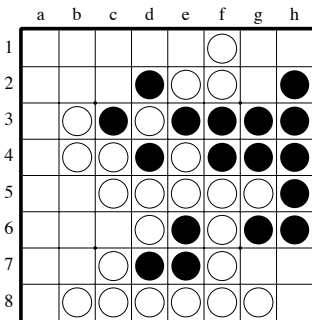
Diagram 7-19
Black to move
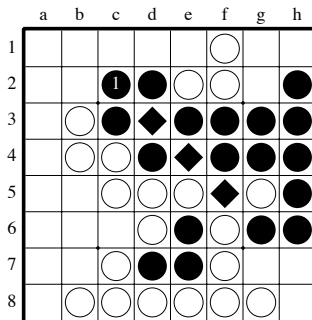
Diagram 7-20
White to move
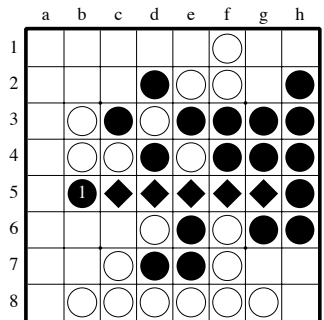
Diagram 7-21
White to move

Exercises

In each diagram, find a good defensive move. Answers begin on page 147.
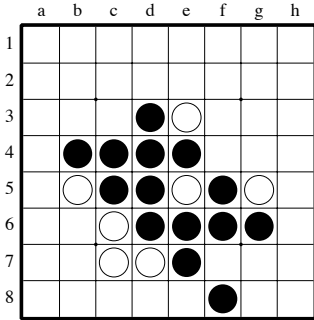
Exercise 7-1
White to move
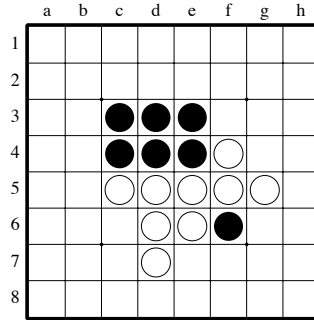
Exercise 7-2
Black to move
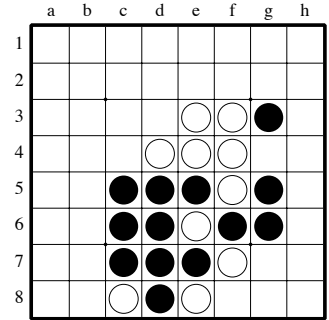
Exercise 7-3
White to move
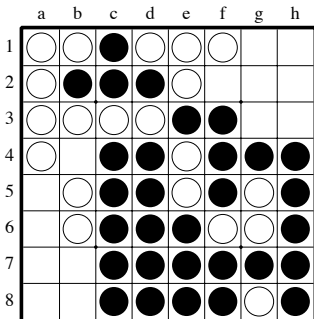
Exercise 7-4
Black to move
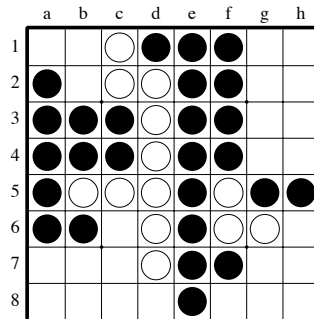
Exercise 7-5
White to move
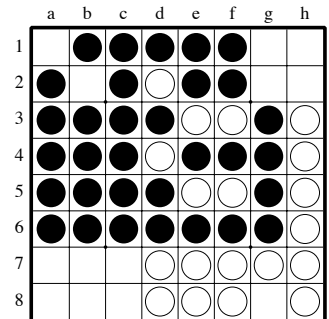
Exercise 7-6
White to move

Chapter 8

Even number theory

One of the most important strategies in Othello is what the Japanese call **even number theory**; others refer to it as **parity**. Before examining this theory, we need to define the term **region**. As the name implies, a region refers to an empty area of the board, usually (although not always) including a corner, separate from other empty squares. In Diagram 8-1, the board has been broken up into four separate regions: 3 squares in the upper left, 8 squares in the upper right, 3 squares in the lower right, and 7 squares in the lower left.

The basic idea behind parity is that, when there is a region with an even number of squares left to be filled, it is usually better to play into the region last. That is, you want your opponent to play into the region first, after which you follow, hopefully flipping back some of the pieces that your opponent just captured. In Diagram 8-2, it might appear obvious that Black would want to move first, taking the h1 corner and saving the adjacent four black discs. White would then take the last move at g1, leaving Black with 37 discs (Diagram 8-3).

Now suppose that it is White to move first in Diagram 8-2. White has no choice but to play h1 (Diagram 8-4). Black takes the last move at g1 (Diagram 8-5). As shown in Diagram 8-5, this leaves Black with 38 discs, one more than in Diagram 8-3! Perhaps you are wondering "what is the big deal about one disc"? The point is that even when it looked like Black wanted to go first, in fact he was better off going second. In many positions, such as Diagram 8-6, the difference between playing first and playing second is the difference between winning and losing.
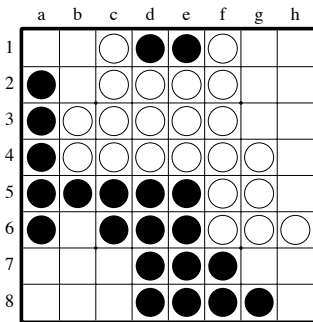
Diagram 8-1
White to move
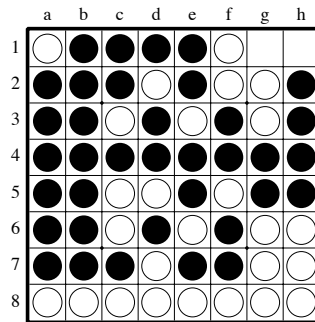
Diagram 8-2
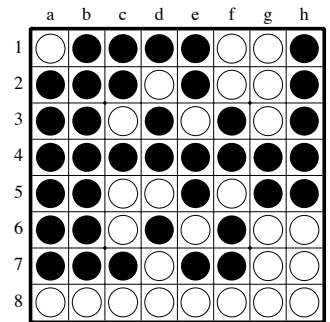
Diagram 8-3
Black H1, White G1
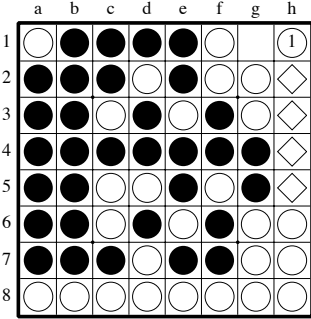
Diagram 8-4
White H1
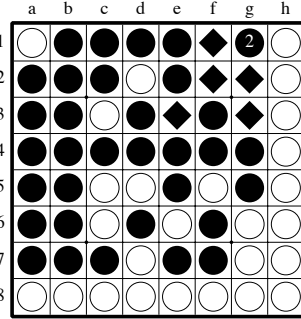
Diagram 8-5
Black G1
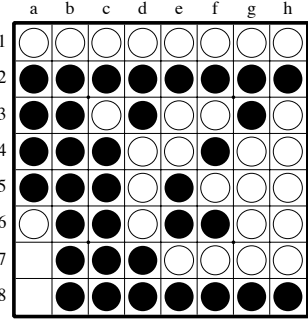
Diagram 8-6

Diagram 8-7 shows an example of even number theory with four squares left. Suppose that it is Black's turn to move (Diagram 8-8). Black has no choice but to play b2, after which White takes the a1 corner. Now there are two squares left; naturally Black must play first, giving White a good final move and a 33-31 victory. On the other hand, if it were White's turn in Diagram 8-7, then after the sequence shown in Diagram 8-9, Black wins 37-27. As these examples suggest, the impact of even number theory is often greater for a 4-square region than for a 2-square region.

While in the examples above we have only looked at the final moves, in an actual game, once there are only two squares left, it is too late to start worrying about whether you want to go first or second. After all, that is something you do not get to choose! The real power behind even number theory is that earlier in the game, sometimes much earlier, it may be possible to play in such a way that you are guaranteed to get the last move in most or all of the regions. Since there are very often several regions on the board, the cumulative advantage of getting the last move in each of them can add up to be worth many discs.
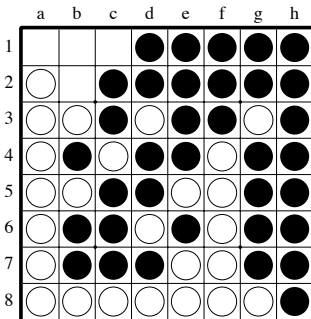
Diagram 8-7
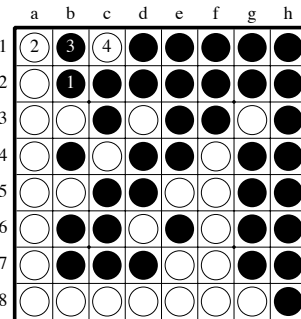
Diagram 8-8
Black first
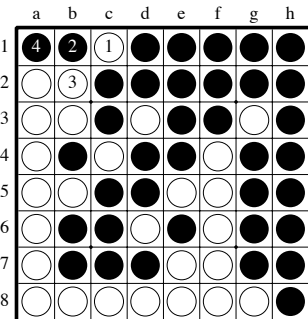
Diagram 8-9
White first

In fact, it is often worth sacrificing one, two, or even all four corners if it ensures that you can play last in every region. Diagram 8-10 shows a position from the 2001 World Championship finals. White appears to be in considerable trouble. He has already conceded the a8 corner, and what is worse, has no safe moves available. Since it is White's turn, this means that he will have to give up yet another corner. Despite all this, even number theory actually gives White a slight advantage in the game! The main feature to notice in this position is that all four regions of the board have an even number of squares, except for the lower-right hand corner, which has three squares.
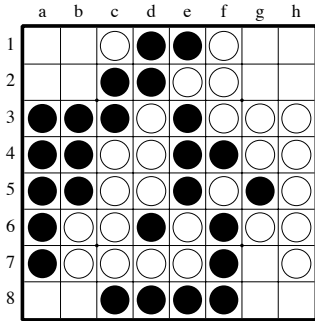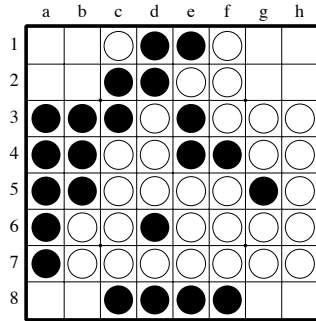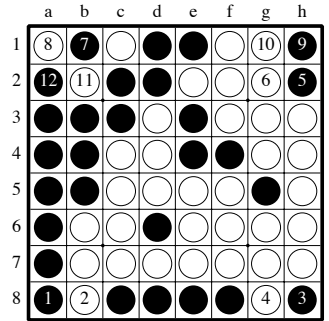
Diagram 8-10	Diagram 8-11	Diagram 8-12
White to move	*Black to move*	*Perfect play*

White should begin by playing into the odd-numbered region, i.e., either g7 or g8. In this case, g7 is considerably better, since it allows White to keep the bottom edge at the end of the game (if this is not clear to you, try playing g8 in Diagram 8-10, then use the sequence in Diagram 8-12, except for playing move 4 at g7 instead of g8). The resulting position is shown in Diagram 8-11. Note how all of the regions now contain an even number of squares. Unfortunately for Black, he will (with one exception) have to initiate play into even regions for the rest of the game. Meanwhile, finding the right moves for White is easy: whenever Black plays into a region, simply follow him by playing in the same region.

Diagram 8-12 shows perfect play for both sides (I strongly urge you to play this sequence out on a board). Note how Black is always playing into an even-numbered region, creating an odd-numbered region for White. White gets the last move in each region except for the final two squares, when Black passes and forces White to initiate play. Still, the advantage of playing into an odd-numbered region on six of his last seven moves allows White to eke out a 33-31 victory. In this case, we say that White won by using even number theory, or that White had **parity**, that is, White got the last move in every (or almost every) region.

Thus far we have looked at even-number theory only in the endgame, but it can also help find the right move earlier in the game. Consider the starting position, before the first move is made. The board has 64 squares, and four squares are occupied, so that there are 60 empty squares in this position. In some sense, all 60 empty squares on the board can be viewed as one large even-numbered region. On the first move of the game, Black moves into an even-numbered region, on the second move, White moves into an odd-numbered region (59 empty), and so on. Thus, from the beginning of the game, even-number theory is working in favor of White. If the game proceeds without any passes, then White will get the last move of the game on move 60.

As noted earlier, in Diagram 8-6, whichever side plays first will lose. Even number theory tells us that if no passes occurred during the game, then it must now be Black's turn, because there are an even number of empty squares. The only way it could be White's turn would be if there was one pass (or some odd number of passes). Similarly, in Diagram 8-11, it is not merely a coincidence that it is Black's turn to move.

While the above examples might make it appear that White starts the game with a big advantage, there are ways for Black to make even number theory work in his favor. For example, Diagram 8-13 shows a position from a game played at the 1982 World Championship. Black was played by Kunihito Tanida from Japan, who went on to win the tournament. Up until this point there were no passes, and there are an even number of empty squares, so it must be Black's turn. Note, however, that instead of even-numbered regions, there are two odd-numbered regions: three squares in the upper left corner, and one square at e1. Further, note that White can not move to e1. This allows Black to win by playing b1 (Diagram 8-14)! According to even number theory, White should play into the odd region, i.e., e1, but in this case White does not have access, and must play into the even region. White can play a1, but Black gets the last move in the region by playing b2, leaving the position in Diagram 8-15.
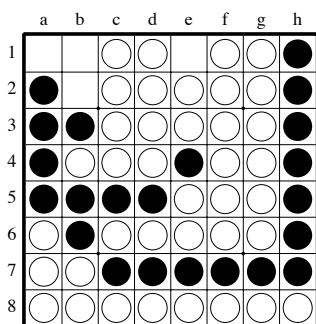
Diagram 8-13
Black to move
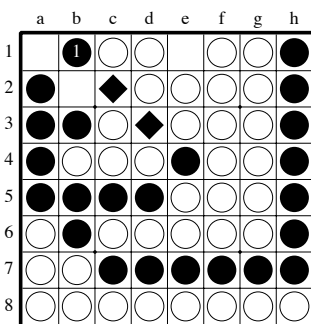
Diagram 8-14
White to move
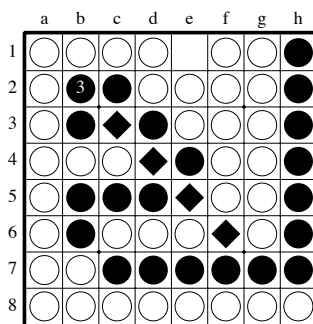
Diagram 8-15
White passes

White still does not have access to e1 and must pass. Black finishes the game by playing e1 himself, squeezing out a 33-31 victory (Diagram 8-16). Since Black got the last move in each region, we say that Black used anti-even number theory, or that Black had parity.
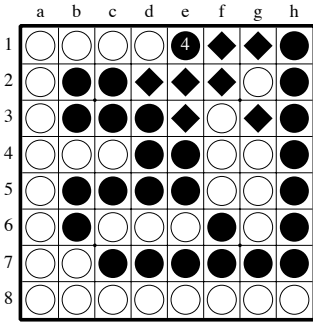
Diagram 8-16
Black wins
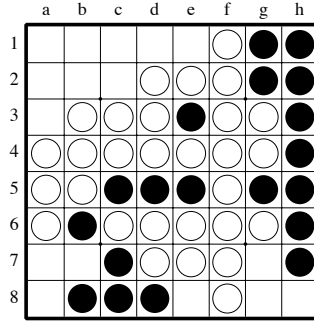
Diagram 8-17
Black to move
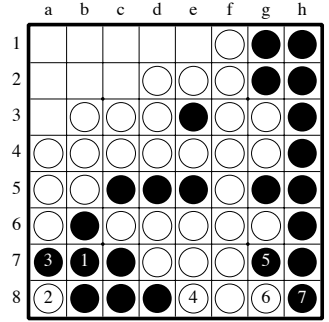
Diagram 8-18
White passes

Again, the key feature of Diagram 8-13 which allows Black to win is that White does not have access to an odd-numbered (in this case one square, e1) region. Since the total number of squares is even, the number of squares in the rest of the board must be odd as well (in this case three squares, a1, b1 and b2). If Black can keep play contained in the rest of the board, even-number theory is working in his favor. Black will take the last move in the rest of the board, and then White will pass. Finally, black will initiate play in the odd-numbered region which White does not have access to. Since it is odd-numbered region, the player moving first, Black, will get the last move in this region as well.

Diagram 8-17 shows another example of the same principle, but with 16 empty squares rather than four. Here, white is walled off from the upper-left region of the board, which contains nine empty squares. While there are many ways for Black to win, the simplest strategy is to use even number theory. This tells us that Black should leave the upper-left region untouched, filling in the rest of the board first. One possible sequence is shown in Diagram 8-18. Note how Black gets the last move because, excluding the upper-left region, there are an odd number of empty squares (seven in this case). White passes, and then Black can initiate play into the upper-left region, with e1 being the obvious place to start. Since the upper-left region is odd-numbered, Black will get the last move here as well, winning easily.

As these examples demonstrate, it can be dangerous for White to wall himself off from an odd-numbered region. However, it would not be true to say that White should always avoid creating odd-numbered regions. Diagram 8-19 shows a position which has been reached many times in expert play. Here, White's best strategy is to leave Black's long wall untouched, and play to the top edge at c1 (Diagram 8-20) or d1 (Diagram 8-21). Even number theory suggests that d1 would be better than c1, since c1 creates a three square region in the upper left corner that White can not play into, while d1 would leave a four square region. However, player experience and computer analysis tells us that c1 is actually slightly better than d1.

Considering only how the top edge will play out, most experts would agree that c1 is the best move. In this case, that advantage seems to be enough to overcome the awkward position created in the upper-left corner. Always keep in mind that the basic strategy of Othello is to run the opponent out of moves. In Diagram 8-20, if White can eventually run Black out moves, Black may very well be forced to move into the upper-left corner sooner than he wants, and once again even number theory will work in favor of White.
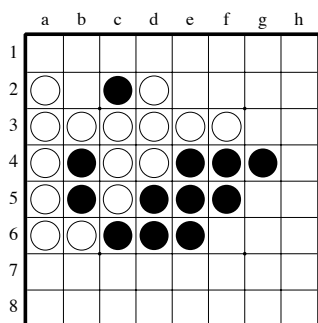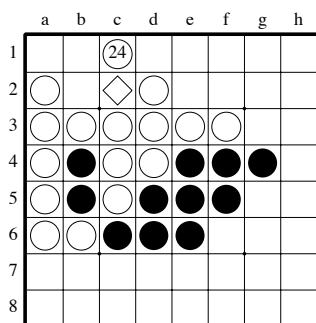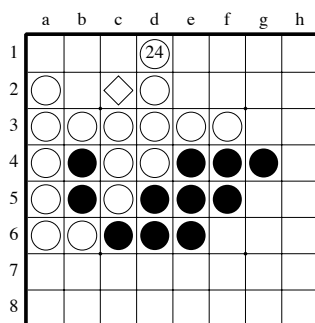
Diagram 8-19	Diagram 8-20	Diagram 8-21
White to move	Black to move	Black to move

Hyper even number theory

Even number theory tells us that it is usually a disadvantage to initiate play into an even-numbered region. One way to ensure that you will not have to play into an even-numbered region is to have no legal moves in that region! Even if you run completely out of moves in the rest of the board, you will simply pass, and your opponent will still have to initiate play into the region. In Japanese, this is called **hyper even number theory**, or just **hyper** for short.

In Diagram 8-22, Black must play to either a1 or b1. In either case, White captures most of the top edge and wins the game. Diagram 8-23 shows the same position, except that the disc on b2 has been made black. In this case, Black does not have a legal move and passes. This forces White to initiate play into the region, and now it is Black that gets to keep most of the top edge, winning the game. This difference is the basic idea behind hyper even number theory.
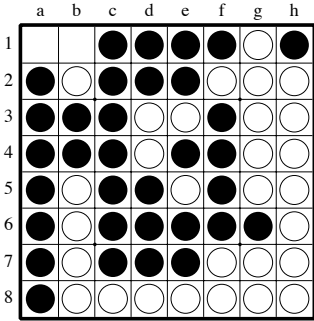
Diagram 8-22
Black to move
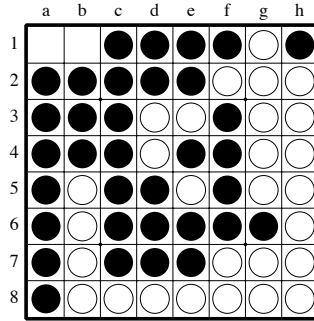
Diagram 8-23
Black passes
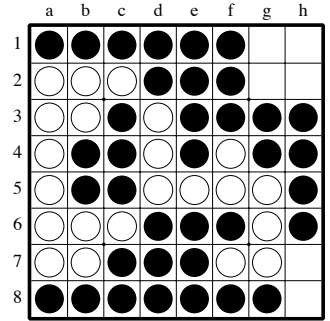
Diagram 8-24
Black to move

Diagram 8-24 shows one common way that Black can set up a position which takes advantage of hyper even number theory. Here, Black should begin with h8, as shown in Diagram 8-25. If White does not wedge at h7, Black will play there next turn, creating a mass of stable discs and winning easily. Thus, White must play h7, leaving the position in Diagram 8-26. Now Black passes and White must initiate play into the 4-square region in the upper right. The perfect play sequence is shown in Diagram 8-27, with Black getting the last move, keeping most of the right edge, and winning 36-28.
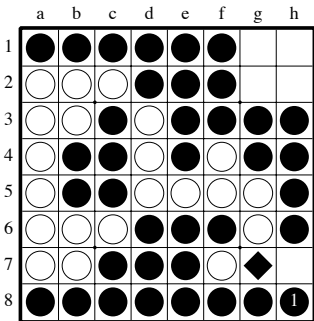
Diagram 8-25
White to move
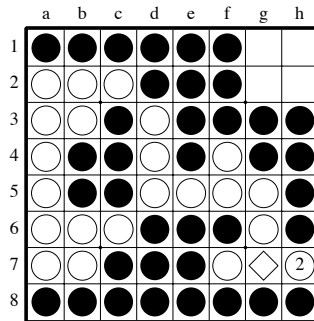
Diagram 8-26
Black passes
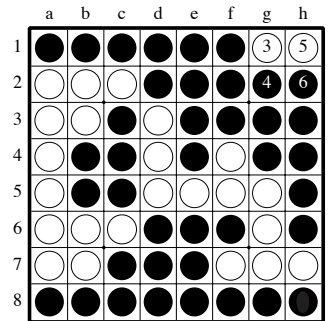
Diagram 8-27
Black wins
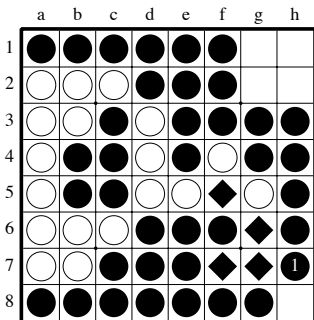
Diagram 8-28
White to move
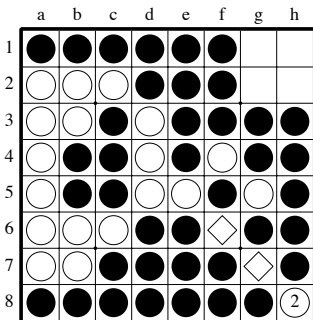
Diagram 8-29
Black passes
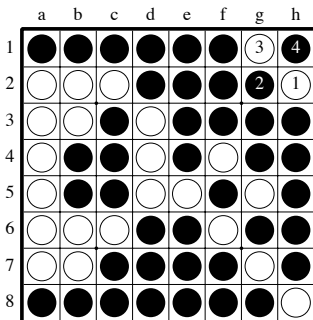
Diagram 8-30
Perfect play

Feeding the opponent

Suppose that in Diagram 8-24, Black plays to h7 instead of h8, creating the position in Diagram 8-28. Basic even number theory tells us that White should move into the odd region by playing h8, as shown in Diagram 8-29. However, Black now passes, and White must play first into the 4-square region. Although White can capture the right edge, with perfect play Black holds on to win 33-31 (Diagram 8-30).

The only way for White to win in Diagram 8-28 is to create legal options for Black in the 4-square region, which will eventually allow White to get the last move in the region. This is called **feeding the opponent**. In this case, White should feed Black moves by beginning with g1 (see Diagram 8-31). No matter where Black plays on his next turn, White can now take full advantage of even number theory by playing to the odd region, i.e., h8 (see Diagrams 8-32 and 8-33). This leaves 2 empty squares in the upper-right, and since Black has access to one of the squares, White will get the last move in this region, winning the game 33-31.
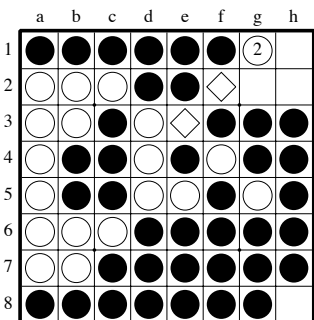
Diagram 8-31
Black to move
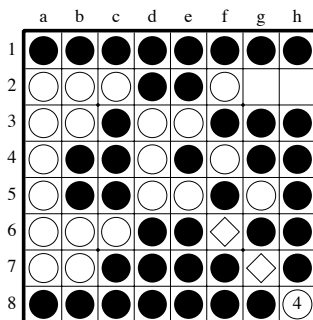
Diagram 8-32
After h1, h8
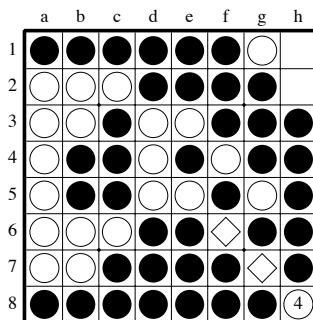
Diagram 8-33
After g2, h8

Exercises

In each diagram, find the best move. Answers begin on page 148.
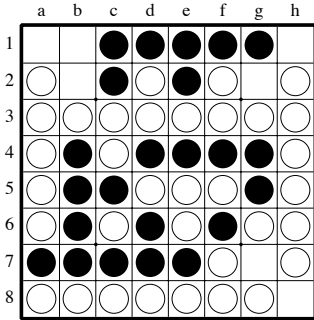
Exercise 8-1
White to move
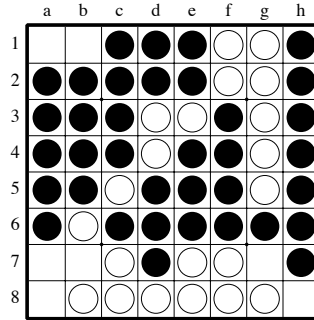
Exercise 8-2
White to move
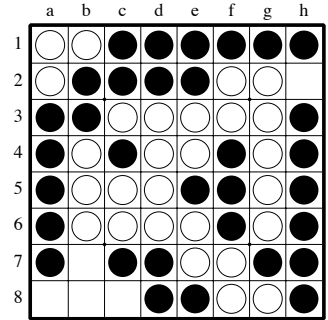
Exercise 8-3
White to move
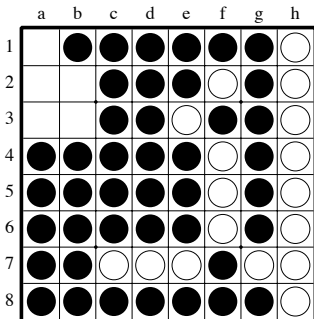
Exercise 8-4
White to move
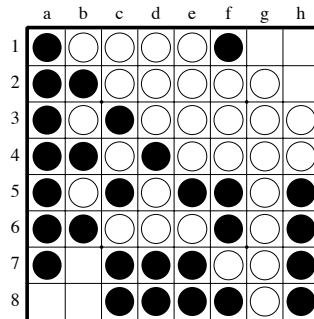
Exercise 8-5
Black to move
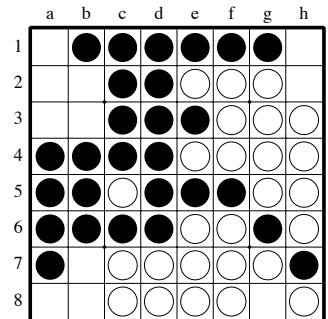
Exercise 8-6
White to move

Chapter 9

Tesuji Part I

Tesuji is a Japanese word (pronounced *te* as in ten, *su* as in super, *ji* as in jeep) used in games such as Go and Shogi, with no simple equivalent in English. It is sometimes translated as "set moves" or "brilliant moves". Tesujis are basically just good moves in certain positions that arise often enough to merit special attention. Knowledge of tesujis allows you not only to spot them easily when they are available, but also to look ahead and set them up, or avoid giving your opponent a chance to use them. This chapter looks at tesuji involving corner attacks, while Chapter 10 examines swindles and other tesuji.

The basic idea behind all of the corner attack tesuji is to make a move which threatens to take a corner. This forces the opponent to either make a move that eliminates the threat,   or give up the corner. When both of these options are bad for the opponent, then the corner attack will be an effective move. However, it is important to keep in mind that there are circumstances under which your opponent can afford to simply give up the corner, in which case the corner attack may be a bad move.

Forcing your opponent to create a wall

Diagram 9-1 shows one pattern (similar to Diagram 5-11) that often occurs in beginner's games. White has just played b8, giving Black a golden opportunity to attack the a8 corner by playing e8 (Diagram 9-2). In this case, the a8 corner is extremely valuable for Black, as it would allow him to jump to the a1 corner as well. In order to avoid losing the corner, White must respond with f8, forming a huge wall across the board (Diagram 9-3).
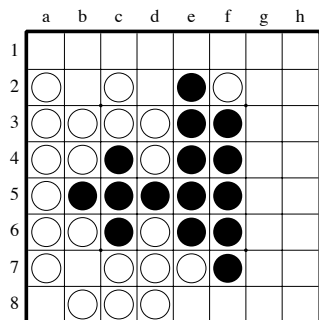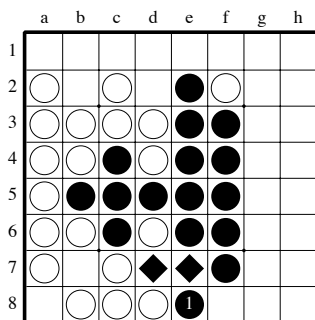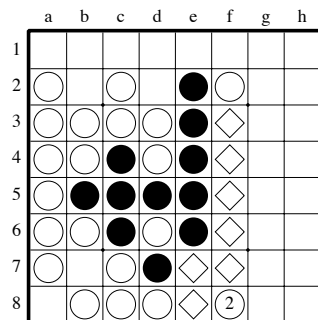
Diagram 9-1	Diagram 9-2	Diagram 9-3
Black to move	*White to move*	*Black to move*
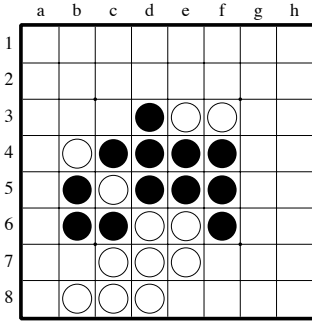
Diagram 9-4
Black to move
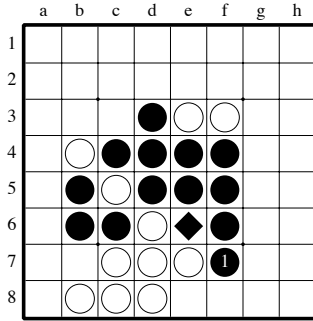
Diagram 9-5
White to move
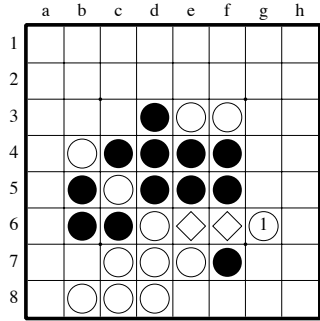
Diagram 9-6
Black to move

Even in expert games, the threat of this tesuji is often used to great effect. In Diagram 9-4, Black should move to f7, threatening to follow with e8 in Diagram 9-5. White would like to respond with g8, but in this case he can not. White's best move is to limit the effectiveness of Black's e8 threat by playing g6 (Diagram 9-6). Now if Black plays e8, White can respond f8 without flipping the discs at f4 and f5. However, Black can continue with h6, flipping the disc at f6 back to Black and reestablishing the threat of e8.

Forcing your opponent to flip your poison discs

Diagram 9-7 shows a typical example of this tesuji. As the position stands now, it appears that Black will have to break through White's wall, playing g4, g5 or g6. Black potentially has an excellent play at f3, but the discs at f7 and f8 poison the move. In this case, Black can set up his f3 move by playing c8, attacking the a8 corner. This leaves White with little choice but to take the bottom edge with g8 (Diagram 9-8). This removes the poison discs, allowing Black to play a quiet move at f3 (Diagram 9-9), and now White must break through Black's wall.
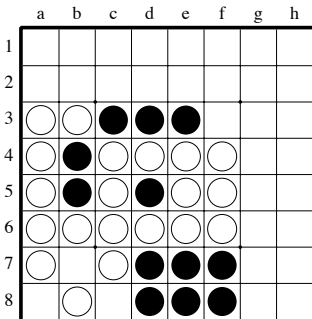
Diagram 9-7
Black to move
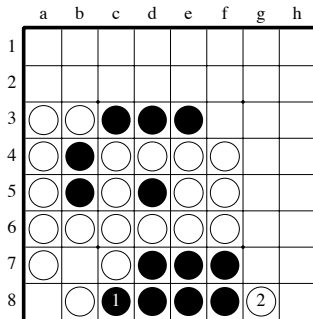
Diagram 9-8
Black to move
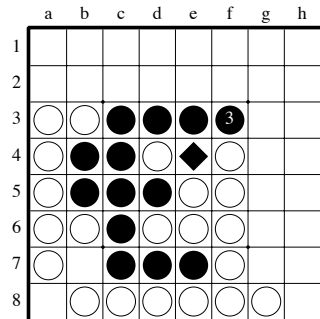
Diagram 9-9
White to move

Gaining access to a vital square

In Diagram 9-10, Black desperately needs access to h1, and can get it by playing c8, attacking the a8 corner (Diagram 9-11). If White tries to grab the diagonal with b7, Black just takes a8, gaining undeniable access to h1. Of course, White can take the h8 corner, winning the bottom edge, but then Black continues with h1, guaranteeing him the other three edges and a comfortable victory. Note that if we modify Diagram 9-10 slightly by removing the white disc on b8 and putting it on h7 instead, Black's c8 would not work. White simply plays b7, denying Black access to h1 (Diagram 9-12). It is the fact that Black is attacking a corner in Diagram 9-11 which guarantees eventual access to h1.
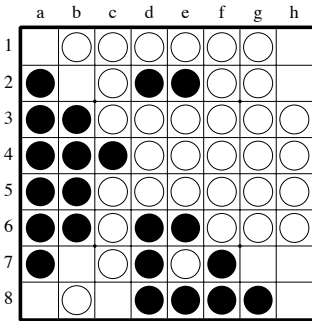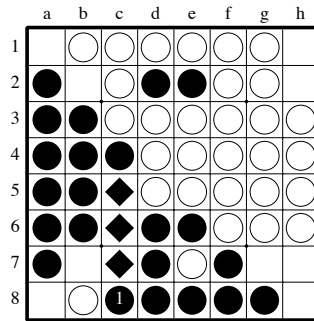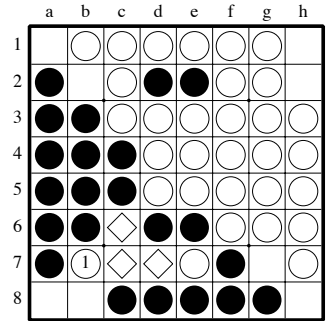
Diagram 9-10	Diagram 9-11	Diagram 9-12
Black to move	*White to move*	*Black to move*

Diagonal grab

Diagram 9-13 shows a common endgame pattern. It may appear that Black has lost, but there is a way to win. Black begins by playing c8, attacking the a8 corner; White's natural response is g8 (Diagram 9-14). With the disc at c6 black, now Black grabs the diagonal with g2, and White is dead (Diagram 9-15).
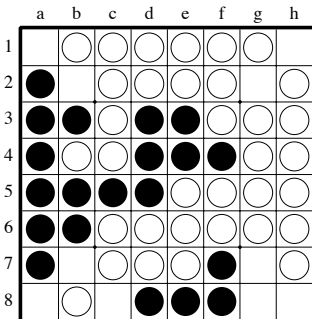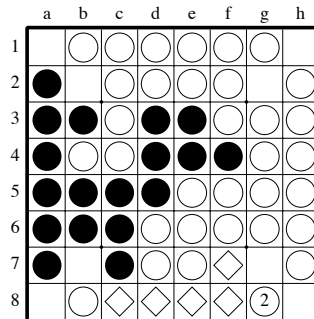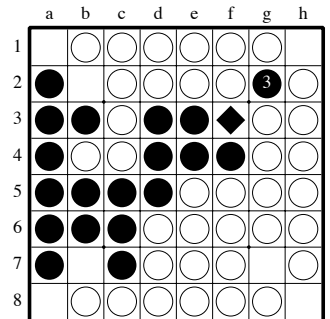
Diagram 9-13	Diagram 9-14	Diagram 9-15
Black to move	*Black to move*	*White to move*

Double corner attack

Diagram 9-16 shows a pattern which frequently occurs late in the midgame or in the endgame. I have often seen players in this situation take the corner immediately, fearing that somehow they will lose access to it. The problem with playing a8 in Diagram 9-16 is that White will wedge with e8, and now Black is short of moves (Diagram 9-17). It is much better for Black to play e8 himself, setting up a double corner attack (Diagram 9-18). Comparing Diagram 9-17 with Diagram 9-18, several advantages for Black are apparent. In Diagram 9-18, no matter where White moves, Black will still be able to take the a8 corner on his next move, and White does not get a wedge on the bottom edge. Further, instead of Black having to find a move as in Diagram 9-17, in Diagram 9-18 it is White's turn to move.
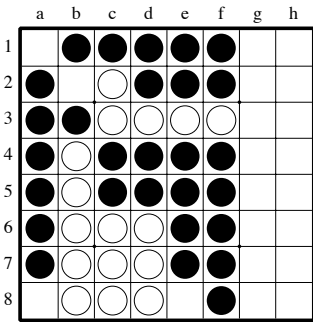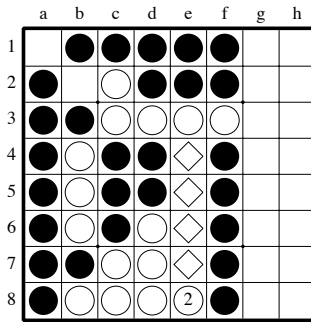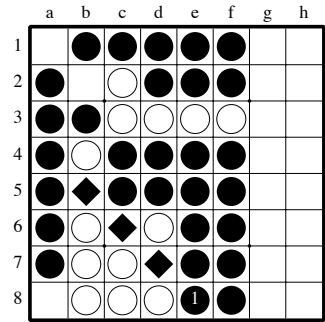
Diagram 9-16	Diagram 9-17	Diagram 9-18
Black to move	*Black to move*	*White to move*

Since a double corner attack almost always wins the corner, if the corner is valuable enough you should not hesitate to sacrifice an edge. In Diagram 9-19, you may be tempted to play g7, h7, or some other move, but Black will win easily after e8 (Diagram 9-20). This sacrifices the bottom edge, but Black will get a huge number of stable discs as he sweeps around the left and top edges (Diagram 9-21).
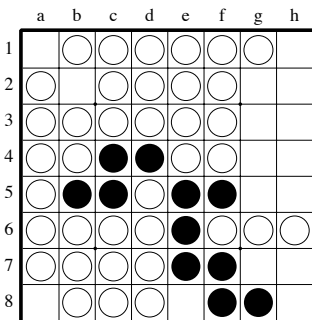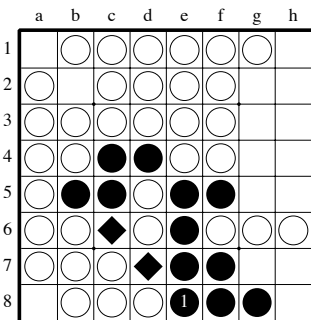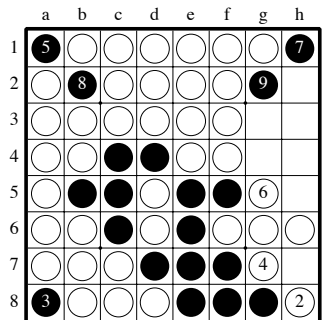
Diagram 9-19	Diagram 9-20	Diagram 9-21
Black to move	*White to move*	*Black wins*

Double unbalanced edge

In Diagram 9-22, White has two unbalanced edges facing the a8 corner. This formation is nearly always fatal, because Black not only wins a corner, but can choose which corner to take. In this case, Black has two possible corner attacks, a7 or b8. In either case, if White takes the a8 corner on his next turn, then Black will wedge, winning a corner. The two most natural sequences are shown in Diagram 9-23 and 9-24. The question is, which of these is better for Black?
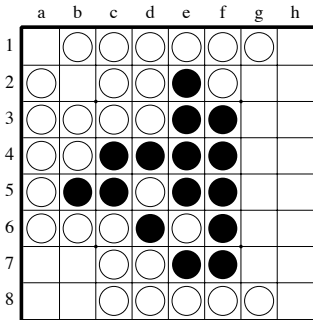
Diagram 9-22
Black to move
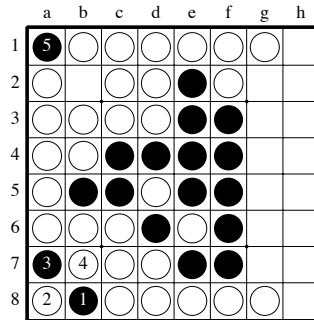
Diagram 9-23
White to move
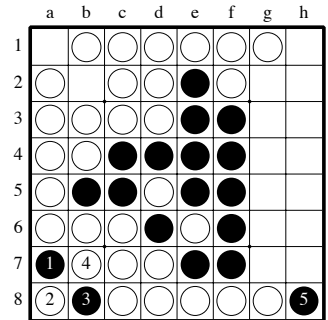
Diagram 9-24
White to move

This boils down to the question of which corner is more value for Black, a1 (Diagram 9-23) or h8 (Diagram 9-24). While h8 is certainly valuable, a1 is worth much more. Not only does it allow Black to capture another corner with h1, but it also gives Black a huge free move at b2. The point to keep in mind is that in order to win the a1 corner, Black should begin by attacking the other corner (h8) first, playing b8 in Diagram 9-22. Note that White could refuse to play along with Black's plan and play somewhere on the g-column instead of a8. In that case, Black can follow up with b7, in some sense sacrificing the a8 corner again while still threatening to capture the h8 corner.

Stoner trap

This tesuji is named after John Stoner, one of the founding members of the US Othello Association. I have saved this corner attack tesuji for last because it is more complicated than the other tesuji that I have presented so far. When successfully implemented, the trap guarantees the capture of a corner, but there are many circumstances under which the trap fails, some of which are very subtle. Further, as with all of the corner attack tesuji, it is important to keep in mind how much must be sacrificed to set up the trap, and balance that against the value of the corner gained.

Diagram 9-25 shows the basic setup for a Stoner trap. In this case, Black will exploit White's weak bottom edge to capture the h8 corner. Black should begin with b7 (Diagram 9-26). Note that Black controls the b7-f3 diagonal so that White can not take the a8 corner, at least for the moment. This leaves White with only two choices which do not immediately lose a corner: e2 and f2. Suppose that White takes f2, flipping the disc at f3 and gaining access to the a8 corner (Diagram 9-27).
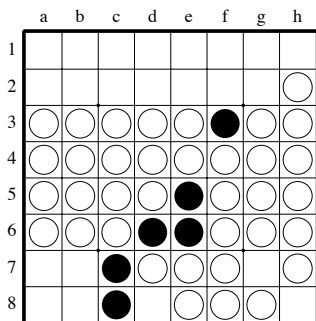
Diagram 9-25
Black to move
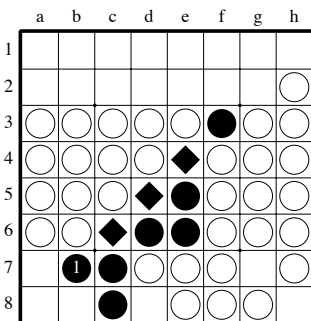
Diagram 9-26
White to move
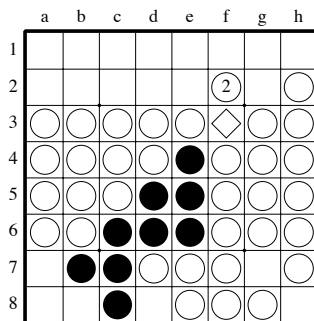
Diagram 9-27
Black to move

Black now launches a powerful corner attack with e8!! (Diagram 9-28). Black is threatening to take the h8 corner, and the only move for White which does not give up the corner immediately is b8 (Diagram 9-29). Unfortunately for White, playing b8 flips the disc on b7, the very disc that Black first played in Diagram 9-25. Now Black can take the a8 corner, and then h8 on his next turn (Diagram 9-30). In this manner, a successfully implemented Stoner trap always wins the corner attacked; if the opponent tries to defend the corner by taking the edge, he flips the X-square, losing two corners. It is important to note, however, that a Stoner trap usually results in the loss of the corner adjacent to the X-square.
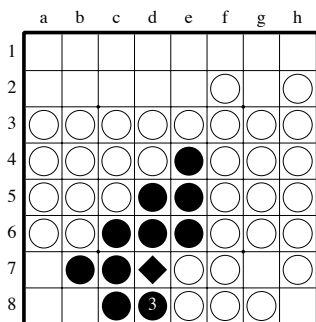
Diagram 9-28
White to move
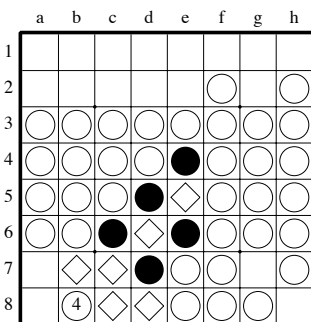
Diagram 9-29
Black to move
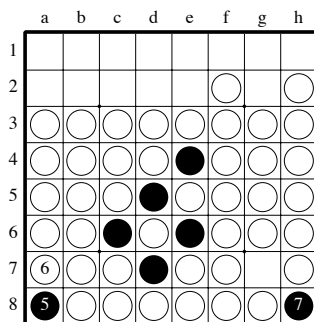
Diagram 9-30
Black takes h8

It is very easy for players (of all abilities) to get tunnel vision when they see the opportunity to set up a Stoner trap. They focus so much on the tesuji that they forget to think about whether or not it works out to their advantage. For example, consider Diagram 9-31. Here, Black can play a Stoner trap with b7. This move will eventually lead to black capturing h8, but how much is h8 worth? Since Black has an unbalanced edge, if he takes h8, White will be able to wedge at h7, winning the h1 corner. Further, playing b7 leaves White with a nice quiet move at e2, which breaks the diagonal and eventually will allow White to take a8 and the left edge (see Diagram 9-32).
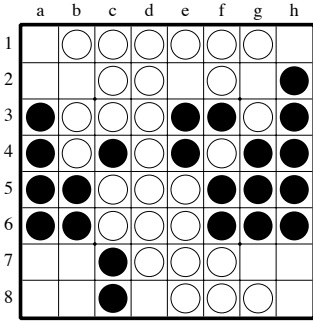
Diagram 9-31
Black to move
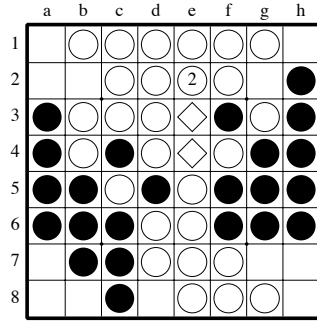
Diagram 9-32
Black b7, White e2
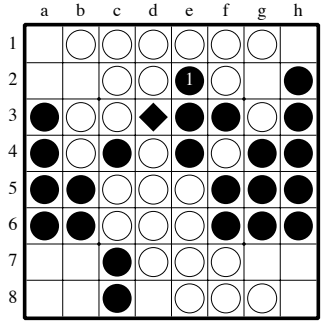
Diagram 9-33
White to move

It is far better for Black to simply play the quiet move e2 (Diagram 9-33), play-ing where White would like to play, and leaving b7 as a powerful threat. White could grab a diagonal with g7 (Diagram 9-34), but now Black takes the other diagonal with b7, and White is dead (Diagram 9-35). If instead White tries to stop Black's b7 threat by playing g2, then Black simply cuts with d8, winning easily (Diagram 9-36). Why sacrifice a corner to play a Stoner trap when you can just run your opponent out of moves instead?
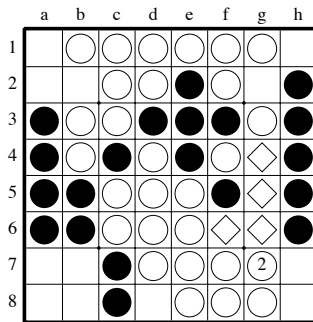
Diagram 9-34
Black to move
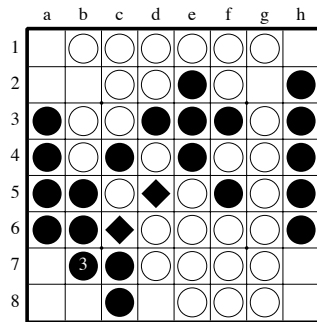
Diagram 9-35
White to move
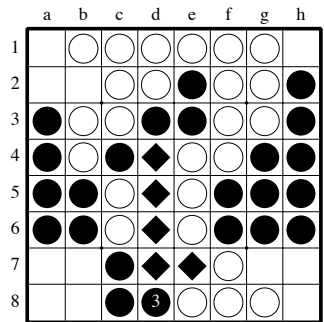
Diagram 9-36
After g2, d8

Stoner trap varieties

So far, we have looked only at the basic Stoner trap. While this is probably the pattern seen most often in actual play, there are a great number of variations to the basic theme. Three of these are shown below. In each case, Black can play b7, follow with an attack on the h8 corner, and eventually take h8.
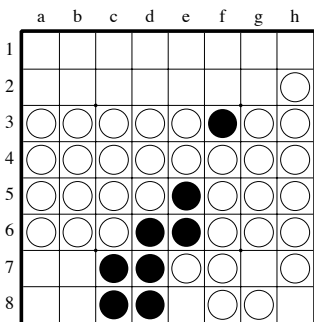
Diagram 9-37
Black to move
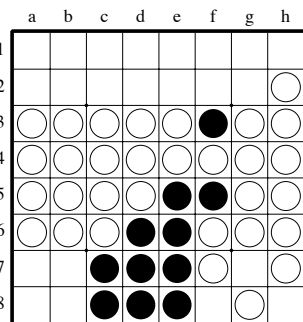
Diagram 9-38
Black to move
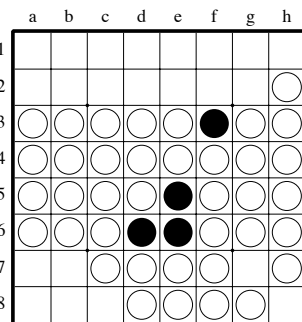
Diagram 9-39
Black to move

Another twist on the Stoner trap is shown in Diagram 9-40. Here again, Black begins by playing b7 (Diagram 9-41). White can break the diagonal with f2, but now Black launches a corner attack with d8. If White takes the edge at c8, he flips the b7 X-square diagonally, losing two corners (Diagram 9-42). While this sort of Stoner trap occurs relatively infrequently, in my experience it is often more effective than the conventional type. The corner sacrificed is often not that valuable, and the attacker has greater chances of finding good moves near the sacrificed corner.

In the next section, we examine some of the ways that Stoner traps can fail.
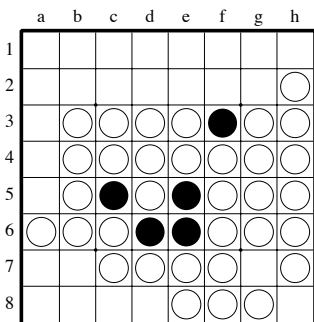
Diagram 9-40
Black to move
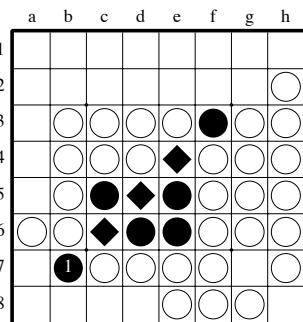
Diagram 9-41
White to move
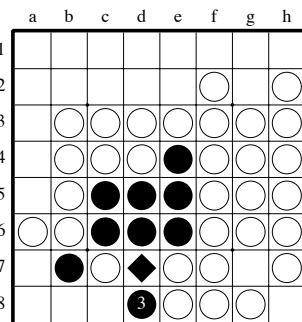
Diagram 9-42
White to move

A funny thing happened on the way to the X-square

The most common reason that Stoner traps fail is that, after playing the initial X-square, the attacker is unable to make the corner attack on his next move. For example, consider Diagram 9-43. Suppose that Black decides to launch a Stoner trap, starting with b7 (Diagram 9-44). Black is threatening to win a corner by playing d8, but White can prevent this by moving to d2 (Diagram 9-45)! Black does not have access to the critical square d8, and White has broken the diagonal. No matter where Black plays, White will be able to capture the a8 corner on his next turn, and Black's Stoner trap has failed.
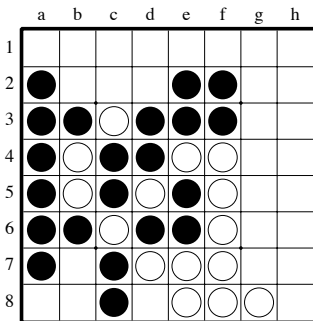
Diagram 9-43
Black to move
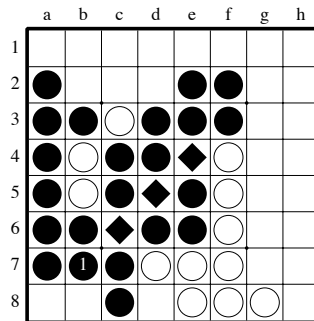
Diagram 9-44
White to move
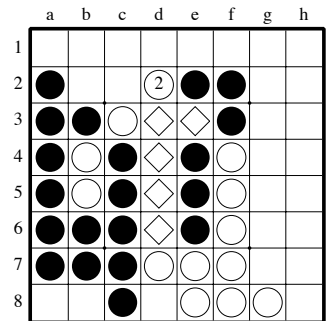
Diagram 9-45
Black to move

Another common reason for Stoner traps to fail is that the opponent can safely deal with the corner attack without flipping the X-square. Diagram 9-46 is a modified version of Diagram 9-43. Here, after the sequence Black b7, White d2, Black is able to launch a corner attack with d8 (Diagram 9-47). However, with the b-column entirely Black, White is able to play b8 without flipping the b7 X-square. See the exercises at the end of this chapter for more examples of Stoner traps.
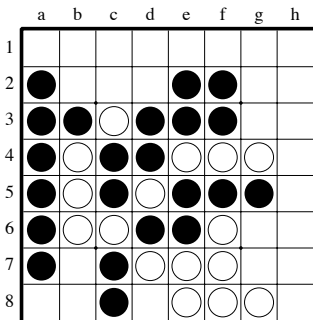
Diagram 9-46
Black to move
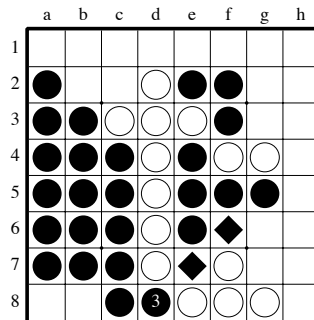
Diagram 9-47
White to move
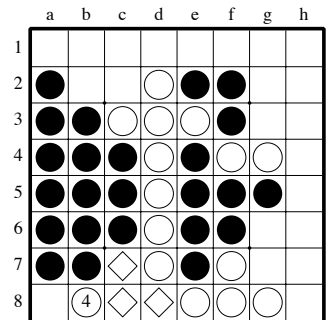
Diagram 9-48
Black to move

Exercises

In each diagram, find the best move. Answers begin on page 149.
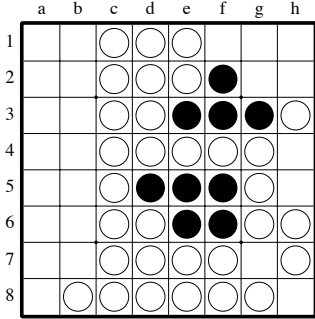
Exercise 9-1
Black to move
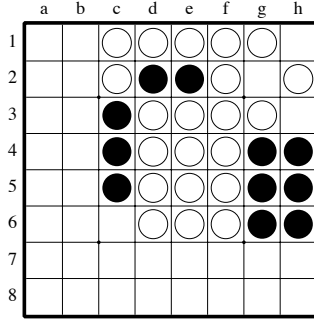
Exercise 9-2
Black to move
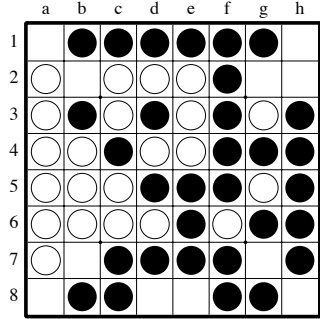
Exercise 9-3
White to move
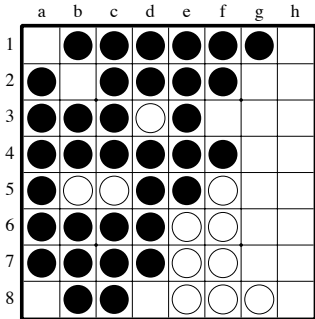
Exercise 9-4
White to move
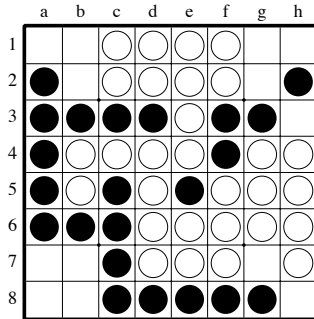
Exercise 9-5
White to move
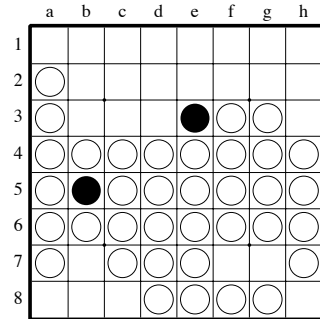
Exercise 9-6
Black to move

The problems below were created by John Stoner and first published in 1981. In each diagram, determine if White can spring an escape-proof Stoner trap starting with a move to b7.
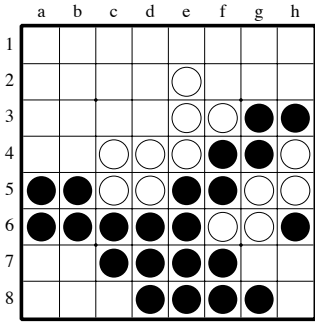
Exercise 9-7
White to move
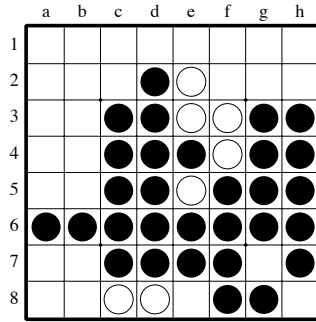
Exercise 9-8
White to move
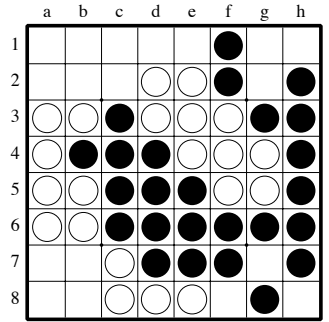
Exercise 9-9
White to move
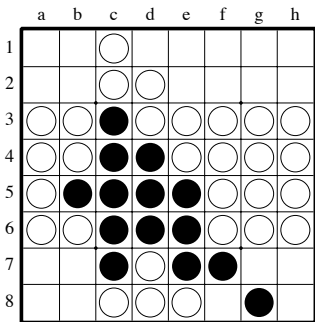
Exercise 9-10
White to move
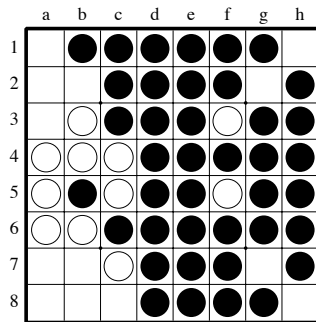
Exercise 9-11
White to move
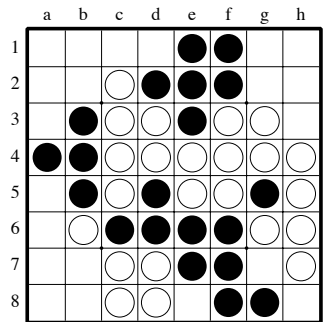
Exercise 9-12
White to move
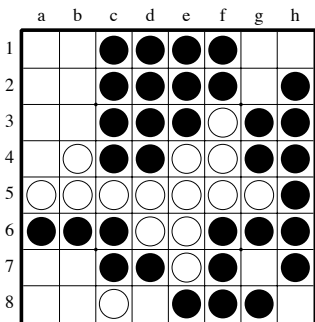
Exercise 9-13
White to move
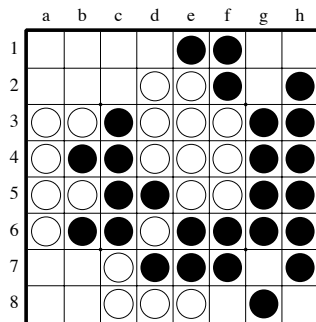
Exercise 9-14
White to move
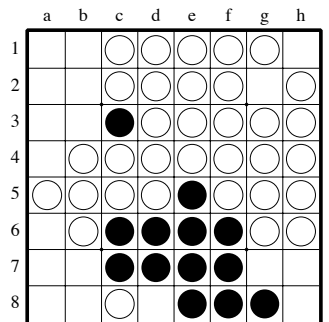
Exercise 9-15
White to move

Chapter 10

Tesuji Part II

Swindles

Swindles are perhaps the most fundamental tesuji of Othello. As discussed in Chapter 5, there are many situations where two squares form a pair: two squares such that if a player moves to one the squares, the opponent's best move is normally to move to the other. A swindle occurs when a player moves into the pair, but the opponent does not have a legal move to the other square of the pair, allowing the first player to get both moves in the pair. There are situations where a player can get both moves in a pair because the opponent does not want to move into the other half of the pair; a swindle occurs only when the opponent can not move into the other half.

Swindles involving corner/C-square pairs are the most common type of swindle, and often the most devastating. In Diagram 10-1, a1 and b1 form a pair. If Black plays a1, White will want to wedge at b1, winning the h1 corner-- presumably that is why White played to b2 in the first place. However, in this case, Black can "swindle" White, moving to a1 without giving White access to b1. Black can later move to b1 and wins easily. This situation can often be set up by using a corner attack to semi-force the opponent to take the corner on the opposite end of the diagonal. In Diagram 10-2, Black can win the game by attacking the h1 corner with h7 (Diagram 10-3)! If White plays h8, he will create many stable discs, but the b2-g7 diagonal will become all White. This allows Black to take a1 without offering White access to b1, which is enough to win the game. Of course, White can play somewhere else, but then Black follows through on his attack, winning two edges with h1.
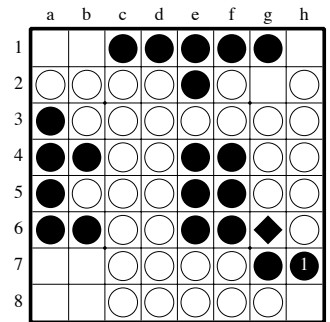
Diagram 10-1	Diagram 10-2	Diagram 10-3
Black to move	*Black to move*	*White to move*
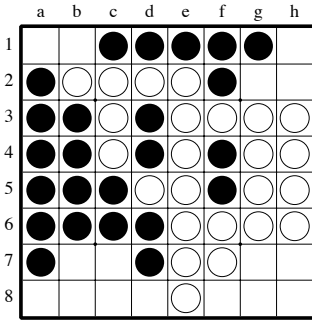
Diagram 10-4
Black to move
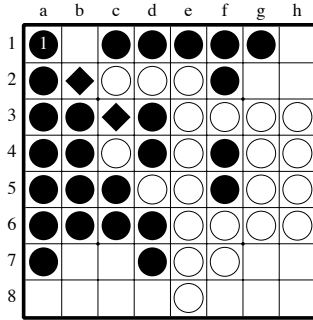
Diagram 10-5
White to move
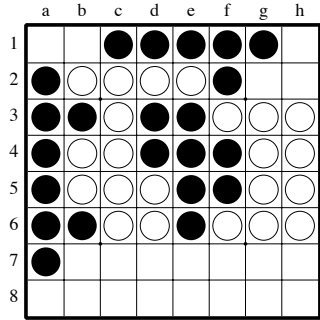
Diagram 10-6
Black to move

Diagram 10-4 shows another swindle in which one side gets both a corner and the adjacent C-square. Sometime earlier in the game, White played to b2, hoping to wedge at b1 after Black takes the a1 corner. Unfortunately for White, if Black takes the corner now, White will not have access to b1 because the entire b-column is black (Diagram 10-5). Black will be able to play b1 on his next turn, winning easily. A common way to set up this swindle is to "extract" the discs the opponent needs to gain access to the C-square. In Diagram 10-6, Black should begin with e7, extracting the white disc on b4 (Diagram 10-7). Then, on his next move, Black can extract the white disc on b5, setting up the swindle. For example, if White plays f7 (Diagram 10-8), Black can follow with d7 (Diagram 10-9).

In the examples above, the swindles involved taking a corner without giving the opponent access to the adjacent C-square. When this swindle is not available, it is sometimes possible to play the swindle in the opposite order, taking the C-square without offering the opponent access to the adjacent corner. For example, suppose that in Diagram 10-9, White sees that he is going to be swindled, and plays to b7 in an attempt to gain access to b1 after Black takes the a1 corner (Diagram 10-10).
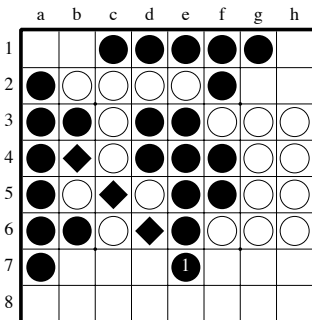
Diagram 10-7
White to move

Diagram 10-8
Black to move
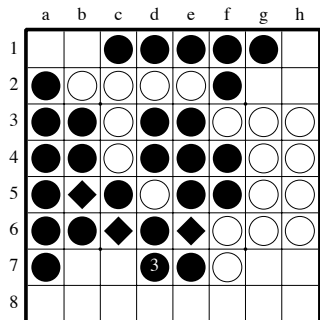
Diagram 10-9
White to move
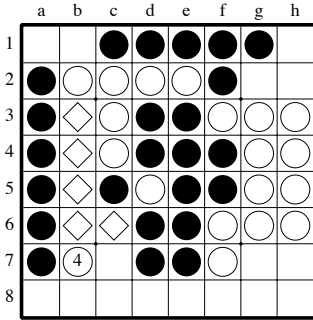
Diagram 10-10
Black to move
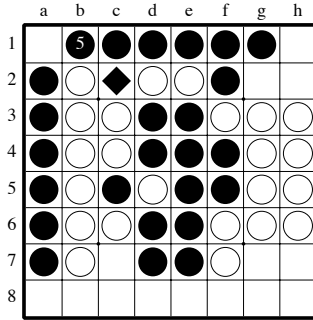
Diagram 10-11
White to move
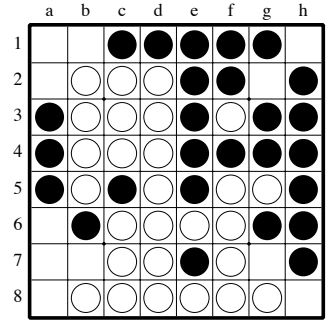
Diagram 10-12
White to move

In Diagram 10-10, White's move to b7 makes the entire b-column white. While this prevents Black from getting a swindle with a1, Black can now get a swindle by playing b1! Since this does not flip the disc on b2 (Diagram 10-11), Black will later be able to take the a1 corner. Diagram 10-12 shows another common situation. Here, Black would like to play b1 without flipping b2, but the black disc at b6 poisons the move. Unfortunately for White, the only "safe" moves available are a6 and a7, which flip the disc on b6, allowing Black to get a swindle with b1. As the above examples demonstrate, before playing an X-square move to attack an unbalanced edge, it is important to verify that you will not get swindled.

C-square/A-square swindles

While not as common as swindles involving C-squares and corners, it is not unusual to see swindles with C-square/A-square pairs. Diagram 10-13 shows a situation similar to Diagram 10-4. Black can swindle White by playing b1! (Diagram 10-14), taking advantage of the fact that the entire c-column is black. Black will later fill in the hole at c1, gaining two-tempos. Another reasonably common situation is shown in Diagram 10-15. Again, Black should begin by playing b1 (Diagram 10-16).

Diagram 10-13
Black to move
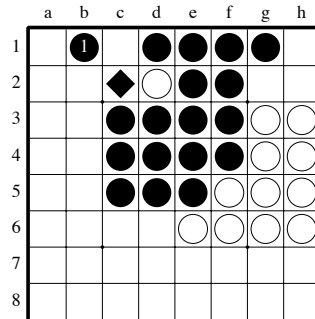
Diagram 10-14
White to move
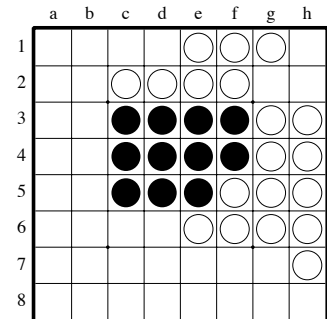
Diagram 10-15
Black to move
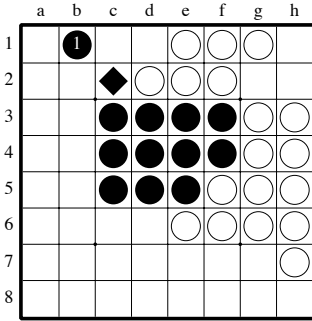
Diagram 10-16
White to move
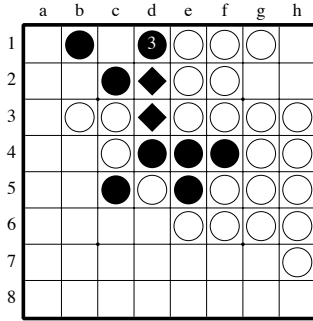
Diagram 10-17
White b3, black d1
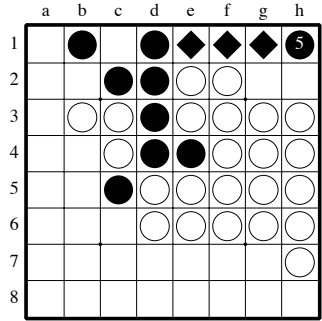
Diagram 10-18
White to move

In Diagram 10-16, White does not have access to c1 or d1. No matter how White plays, Black can follow with d1, winning the h1 corner (Diagram 10-17). One point to note, however, is that if Black takes the h1 corner, White may be able to wedge at c1, winning the a1 corner (Diagram 10-18). In this case, the h1 corner is extremely valuable and Black can still win easily, but there are some positions where this swindle backfires.

Boscov swindle

This swindle is so devastating that most people fall victim to it only once. My "one time" was in a 1980 loss to David Toth. Diagram 10-19 shows the basic setup. Black may be tempted to play f7, trying to force White to play to the North (Diagram 10-20). However, White has a wonderful swindle with b8! (Diagram 10-21). Black has sealed himself off from e8, so White will later be able to play both e8 and g8. This loss of tempos allows White to win easily. While the Boscov swindle does not occur very often, it raises an important point, which is that moves which flip discs next to the edge can easily lead to a swindle.
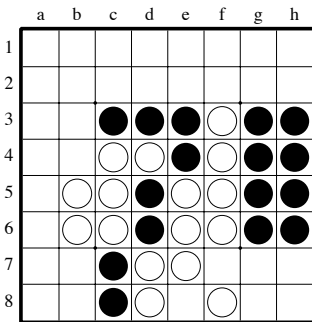
Diagram 10-19
Black to move
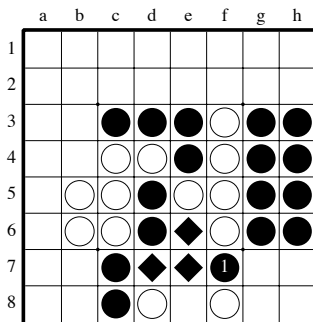
Diagram 10-20
White to move
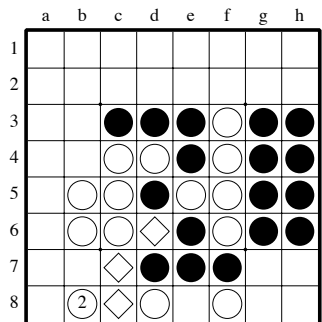
Diagram 10-21
Black to move

Four in the corner swindle

This swindle is available surprisingly often, and is easy to overlook if you do not know this tesuji. The basic pattern is shown in Diagram 10-22. With four empty squares and Black to play, Black appears destined for a parity-induced loss. However, the pattern of the four empty squares, as well as the fact that black has access to the corner, allows Black to pull off a swindle. Black's winning move is g8! (Diagram 10-23). No matter how White plays, Black takes h8 and White has to pass. With this tesuji in mind, look at Diagram 10-24. While this position is complicated, Black's only winning move, g8!, is not hard to find if you are aware of the tesuji.
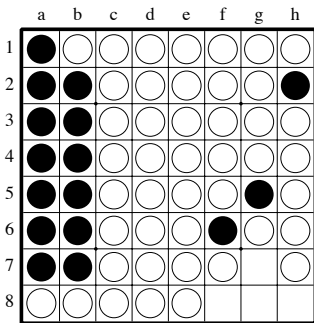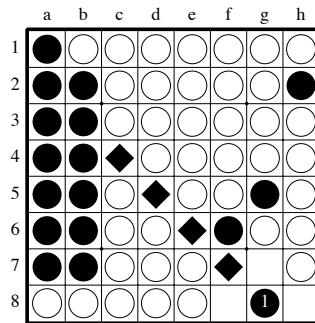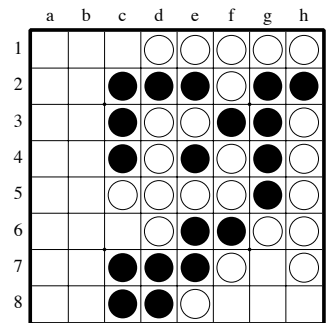
| Diagram 10-22 | Diagram 10-23 | Diagram 10-24 |
| *Black to move* | *White to move* | *Black to move* |

A-square/B-square swindle

In Diagram 10-25, White can exploit the position on the top edge by playing c1! (Diagram 10-26). Black would like to wedge at e1, but in this case he does not have access. Of course Black could take the edge with b1 (Diagram 10-27), but this is a weak position subject to the sort of corner attack tesuji discussed in Chapter 9. If Black plays somewhere else, White continues with e1, gaining two tempos.
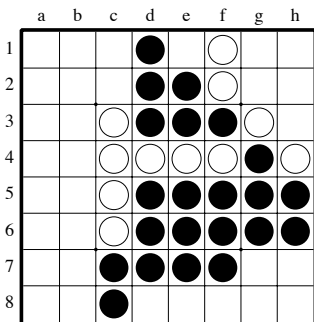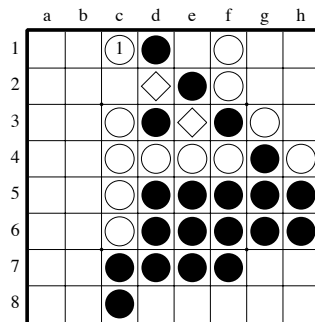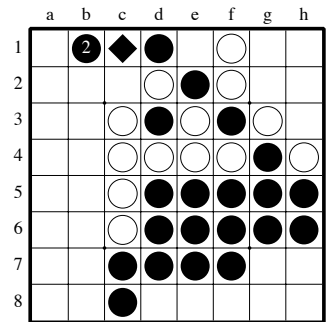
| Diagram 10-25 | Diagram 10-26 | Diagram 10-27 |
| *White to move* | *Black to move* | *White to move* |

Diagram 10-28 shows another variation on this theme; this particular position is from an opening that used to be common in expert games, and similar patterns occur fairly frequently. Black has just played a6, inviting white to play a5 (Diagram 10-29). While a5 is a quiet move for White, it flips the disc on c5, allowing Black to play a3 without flipping b4 (Diagram 10-30). As in Diagram 10-26, this leaves a difficult choice between taking a bad edge with a7, or allowing Black to gain a tempo with a4.
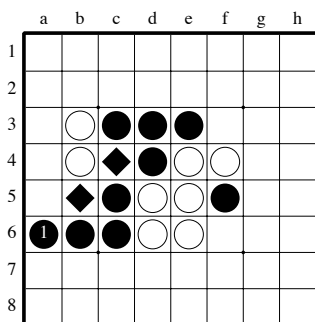
Diagram 10-28
White to move
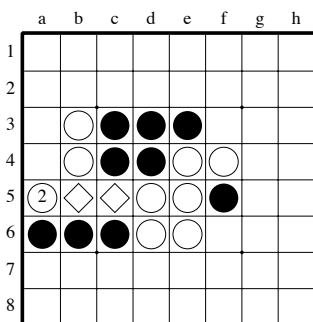
Diagram 10-29
Black to move
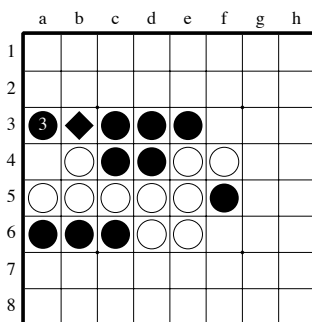
Diagram 10-30
White to move

Landau maneuver

This tesuji is named after Ted Landau, a former U.S. Champion. The position in Diagram 10-31 is from a postal game where Landau played Black. While Black has several moves which are good enough to win, Landau found a5!!, a shocking move which crushes White (Diagram 10-32). The point of this is move is that if White takes the a1 corner, Black continues with a7, making the entire b-column black (Diagram 10-33). If White continues with a8 (perfect play), he can not secure a disk on the b-column. Black essentially gets two swindles (b2/b1 and b7/b8), and can play into all four empty squares in the column.
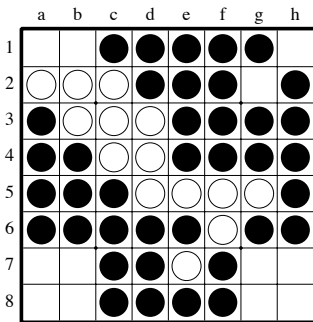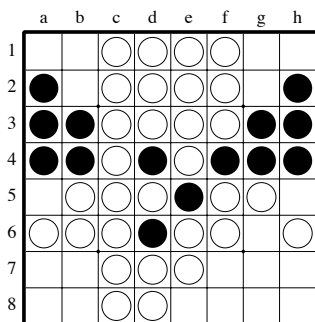

Diagram 10-31
Black to move
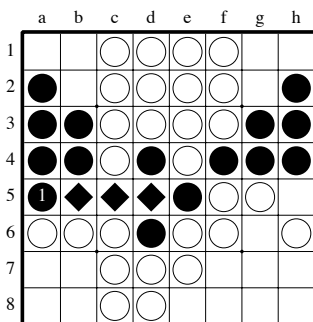
Diagram 10-32
Black to move
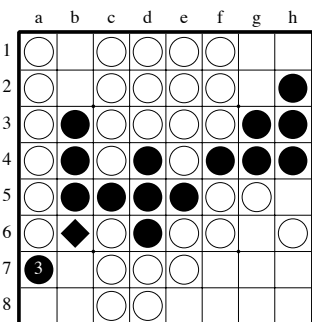
Diagram 10-33
White a1, Black a7
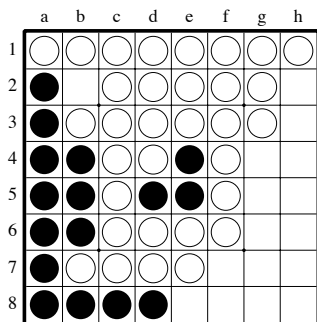
Diagram 10-34
Black to move
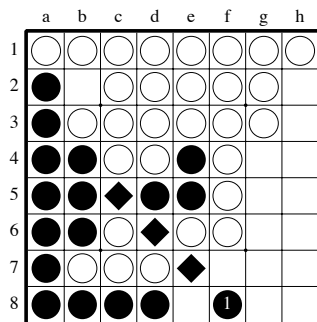
Diagram 10-35
White to move
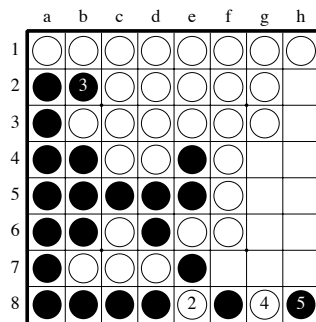
Diagram 10-36

Other tesuji

Inviting a wedge

This is a nasty little tesuji that would usually be used to help run up the score in a one-sided game. In many ways it is similar to feeding the opponent moves in order to get parity in the endgame (see Chapter 8). Diagram 10-34 shows the basic pattern. Not only has White run completely out of moves, but Black also has a free move available at b2. Black can take full advantage of the situation by playing f8! (Diagram 10-35). At first, this appears to be a bad move, because White can simply wedge at e8. However, Black now takes his free move at b2, and White is forced to "unwedge" with g8, giving Black the h8 corner (Diagram 10-36). Of course, in Diagram 10-35, White can (and should) play f7, but this leaves Black with another free move at e8.

Diagonal grab to get 3 of 4 in corner
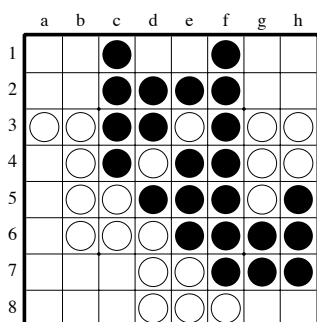
Diagram 10-37
White to move

This tesuji appears with great frequency, usually late in the midgame or early in the endgame. In Diagram 10-37, Black has sacrificed the h8 corner in order to gain a tempo. White appears to be under pressure because he is walled off from the region in the lower-left. He could of course take the h8 corner, but then Black simply wedges at g8, and it is still White's turn to move. White needs to somehow gain a tempo, and can do so by playing g2!, grabbing the diagonal (Diagram 10-38).
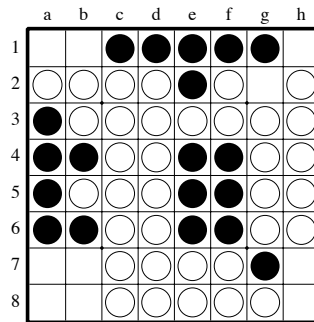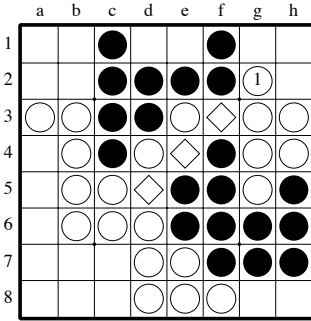
Diagram 10-38
Black to move
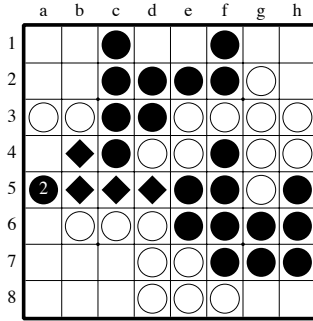
Diagram 10-39
White to move
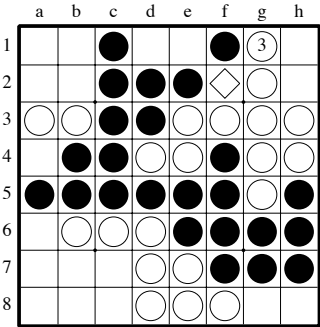
Diagram 10-40
Black to move

Of course, in this position Black can easily break the diagonal by playing a5 (Diagram 10-40), winning the h1 corner. However, this is exactly what White wants! White responds with g1, in some sense sacrificing the h1 corner again (Diagram 10-40). Although White loses the corner, he gets three of four moves in the region, gaining two tempos. A very important point is that since Black has broken the diagonal, there is no swindle available. If Black avoids breaking the diagonal, say by playing a4 in Diagram 10-38, then White should not respond with g1 (Diagram 10-41), because it would allow Black to play h1 without flipping the disc on g2. Instead, White must wait until Black breaks the diagonal before playing g1.

Diagram 10-42 shows another variation of this tesuji. Here we can treat h4 as part of the lower-right corner region, and White will take three of the four moves in the region. White should begin with g7, grabbing the diagonal. If Black breaks the diagonal, say with b5, then White plays h4, gaining another tempo (Diagram 10-43). In this case, White must be extra-careful not to get swindled. If White flips the disc on g3, or takes Black off of the whiteline diagonal, then White will get swindled.
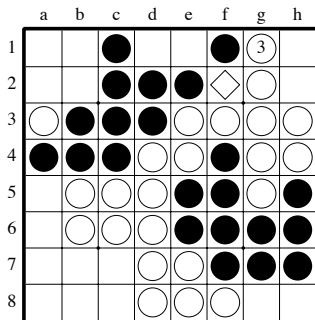
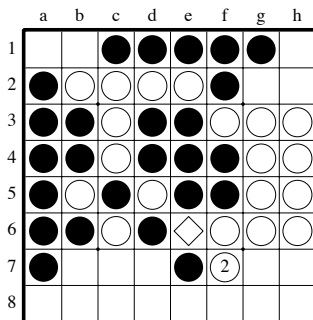

Diagram 10-41
Black to move
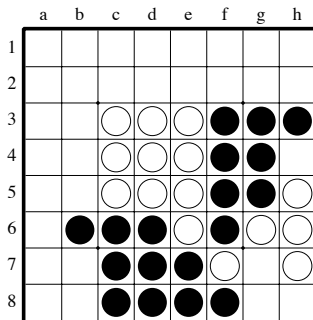
Diagram 10-42
White to move
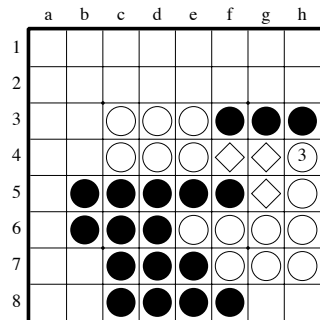
Diagram 10-43
Black to move

Exercises

In each diagram, find the best move. Answers begin on page 150.
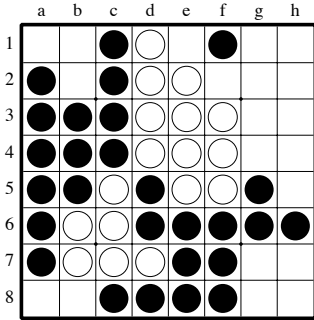
Exercise 10-1
Black to move
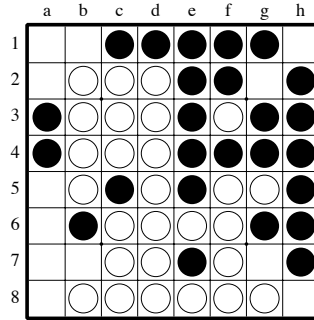
Exercise 10-2
Black to move
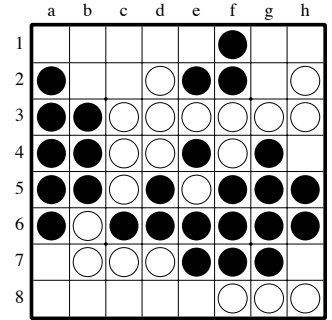
Exercise 10-3
Black to move
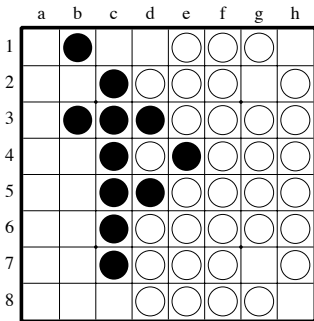
Exercise 10-4
White to move
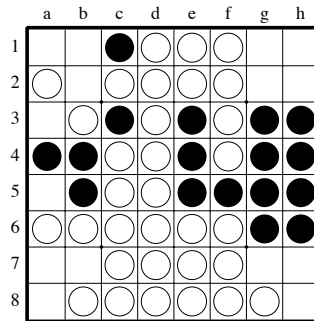
Exercise 10-5
Black to move
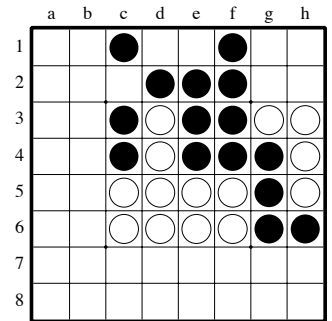
Exercise 10-6
White to move

Chapter 11

Book openings

This chapter examines **book openings**, i.e., moves that are prepared and memorized before the game begins; an **opening book** is a collection of openings. As noted in Chapter 4, novice players really do not have to worry that much about openings. However, having well prepared book openings becomes vital as you come up against stronger players. Rather than a long list of moves to be studied, this chapter is meant to teach you how to go about developing openings of your own.

If you have played even a few dozen games of Othello, you have probably noticed the same patterns being repeated in the first moves of the game. If you remember what you did the last time you saw a certain position, you might make the same move without really thinking about it. Or, perhaps the move you used last time did not work out well, and you started to look for some alternative. While simply playing games will eventually give you a feel for which moves are good and which are bad, developing an opening book with the aid of computer analysis can make this process much easier and more effective.

Example of developing an opening

Suppose that you are black and played the opening shown in Diagram 11-1. Your opponent chose to play the "chimney" opening (6. d6), resulting in Diagram 11-2, at which point you had no idea what to play next. You want to build up your opening book so that the next time this position occurs, you will be prepared with a good response. The easiest thing to do would be to have a computer suggest a move; suppose the computer recommends 7. g4, as shown in Diagram 11-3.
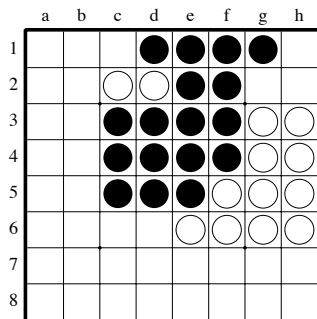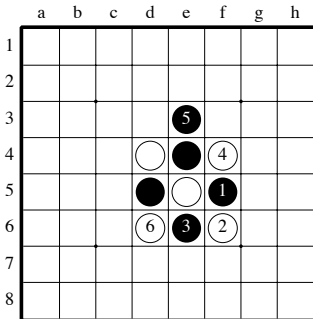

Diagram 11-1
Chimney
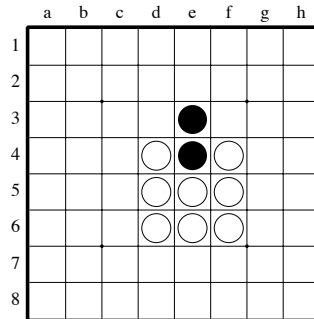
Diagram 11-2
Black to move
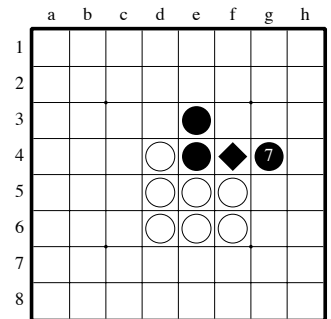
Diagram 11-3
White to move

You might choose to stop at this point, and simply add Diagram 11-3 to your opening book. The next time someone plays the chimney, you can play g4 without having to think about it. That is all well and good, but you should be at least a little bit curious about what White will do in response to your g4 move. In Diagram 11-3, White has seven moves to choose from; searching the Thor database (see Appendix for details) reveals that all of these moves have been played at least once. Ideally, we would like to know what to do against each of White's possible responses. We could try each move for White, then ask the computer for a suggested reply as Black. Our book would then look like:

8. d3

Our move

6. d6

Our move

8. e2

Our move

8. f2
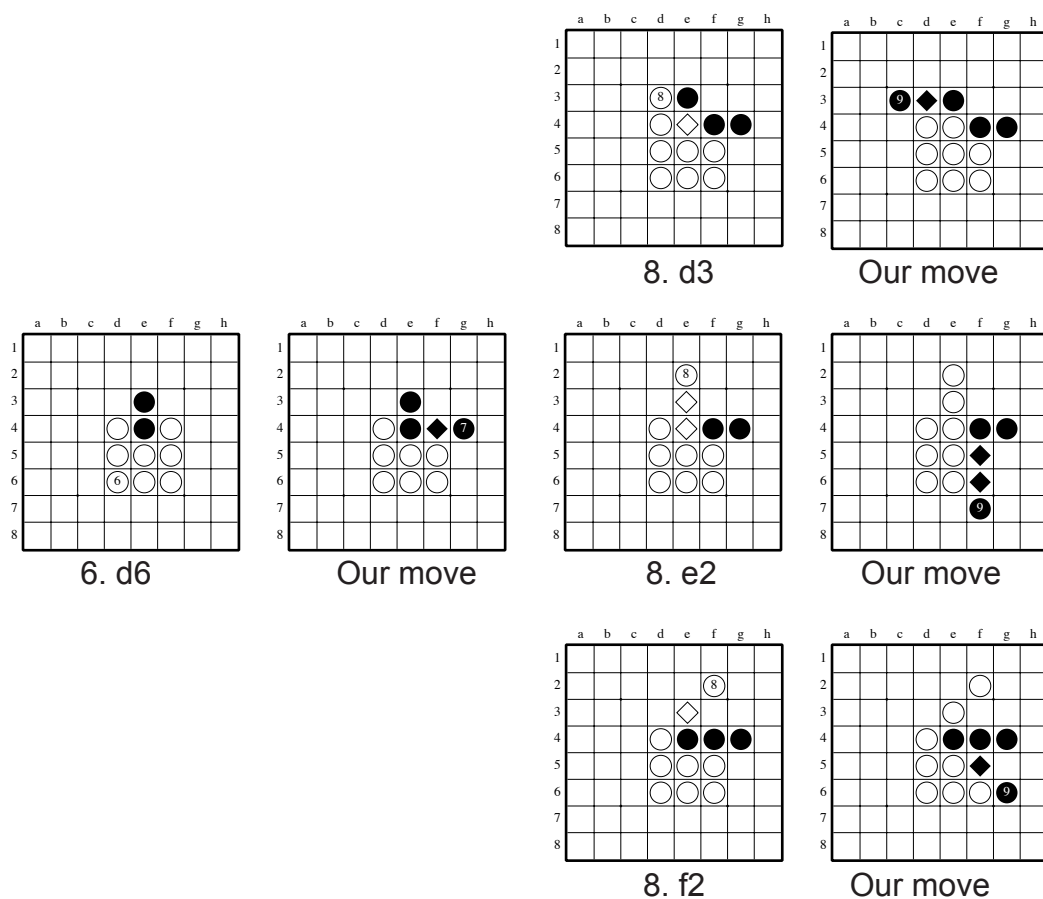
Our move

(Four other move 8's not shown)

Of course, once you have come this far, you may start to wonder about what White will do after your move 9. For example, if White plays 8. d3 and you make your prepared move 9. c3, this leaves White with quite a few reasonable looking options for move 10. Looking the position up in the database shows that 7 different moves have been used at move 10. You could again ask the computer to find a good move against each of these 7 moves. The problem though is that if you put in every possible response to each of your moves, the size of your opening book will grow exponentially. If your opponent always has 7 possible moves to choose from then the number of lines that you would have to remember will grow to 7x7 = 49, then 7x7x7= 343, then 7x7x7x7= 2401 and so on. To put that in perspective, when I won the World Championship my entire opening book with both colors had around 300 lines. Even for a computer program, which might have a million lines in its opening book, it is impossible to include everything.

Thus, it is important to be very selective when choosing what to put into your opening book. To help in the selection process, I actually keep two separate books. One book has all of the research that I have conducted, and contains a lot more openings than I actually know. The other book contains "cheat sheets" for the particular openings that I intend to use and want to have memorized. The cheat sheets are color specific— if there is a certain opening that I might play with either color, it will appear once in the section with black openings and again in the section with white openings. When I am building a new opening, I will put all of the research into the large book. Once the research is finished, I decide which lines to put onto the cheat sheets, and then try to memorize those lines.

Of course, you still must figure out what openings to research in the first place. For players who are just starting to learn openings, the obvious place to start is with the games that you actually play. Naturally, in order to do that, you must keep transcripts of your games, or at least record the openings. Even if you are just playing some informal games, it pays to keep track of your games. Have a computer analyze your games and find your mistakes in the opening. In this manner, you can build up your book one move at a time.

For anyone striving to become a world-class player, it is important to take a more systematic approach to opening research, including studying openings that you have not actually played before. Below I will try to make the process more concrete, but first I want to offer a "big picture" perspective that might help guide you in your opening research.

The perfect game

Speculation on which side would win a perfectly played game of Othello seems to be as old as the game itself. As even number theory was developed in the 1980's, it seemed that the advantage of the last move gave White a slight edge. Now with the benefit of strong computer programs, it appears that a perfectly played game of Othello would end in a draw. While it will be a long time before computers are powerful enough to prove this conclusively, until someone comes up with a way to win for one side or the other, we might as well accept it as though it was fact.

One important conclusion of opening research is that while there are many ways to play for White, Black has very few choices that lead to a draw. For example, Diagrams 11-5 and 11-5 show one opening sequence which appears to lead to a draw. Black could change the order of moves 3 and 5, but other than this there are no choices except for 7. f6, which is also a draw. At move 10, White has three moves that maintain a draw (b4, e3, and e6), and in response to each of these Black again has only one drawing move. In the game shown in Diagram 11-3, Black effectively has no choices, other than move order (e.g., moves 55/56 could be made before moves 53/54 without changing the outcome of the game) throughout the entire game. If Black makes any move other than those shown, White would be winning. Meanwhile, White has choices at several points in the game, including four possible move 22's.

As White, if you can just memorize the one sequence of moves in Diagram 11-6, you can guarantee that you get a draw (if Black follows the sequence as well), or that you reach a winning position (if Black makes a different move at some point). However, before you sit down to memorize this game, I should point out a couple of problems. First, a draw is not a particularly good result under many circumstances. You could not become World Champion by drawing every game. Second, there is a big difference between having a winning position and actually winning.
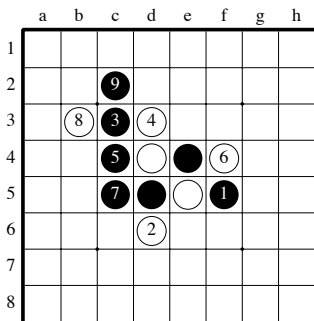
Diagram 11-4
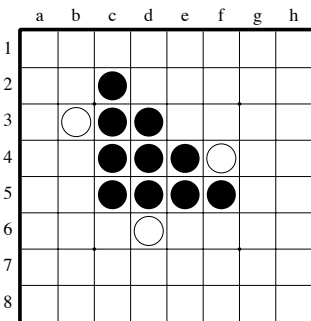
Diagram 11-5
White to move
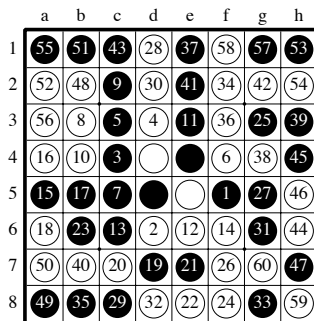
Diagram 11-6
Perfect game?

While Black has very few ways to maintain a drawing position, there are a huge number of variations which give White a 33-31 win. Even the strongest computer programs can not hold on to every 2-disc advantage early in the game. For humans, even world-class players, 2 discs is not a significant advantage. In fact, in many of these positions, it is more difficult to play white than black; in games between human players of equal strength, Black will win more often than White.

Given all this, deciding on what book openings to use is not simply a matter of choosing what are theoretically the best moves. Instead, in each particular game, you must choose the moves that will give you the best chance of winning the game. There are many factors to consider: your strengths and weakness, those of your opponent, how many openings you are able to memorize, what openings your opponent knows, the time limit for the game, and so on. Choosing openings is thus more of an art than a science. What works for me probably would not work for you, and what worked in the last game might not work in the next one. There are, however, three general principles that you may find useful.

1. Choose uncommon openings

Since there are no openings that lead to a forced win, and you can not expect to play perfectly, in order to win your opponent must make more mistakes than you do. Thus, we want to maximize the chances of our opponents making a bad move, and often the best way of doing that is to play openings that they have not seen before.

As noted above, in Diagram 11-6, White has four choices at move 22 which lead to a draw. Of these, e8 is by far the most common move— for quite some time, it was believed that this move led to a win for White. Even after it was discovered that e8 was actually draw, it remained the most common move. Naturally, anyone playing this opening with Black would know what to do against this move. Sometime in 1998 I saw several computer games with d1 at move 22 that led to good results for White. After studying it I started playing this move, and won several games in a row with it as my opponents had not seen it before. In theory, e8 is just as good as d1, but at least at that time, d1 was much less common, and much more effective.

2. Choose openings which are easy to learn

Another way to make things difficult for your opponent is to play openings which offer a lot of good choices for your color, but few choices for your opponent. For example, while the sequence in Diagram 11-4 is theoretically the best opening for Black, White has a lot of good choices while Black does not. This means that in order to play this opening well with Black, you must study all of White's options, whereas your opponent need only study one of the lines. This is a heavy price to pay just to get a theoretical draw.

Compare this to an opening where Black has a slightly inferior position, but Black has a lot of viable options, while in response to each of these options White has only one move which maintains the advantage. In this case, you need only remember a few sequences, while your opponent would have to know many. In my experience, if you prepare such an opening, even world-class players are unable to maintain the advantage for the entire game. Eventually you gain the advantage by knowing the opening to greater depth than your opponents.

3. Do not accept worse than a minus 4 position

As noted above, playing unusual openings is a good way to get your opponent out of his opening book. Sometimes, however, the reason an opening is uncommon is simply that it is bad. In my experience, it is rarely worthwhile to play an opening which computer analysis indicates is worse than minus 4 discs. The problem with such an opening is it usually opens up a lot of reasonable responses by your opponent— even if your opponent makes a mistake, it may still leave you with a losing or at best even position. There are plenty of openings to choose from which are both rarely played and close to even, so there is no need to intentionally play bad moves that leave you with a significant disadvantage. By the same token, when deciding on which of your opponent's options to prepare for, it usually does not pay to look at positions where you are ahead by more than 4 discs; if you get ahead by that much the opening has done its job.

Trade-off between goals

In general, there is a trade-off between the above-mentioned principles. Since everyone wants openings which are good and easy to learn (principles 2 and 3), most of these openings have been played before and are well known (violating principle 1). Still, there are always new moves to try if you look for them carefully. Sometimes a good opening falls out of favor for a while, at which point people start to forget about it, offering a chance to surprise someone with it.

It is certainly possible to live only by principle 2 and be successful with openings even when they are well known. Some people specialize in certain openings, playing them in every single game for years. Even if you study the opening, they will know it better than you do, and thus have a good chance of beating you. This sort of strategy will naturally lead to long book openings, and a lot of very close positions going into the endgame. It is thus suited to someone who is good at memorizing openings and at counting in the endgame (see Chapter 13).

Someone who hates studying openings but is strong in the midgame would normally focus only on principle 1 and choose to play unusual openings, even if it means

taking a slightly inferior position out of the opening. If the opening is so uncommon that you are certain your opponent will not know it, then principle 2 is not important. In such a case, you are not planning to beat your opponent with the opening. Rather, you simply want to force your opponent out of his book and try to win by out-playing him the rest of the game. If you are substantially better than your opponent at the midgame and endgame, taking a position which is inferior by 4 discs is not an unreasonable price to pay.

Looking back at history, I would argue that no one who has taken an extreme approach to openings has ever become World Champion. No matter how strong you are in the rest of the game, if you always play bad openings to force your opponents out of book, it is difficult to come from behind and win a high percentage of games. If you take the other extreme and try to memorize commonly played computer moves until move 60, you end up with a lot of very close games at move 40, and again it is hard to win a high percentage of games. For most players, I suggest a compromise approach: try to get your opponent out of his opening book, but do not resort to taking bad positions in order to do so.

Using WZebra to develop an opening

In light of the above, let us think about developing a practical opening book to use against the chimney (Diagram 11-1) as Black. Again, this is more of an art than a science, and there are many factors which depend on your individual needs, but working through a brief example should give you the basic idea. First, we must decide on what to play at move 7. Table 11-1 shows some of the factors that we might consider.

The column labelled "evaluation" shows how WZebra rates each move at a search depth of 24 moves. We could simply choose the move with the best evaluation, but keep in mind principles 1 and 2. "Frequency" is the percentage of games (in the Thor database) in which each move was chosen. Usually, the lower the percentage, the better the chances are for knocking your opponent out of his opening book. Note that there is some decision involved in which games to include in the analysis. I would argue that any game more than 10 years old is probably irrelevant, and 5 years or even 2 years could be the cutoff.

"Branches better than -2" indicates the number of White's choices at move 8 that WZebra rates better than -2.00. This gives some indication of how many moves we will have to include if we want to extend our book to move 9. In practice, we would normally want to look further out along the tree to see how many good options each side has. Again, by principle 2, we want a lot of options for Black, and few options for White. Note that -2 as the cutoff is arbitrary; for some openings I might use zero, for others -4 would make more sense.

Table 11-1

Move	Evaluation	Frequency	Branches better than -2	White found decent reply	Branches frequency >10%
c4	-2.38	22%	2	84%	2
c5	-3.75	7%	2	85%	1
c6	-2.16	3%	2	78%	3
e7	-1.94	6%	3	84%	4
g4	-1.08	58%	1	86%	1
g5	-2.98	3%	3	100%	2
g6	-2.41	1%	2	100%	2

Note: This table constructed with WZebra 4.2.1-- your mileage may vary

In that regard, the column "white found decent reply" shows the percentage of games in which white found one of the moves included under the "branches better than -2" column. After all, we are hoping that our opponent is going to make a bad move, so it is good to know how frequently players have made mistakes facing the same position. The column labelled "branches frequency >10%" indicates, following Black's move 7, the number of White replies at move 8 which were used in more than 10% of the games in the database. Again, this gets at the issue of how many lines we will need to extend our opening book to move 9 or beyond. To be safe, it is best to consider White's moves if WZebra rates them highly or if they have been used frequently in actual play.

Given all this information, we can start to get some idea of the advantages and disadvantages of each choice at move 7. The move which WZebra rates the highest, g4, is played in a majority of games. There is only one good choice for White at 8, and it is natural to expect that any expert player would know this move. Thus, playing g4 triggers a semiautomatic response at 8, and we need to research the opening from move 9 onward.

By contrast, 7. c6 is given a slightly lower evaluation, but has been played only 3% of the time, which should mean that most players will not have studied it extensively. White has 2 reasonable choices at 8 and you should expect most of your opponents to find one of them, but with a bit more research at move 9 or beyond, you might be able to stay in your opening book longer than your opponent. You must then figure out whether that is likely to translate into getting an advantageous position.

One way to test a move like 7. c6 is to play out a few games against yourself, trying some plausible-looking variations for each side. If you have not tried it before, it can be tricky to play against yourself, but it is a very good way to practice and to develop a feel for an opening. Suppose that you used a computer to study an opening, and reach a position where White is supposed to have a 4 disc advantage after move 20. When you play out the game for both sides, you might find that despite this theoretical advantage, Black ends up winning every time. In this case, you are unlikely to be successful with the opening as White unless you memorize more of the correct moves later in the game.

Conclusion

Although I would like to provide you with a surefire method for getting through the opening with an advantage, it should be clear by now that there is no way to do so. While complicated, the above analysis barely scratches the surface on all of the factors that you could consider when choosing an opening. There is simply no right or wrong answer.

Regardless of the approach you adopt, it is important to spend at least some of your practice time studying openings, especially if you aspire to be an expert player. I strongly urge you to record your games and study the openings. Write down the results of your research in a book, and make cheat sheets so that you can learn openings in a systematic way.

Chapter 12

Advanced midgame play

This chapter covers various elements of play in the midgame, roughly moves 15 through 45 in a typical game. We have already seen many strategies that are used in the midgame, but here we examine midgame strategy at a more advanced level. As with Chapter 11, this chapter is not meant to teach something that will immediately raise the level of your play. Rather, I describe a way to think about the midgame, so that (hopefully) your ability will grow more quickly as you practice.

Good shape/bad shape

The first very strong Othello program readily available to the public was Brutus. While the program had relatively little knowledge of midgame strategy, it was able to make up for this by looking very far ahead. Although it was certainly hard for me to defeat Brutus, there was always something a bit dissatisfying about playing it. The program made a lot of awkward looking moves, and it always seemed that it should not be that hard to win against it. Somehow though, these moves usually turned out to be not so bad after all, because Brutus was looking at millions of possible continuations and could "read" that these strange moves would work out in the end.

For humans, who have a far more limited ability to read ahead, it is much more important to rely on general principles and especially what I call **good shape**. Basically, good shapes are patterns that will tend to work out favorably in the future, even if we can not read out the position completely. In a position such as Exercise 3-2, reproduced below, even set to look ahead only 1 move, WZebra finds the right move

(c7). How the game will proceed is by no means obvious, but the right move is, because cutting quietly through the middle is good shape. By contrast, bad shapes tend to lead to problems in the future; these are the types of positions that are often vulnerable to the tesujis presented in Chapters 9 and 10. Of course, we want to make good shapes when we can, but there are certain positions where the best move available makes a bad shape. In general, it is critical to read out the consequences of moves that make bad shapes to see if they really work, while less reading is required when making good shapes.

Exercise 3-2
Black to move
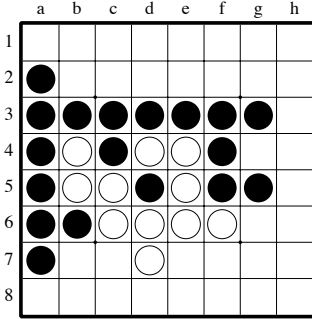
Diagram 12-1
White to move
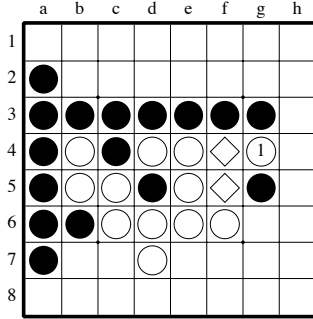
Diagram 12-2
Black to move
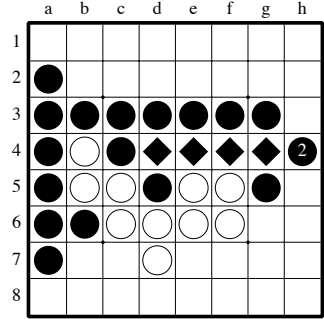
Diagram 12-3
White to move

Make the most of your opponent's bad shape

Consider the position in Diagram 12-1. Suppose that it was Black's turn to move in this position. Black would not have any quiet moves available, and would be in grave danger of completely running out of moves. In a situation like this, if White can simply avoid opening up new places to move for Black, then Black would have to play an unappealing move to the south. Breaking through Black's wall by playing on row 2 and opening up new moves for Black is simply unthinkable. Rather, White wants to play to the east, but the question is where?

It might appear that g4 is a reasonable choice, since it a quiet move in between the black discs on g3 and g5 (Diagram 12-2). However, Black has a good response at h4 (Diagram 12-3). Now, White has no choice but to break through Black's wall.

Although the black discs on g3 and g5 do form a bad shape, playing in between them is not the way to exploit this shape. Much better for White is to play g6 (Diagram 12-4), which accomplishes the goal of forcing Black to play to the south. Further, White still has two moves to the east at h5 (or h4) and g4.
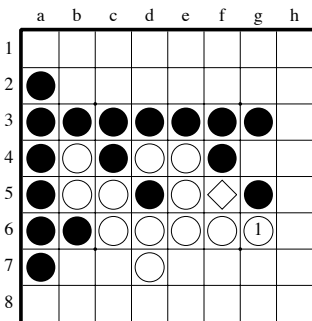
Diagram 12-4
Black to move

In fact, even if White let Black pass a couple of times, and (from Diagram 12-1) played three moves in a row at g6, h5, and g4, the result would still be favorable for White, as Black would have to initiate play in the south.

As this demonstrates, often a good way to take advantage of your opponent's bad shapes is to think about playing several moves in a row with your opponent passing. In Diagram 12-1, White could get in three good moves by beginning with g6, but would only get two moves starting at g4. Therefore, g6 is likely to work out better than g4.
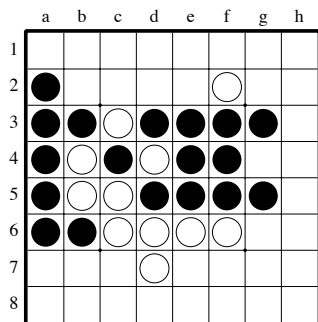
Diagram 12-5
White to move
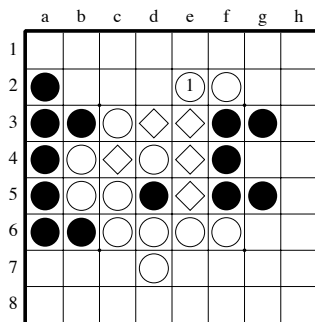
Diagram 12-6
Black to move

Next, consider Diagram 12-5. Compared to Diagram 12-1, the position is not as favorable to White, since Black has some moves available to the north. However, White wants to follow the same basic strategy of forcing Black to initiate play to the south. In Diagram 12-5, Black has an unbalanced edge, and if Black opens up the south, White could eventually end up with a good move at b7. As in Diagram 12-1, White wants to try to gain some tempos by exploiting Black's bad shape to the east, ideally initiating play with g6, then following with h5 and g4. Of course, in Diagram 12-5, White does not have access to g6, but White can establish access by playing e2 (Diagram 12-6). Notice how this links all of the white discs together, which is often a sign of good shape.

Black has many possible moves in Diagram 12-6. Either e1 or e7 would exploit the fact that the e-column is now white. Playing c2 would deny White access to g6, at least temporarily. Other possibilities are d1, d2, c7, d8, and e8. For White to thoroughly examine all of these possibilities would take a long time, but it would not be difficult to verify that none of these moves will pose a great problem for White. Often, as long as the move we are considering fits in with the principle of good shape, all that is required when thinking in the midgame is to make sure that, following any of your opponent's replies, you will have another move which makes good shape.

In the current example, in order to play e2 with some confidence, we might check each of Black's replies and come up with at least one reasonable response. If Black does nothing defensively (playing d1, e1, d2, or c7), then White will have a good move to g6. If Black tries c2, then simply playing d2 is certainly good shape. If Black tries to poison g6 by playing e7, then c7 would be a very quiet response. If Black tries d8 or e8, flipping the disc on d7, White must be a bit careful because now a move to g6 would give Black access to g4, making it much harder for White to gain tempos in the east. However, d8 and e8 are both bad shape and offer White some good choices. After d8, White could play c7, c8, or e7; after e8, White has c7, c8, or d8.
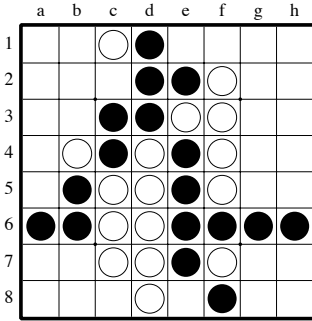
Diagram 12-7
White to move
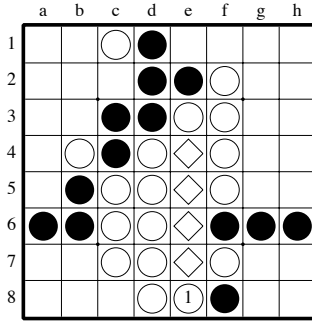
Diagram 12-8
Black to move
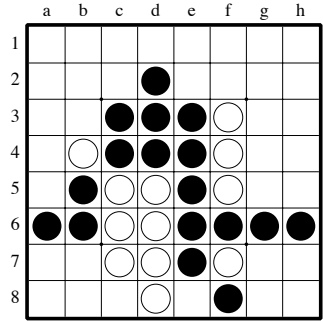
Diagram 12-9
White to move

Look for ways to set up key moves

Diagram 12-7 shows a position from a game between two of Japan's top players, Hirohisa Tezuka (Black) and Hideshi Tamenori (White). Before reading further, consider for a moment where you would play in this position. Whether you are a novice or an expert, e8 should jump out at you as a wonderful move (Diagram 12-8). A novice might simply notice that this is a very quiet move, only flipping discs in the middle of the board. An expert would further notice that the obvious reply for Black, namely taking the edge at c8, is an ugly looking move. It would seal Black off from the lower-left region and set up a quiet move for White at a5. An expert would also want to play e8 in order for White to exploit a good potential move at g5. In short, the shapes in Diagram 12-7 cry out for White to move to e8.

Now consider Diagram 12-9. Here too, e8 jumps out as the place White wants to play, but for the moment he can not, because the e-column is entirely black. In the actual game, Tamenori played f2! (Diagram 12-10), threatening e8 on his next move. The game continued Black e2, White c1, Black d1, resulting in the position shown in Diagram 12-7.
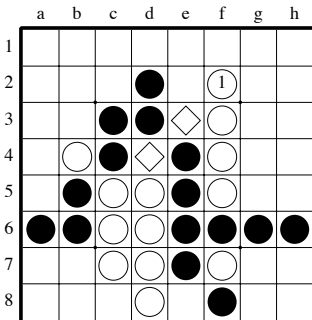
Diagram 12-10
Black to move

In Diagram 12-9, Tamenori came up with a clever way to set up a move to e8, but even a not-so-clever move such as c2 would have been reasonable. In the midgame, it is important to be able to look at a position and quickly identify the "hot spots" that each side wants to play to. If you can quickly find the right move in positions such as Diagram 12-1 and Diagram 12-7, then you should eventually be able to find good moves in situations such as Diagram 12-5 and Diagram 12-9.
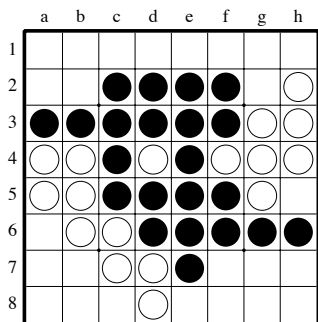
Diagram 12-11
White to move
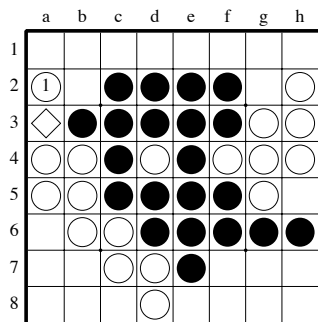
Diagram 12-12
Black to move
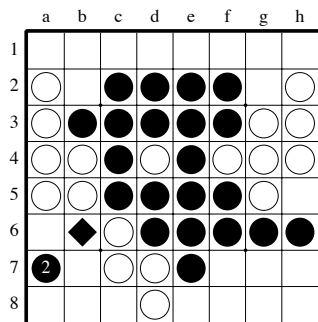
Diagram 12-13
Black to move

Bad shape: look before you leap

In Diagram 12-11, Black is in danger of running out of moves. If it were Black's turn to move, pretty much the only choice would be to play a6. White can therefore put pressure on Black by playing a2 (Diagram 12-12). Now if Black plays a6, White can just take back with a7. The question then becomes, can White get away with this C-square move? The resulting shape is dangerous, because Black has several options in the lower-left, while White is walled off from the region. A move like a2 is very likely to result in White losing the a1 corner in the future. For example, Black might play a7 (Diagram 12-13), sacrifice the a8 corner, wedge at a6, and then take a1.

In order to play a2 with any confidence, you must be able read ahead a couple of more moves. You at least need to have some idea of where to move if Black indeed plays a7. The key to understanding this position is to realize that White can afford to lose the a1 corner, especially if Black runs out of moves in the process. Indeed, once the position in Diagram 12-13 is reached, White would like nothing more than for black to play a1, allowing White to wedge at a6 and winning the a8 corner.
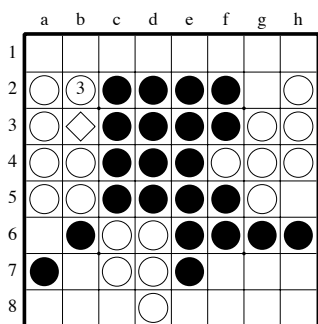
Diagram 12-14
Black to move

White should therefore play b2 (Diagram 12-14), offering the a1 corner to Black. If Black refuses the corner by playing b8 or c8, White can play a6, again offering Black the a1 corner. This time Black has little choice but to accept, and White can run Black out of moves by playing on the bottom edge. Starting with Diagram 12-11, if you can at least read ahead until the position in Diagram 12-14, then you can feel reasonably comfortable about making a dangerous move like a2, even if you can not read out the entire sequence until Black runs out of moves.
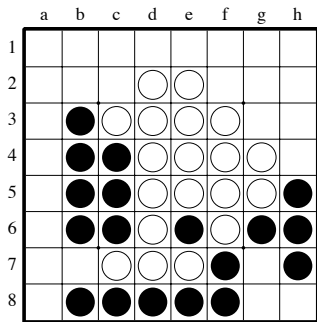
Diagram 12-15
White to move
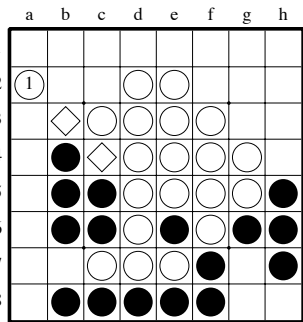
Diagram 12-16
Black to move
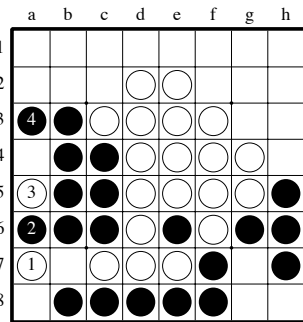
Diagram 12-17
White loses

In the example above, White was ahead and made a bad shape to put pressure on Black. In Diagram 12-15, it is White who is under pressure, but again the best move is to make a bad shape. Here, White is walled off from most of the board, and his only safe moves are on the left edge. White would like to attack Black's unbalanced edge with g7, but this allows a swindle, as a Black move to g8 would not flip g7. None of the usual moves (a3, a4, a5, or a6) looks appealing, as they flip in more than one direction and open up new moves for Black. Computer analysis reveals that all of these moves lose by at least 12 discs.

The only way for White to keep the game close is to play a2! (Diagram 12-16). This is a terrible shape, and would normally be a disaster. For example, if white tried to play a7, he would be run completely out of moves in the sequence shown in Diagram 12-17. However, in Diagram 12-16, Black does not have access to a3, and can not launch an immediate corner attack. Diagram 12-18 shows one possible sequence, leading to the position in Diagram 12-19. While the left edge is still a liability for White, playing a2 leads to the gain of a critical tempo, and the position is even.
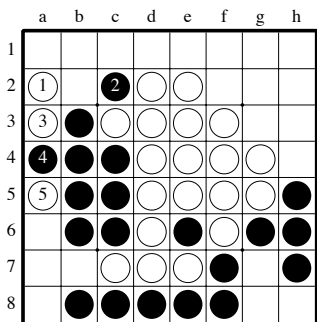
Diagram 12-18
Black to move
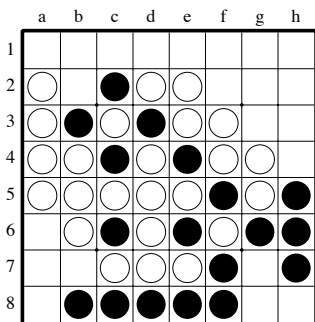
Diagram 12-19
Black to move

Edges as shapes

Among Othello experts, there has been a lot of debate over whether taking edges is good or bad. Looking at a position like Diagram 5-11, it is easy to understand why most novices are warned against taking too many edges. Edges may be subject to various attacks, and can also make it difficult to find quiet moves when the edges act as poison discs. Certainly, simply taking an edge any time one is available is not going to be a work against someone who has a reasonable idea of proper strategy.

While there is no true consensus, most experts would probably agree with the idea that taking edges is good for gaining tempos in the midgame, but often leads to problems later in the game. In terms of the current discussion, we might think of most edge positions as bad shape, even if they are not immediately subject to attack. If taking edges makes bad shapes, then you have to read ahead to decide whether an edge is worth taking.

In Diagram 12-15, Black holds two edges which are adjacent in the sense that they are both connected to the h8 corner. Holding adjacent edges can be a powerful strategy, and experience shows that it is usually better to occupy adjacent edges rather than opposing edges. While the bottom and right edges in Diagram 12-15 are both bad shape, White has no way to attack them. In the process of taking adjacent edges, it is often possible to gain tempos, forcing your opponent to build walls.

In some cases, it is possible to completely run your opponent out of moves in the midgame by grabbing the long diagonal connecting adjacent edges. Diagram 12-20 shows perhaps a famous example of this, from the 1984 World Othello Championship. Paul Ralle of France, as White, grabbed the diagonal with g2! (Diagram 12-21). Black can (and did) break the diagonal by playing a6, but White can again control the diagonal with b7 (Diagram 12-22), winning easily. Note, however, that if the diagonal grab was not available in Diagram 12-20 (for example if the disc on e4 were white rather than black), then White's bad edges would give Black the advantage.
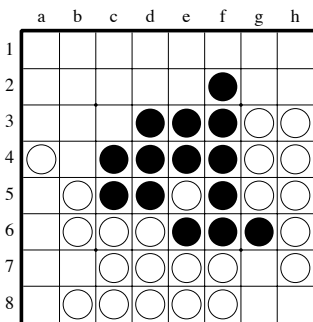
Diagram 12-20
White to move
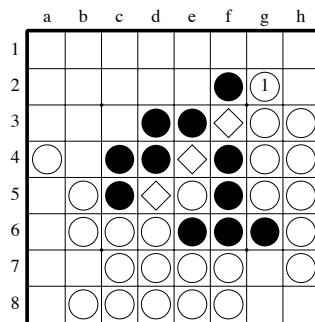
Diagram 12-21
Black to move
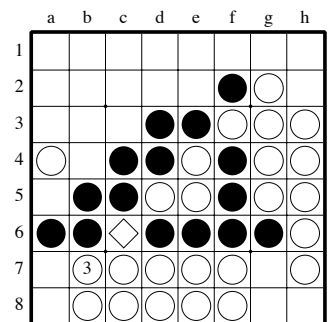
Diagram 12-22
Black to move

	a b c d e f g h		a b c d e f g h		a b c d e f g h
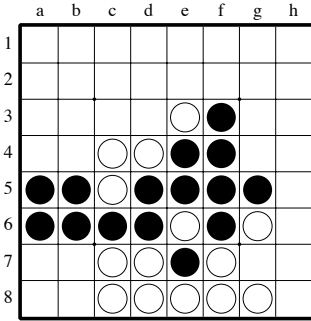
Diagram 12-23
White to move
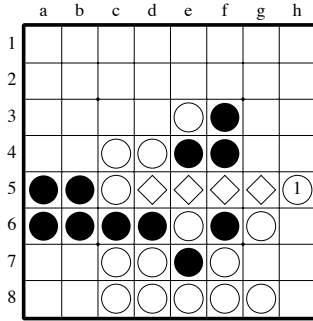
Diagram 12-24
Black to move
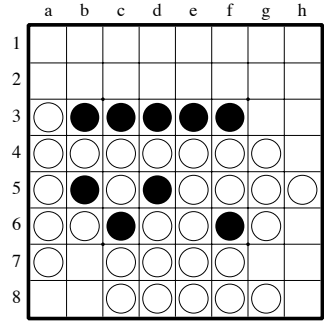
Diagram 12-25
Black to move

Diagram 12-23 shows another example where a "bad shape" edge turns out to be an advantage. This position is from the semifinals of the 2003 World Championship. Ben Seeley, playing White, moved to h5 (Diagram 12-24), exploiting the fact that Black does not have access to g4. Diagram 12-25 shows the position a few moves later in the game. Note that Black does not have access to g3 or h3 because of the block of white pieces at the bottom of the board. Black will at least get a good move to b7 at some point in the game, attacking White's unbalanced edge, but overall having this edge is working to White's advantage.

Harmony of the discs

Anders Kierulf of Switzerland (among other places) once carried out a statistical analysis of tournament games showing that the eventual losers of games had, on average, more edge discs in the midgame than the winner. However, as we have seen above, there are many circumstances under which taking edge positions, even "bad" positions such as unbalanced edges, is advantageous. One reason that the player with more edge discs goes on to lose the game is that, in many games the player who is losing will be forced to take edges in a desperate attempt to gain tempos and avoid running out of moves.

In my view, the key to playing well in the midgame is to make the right edge moves, keeping a balance between offense and defense. Taking bad edges can work as long as you are receiving adequate compensation for it, either in terms of offense as in Diagram 12-20, or in terms of defense as in Diagram 12-25.

Exercises

In each diagram, find the best move. Answers begin on page 151. Hint for Exercises 12-3 and 12-4: consider the answers to Exercises 12-1 and 12-2.
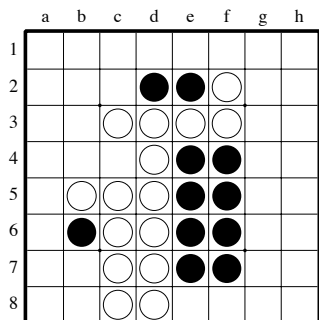
Exercise 12-1
Black to move
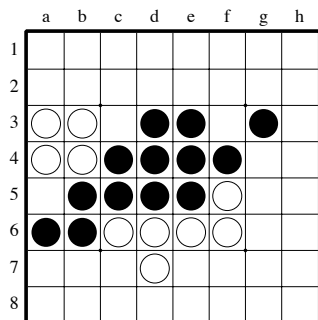
Exercise 12-2
White to move
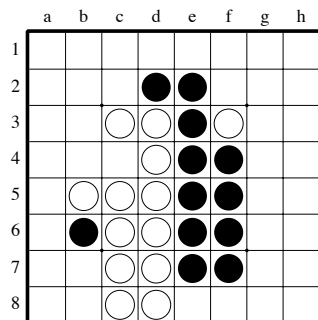
Exercise 12-3
White to move
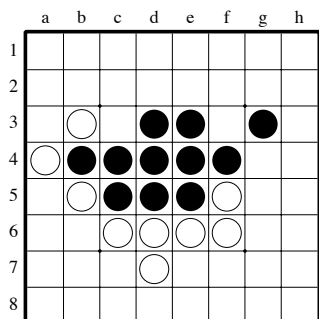
Exercise 12-4
Black to move
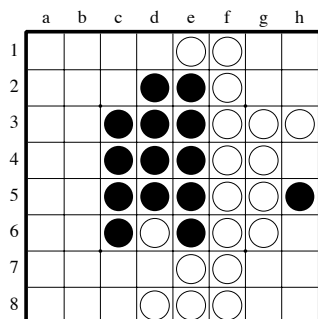
Exercise 12-5
Black to move
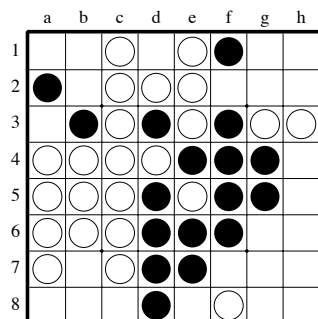
Exercise 12-6
Black to move

Chapter 13

Endgame counting

In chapters 6 and 8, we looked at strategies that can help uncover good moves in the endgame. However, in many positions, the only way to find the right move is to make an exact count. That is, you must be able to consider a sequence of moves for the rest of the game, and figure out what the final score of the game will be. While I explore techniques to make this as easy as possible, it still requires the ability to "read ahead" and visualize what the board will look like in the future, which novice players may find difficult. The first part of this chapter explains how to count the last two moves of the game, which is relatively easy and should be manageable even for novices. The rest of the chapter contains some of the most difficult material in the book, and is designed for more advanced players. Regardless of your current level, practicing endgame counting is one of the best ways to improve your ability to read ahead, and can help you become stronger at all phases of the game. The Appendix discusses software designed specifically for practicing endgames.

Diagram 13-1 shows a typical position where counting can be used to determine the best move. The first step is to count the number of discs of your own color on the board in the current position. There are several ways to count the discs, and experience will tell you which method works best for you. While speed can be important if you are playing a game with a time limit, getting the number of discs correct is critical, so it is important to find a method that allows you to count accurately. Personally, I count the number of discs in each column, adding from right to left. For example, in Diagram 13-1, there are 7 black discs in column h, plus 5 in column g makes 12, plus 4 in column f makes 16, etc. With practice, it becomes possible to just look at the column and know how many discs there are without really counting. Of course, you could just as well count left to right, starting in column a and ending with column h, but you are likely to find that it is easier to add along columns than along rows. Another way to count is to group the discs into fives, which makes it easier to add the groups (counting 5, 10, 15...), but I have found that this can make it difficult to remember which discs have been counted.
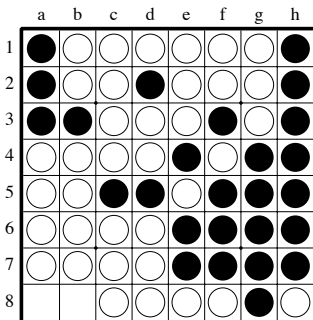
Diagram 13-1
Black to move

Having determined that Black has 26 discs in Diagram 13-1 (repeated below), we will now count the number of discs that Black will have at the end of the game. Consider what happens if Black plays a8 (Diagram 13-2) and then White finishes the game with b8 (Diagram 13-3). How many discs does Black have? In Diagram 13-2, Black has 26 + 7 = 33 discs; black started with 26 discs, got an additional five on the left edge (a4, a5, a6, a7, and a8) and two on the diagonal (b7 and c6). When counting a move which flips in two or more directions, it is often easier to add discs in this manner, one direction at a time. In Diagram 13-3, White flips one disc back (b7), leaving Black with 33 – 1 = 32 discs. Thus, if black plays a8 in Diagram 13-1, he will have 32 discs at the end of the game.
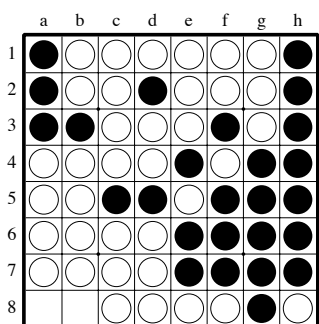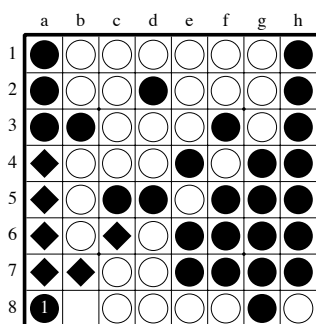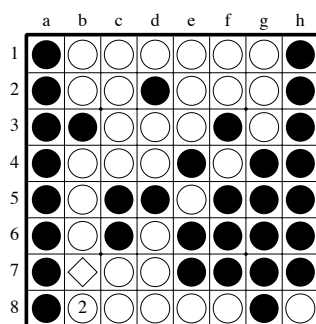
Diagram 13-1	Diagram 13-2	Diagram 13-3
Black to move	*White to move*	*Black has 32 discs*

While it is possible to count this way, first calculating that Black has 33 discs in Diagram 13-2 then 32 discs at the end of the game, which I would call the two-step method, you can save a step by finding the score in Diagram 13-3 directly. After all, when thinking about the move to a8 in Diagram 13-1, we know that at the end of the game Black will not get to keep the disc on b7 because White will move to b8. So, instead of crediting Black with this disc and then taking it away, it is easier to just not count it in the first place.

If I were counting this position, I would start with 26, add five for the discs on the left edge to make 31, and then add one for the disc on c6 to make 32. If you have never done it before, it might seem as though this "shortcut" of going straight to Diagram 13-3 in one step will make counting more difficult and error-prone. However, having spent years using both methods, I assure you that cutting out the extra step will allow you to count both more quickly and with fewer mistakes. The difference between these two methods should become clearer when we consider what happens if Black starts with b8 in Diagram 13-1.

Beginning with Diagram 13-1, if Black starts with b8, the result is shown in Diagram 13-4. White will finish the game with a8 (Diagram 13-5). How many discs does Black have? In Diagram 13-4, Black has 26 + 14 = 40 discs; Black started with 26 discs, got an additional five on the bottom edge (b8, c8, d8, e8, and f8), five on the diagonal (c7, d6, e5, f4 and g3), and four on column b (b4, b5, b6, and b7; note that b8 was already included above). In Diagram 13-5, White flips seven discs back (b7, b8, c8, d8, e8, f8, and g8), leaving Black with 40 - 7 = 33 discs. Thus, if Black plays b8 in Diagram 13-1, he will have 33 discs at the end of the game. Since a8 leaves Black with 32 discs and b8 leaves Black with 33 discs, b8 is the better move.
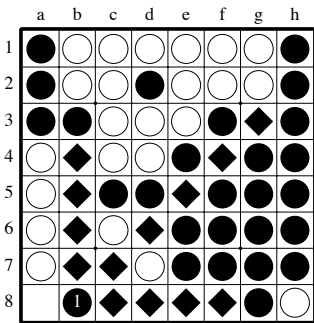
Diagram 13-4
White to move
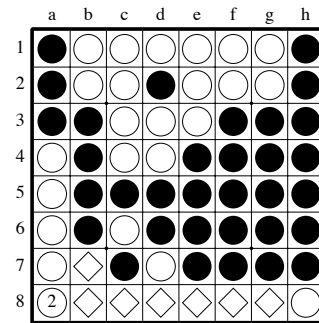
Diagram 13-5
Black has 33 discs

Using the one-step method to calculate the number of discs in Diagram 13-5, again start with 26, the count in Diagram 13-1. Black then gains five discs on the diagonal (c7, d6, e5, f4, and g3) for 31 and three discs on column b (b4, b5, and b6) to make 34. Finally, when White moves to a8, Black loses the disc on g8 (note that we never added the other discs on the bottom edge to Black's total, so there is no need to subtract them now), and at the end of the game Black will have 34 - 1 = 33 discs. Personally, I find counting this way much easier than calculating 26 + 14 = 40 after b8, and 40 - 7 = 33 after White a8.

At this point I should mention another counting method, which I call the plus/minus method. Above, we compared the number of discs at the end of the game, for a8 and b8, to determine that b8 was better. Another way to choose a move is to instead calculate the number of discs gained or lost. Comparing Diagram 13-1 and Diagram 13-3, we see that at the end of the game, Black will gain 6 discs by playing a8 (a4, a5, a6, a7, a8, and c6). Comparing Diagram 13-1 and Diagram 13-5 shows Black will gain 7 discs by playing b8 (8 new discs on c7, d6, e5, f4, g3, b4, b5 and b6 less one disc lost at g8). Again, since the gain is larger for b8 (+7) than for a8 (+6), we know that b8 is the better move.

The main advantage of using the plus/minus method is that there is no need to count the number of Black discs in Diagram 13-1. If a8 is +6 and b8 is +7, then b8 is better, end of story. If someone gave me 5 seconds to figure out the right move I could do it with the plus/minus method, but it might take me 10 seconds to count that there are 26 black discs in Diagram 13-1. Moreover, if you do bother to count the number of discs in the initial position, then the plus/minus method will still let you determine the final score. In our example, if we calculate that b8 is +7, then the final disc count must be the initial count, 26, plus 7, or 33.

If you never plan on counting positions with more than 2 empty squares, then plus/minus is probably better than counting discs. The main advantages of counting discs only become apparent as you start to count longer sequences. Often the reason to count is not to determine the best move, but to find a move which is good enough to win. If you are counting discs, and you find a sequence that will leave you with 33 discs, then you know you can win. If you find a sequence that is +10, is that enough to win? The only way to know is to count the number of discs in the original position, which takes away the main advantage of the plus/minus method. In fact, when I count with plus/minus, I usually have a "target" score which tells me whether I have enough to win. In our example, starting with 26 discs, the target would be +7; that is, if I find a move which scores +7 or better, then I know I can win. However, in a long endgame count in which you consider many possible sequences, it can be hard to keep the target in mind. When counting discs, it is always obvious that 33 discs win.

Another drawback of the plus/minus method is that it can be confusing when you are losing discs in the sequence under consideration. Suppose that you start with 45 discs but will lose discs during the rest of the game. It is obvious that finishing with 33 discs is better than 32, but is -12 better than -13? Mentally counting "45 minus 5 is 40, minus 5 is 35, plus 2 is 37, minus 4 is 33" is easier than "minus 5 minus 5 is minus 10, plus 2 is minus 8, minus 4 is minus 12".

Since you can use either the one-step or two-step approach, and choose to either count discs or use plus/minus, there are really four different ways to count. While I would strongly recommend using one-step instead of two-step, whether you count discs or use plus/minus is really a matter of personal preference; you can certainly be effective with either method. When I first started playing Othello, back when dinosaurs roamed the earth, as far as I know everyone counted using the two-step, plus/minus method, and even today some experts count this way. Around 1990 I switched to using one-step plus/minus, and it was not until 2000 that I finally started counting discs. Having considerable experience using both methods, I would recommend counting discs over plus/minus for longer sequences.

Cancellation

Regardless of which method you use to count, a technique which I call **cancellation** can make counting easier. Consider counting out the position in Diagram 13-6 using the plus/minus method. To count the sequence Black a8, White b8, normally we would say that Black gains two discs (a7 and a8) for +2, and loses two discs (b5 and b6) for 0. Using cancellation, we mentally pair the discs gained (a7 and a8) with the discs lost (c5 and c6) and immediately get the result of 0 (see Diagram 13-7). To count out the sequence Black b8, White a8, we can cancel four discs gained (e.g., c7, d6, e5, and f4) with four discs lost (c6, d5, e4, and f3), leaving one extra disc gained on g3. Thus, this sequence is +1 for Black (see Diagram 13-8).
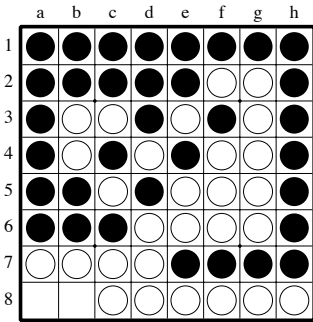
Diagram 13-6
Black to move
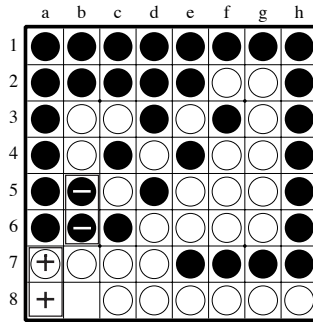
Diagram 13-7
Black a8, white b8
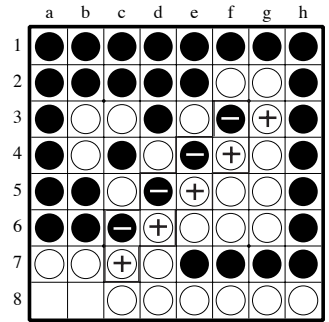
Diagram 13-8
Black b8, white a8

Cancellation is most useful in situations such as Diagram 13-8, where the discs to be cancelled lie on adjacent squares, or are at least close to each other. If the discs are on opposite sides of the board, I find that it is usually better to just count without using cancellation. If you have to keep shifting your eyes from one part of the board to another in order to line up the discs to be cancelled, it becomes much more likely that you will make a mistake. One exception to this is when there are a large number of edge discs which can be cancelled, such as Diagram 13-9. When considering the sequence Black a8, White b8, it might pay to cancel out five edge discs, yielding the result of +1. As I mention throughout this chapter, through practice and experience you can discover whether this technique makes counting easier for you.

Diagram 13-9
Black to move

Branching

In the examples above, with only two empty squares, once Black chooses a move the final score of the game is determined, since White simply fills in the last empty square to finish the game. Once you start counting positions with more empty squares, your opponent may have more than one move to choose between. It then becomes necessary to think not only about which move you want to play, but also about which move your opponent will choose in response. Even with just three empty squares, this can make figuring out the best move much more difficult. For example, consider Diagram 13-10.
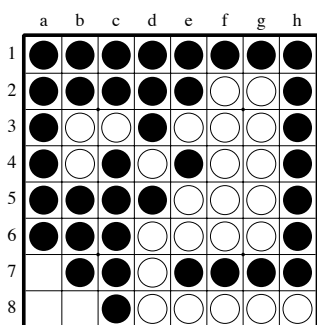
Diagram 13-10
White to move
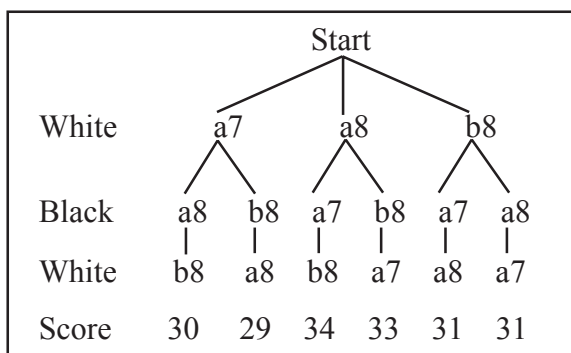
Diagram 13-11
Possible sequences from Diagram 13-10

White can choose among any of the three empty squares, and after his move, Black will be able to play into either of the two remaining squares. This means that there are 3 X 2 = 6 possible sequences to consider; these are shown in Diagram 13-11, along with the score for White after each sequence (e.g., after the sequence White a7, Black a8, White b8, White will have 30 discs at the end of the game). Given this information, what are the best moves for both sides?

If White begins with a7, then Black chooses between a8 and b8. If Black plays a8, then White will end up with 30 discs, which means that Black will have 34. If Black plays b8, then White will end up with 29 discs, and Black will have 35. Black will naturally choose the move which gives him the most discs and gives White the fewest discs possible. Thus, if White begins with a7, Black follows with b8, and White will have 29 discs at the end of the game. Similarly, if White begins with a8, Black chooses b8, and White will get 33 discs. If White begins with b8, both of Black's replies yield the same score, and White will get 31 discs. Since White can score 33 starting with a8, but only 31 with b8 and 29 with a7, White's best move in Diagram 13-10 must be a8, and Black will reply with b8.

The example above demonstrates how complicated counting the endgame can seem when the opponent has different moves to choose from. The good news is that in practice, we can simplify the process considerably, and it really is not all that difficult to find the right move in Diagram 13-10. Suppose that you are playing White, without the information in Diagram 13-11. The first step in counting this position is to count the current number of discs for White, which is 24. Next, you have to decide which of the three choices to consider first. Usually, the first move to consider is the one which, without counting, looks the best. Suppose that you decide to start with b8. Diagram 13-12 shows the resulting position, and White now has 30 discs (of course, in an actual game you would have to see this in your mind's eye).
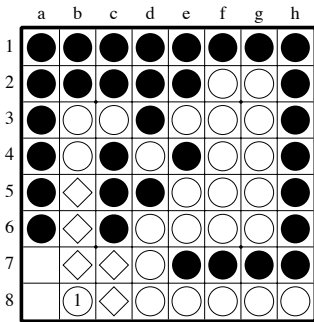
Diagram 13-12
White has 30 discs
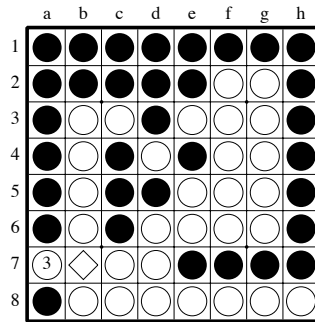
Diagram 13-13
White has 31 discs
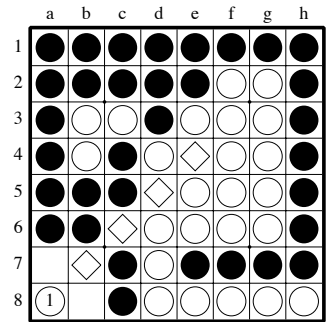
Diagram 13-14
White has 29 discs

If we follow the logic of Diagram 13-11, we must now count the final score after each of Black's choices to determine which is best (for Black); only then will we know how many discs White will get at the end of the game if he starts with b8. In practice, the best way to proceed is to count the final score if Black plays to a8 (and White finishes with a7), since this is considerably easier than counting the sequence a7-a8. After Black a8, White a7, the only change for White is the extra disc on a7 (see Diagram 13-13). Since White has 30 discs in Diagram 13-12, he must end up with 31 discs in Diagram 13-13. Now, to be sure that White can really get 31 discs by choosing b8 in Diagram 13-10, we have to count out the sequence if black chooses a7 in Diagram 13-12. Perhaps a7 is better for Black, and White will get less than 31 discs. Even without counting this sequence, however, one thing is clear: *White will lose if he starts with b8*. The only question is how much he will lose by, and rather than spending time figuring that out, it makes more sense to try one of the other choices in Diagram 13-10. Suppose that you decide to try a8 next, which results in the position shown in Diagram 13-14, where White has 29 discs.

Again, we must decide which Black move to count first. In this case, b8 would appear to be the obvious choice, keeping two discs on the bottom edge. White finishes with a7, and the final position is shown in Diagram 13-15. Comparing this with Diagram 13-14, White gains four discs (a7, b6, c5, and c7), leaving a total of 33 discs. Thus, it appears that White may be able to win if he starts with a8 in Diagram 13-10. However, we must be certain that in Diagram 13-14, b8 is really the best move for Black. If Black plays a7 instead, then White finishes with b8 (Diagram 13-16). Comparing Diagrams 8-14 and 8-16, White has gained five discs (b5, b6, b8, c7 and c8) for a total of 34. Thus, if White starts with a8, Black can do no better than reply with b8, and White will win 33-31.
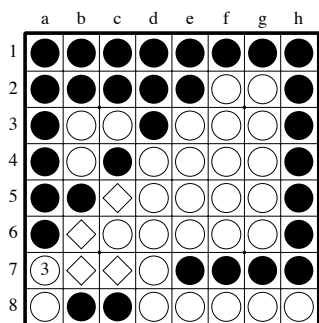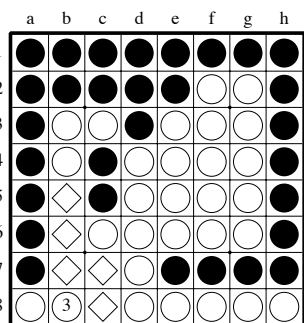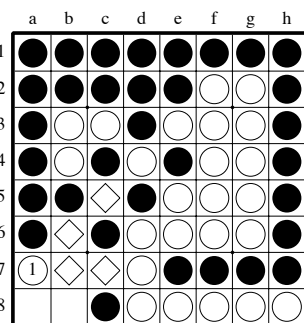
Diagram 13-15	Diagram 13-16	Diagram 13-17
White has 33 discs	*White has 34 discs*	*White has 29 discs*

Now that you have determined a8 wins for White, you might want to stop counting and just play a8. However, suppose that you want to make sure that a8 is really the best move. Then, you must consider White's final choice in Diagram 13-10, namely a7 (Diagram 13-17). With only 29 discs in Diagram 13-17, it is immediately obvious that White will not get more than 33 discs (the score when White begins with a8), and White can reject a7 in favor of a8.

As the analysis above demonstrates, in order to find the best move, it is not necessary to find the score for every possible sequence. In this example we considered 4 out of 6 sequences, and in some cases it is possible to find the right move by looking at only a small percentage of the sequences. This is especially true if we are willing to accept any move that wins, as opposed to finding the absolute best move. Still, branching certainly does make counting more complicated, which is why expert players usually look for winning sequences without any branches. Some examples of this appear in the next section.

Counting with more than two empty squares

This section describes techniques for counting positions with more than two empty squares. As mentioned in the first part of this chapter, there are several ways to count with only two empty, and naturally even more variation is possible when counting longer sequences. Below I go through some examples of how I count a position, but I would never claim that this is the only right way to do it. Through practice and experience, you can discover what methods work best for you.

As shown in the previous section on branching, counting with more than two empty squares requires us to not only count out sequences, but to also think about which sequences we should count. In Diagram 13-18, Black has three choices, all of which will leave White with three choices, and after some of these sequences Black will have two moves to choose from. Fortunately, we do not have to bother counting out all of these possibilities. The key to counting this position is to use even number theory (see Chapter 8) to help decide which sequences to count.
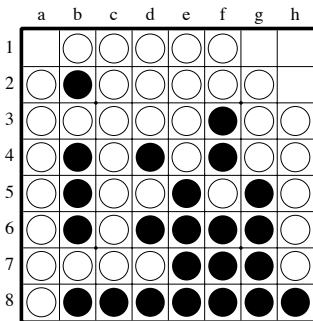
Diagram 13-18
Black to move
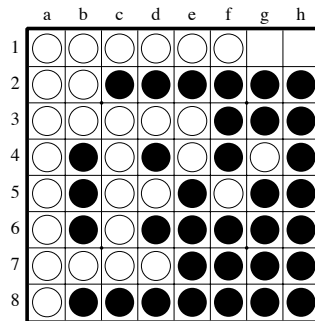
Diagram 13-19
After h2, a1
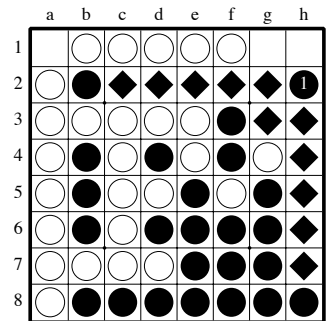
Diagram 13-20
After h2

No matter where black plays in Diagram 13-18, the upper-right region will have two squares left, while the upper-left region will have one square (a1). Even number theory tells us that White will probably want to play a1 on his turn, leaving Black to initiate play into the final pair. Further, if Black starts with h2, then this creates a hyper region (an even numbered region that Black can not play into), so that even if White continues with a1, White will have to initiate play into the region. Thus, the place to start this count is with a Black move to h2 and a White reply of a1. The resulting position is shown in Diagram 13-19. Now the question is, where does White want to play, g1 or h1?

There are at least two ways of handling this situation. One is to count the discs in Diagram 13-19, then use this as a starting position to count both sequences (White g1, Black h1 and White h1, Black g1). Using this method, we must determine the number

of black discs in Diagram 13-19. In order to do this, first we count the number of discs in Diagram 13-18, which is 23. Black's move to h2 gives black six discs on the right edge (h2, h3, h4, h5, h6, and h7) for 29, g3 for 30, and five discs on the second row (c2, d2, e2, f2, and g2) for 35. White's move to a1 flips the disc on b2, leaving Black with 34 discs in Diagram 13-19. Now that we know this number, we can count to the end of the game for both of White's choices. First, if White plays g1 and Black plays h1, then Black loses discs on f2 and g3 for 32, and gains the disc on h1 for 33. If instead White plays h1 and Black plays g1, then Black loses the disc on f3 for 33, and gains the disc on g1 for 34. Thus, in Diagram 13-19 White can do no better than g1, and Black wins 33-31.

Another way to approach the same count is to figure out which move in Diagram 13-19 is better for White before calculating what the final score of the game will be. In this case, we would use the plus/minus method, counting from White's point of view. Again starting from Diagram 13-19, after White g1 and Black h1, White will gain three discs (g1, f2 and g3). If instead White plays h1, after Black g1, White gains two discs (h1 and f3). Thus, in Diagram 13-19, we assume that White will play g1. We are then ready to count, starting with Diagram 13-18 (at some point we must count that there are 23 black discs in this position), the entire sequence Black h2, White a1, pass, White g1, Black h1. First, I would notice that at the end of the game black will own the entire right edge, gaining seven discs (h1, h2, h3, h4, h5, h6 and h7), for a total 30. Black also gets g2 for 31, three more discs on row 2 (c2, d2, e2) for 34, but loses b2 for 33.

In general I would favor the former of these two methods because it is easier, although the latter might be somewhat faster, since we are going more directly to the final position (in the former, we count f2 and g3 for Black then subtract them away later). Practice will tell you which method works best for you, but I believe that when the number of empty squares is greater, it becomes very difficult to handle the visualization required in the latter method. Further, sometimes counting to an intermediate position such as Diagram 13-19 will tell you right away that you are either going to win or lose. In our example the score is close, so we have to think about both White moves in Diagram 13-19. However, if black had 38 discs at that point, then we would know without further counting that Black will win, or if Black had 26 discs, we would know that black will lose.

Having calculated that Black will win after h2, White a1, it is a simple matter to conclude that after h2 (Diagram 13-20), Black wins no matter where White moves. In this case, the upper-right region (g1 and h1) and upper-left region (a1) are independent. That is, whether White plays out the upper-right region first or a1 first, the discs flipped will be exactly the same. Thus, if White plays g1 instead of a1, Black will still end up with 33 discs.

If we want to verify that h2 is Black's best move in Diagram 13-18, then we must consider Black's other options, namely g1 and h1. As noted above, even number theory tells us that in either case the first sequence to calculate is a reply of White a1. After Black h1, White a1, Black h2 is obviously the best choice. After Black g1, White a1, the final two moves (Black h2, White h1) are forced. Thus, we need only count two sequences, namely h1, a1, h2, g1 and g1, a1, h2, a1. These are left as an exercise, but it is not difficult to verify that neither of these sequences matches the 33 discs that Black can get by starting with h2. In the end, it was only necessary to count out four sequences to verify that h2 is the best move in Diagram 13-18.

Diagram 13-21 shows a position from one of my games at the 2001 World Championships. Finding and verifying the best move in the position is not easy; giving the position to WZebra, it looked at 3,440 sequences before selecting h1. In the actual game I did not play this move, but I did find a winning sequence which was quite easy to count. First, I counted that White has 19 discs. Looking at the position, I thought that a3 was a good move, taking four interior discs (b4, c5, d6, and e7); Black has only one move, a2, leaving White with 23 discs.
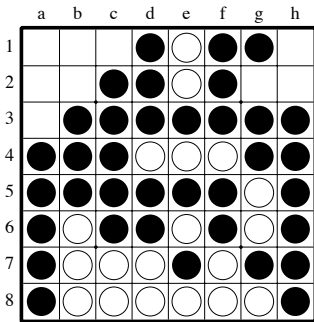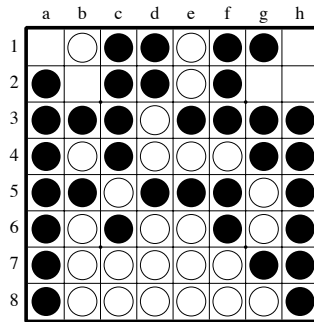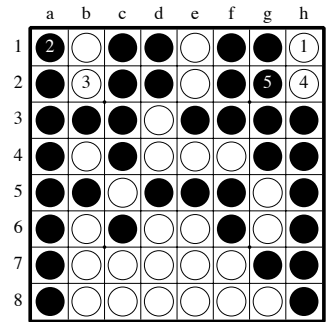

Diagram 13-21	Diagram 13-22	Diagram 13-23
White to move	*White to move*	*Final moves*

Now, the upper-left region is still a hyper region for Black, and one way to deal with this region is to feed Black moves in this region (see Chapter 8). I decided to look at b1, which gives Black two choices, b2 and c1. However, b2 is terrible, allowing White to play h1, pass, c1, pass, a1. So, Black must move to c1. These two moves give White additional discs on b1 and d3, but Black will eventually move to a1, flipping the disc on b1. Thus, I added only the disc on d3, making 24 white discs (Diagram 13-22). The rest of the moves, shown in Diagram 13-23, are obvious and offer Black no choices. It is also pretty easy to count this sequence. White gains five discs in the upper-left (b2, c2, d2, b3, and c3) for 29, and four discs in the upper-right (f1, g1, h1, and h2) for 33. In this case, I really only needed to count one sequence to find a winning move.

Exercises

In each diagram, find the best move and determine the final score of the game with perfect play from both sides. Answers begin on page 152.
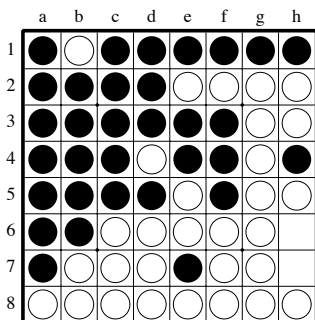
Exercise 13-1
Black to move
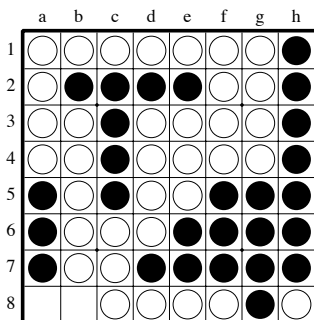
Exercise 13-2
Black to move

Exercise 13-3
Black to move

Exercise 13-4
White to move

Exercise 13-5
White to move

Exercise 13-6
White to move

Chapter 14

Becoming an expert

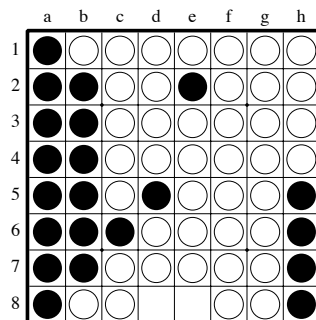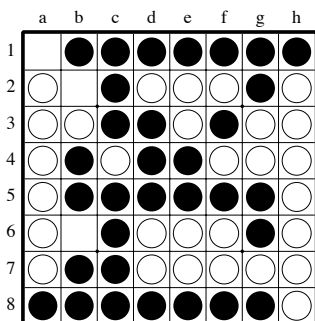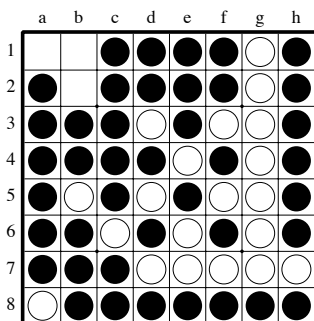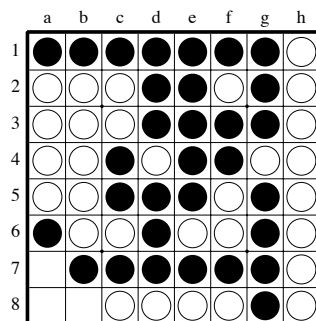Although millions of people enjoy playing Othello with their friends and family, most of them have no idea there are experts who study the game seriously or that tournaments are being held all over the world . If you are interested in becoming an expert, or perhaps even the World Champion, this chapter will explain how to do it.

Play in tournaments

While it is certainly possible to become a strong player by practicing against friends, computers, or opponents on the Internet, nothing will raise the level of your play as quickly as participating in tournaments. There is something special about the atmosphere of a tournament, sitting face-to-face with your opponent in a game that counts (if for nothing else than rating points) that can not be matched by playing electronically. Not only does playing in a tournament give you a chance to play against experts, but it can also spur your desire to improve. More importantly, playing in tournaments is a lot of fun! Unlike some other strategy games, there are no professional Othello players, and gambling is not common. As of this writing, the biggest prize is $3,000 for winning the World Championship, and most tournaments offer only a trivial amount of prize money. In general, people play in tournaments for the fun of it, and perhaps that is why the atmosphere is fairly relaxed. The best way to find a tournament near you is to contact the Othello Association in your country (see Appendix).

If the idea of playing in a tournament seems intimidating, keep in mind that Othello players are generally very friendly people, and are always happy to see new players coming to tournaments. If you are familiar with the ideas in Part I of this book, you are certainly good enough to play in a tournament. In more than twenty years of tournament play, I have never heard anyone complaining that their opponent was too weak. By far the most common complaint about people coming to their first tournament is that they sometimes play the first couple of games and then just disappear, which can ruin the pairings for the rest of the tournament. Although rules vary, a typical one-day tournament would consist of six rounds with a time limit of 25 minutes per player. Adding in an hour for lunch and some time between rounds, it will take 7 or 8 hours to finish the tournament. If you can not stay for the entire tournament, then at least speak to the tournament director before you enter.

There are some extra rules which apply to tournament games. A device called a "chess clock" is used to keep track of the time used by each player. It has two clocks and two buttons which control its operation. The clocks are set to show the amount of time allotted to each player. To begin the game, the player with white presses his button, which starts Black's clock counting down. Black makes his move, flips the discs, and then presses his button, which stops his own clock and starts White's. If one player's clock runs all the way down to zero before he hits his button to complete his last move, that player time defaults. Although the rules used for scoring games with a time default vary, the player who runs out of time always loses, regardless of the position on the board.

In a tournament game, if you touch a disc to a square where you have a legal move, then you must move there. Thus Othello is not like some games where you are not committed to making a move until you take your finger off the piece. Further, you must use the same hand to place the disc on the board, flip the pieces, and hit your clock. When time is running short it may be tempting to flip with both hands to save time, but the tournament director can impose a penalty on any player doing so.

If your opponent fails to flip all of the discs that he was supposed to, you have the option of forcing him to correct his mistake. To do so, hit your button to start your opponent's clock and point out the discs that he failed to flip. If it is to your advantage, you are allowed to leave the board as it stands, even if your opponent realizes his mistake after he hits his clock. By the same token, if you make a move, hit your clock, and then realize that you forgot to flip some discs, you are not entitled to flip the discs even if your opponent has not yet made his next move.

Practice intensively

One of the reasons that playing in tournaments is so beneficial is that it forces you to concentrate on Othello for several hours in a row. Just as intensive exercise such as weight lifting will make your body adjust by making your muscles bigger, intensive concentration on Othello makes your brain adjust. It is certainly possible to make progress playing a little bit every day, but becoming a top player requires at least occasional periods of intensive practice.

In my view, the key to playing Othello at a high level is the ability to read ahead and visualize what the board will look like after several moves. In fact, at the highest levels of play, nearly all of the "thinking" taking place is visual. For example, scans of Japan's top Shogi (Japanese Chess) player showed activity concentrated in the vision center of his brain.

The first time that I was able to really "see" what the board would look like was during the 1981 World Championship. I had practiced quite a lot in the month before,

and then played 19 games over two days during the tournament. In the last game, I was considering a move when quite literally I saw a diagonal of pieces turn from white to black. It looked as real to me as if the pieces had actually changed color. It was not until much later that I was able to visualize this well on a consistent basis. In the summer of 1987 I visited Japan and pretty much played Othello all day for 3 weeks. By the end of that trip, when I looked at the board, it seemed to come alive, as though I was watching a movie.

Practice counting endgames

Another good way to improve your ability to visualize is to practicing counting endgames (see Chapter 13). In order to accurately count a sequence of moves in the endgame, you must correctly visualize all of the pieces that are added to the board or flipped. The level of concentration needed to do that is so high that you may find it extraordinarily tiring. In my experience, novice players are usually unable to maintain this level of concentration for more than a minute or two. Pretty soon their eyes start to glaze over, and it looks as though they need a nap. Although it might seem that they are just getting bored, in actuality it is the strain of doing something they are not used to that makes them feel tired or that their eyes can not focus anymore.

In some ways, counting endgames is like running in an all-out sprint. At first, you may find it difficult to count anything more than two empty squares. My advice would be to slowly work your way up, at first practicing by counting the last two or three moves of your games. As your ability to visualize improves, you will be able to count positions with several empty squares. At that point, it will really start to pay to devote more practice time to endgame counting. The Appendix describes software useful for practicing endgames.

Record and review your games

One of the best ways to improve is to review your games. WZebra can analyze your games and show you where you made mistakes and how much those mistakes cost you. Of course, in order to review, you have to be able to remember the games you play, and it is well worth the effort to take a transcript of your games as you play. Simply start with an empty 8x8 diagram, put in the initial four center discs, and then write in the moves as they are made. I usually use a small notebook containing graph paper, but it is not difficult to make your own transcript sheets using Excel or other software.

One problem with taking transcripts is that in a timed game, it may seem like a waste of precious seconds to record the moves. With practice, it should become possible for you to write the transcript after the game is complete, without using a board. At the 1987 All Japan Championship, Takeshi Murakami played in nine games, in-

cluding two tie-breaker games that were held with 5-minute time limits. The following day, while sitting on a train without a board, Murakami was able to write down transcripts of all nine games! Although there are not many people capable of that, it really is not too difficult to learn how to write down your game right after you finish it. At first you might only be able to write down the first 10 moves, but as you practice you will make it further and further until finally you are able to record the entire game.

Review transcripts of experts' games

Besides the transcripts published in magazines such as *Othello Quarterly*, a large collection of games is available over the Internet from the French Othello Federation (FFO, see Appendix). These games can be examined using WZebra. When reviewing transcripts, I usually try to put myself in the shoes of one of the players, normally the stronger of the contestants. It is possible to think before every move, considering moves for both sides, but this can get confusing, particularly if one of the players is not very strong. When it is "my" player's turn to move, I think for a while about where I would have moved, and only then look at how the game actually proceeded. Sometimes the actual moves turn out to be better than the moves I thought of, and when this happens it can provide tremendous insight into the blind spots in my play.

While there are a lot of players worth studying, by far my favorite is the transcripts of 5-time World Champion Hideshi Tamenori. There are more than 200 of Tamenori's games in the FFO database, and I highly recommend playing through all of them. I also recommend the games of 2-time World Champion Masaki Takizawa, especially his games as black. In particular there is a lot to learn from Takizawa's defensive plays.

Play on the Internet

If there are no strong players near where you live, it is possible to find opponents from all over the world on the Internet. If you want to play against experts, the best site is probably Vinco Online Games (www.vogclub.com), although there is a small charge to become a full member. You will find some of the world's best playing there, and compared to other sites, many of the experts seem willing to share strategy tips with newcomers. VOG also features the automatic recording of game transcripts; a large archive of transcripts is available for study.

Another good site for Othello is Yahoo Japan (www.yahoo.co.jp). Although it is a bit difficult to set up an ID (unless you can read Japanese), the buttons and boxes are more or less in the same places as they are on other Yahoo sites. It helps to look at the bottom of the screen as you point at various hyperlinks, since the address usually

contains English words which will give you a hint as to what the link is. When registering your ID, use 000-0000 as the postal code, indicating that you are outside Japan. If you can not manage to create your own ID, you can use the ID *foreign_guest*. The password is *guest*. It is polite to type "yoroshiku", which means something like "do me the honor (of playing)", before the game starts.

There are several sites where Othello is played under the name "Reversi". Most of these sites feature chat that could make a sailor blush. I would encourage you to play on the genuine Othello sites as much as possible, and when you do, please keep sportsmanship in mind.

One of my pet peeves about playing online is that most of the good players set very short time limits, sometimes only 1 minute per game! One reason this happens is that there are a lot of people who cheat by using WZebra or other computers to play, and it is much harder to cheat in a 1-minute game. While it can be fun to be play 1-minute games, it is not a good way to become a better Othello player. A steady diet of 1-minute games can create all sorts of bad habits, especially moving before really thinking. By the way, if you are tempted to cheat with WZebra, I urge you in the strongest terms not to. Almost everyone playing on the Internet has their own copy of WZebra, and they are not on the Internet because they want to play WZebra. Sometimes I see people "playing" each other, both using WZebra!

Read Othello Magazines

Currently the only regularly published Othello magazine written in English is the *Othello Quarterly*, published by the United States Othello Association. Back issues of OQ are available and are well worth reading (Othello Quarterly, 7 Peter Cooper Rd. #10G, New York, NY 10010). In particular, many of the earliest issues of OQ featured articles appropriate for beginners. The USOA also sells "Othello: Brief and Basic", written by former U.S. Champion Ted Landau. Some newsletters produced by the British Othello Federation are available online for free (www.ugateways.com/bofmain.html). They offer a wealth of strategy tips and game analysis, and are highly entertaining as well. If you can read French, the FFO produces an excellent magazine (FFO, BP 383, 75626 PARIS Cedex 13).

Play in the World Othello Championship!

The World Othello Championship (WOC) has been held annually since 1978, usually in late October or early November. Under the current format, each country is allowed to send up to three representatives. The three-day competition consists of 13 preliminary rounds, with the top 4 players advancing to the best 2-of-3 semifinals and finals. The results of the preliminary rounds also determine the team championship,

which goes to the country with the greatest number of total wins.

Each country has its own rules for choosing the representatives sent to the WOC. Some countries simply select the top 3 finishers at their national championship, while others have several qualifying tournaments, with the winners of those tournaments earning the right to represent their country. If you would like to participate in the WOC, the first step is to contact the national Othello association in your country (see Appendix). If you live in a country that does not have an association or has never participated in the WOC, it may still be possible for you to play. A good first step would be to contact the tournament director, who can help guide you through the process of being invited to participate. See www.worldothellochampionships.com for details.

Chapter 15

Puzzles

Take a corner puzzles

Diagram 15-1 shows an example of a take a corner puzzle. The expression "White in 2" indicates that it is White's move, and you are asked to evolve a plan that will enable White to occupy one of the board's four corners on his second move. To solve the puzzle properly, your plan must deal with every possible defense for Black so that no matter what move Black makes he cannot stop White from occupying a corner on White's second move. White need not prevent Black from taking a corner, as long as White himself can take a corner. The expression "or win" (see puzzle 9) means that the side to play must take a corner or win the game in the number of moves allowed. In some puzzles, the corner to be captured is specified. For example in puzzle 20, the a8 corner must be captured in 3 moves.
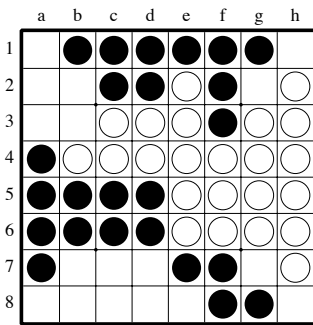
Diagram 15-1
White in 2

In Diagram 15-1, White's first move should be to b2. This allows Black only three options: a2, a3, and b3. Whichever move Black chooses, it will turn over the new disc at b2 and thus allow White to occupy a corner (a1) on his second move.

Take a corner puzzles were popular in the 1980's, but have largely disappeared in recent years, which is a shame in my view. One problem with take a corner puzzles is that, since the goal is to capture a corner rather than win the game, the solution is often not the best move available. Indeed, the solution to the puzzle could very well be a game losing move. Despite this esthetic flaw, I believe that working on these puzzles will help you develop the ability to read ahead. Solving take a corner puzzles is also a lot of fun! The puzzles below appeared in *Othello Quarterly* between 1979 and 1986. Answers begin on page 153.
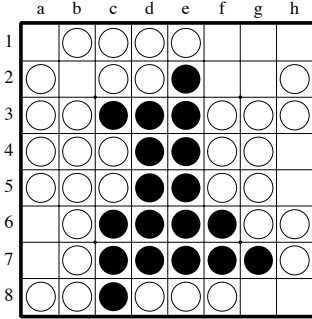
Puzzle 1
Black in 2
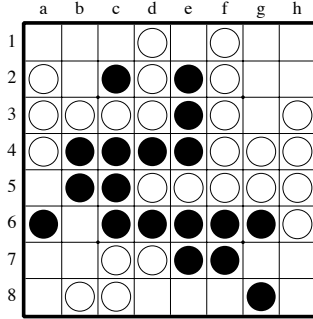
Puzzle 2
White in 2
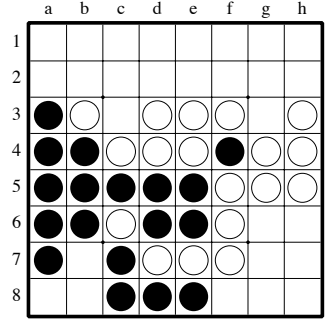
Puzzle 3
Black in 2
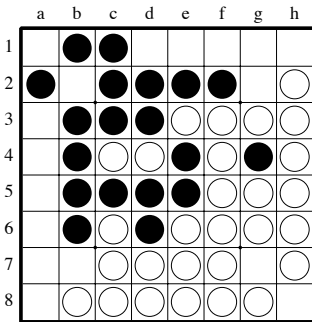
Puzzle 4
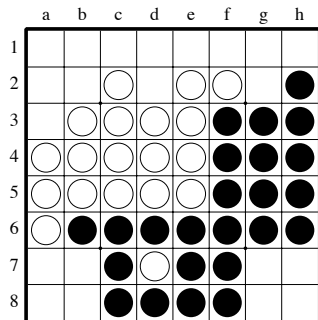*White in 2*
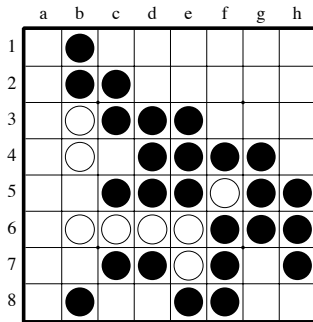
Puzzle 5
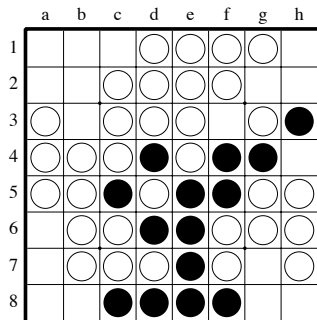*White in 2*
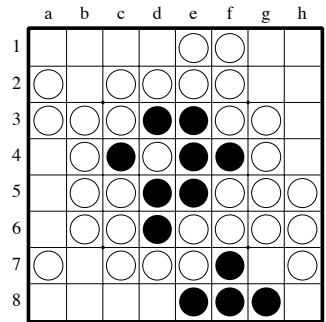
Puzzle 6
Black in 2
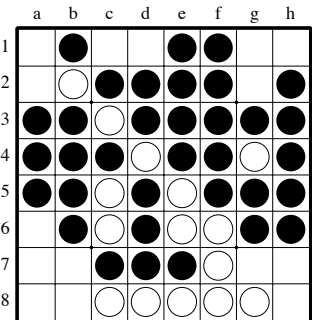
Puzzle 7
White in 2
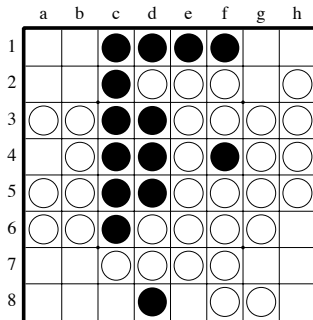
Puzzle 8
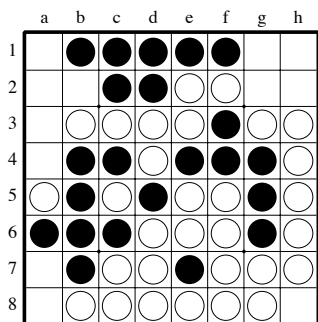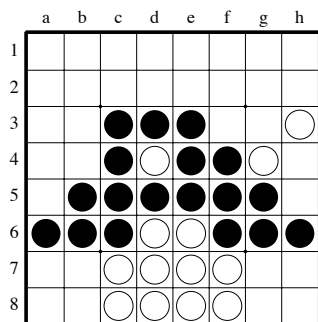*Black in 2*
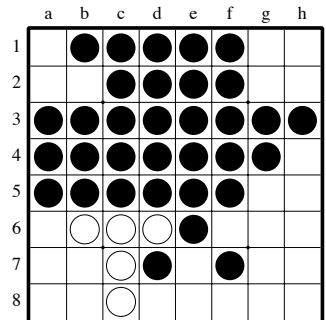
Puzzle 9
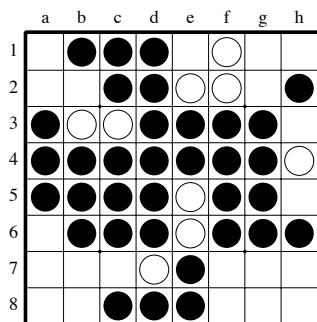*Black or win in 2*
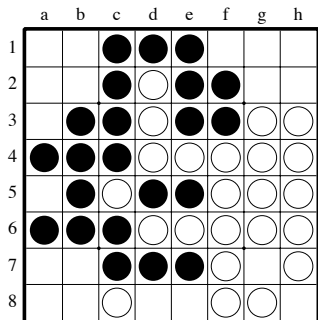
Puzzle 10
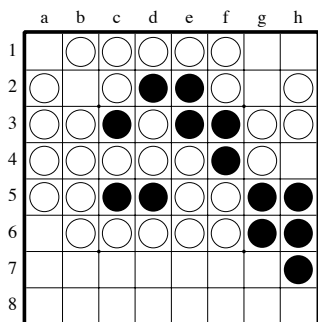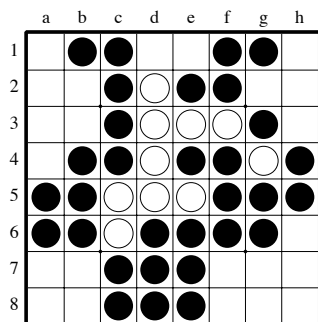*White in 2*

Puzzle 11
Black in 2
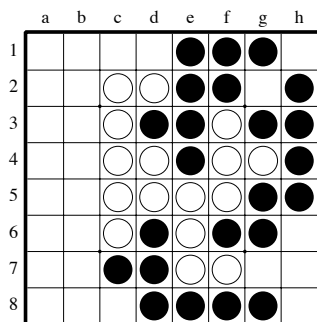
Puzzle 12
Black in 2

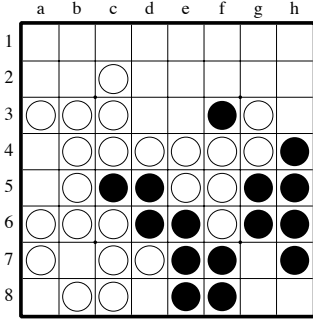Puzzle 13
Black in 2

Puzzle 14
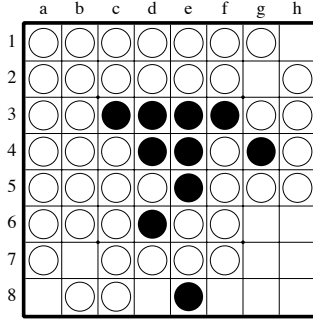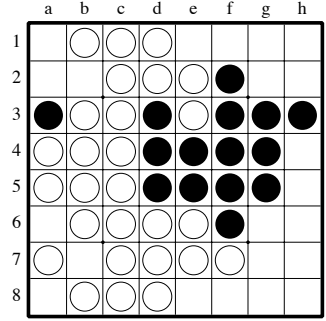*White in 3*

Puzzle 15
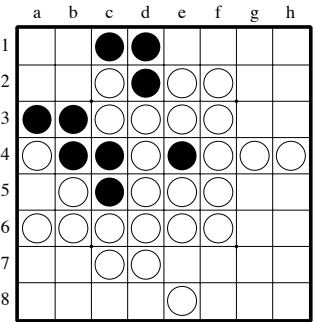*White in 3*

Puzzle 16
Black in 3
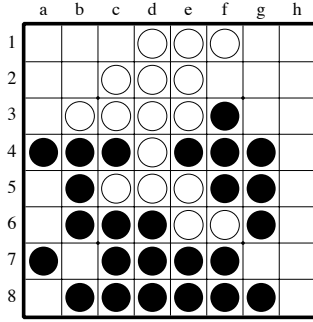
Puzzle 17
White in 3

Puzzle 18
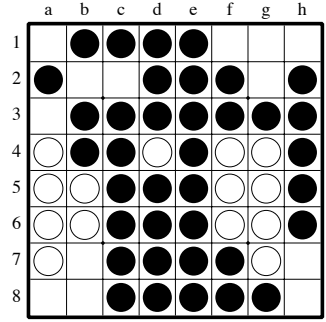*White in 3*

Puzzle 19
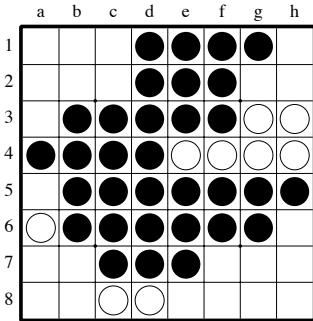*Black in 3*

Puzzle 20
Black a8 in 3
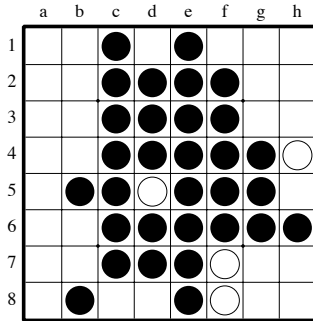
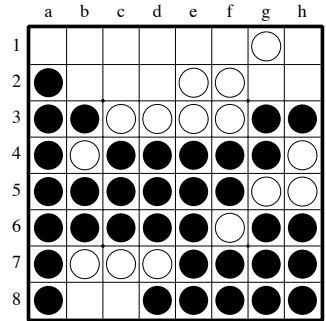Puzzle 21
Black in 3

Puzzle 22
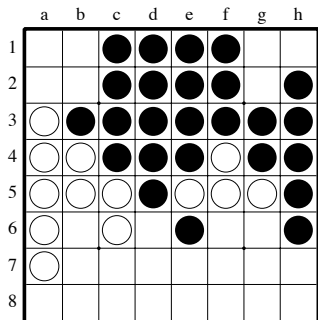*Black in 3*

Puzzle 23
White in 3
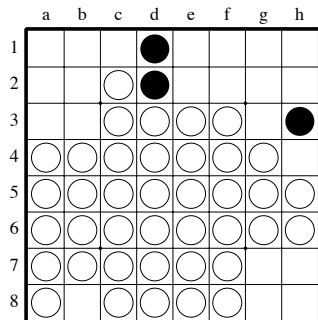
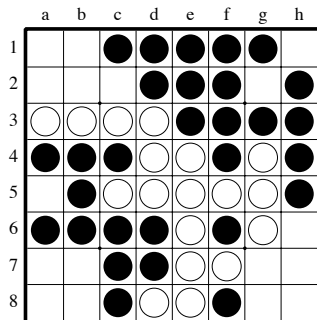Puzzle 24
White in 3

Puzzle 25
White in 3

Puzzle 26
White in 3

Puzzle 27
Black in 3

Puzzle 28
Black in 3

Puzzle 29
White in 3

Puzzle 30
Black in 3

Puzzle 31
Black in 3

Puzzle 32
Black in 3

Puzzle 33
Black in 3

Puzzle 34
White in 3

Puzzle 35
Black in 3

Puzzle 36
White in 3

Puzzle 37
Black in 3

Puzzle 38
White in 3
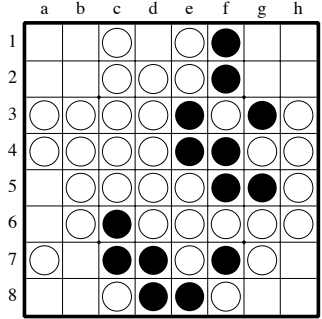
Puzzle 39
Black in 3
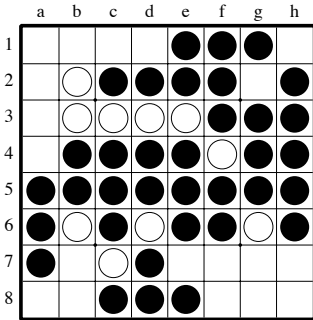
Puzzle 40
White in 3
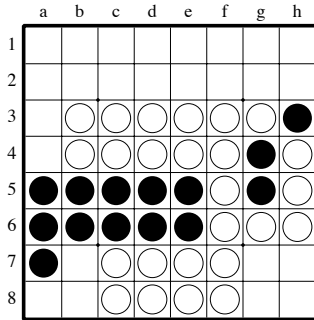
Puzzle 41
White in 3

Puzzle 42
White in 3
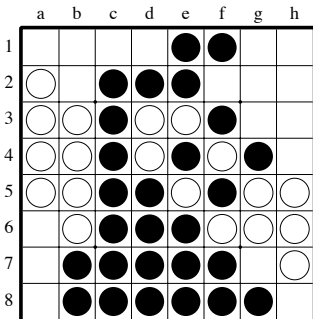
Puzzle 43
Black in 3
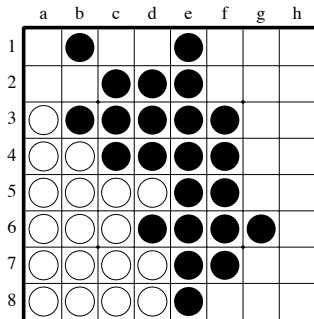
Puzzle 44
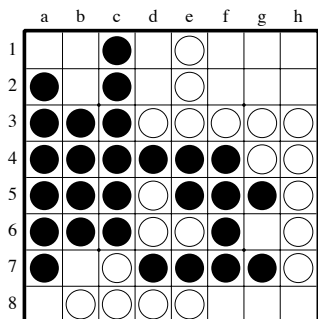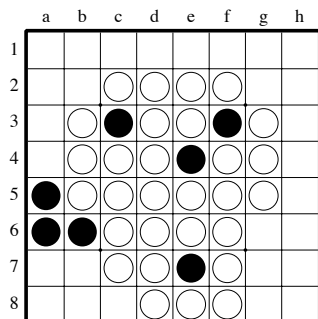*White in 3*

Puzzle 45
White in 3

Puzzle 46
White in 3

Puzzle 47
Black in 3
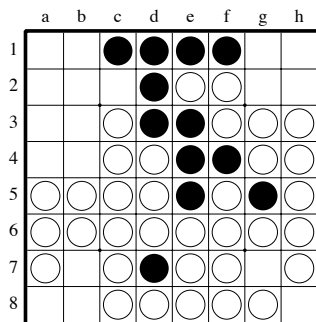
Puzzle 48
Black in 3

Puzzle 49
Black in 3

Puzzle 50
White in 3
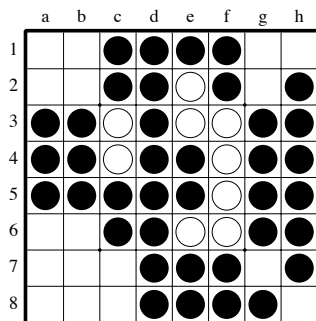
Puzzle 51
White in 3
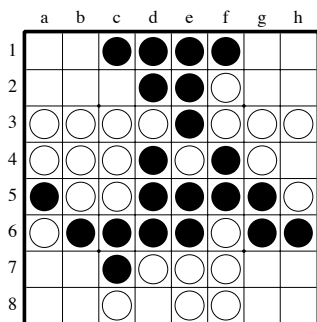
Puzzle 52
Black in 3
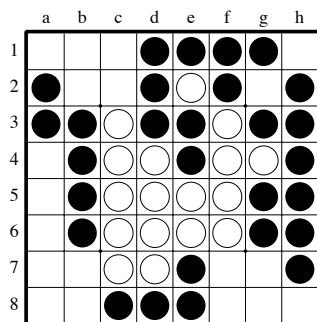
Puzzle 53
White in 3
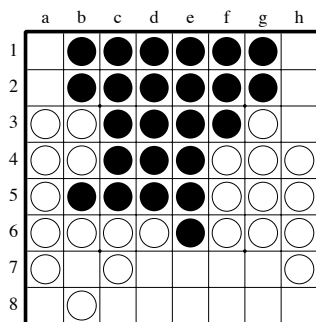
Puzzle 54
Black in 3
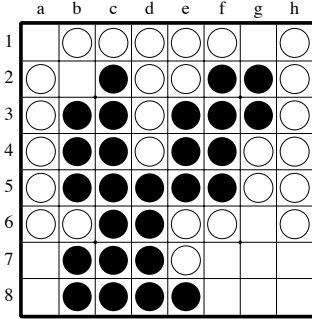
Puzzle 55
Black in 3
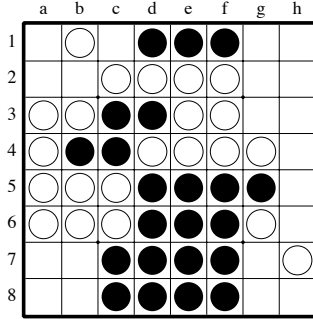
Puzzle 56
Black in 3
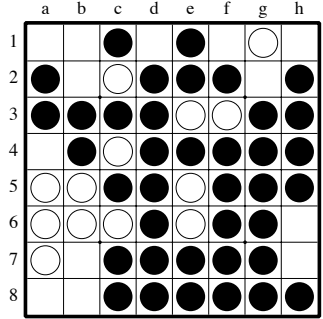
Puzzle 57
White in 3
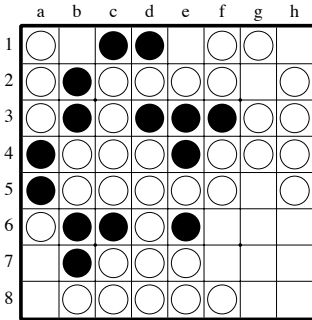
Puzzle 58
Black in 3
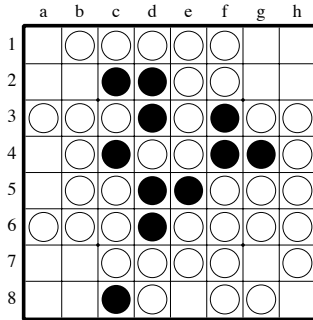
Puzzle 59
Black in 3
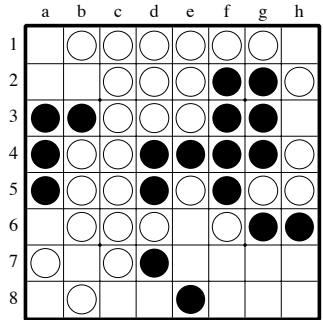
Puzzle 60
Black in 3
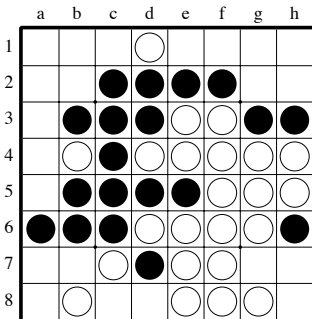
Puzzle 61
White in 3
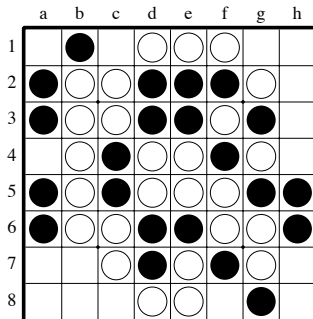
Puzzle 62
White in 3
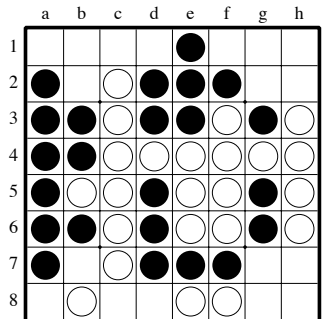
Puzzle 63
White in 3
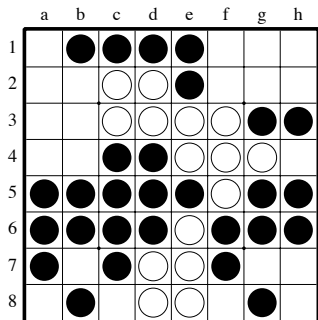
Puzzle 64
White in 3
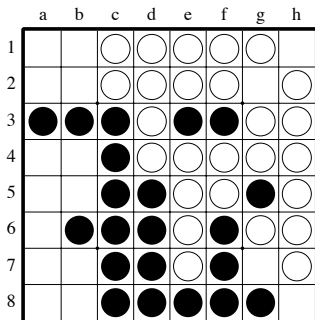
Puzzle 65
White in 3
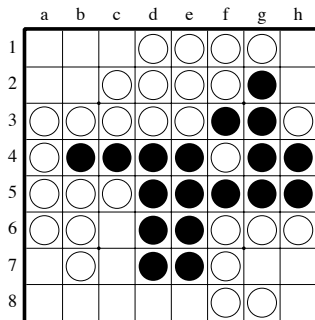
Puzzle 66
Black in 3
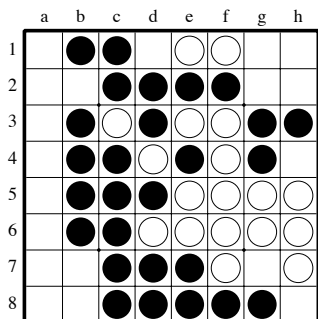
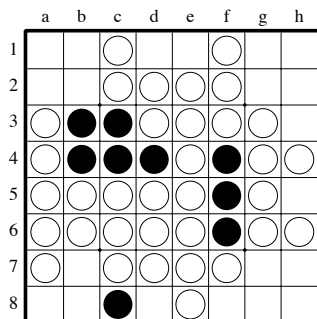Puzzle 67
White in 3
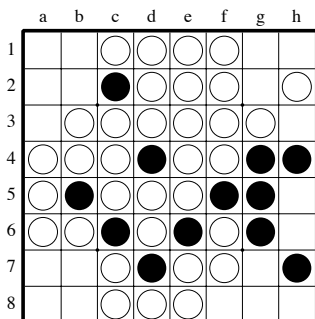
Puzzle 68
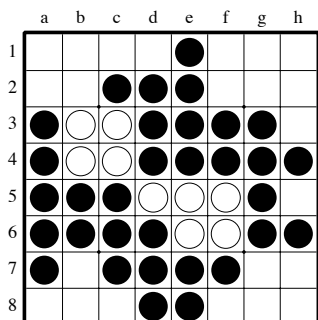*White in 3*
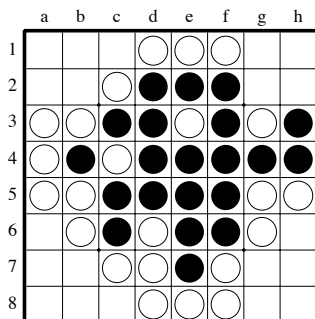
Puzzle 69
Black in 3
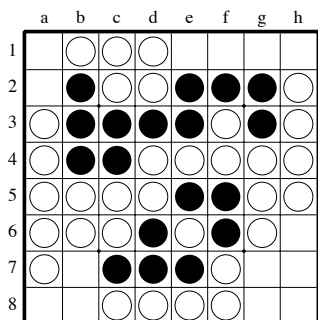
Puzzle 70
Black in 3
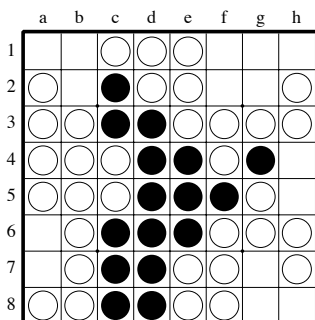
Puzzle 71
Black in 3
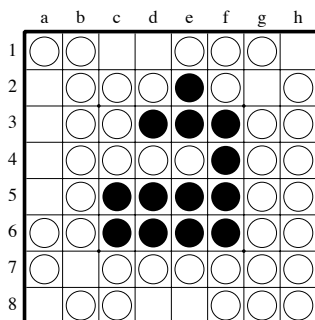
Puzzle 72
Black in 3
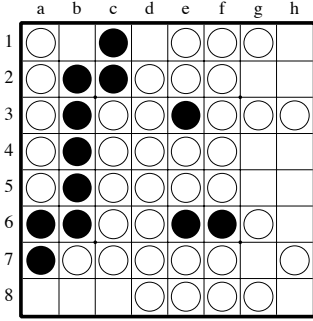
Puzzle 73
Black in 3
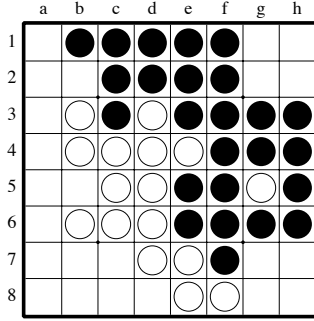
Puzzle 74
Black in 3
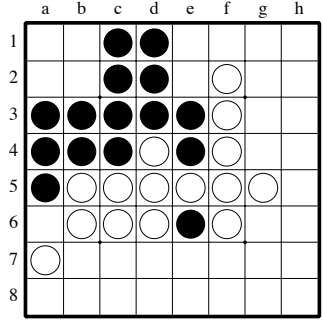
Puzzle 75
Black in 3
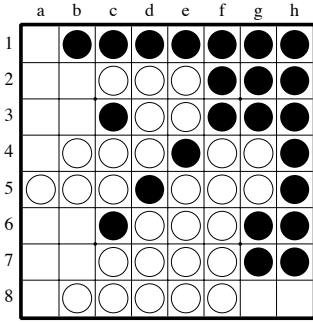
Puzzle 76
Black in 3
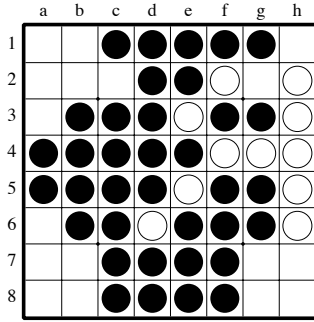
Puzzle 77
White in 3
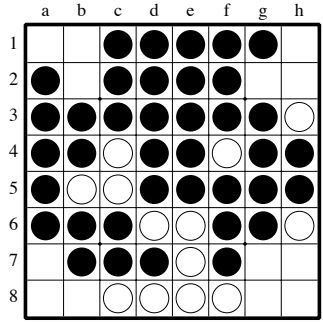
Puzzle 78
White in 3
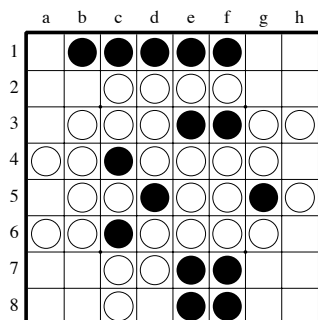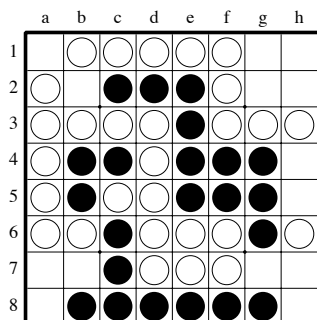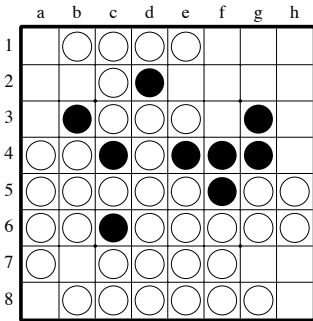
Puzzle 79
White in 3
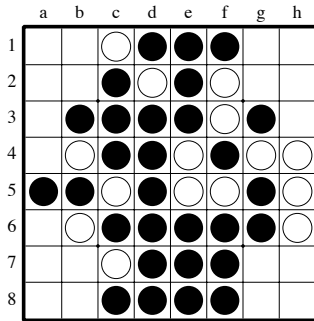
Puzzle 80
Black in 3
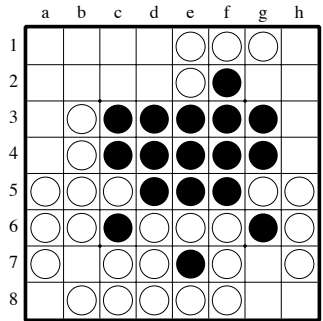
Puzzle 81
Black in 3
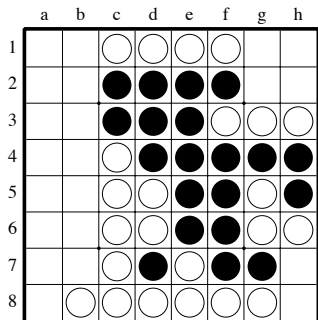
Puzzle 82
White in 3
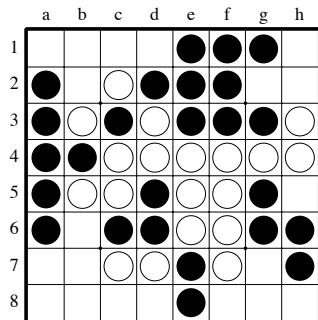
Puzzle 83
White in 3
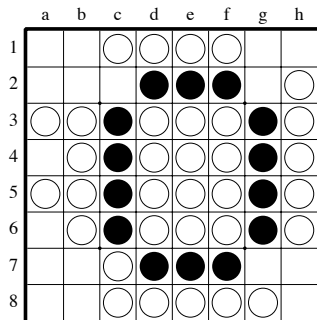
Puzzle 84
Black in 3
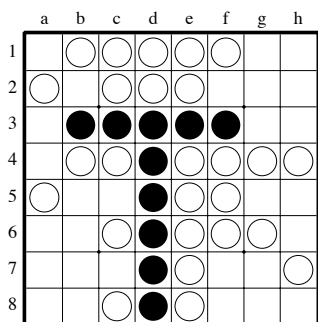
Puzzle 85
Black in 3
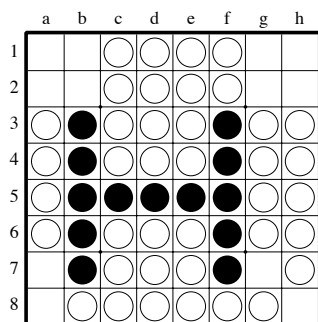
Puzzle 86
Black in 3
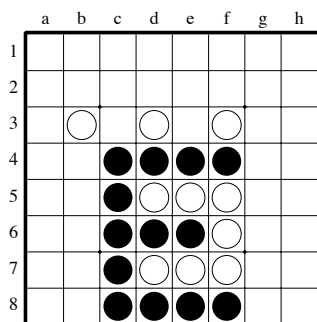
Puzzle 87
Black in 3
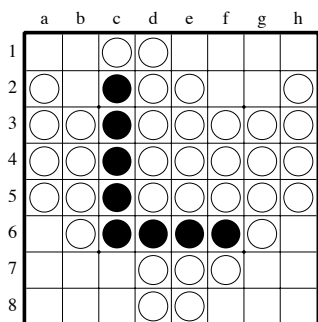
Puzzle 88
Black in 3
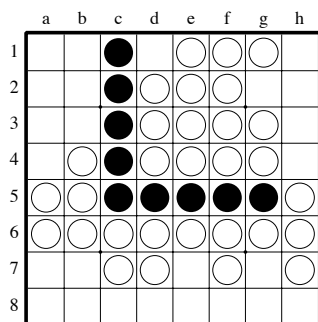
Puzzle 89
Black in 3
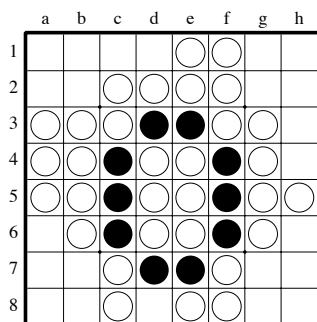
Puzzle 90
Black in 3
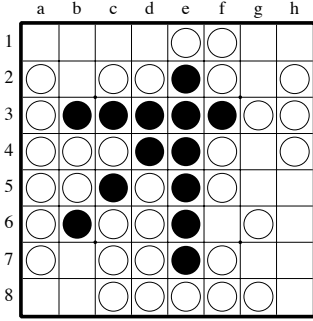
Puzzle 91
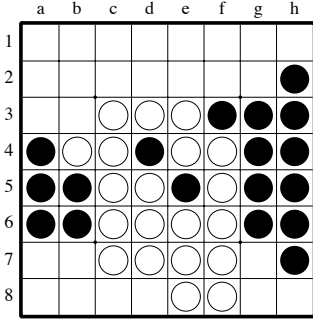*Black in 3*
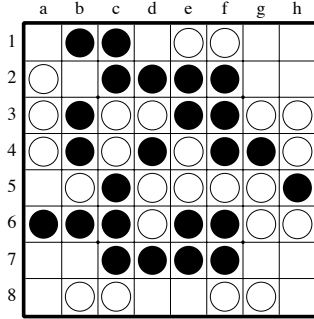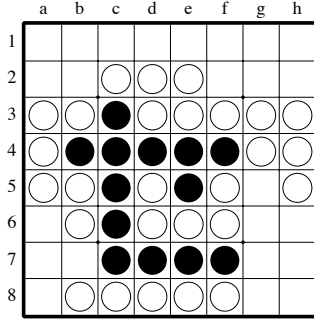
Puzzle 92
Black in 3
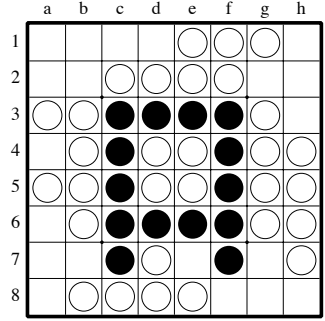
Puzzle 93
Black in 3
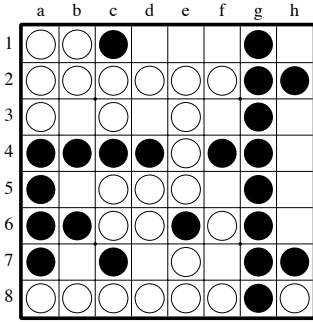
Puzzle 94
White in 3
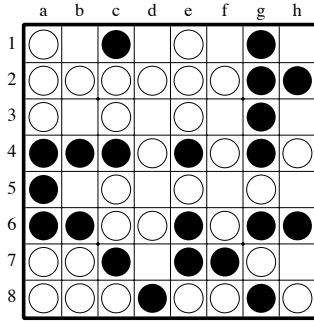
Puzzle 95
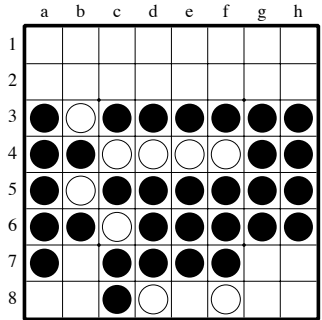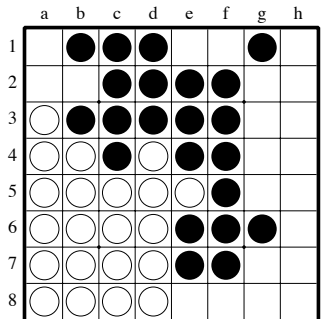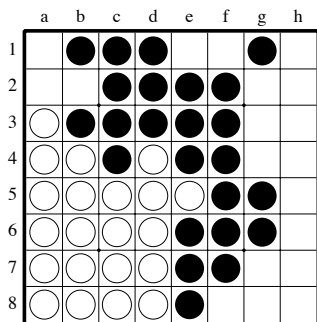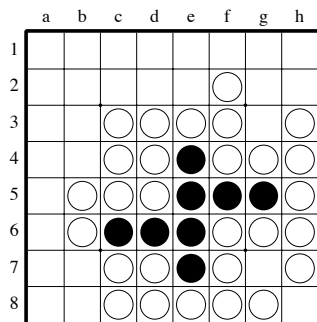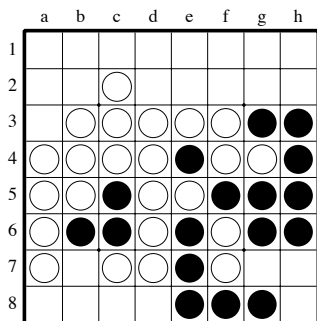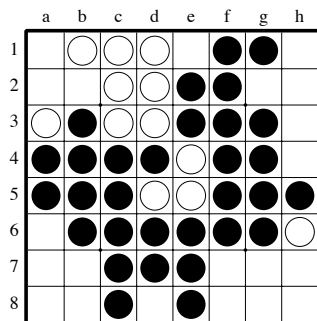*White in 3*
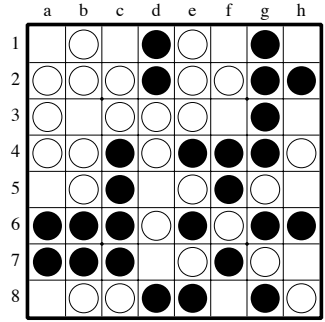
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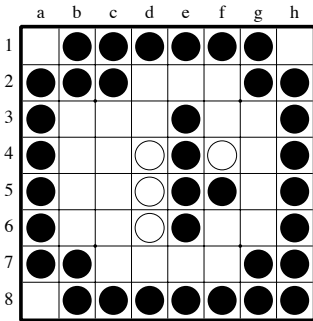
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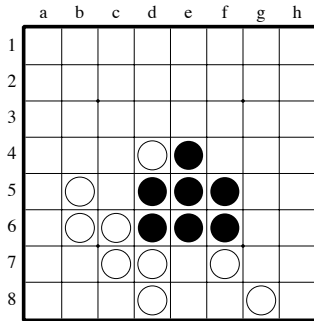
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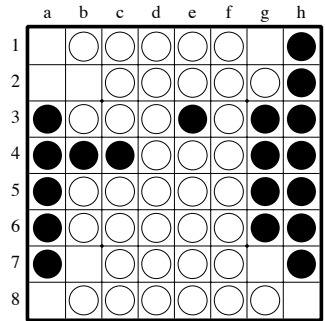
Puzzle 99
Black h8 in 4

Chapter 16

Game analysis

The finals of the 2003 World Othello Championships were contested between, appropriately enough, the two strongest players in the world. Ben Seeley of the United States and Makoto Suekuni of Japan finished 1-2 in the preliminary rounds of the tournament, and were the highest rated players in their respective countries. In the first game of the best 2-of-3 finals, Seeley, playing white, cruised to a 42-22 victory (see transcript). Suekuni thus needed to win the second game in order to get back in the match, while another victory for Seeley would make him World Champion. By the rules of the World Championship, the players reversed colors for the second game, with Seeley playing Black and Suekuni playing White.

First game of finals
Suekuni 22- Seeley 42

Player profiles

Ben Seeley of the United States has achieved a meteoric rise through the ranks in his short career as an Othello player. His first tournament was in 2000, and by 2001 he was the U.S. champion. He went on to finish second at the World Championship in 2002. Seeley is the strongest of what I call the "new breed" of players, people who became experts mainly by playing over the Internet.

Makoto Suekuni of Japan is the "Tiger Woods" of Othello, having played well from a very young age. He won an open tournament at the age of 10, and has won every major tournament at least once, including the All Japan Championship, Student Meijin, Meijin, Paris Open, Tokyo Open, and Mind Sport Olympiad. He won the World Championship in 1997.
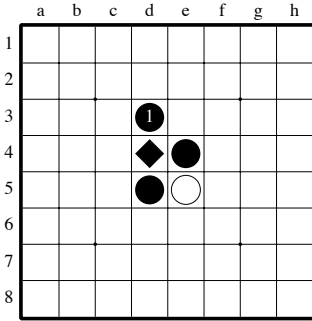
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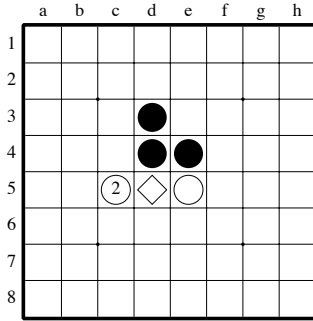
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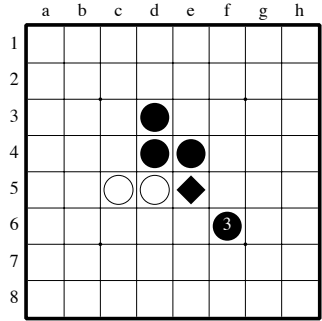
Diagram 16-3

The second game of the finals began with Suekuni choosing the perpendicular opening at move 2. Although Suekuni sometimes plays the diagonal, in recent years he has mainly used the perpendicular. Seeley continued with 3. f6, the most common choice for Black against the perpendicular in recent years, although c6, d6, and e6 are all reasonable alternatives. At move 4, Suekuni again chose the most common move, f5. White could play e3 or even d2 here, but these moves leave Black with a small advantage.

At move 5, Black has only one reasonable choice, namely e6, connecting his pieces while splitting White's discs. Indeed it is the strength of this move which makes 3. f6 so appealing for Black. These first five moves are called the "Tiger" opening, supposedly because the shape resembles a tiger (this is slightly easier to imagine if move one is made at f5). At move 6, e3 is by far the most common move, playing quietly in the center of the board and setting up a threat to play f4. Occasionally playing to the outside with d7 or even f7 is used as a "change-up" by White when trying to drive Black out of his opening book early in the game.
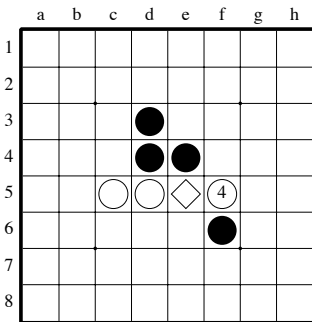
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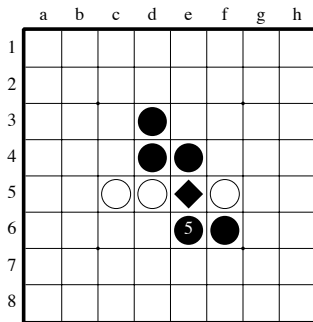
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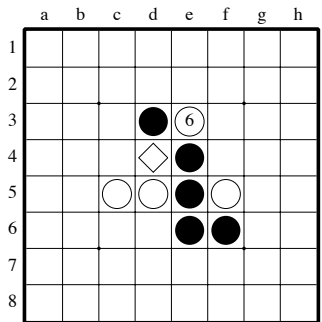
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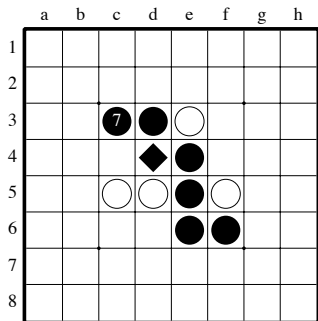
Diagram 16-7

Diagram 16-8

Diagram 16-9

At move 7, Black wants to do something to prevent White from moving to f4. One possibility is for Black to play f4 himself, but more commonly Black makes a move which flips the white disc on d4. The most natural looking move is d6, flipping two discs in the center of the board, but as discussed in Chapter 11, this move tends to give White a lot of viable variations in the opening. Seeley's choice, 7. c3, offers black a lot of possibilities for his next few moves. At move 8, White usually tries to set up a good move on row 4 by playing f3, d2, or even e7. At move 9, Black must do something to prevent White from playing c4. Seeley chose to play there himself, but flipping the white disc on e4 by playing f4 or e2 are reasonable alternatives.

At move 10, Suekuni came through the middle with b4, the first move of the game that flipped more than one disc. White is threatening to follow with d6, and Black has no way of preventing this move, so he usually tries to make d6 less attractive for White by playing 11. b5 (the move Seeley chose) or 11. c6. At move 12, White almost always plays toward the outside at c2. Although 12. d6 is a reasonable play, black can respond with c6, leaving White with little choice but to play c2 anyway. It is therefore better for White to keep his options open and play straight to c2 at move 12.

Diagram 16-10

Diagram 16-11

Diagram 16-12
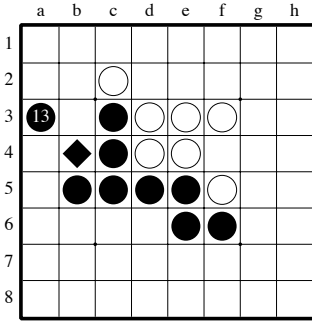
Diagram 16-13

Diagram 16-14

Diagram 16-15

At move 13, Black wants to prevent White from playing d2. Black playing 13. d2 himself is the classic move, but in recent years it has become more popular to flip the white disc on b4. At 14, White could play d6, but again this gives Black an easy response at c6, so White usually chooses 14. b3. Black can play 15. c1, starting to establish adjacent edges, but Seeley's choice of 15. d2, playing in the middle, was more popular at the time of this match.

At 16, a4 appears tempting for White, flipping quietly in the middle. However, Black plays a5, and now that the a4-a5 pair is filled in, Black's free move at a2 becomes a much more valuable threat. Suekuni chose, 16. c1, the most common choice for White, although the odd-looking 16. e2 also works out reasonably well. At 17, Black does not want to flip the white disc on f5, as this would open the possibility of White playing a5 without flipping b5. The position after Seeley's 17. e1 was one that Suekuni was prepared for, as Seeley had played this exact same opening 4 times at the 2002 World Championships. At 18, White usually plays e2, e7, or a4, but Suekuni came up with a new move, 18. d7. Unfortunately for Suekuni, it seems that Seeley had seen this "new" move before. While moves jutting diagonally to the outside like 18. d7 are usually bad moves, in this case it seems to work out well for White.

Diagram 16-16

Diagram 16-17

Diagram 16-18
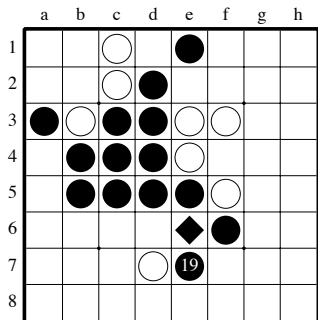
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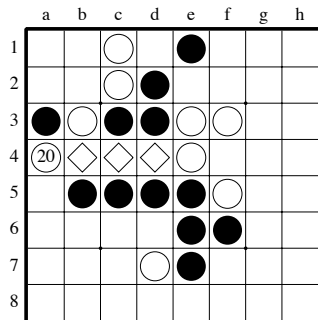
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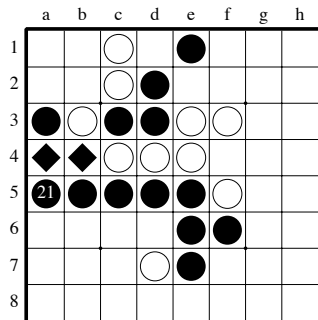
Diagram 16-21

Comparing Diagram 16-19 and Diagram 16-17, the only difference is the extra discs on d7 and e7. It might seem that this is an even trade-off, but adding extra discs such as these usually work against the player making the diagonal move (White's 18. d7 in this case). The reason is that in Diagram 16-17, Black does not have any moves in the south, while in Diagram 16-19, Black can use the disc on d7 to make a move. Giving your opponent the option to make a move in a region that he was walled off from is often a bad idea, unless of course there are no other moves available. In this particular case though, 18. d7 seems to be a good move, and the reason finally becomes apparent after White's move 26.

Following the exchange at moves 18 and 19, Suekuni followed with 20. a4. Seeley could not afford to give up two tempos by allowing White to play a2. He therefore took the edge with 21. a5. However, White now has a disc on the d-column, and is able to play a quiet move with 22. d6. This also sets up a huge threat for White at f4, and Black has little choice but to play defense with 23. c6. Suekuni continued with 24. a6, again threatening to gain two tempos unless Black takes the unbalanced edge at a7.
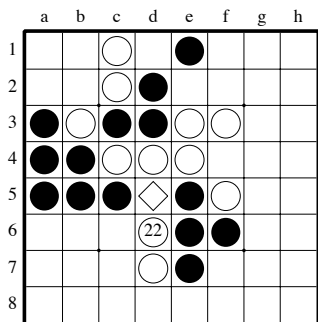
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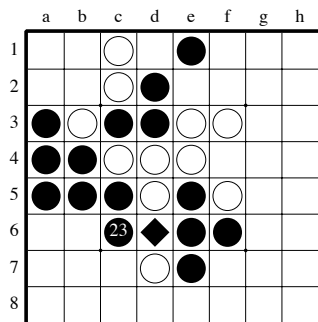
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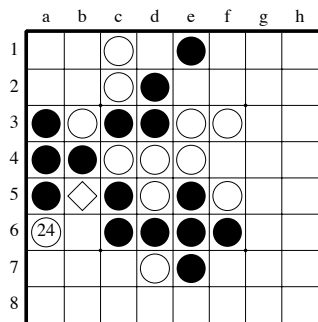
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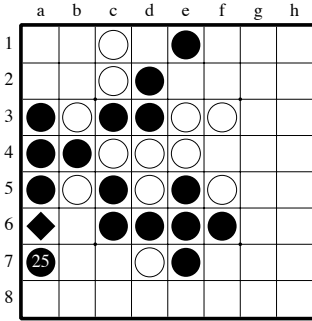
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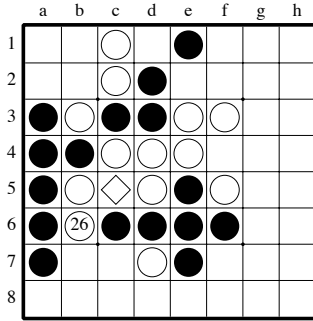
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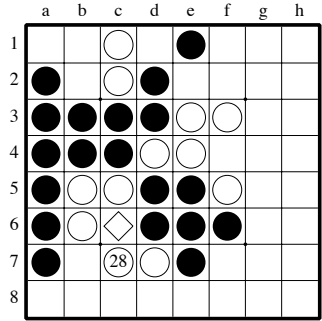
Diagram 16-26b

At move 25, Black again can not afford to allow White play a2, and therefore Seeley took the unbalanced edge with a7. Of course, in this case, the white disc on b3 offers Black the prospect of balancing his edge by playing a2. At 26, Suekuni made the quiet move to b6, and now the advantage of 18. d7 is revealed. In Diagram 16-26, White is threatening to make an excellent move to c7. Although Black could play 27. a2, White would just play c7; the resulting position is shown in Diagram 16-26b. Notice how Black does not have an attractive move to the south, while White has a potentially valuable move at f8, flipping the disc on e7, i.e., the extra disc Black played in the exchange at move 18-19.

Presumably Seeley saw the problem with playing a2 and chose 27. d8, using the disc on d7 before White can play to c7. Now if White plays 28. c7, Black can just play c8. Suekuni eventually chose 28. b2, which was the right idea but the wrong move. White wants to prevent Black from playing a2, and attacking the unbalanced edge with b2 certainly accomplishes that. However, White's best move was 28. c8, denying Black's access to a2 by flipping the disc on e6 (Diagram 16-28b). Computer analysis reveals that after playing 28. b2, Suekuni was behind the rest of the game.
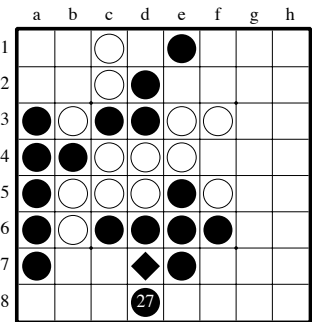
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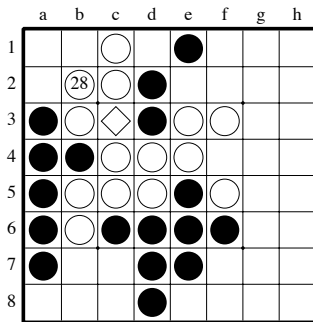
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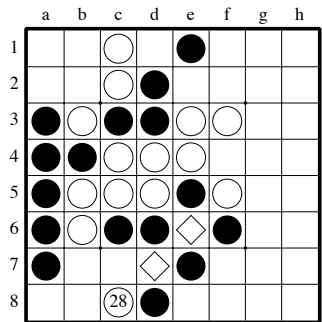
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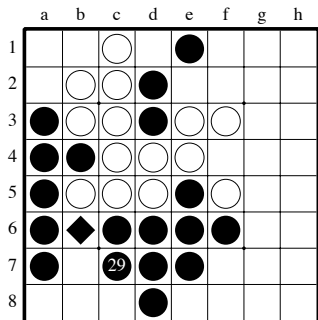
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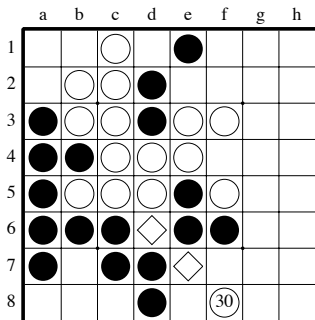
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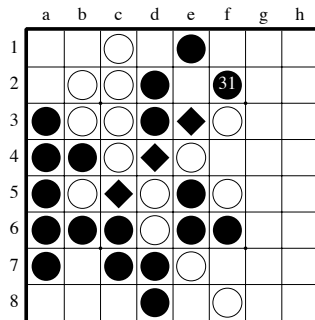
Diagram 16-31

One of the problems with 28. b2 is that it allowed Seeley to make a quiet move at c7. Suekuni might have been thinking that if Seeley ever took the a1 corner, he could wedge at a2, gaining access to the a8 corner. In that case, the Black disc on c7 could allow White to use the four in the corner swindle (see Diagram 10-22). Another problem with 28. b2 is that White can not flip the disc on d2, because this would allow Black a swindle by playing a2 without flipping b2. A third problem is that, as in the actual game, a1-a2-b1 is likely to become an odd (3-square) region that White can not move into, losing parity. At 30, White has little choice but to play f8, threatening to follow with f4. Seeley then played an excellent defensive move with 31. f2! If White now plays f4, it would flip d2, again giving Black a swindle with a2.

Suekuni played 32. g5; the main appeal of this move is that it sets up a quiet move to f7. Computer analysis reveals that 32.e2 was slightly better. Although e2 would flip the critical disc on d2, it makes a link with the black disc on f2, so that a Black move to a2 would still flip b2. The game continued with Seeley playing 33. e8, allowing White to get in his quiet move at f7. Exchanging Black e8 for White f7 reduced Seeley's advantage from 6 discs to 4 discs. It turns out to be slightly better to play 33. g3 (the move Seeley played at 35) without putting in the e8-f7 exchange.
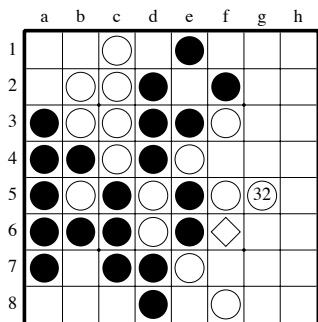
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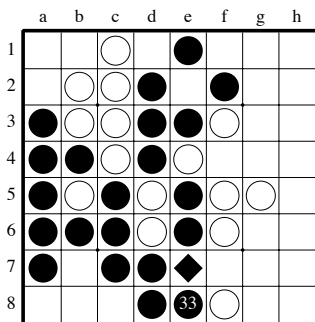
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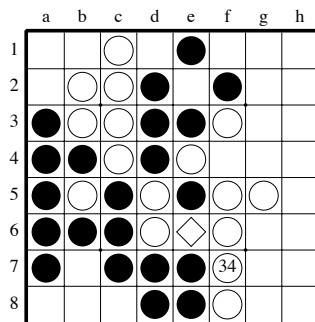
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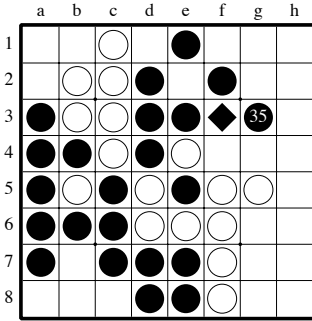
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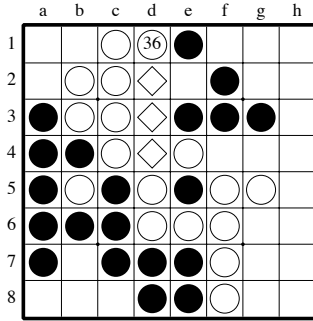
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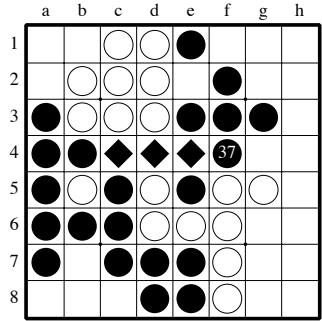
Diagram 16-37

After Seeley's 35. g3, Suekuni played d1, flipping the critical disc on d2. This move takes advantage of the fact that Black does not have access to a2 at the moment. Seeley reestablished access to a2 with 37. f4, powerfully playing through the middle of the board. Suekuni continued with 38. e2, which again links up the black disc on f2, poisoning Black's move to a2 and preventing the swindle.

At 39, Seeley played f1, which in my view was the worst move he made in the game, even though computer analysis shows that Black is still winning by 2 discs after this move. Looking at Diagram 16-38, White can not move to f1, since this would flip the black disc on f2 and set up the a2-a1 swindle for Black. Meanwhile, White is threatening to make a quiet move at g4. It therefore makes sense for Black to play g4 himself at 39. Fortunately for Seeley, Suekuni did not take advantage of the situation, playing 40. h3 instead of the obvious g4. It is hard to say what Suekuni found appealing about h3. Perhaps he was hoping that Seeley would play g4, which is no longer a good move now that f1 has been filled in. Regardless, after 40. h3, Black now has 5 winning options (g2, g6, g8, h5, and h6), making it much easier for Seeley to close out the game.
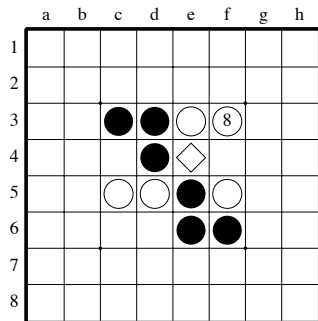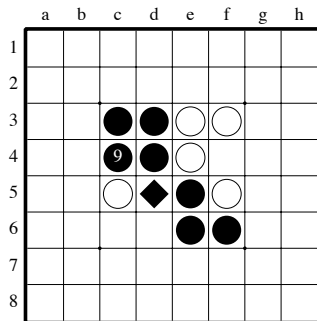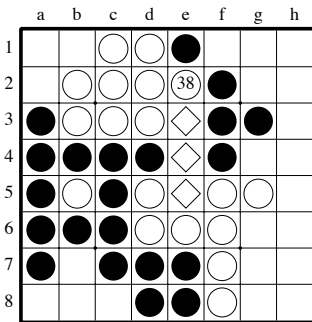

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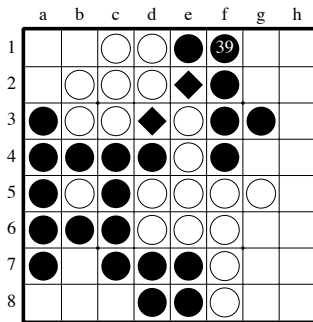
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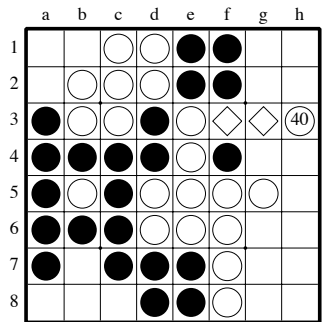
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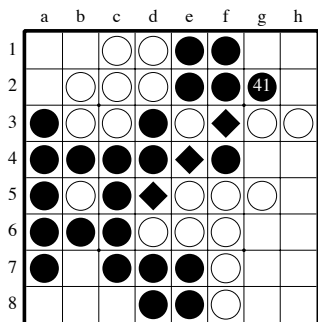
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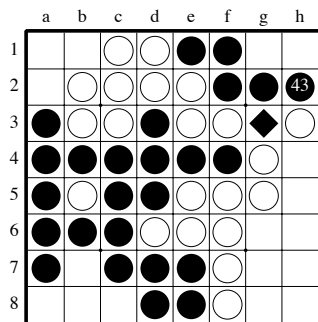
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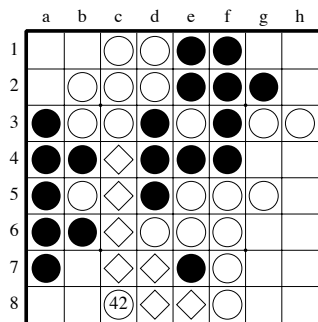
Diagram 16-42

Computer analysis shows that 41. h5 was the best move, winning by 8, but Seeley chose g2 (winning by 4), which is more intuitive for humans. This is an example of the tesuji shown in Diagram 10-37, grabbing a diagonal and getting 3 of 4 moves in a corner region. If White tries 42. g4, Black plays h2, gaining two tempos in the upper-right, which would seal the coffin on White (see Diagram 16-41b). Suekuni instead played 42. c8, which keeps the game close. Although this breaks the diagonal, Black can not play 43. h2, because this would allow White to play g1 without flipping g2. It may seem tempting for Black to regain control of the diagonal by playing 43. b7, but this does not work either, as White could just break the diagonal with g4.

Black's only winning move is the one Seeley chose, 43. g6. Now if White breaks the diagonal with 44. g4, Black can complete the tesuji by playing h2. Although theoretically the best move, losing by just 4 discs, 44. g4 keeps the position simple for Black. Suekuni instead tried for complications by playing 44. h5, which at least gives Seeley some game-losing options which look plausible, such as h6 or b7. However, Seeley kept his cool and simply wedged at h4. This guarantees black access to the critical square h2.
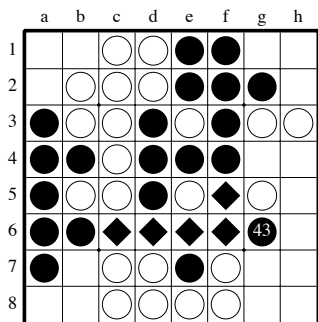
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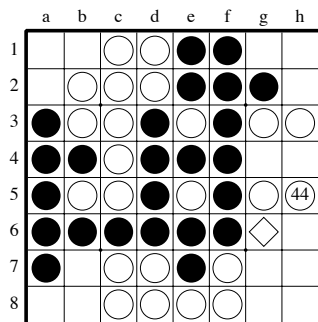
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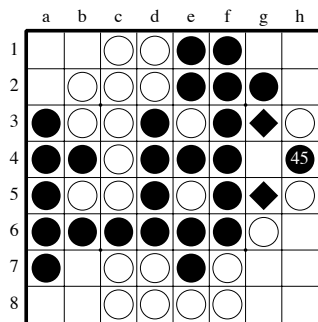
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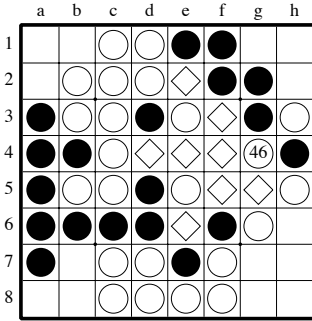
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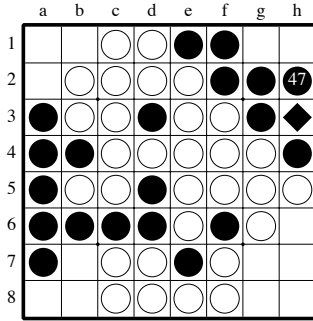
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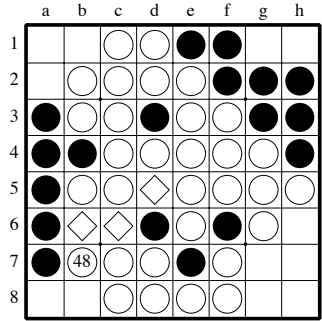
Diagram 16-48

With fewer and fewer squares left open, White's position is becoming increasingly desperate. The "best" move was 46. b7, but then Black can, for example, just grab the a8 corner and follow with a1, guaranteeing Black can stabilize three edges (the top, bottom and left edges). Instead Suekuni finally filled in the hole with 46. g4, and Seeley completed his tesuji by playing 47. h2. White is still walled off from the odd-region in the upper left, so that parity is working in favor of Black. Suekuni's last hope was 48. b7. Now if Black takes the a8 corner, he gets swindled when White plays h1 without flipping the disc on g2.

It thus came as something of a shock when Seeley chose to play 49. a8! This is certainly not the sort of move I would recommend to a novice (or an expert for that matter), but it is not too difficult to verify that Black will have enough discs even after getting swindled. White's move to h1 does not flip along the diagonal, allowing to Black to keep five internal discs (b7, c6, d5, e4, and f3). Further, Black gets to play an extra move in the bottom-left (both a8 and b8) to compensate for White getting an extra move in the upper-right.
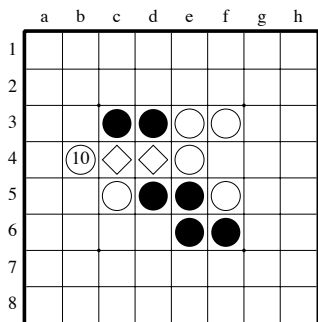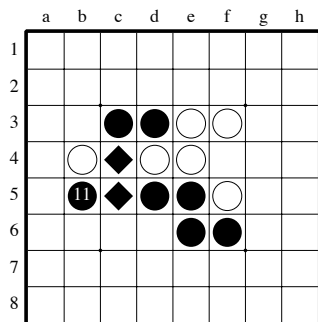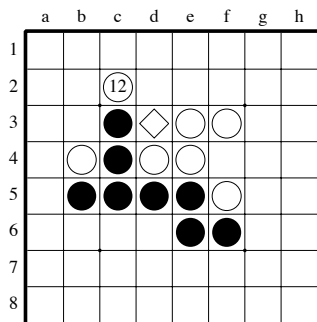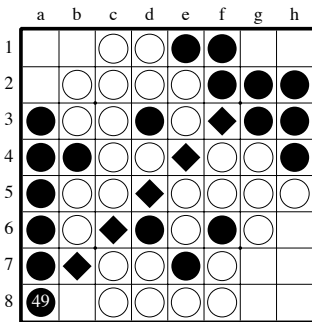
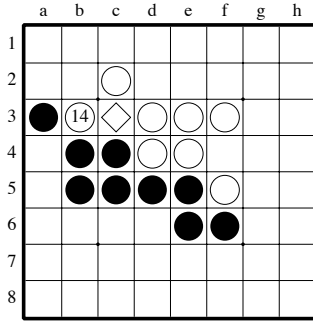

Diagram 16-49
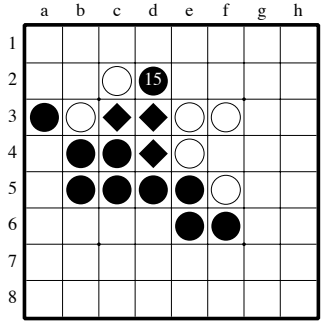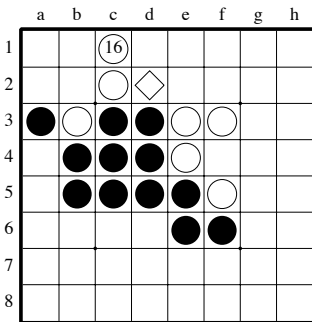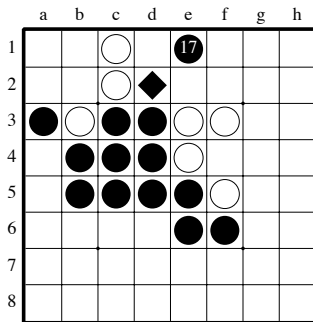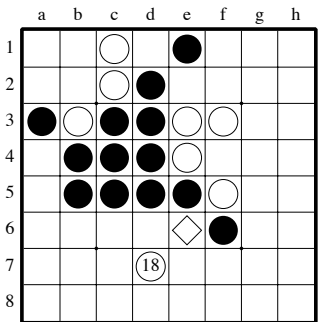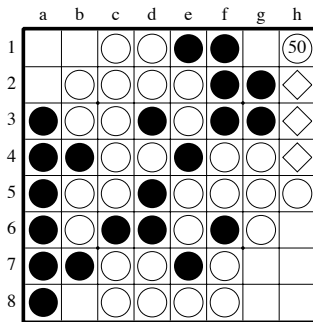

Diagram 16-50
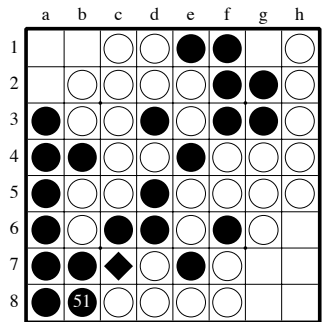
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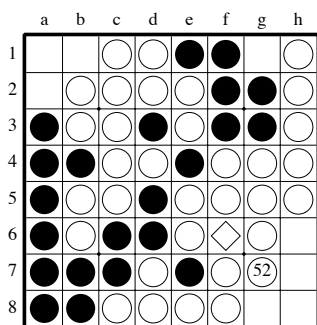
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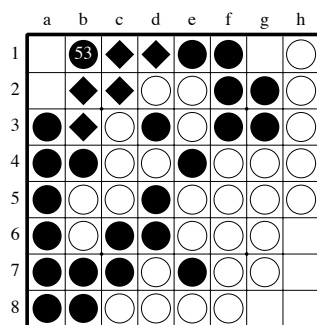
Diagram 16-53
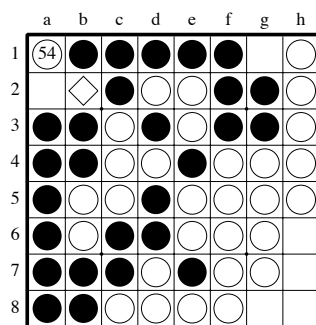
Diagram 16-54

At this point, it appears that White has some hope of retaining parity by playing 52. g7. Although White is cut off from the odd region in the upper left, Black does not have access to g1. Black's only choices are to play into the even region in the bottom right or the odd region in the upper left. If Black moves to the odd region, White can play g1, leaving only even regions. However, there is one big problem for White. When White plays g1, it makes the entire g-column white. This sets up a swindle for Black, allowing him to play g8 without flipping g7.

In the actual game, Seeley played 53. b1, which loses some discs (a2 was the best move) but is easy to count. Suekuni played 54. a1, but after 55. a2, there is no choice but to play 56. g1, setting up the swindle. It is interesting to note that in Diagram 16-56, there are only four empty squares, and Black only has 21 discs. However, 57. g8 is a huge move. Not only does it flip a lot of discs, but it forces White to pass, and now Black will get parity in the last region.
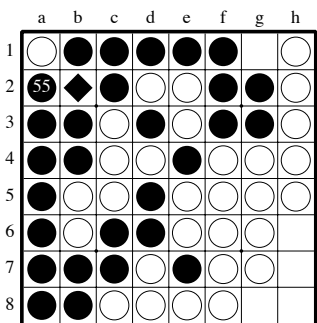
Diagram 16-55
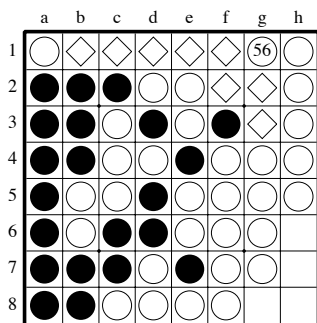
Diagram 16-56
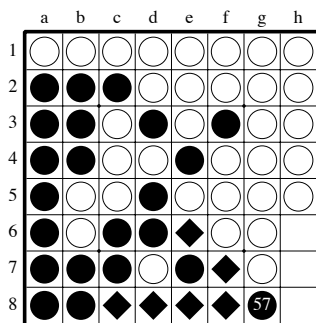
Diagram 16-57
*White passes*
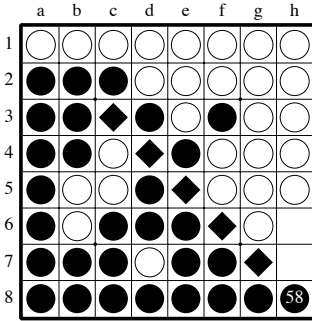
Diagram 16-58
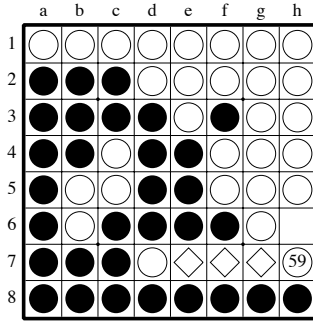
Diagram 16-59
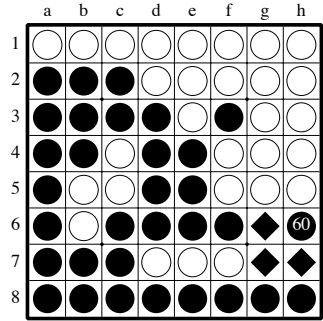
Diagram 16-60

Seeley picked up another 7 discs on the last 3 moves of the game, enough for a 35-29 victory and the title of World Othello Champion! Below are six other transcripts from the tournament, including the preliminary round match between Suekuni and Seeley.
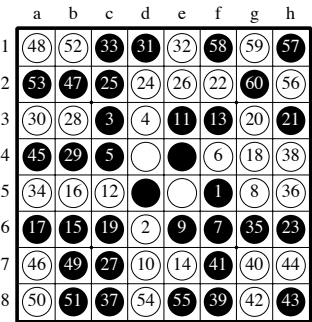
Black: Makoto Suekuni   37
White: Ben Seeley   27
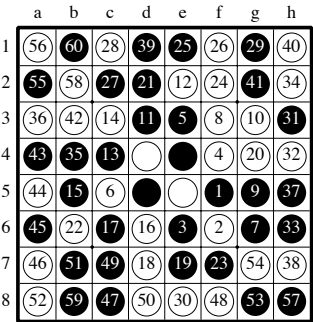
Black: Makoto Suekuni   33
White: Hiroshi Goto   31
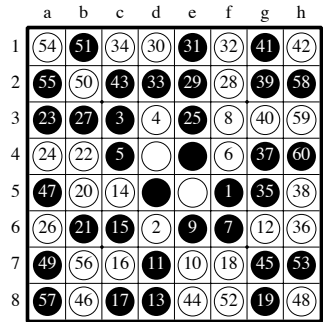
Black: Ben Seeley   33
White: T. Kashiwabara   31
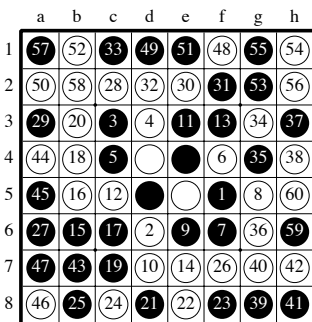
Black: R. Sperandio   29
White: Ben Seeley   35
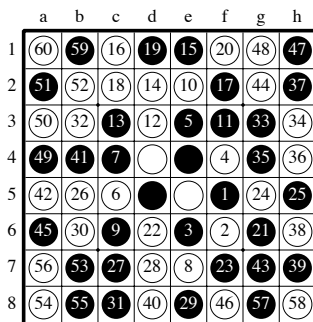
Black: Ben Seeley   32
White: Andreas Hoehne   32
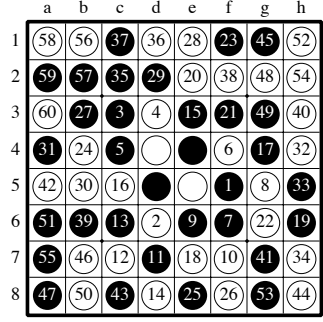
Black: Makoto Suekuni   29
White: E. Caspard   35

Appendix

Internet resources

There is an abundance of useful Othello websites on the Internet. The list below represents only a small fraction of what is available.

WZebra www.nada.kth.se/~gunnar/othello.html
WZebra, written by Gunnar Andersson and Lars Ivansson, is the Windows version of Zebra, one of the strongest Othello-playing programs in the world. Zebra offers a full range of features, including the ability to examine the Thor database of transcripts (see below).

Ntest www.btinternet.com/~chris.welty/Ntest/index.htm
Ntest, written by Chris Welty, is the strongest program available to the public.

Transcript downloading page ffothello.org/info/base.html
Transcripts of games played in most of the important tournaments held around the world are collected by the FFO and entered into the Thor database, which now includes more than 70,000 games. Thor is the name of the original program used to examine the games in the database. Although the database is still maintained in Thor's format, these days most people use WZebra to access the games.

Icare http://othello.federation.free.fr/info/logiciels/
Icare, written by Luc Riviere (with help from Stephane Nicolet), is a program useful for practicing endgames. A position from an actual game is shown, with between 6 and 12 empty squares. You must finish the game, playing against the computer, which always makes the best move. In each position, only one of your available moves is correct, and you must play perfectly to win (or draw). If you fail you can try again as many times as you want, and if you really get stuck there is a "show" button which will show the correct move. Icare is a relatively simple program, but it makes practicing endgames fun.

Happy End www.nada.kth.se/~gunnar/othello.html
Like Icare, Happy End (written by Beppi Menzonni) allows you to practice endgames, but it is has many more features and is closer to playing in a real game. The current version, Happy End III, uses WZebra's endgame algorithm and is thus very

fast. The program draws positions from the Thor database, so you should download at least some of the database files before using Happy End. Note that if you make enough bad moves, the program will insult you in broken English!

National Othello Associations

Australia   www.acslink.aone.net.au/sandhurst/othello
Britain   www.ugateways.com/bofmain.html
Canada   free.hostdepartment.com/o/othellocanada
Chezk Republic   hrejsi.cz/othello/cfo/index.htm
China   www.othello-china.com
Denmark   www.othello.dk
Finland   www.othello.tk
France   othello.federation.free.fr
Germany   www.othello-club.de.vu
Holland   www.othello.nl
Hong Kong www.othello.org.hk
Italy   www.fngo.it
Japan   www.othello.gr.jp
United States   www.usothello.com
Singapore   www.othello.org.sg
Sweden   www.othello.nu
Russia   www.ase.ee/%7Egersimo/ario/arioframe.htm

Links

Bluez Othello links   bluez2000.tripod.com/OthelloLinks.html
FDI's Othello links   www.frankdh.demon.nl/othello

Blogs etc.
Othello Gateway   othellogateway.com

Answers to exercises

Chapter 2

Exercise 2-1 White should play e1, capturing the disc at e4, which will provide access to the h1 corner.

Exercise 2-2 Black should play a2. Although this is a C-square, there is no danger of White gaining access to the a1 corner. Further, this move flips the disc at d5, which will allow Black to take the h1 corner.

Exercise 2-3 White should play a7, using the a8 corner to build more stable discs.

Exercise 2-4 This is an extreme example of building up stable discs. The correct sequence of moves is shown in the diagram.
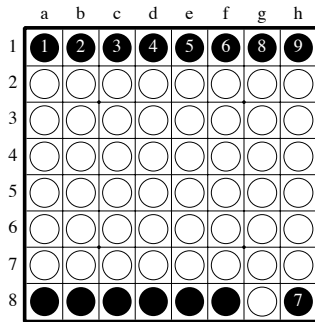
Exercise 2-5 Black should fill in the hole at e1. Since White can not capture this disc, Black will be able to take the a1 corner.

Exercise 2-6 White should play h4, threatening to take the h1 corner. If Black tries to prevent this by playing h5, the white disc at h6 still allows White to take the corner.

Chapter 3

Exercise 3-1 This is a possible continuation of Diagram 3-13. Here Black should play a6, leaving White with no safe response.

Exercise 3-2 Black should play c7, flipping three internal discs. Note how this move does not flip horizontally or vertically. Such moves are often strong as the disc played is usually the only new frontier disc created.

Exercise 3-3 Here again Black should take the very quiet move g6, offering White no new options.

Exercise 3-4 White should simply play h8, leaving Black with no safe options. With perfect play, White can completely wipeout Black.

Exercise 3-5 As in Exercise 3-4, h8 might appear to be the obvious play, but this would leave Black with several quiet options. Instead, White should play the quiet move g4, and save h8 for later in the game.

Exercise 3-6 Black should play g5. Not only is this a quiet move, but it also prevents White from taking a quiet move at g5 himself.

Exercise 3-7 The diagrams below show examples of sequences which force White to concede all four corners to Black.
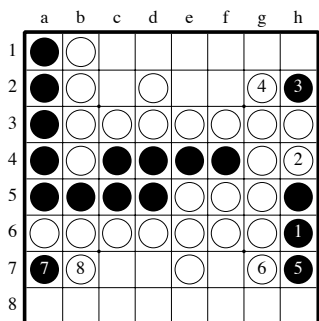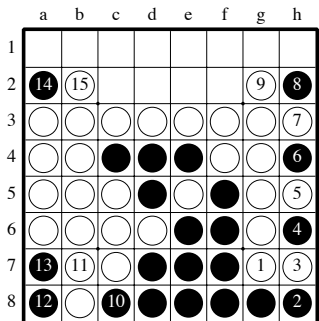
Exercise 3-8 The diagram below shows one sequence, with Black winning 55-8.
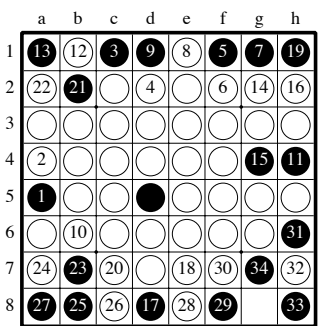
Chapter 4

Exercise 4-1 Black should take the quiet move at f3.

Exercise 4-2 White's highest priority here is to prevent Black from taking an excellent move at c4. The best move is f6, flipping e6 and denying Black access to c4.

Exercise 4-3 f3 is White's quietest move, but allows Black a strong response at c4. It is better to play d7, denying Black access to c4.

Exercise 4-4 This is a position which has occurred many times in expert play. White has a large number of frontier discs, but has control of the center. White should play a3, leaving Black with only 3 options, c6, f7, and g7, all of which are loud.

Exercise 4-5 e6 may appear to be the obvious move, but White can play f6 in response, leaving the same position as Diagram 4-8. Better is for Black to play f3, leaving a position similar to Diagram 4-9.

Exercise 4-6 g6 or c6 are two good choices. If you chose e6, you would regret it when Black replies e7!!, completely wiping you out. This is the prettiest of the many 9-move wipeouts, which is the shortest possible game of Othello. Being wiped out is always a danger that must be guarded against when playing opponents who grab many discs in the opening.
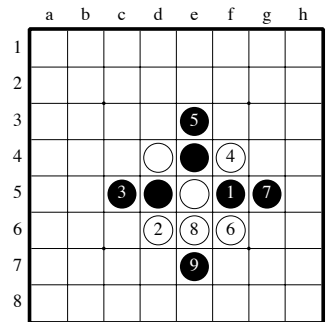
Chapter 5

Exercise 5-1 h5 represents a good quiet move for both sides, and both players want to grab this spot as soon as possible. Since it is Black's turn, he should move to h5. If he moves somewhere else, White will take h5.

Exercise 5-2 In this case, if Black plays h5, it flips the disc at g6. White will take the edge with h2 and be left with a free move at h7. Black's best move here is to play a6, taking away White's access to h5.

Exercise 5-3 This position is taken from Diagram 5-18, with White playing the next move at h5. Since h4 and h5 form a pair, Black wants to take the

other half of the pair and play h5. If Black moves elsewhere, White can play h5 or h7, gaining a tempo.

Exercise 5-4 Black is out of safe moves, but can stay alive by taking advantage of White's wing formations. Before deciding which wing to attack, Black should examine which corner (a1 or h8) is more valuable to him. In this case, a1 is more valuable, since Black will be able to extend out along the left edge. Thus, Black should begin his attack with h2. White's best response is h1, after which Black wedges at g1, gaining access to a1.

Exercise 5-5 White should play h6, leaving a 2-square gap at h4/h5. Black is already in danger of running out of moves.

Exercise 5-6 Black's move to g6 gives White an opportunity to pull off a major coup with h7!! This is safe because Black does not have access to h4. White will later be able to gain tempos by playing both h2 and h4 (I would recommend playing this out on a board if it is not obvious to you).

Chapter 6

Exercise 6-1 Black should begin an interior sweep by playing b1. The perfect play sequence is shown in the diagram, with Black winning 35-29. Purists (purists with computers, that is) might note that Black can also win by an identical score by playing c1. However, I would prefer b1, as it leaves White with only one choice (a1), while Black starting with c1 allows White to choose between a1 and b1.
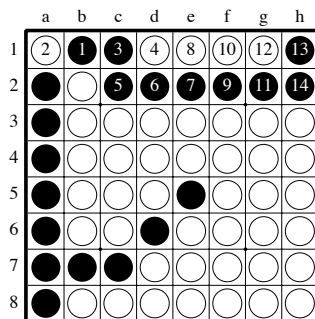
Exercise 6-2 White has many ways to win, but White's best move is b2, taking control of the diagonal. Black will be forced to flip b2 on his next turn, allowing White to take the a1 corner.

Exercise 6-3 White should begin by playing h4. Black has little choice but to reply with h5, his only safe move. White can then play g2, taking control of the diagonal and running Black out of moves. This is another example of how it is often possible to exploit a pair, in this case setting up a move to grab the diagonal. The entire perfect-play sequence is shown in the diagram, with White winning 42-22.
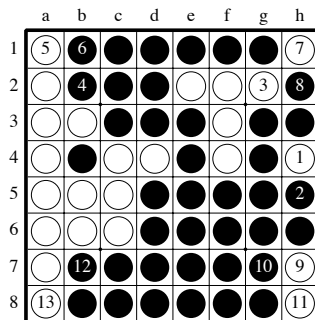
Exercise 6-4 a7 is White's only winning move, breaking the diagonal and gaining access to h8. Although Black can secure two edges by taking the a8 corner, White will fill in at b7, and Black passes. White will then be able to capture the right and top edges with the sequence shown in the diagram. Note that if White starts with b2 or g2, Black simply takes the adjacent corner, and White can not wedge.
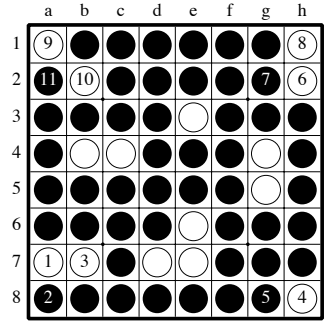
Exercise 6-5 Black should play a1. This is a swindle, as White does not have access to b1. Black will later move to b1 himself, creating many stable discs.

Exercise 6-6 Black should play h7. White can take h8, gaining many stable discs. However, this creates the position in Exercise 6-5! This example demonstrates that it can be worth making a significant sacrifice in order to set up a swindle.

Chapter 7

Exercise 7-1 Black is threatening to make a good move at f4, so White should play to d2, flipping the disc on d6. Not only does this take away Black's access to f4, but now it is White that threatens to make a quiet move to f4.

Exercise 7-2 Black should prevent White from making a quiet move to f3. Black could deny White's access to f3 by playing c6 or f7. While these moves are reasonable, in the case the best move is for Black to play f3 himself.

Exercise 7-3 Black threatens to make a quiet move to g4, and White should prevent this by playing b5! Although very loud, this is easily the best move available for White.

Exercise 7-4 Even in the endgame, it is often more important to consider defense rather than offense. In this case, both players can make a quiet move to b4. Since it is Black's turn, he should play b4. If he plays f2 instead, White takes b4 and Black will run completely out of moves.

Exercise 7-5 In this case, Black threatens to make a quiet move to g4, as well as a strong move to h6. White could play g4 himself, but this would give Black a good move to g3. Better for White is to play h6! While Black can get a good move in at g4, with h6 already occupied, this still leaves White with a solid lead.

Exercise 7-6 In this position, White appears to be winning easily. White has already taken a corner, and has good move available at h2 and c7. However, Black has the powerful threat of grabbing the diagonal with g2, after which White can not break the diagonal. White's only winning move is to prevent Black from grabbing the diagonal by making the defensive move b7!

Chapter 8

Exercise 8-1 White should play to b2, creating three 2-square regions. Black must initiate play into each of these regions, and White simply follows Black by taking the last move in the region.

Exercise 8-2 White should play to a1. White could play into the odd region at b7, but this concedes the entire bottom edge and Black wins. Since Black does not have access to the a1-a2 region, no matter how White proceeds he will eventually have to initiate play into the region. It is far better is to play a1 first, let Black wedge at b1, and then play into the odd region at a7 rather than b7.

Exercise 8-3 Without access to the odd region (h2) it appears that Black has parity. However, if White begins with a8, then Black's only move in the lower-left is b7, which flips the long diagonal and gives White access to h2. Thus, Black's best response is h2, and White will get the last move in the lower-left (after Black h2, White's best move is b7).

Exercise 8-4 If White play's to a1, then Black passes, and White must initiate play into an even region, losing the game. White's winning move is a3, feeding Black two moves (a2 and b3) in the region. Regardless of the order in which Black takes his moves, White plays a1 and then gets a good final move at b2.

Exercise 8-5 This is an example of using hyper even number theory. Black should play h2, sealing himself off from the region in the upper-right. No matter how White plays, White must eventually initiate play in the upper right, allowing Black to get the last move and the victory. The perfect play sequence is shown in the diagram.
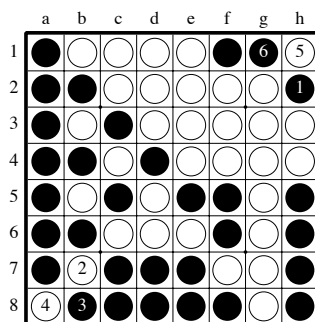
Exercise 8-6 The key to understanding this position is to view the 3-square region in the lower-left (b7, a8, and b8) and g8 as a 4-square region. White should move into the odd region in the upper left, avoiding the lower left until Black plays into g8. The question then, is where in the upper left to move? The obvious choices are a3 and b3. A bit of thought allows us to reject b3 in favor of a3. The problem with b3 is that if Black plays immediately plays to g8, then White's only move to the lower-left region (the only odd region) is b7, which offers Black free moves at a3 and a2. By contrast, after a3, a Black move to g8 (either now or in the future) is well met by b7, and White will be able to get the last move in every region. The perfect play sequence is shown in the diagram, with White winning 33-31.
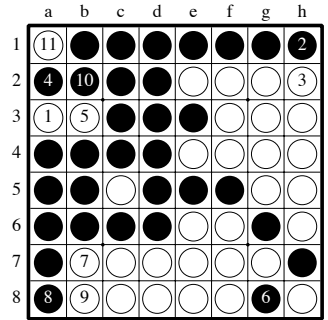
Chapter 9

Exercise 9-1 Black should attack the h8 corner by playing h5. If White responds with h4, this flips f2 and g3. Black can then run White out of moves by playing g1.

Exercise 9-2 Black should attack the h1 corner by playing h3. White has little choice but to reply with h7, flipping the Black discs on g6 and h6. This sets up a good move for Black at c6.

Exercise 9-3 White should attack the h8 corner with e8, flipping the Black disc on e5 and controlling the c3-f6 diagonal. If Black responds with d8, White plays g7, taking permanent control of the diagonal.

Exercise 9-4 White should play d8, attacking the a8 corner from two directions. Although this sacrifices the h8 corner and the bottom edge, White can later take the a8 corner and sweep around the board, winning easily.

Exercise 9-5 White should attack one of Black's unbalanced edges. In this case, the h8 corner is more valuable for White than the a1 corner, so White should begin by playing a7. Black has little choice but to respond with a8, allowing White to win by wedging at b8.

Exercise 9-6 Black should attack the h8 corner by playing h3. If White responds with h2, then Black can initiate a stoner trap with b7.

Exercise 9-7 The trap fails when Black responds c3, denying White access

to the attack square (c8) while establishing access for Black to the a8 corner. Now matter how White continues, Black will be able to take the corner on his next move.

Exercise 9-8 The trap succeeds. Even if Black plays e1, White still has access to the attack square e8, because the move to b7 flips the disc on c6.

Exercise 9-9 The trap fails. Suppose that Black responds with e1, breaking the diagonal. White must continue with f8, but this flips the disc on b4, making the entire b-column White. Black can now play b8 without flipping b7, and will be able to take the a8 corner on his next turn.

Exercise 9-10 The trap fails when Black responds g7. If White tries to continue with f8, it flips the disc on g7, allowing Black to play h8.

Exercise 9-11 The trap fails when Black responds with c8.

Exercise 9-12 The trap fails when Black responds with h3, attacking the h8 corner. White must respond with h2, but now Black can take the a8 corner. Remarkably, computer analysis reveals that White is still winning after b7!

Exercise 9-13 The trap succeeds. After playing b7, White loses access to the attack square d8, but the only Black moves which do not surrender a corner immediately (a3 and a4) give White access to d8.

Exercise 9-14 The trap fails when Black responds with d1. If White continues with f8, it flips the disc on b4, making the entire b-column White. Black can now play b8 without flipping b7.

Exercise 9-15 The trap fails when Black responds with a6. Now if White plays d8, the b-column is entirely White, allowing Black to play b8 without flipping b7. However, it is worth noting that if White plays b8 instead of d8, Black's only winning move is to play d8 himself. So, in some sense the trap does succeed in winning the h8 corner.

Chapter 10

Exercise 10-1 Black should play f2. While this move is loud, it sets up a very valuable swindle. If White plays b2, Black first fills in at e1, and later can swindle White by playing b8 without flipping b7. If White plays anywhere other than b2, Black can play a8 without giving White access to b8.

Exercise 10-2 Black should play a6. White's only safe move is a5, but this makes the b-column entirely White, allowing Black to play b1 without flipping b2.

Exercise 10-3 Black moves to h4, attacking the h1 corner. If White replies with h7, it sets up a swindle, allowing Black to play a7 without flipping b7. If White does not play h7, Black can take h1 on his next move, and White still can not play h7 without allowing a swindle.

Exercise 10-4 Black is attempting to swindle White by playing d1 on his next turn. White can prevent this by playing b5, denying Black's access to d1.

Exercise 10-5 If Black plays g1, then White replies with b2 and Black loses. Black should instead begin with a3. If White responds with a5, then Black can continue with g1. If White now plays b2, then the entire b-column is White, allowing Black to pull off a swindle with b1.

Exercise 10-6 White can get three of four moves in the corner by grabbing the diagonal with g2. Black will break the diagonal on his next turn, and White then continues with g1. Although White is conceding a corner early in the game, the tempos gained are worth more than the corner. Note that Black could deny White's access to g1 by moving to b6, but this creates a huge wall and leaves White with the advantage.

Chapter 12

Exercise 12-1 Black should play quietly to c2, with the potential for moving to b3 and c4 in the future. This is the best way to take advantage of White's shape.

Exercise 12-2 White should play c6, making an excellent shape. This is one of those positions that does not require much reading ahead to figure out the right move.

Exercise 12-3 White has several reasonable looking moves, including the quiet move f2. However, if White plays f2, then this results in the position shown in Exercise 12-1. Black gets in a good move at c2 and threatens b3 followed by c4. WZebra indicates that the best move is f1, which at first glance does not seem appealing at all. Not only does it offer Black a wonderful move at c4, but it also puts a piece on the edge opposite the edge White already occupies (c8-d8). The value of playing f1 is mainly defensive. Black can not respond with c2, because this would give White access to c4. Of course Black gets a good move in a c4, but after this neither b3 nor c2 is particularly good, and there is no way for Black to play to both. In the initial position, WZebra even prefers g4, denying Black access to c2, over f2. The difference between playing f1, f2, or g4 is not big, but the point is that it is important to consider how your opponent will exploit your bad shape.

Exercise 12-4 Black's best move is, believe it or not, a2! In the 1980's, a6 was the automatic response in this position, but this allows White to consolidate his position with a3. Black then has nothing better than the obvious move at b6, resulting in the position in Exercise 13-2. The point of playing a2 is that it threatens a6, allowing Black to gain two tempos on the edge. White can preempt this by attacking the corner with a3, but after Black defends with a5, White must initiate play in the north, leaving White with only a narrow advantage.

Exercise 12-5 Black should exploit White's weak edge position by playing g7. White can of course break the diagonal, but Black will eventually get 4 of the 6 moves (g7,g8, h4, h6,h7,h8) in the region.

Exercise 12-6 The obvious move here is b2-- unfortunately it is not the correct move. After b2, Black does not have a follow-up response to White's h4. The usual move would be to play a3, semi-forcing White to take a1, and then wedge at b1. In this case, however, playing b1 gives White access to d1. Rather than b2, Black should begin with d1. If White responds with g1, then b2 becomes an attack on an unbalanced edge. If White breaks the diagonal with h4, Black can play the a3-a1-b1 sequence and win the h1 corner.

Chapter 13

Exercise 13-1 Black begins with 32 discs. If Black plays h7, White responds with h6, and Black gains just the disc on f7, finishing with 33 discs. If Black instead plays h6, White responds with h7. Cancellation is useful when counting this sequence. Black gains four discs on row 6 (c6, d6, e6, f6) but loses four discs on the b1-h7 diagonal (c2, d3, e4, f5). Further, Black gains g5, but loses h4. Thus, after Black h6/White h7 Black has no gain and finishes with 32 discs.

Exercise 13-2 Black begins with 27 discs. If Black plays a8, White responds with b8, and Black gains six discs (a8, c6, d5, e4, f3, g2) for a total of 33. If Black plays b8, White responds a8. Black gains nine discs (b3, b4, b5, b6, c7, d6, e5, f4, g3) but loses four discs (a5, a6, a7, g8) for a net gain of five discs.

Exercise 13-3 Black should play d8 and ends with 37 discs. After Black plays d8, White gets swindled because he does not have access to e8, so Black gets this move as well. When there are two empty squares at the end of the game, and one of the moves swindles the opponent, it is always better to make this move.

Exercise 13-4 Parity suggests that White should play to the odd region (b6). However, in this case, b2 is the correct move, allowing White to finish with 33 discs. If White plays b6 first, it flips the disc on d4. After Black takes a1, White's move to b2 does not flip e5 because his disc on d4 "gets in the way". Starting with b2 is therefore one disc better than b6.

Exercise 13-5 White should play a1. After Black passes, White plays b2, and Black ends the game with b1. Counting this sequence, White begins with 20 discs, and gains seven discs on the left edge after playing a1 for a subtotal of 27. Following a1, White must consider both b1 and b2. Starting with the move that is easier to count, b1 gains five discs on the top edge and White will finish with 27+5=32 discs. After a1, if White plays b2, it gains eight discs (c2, d2, e2, f2, c3, d4, e5, f6) for a subtotal of 27+8=35, but after Black plays b1, White loses the disc on b5, so he ends with 34 discs.

Exercise 13-6 The perfect play sequence is White b8, Black a8, White a7. Counting this sequence, White starts with 30 discs. After White b8, Black a8, White has gained five discs (c7, d6, e5, f4, g3) and lost five discs (c8, d8, e8, f8, c6). One the final move a7, White gains three discs (a7, a6, b7) for a total of 33 discs. If White begins with a7 or a8, the game ends in a draw.

Chapter 15

Puzzle 1 Black's first move is a6. Unless White responds by going to a7, Black can take the corner at a1 for his second move. If White does respond with a7, it will turn over the disc at g7, allowing Black to take h8 corner.

Puzzle 2 White's first move is b6, turning over ten discs. This leaves Black with only three options (b7, g2, and h7) all of which allow White to take a corner on his next move.

Puzzle 3 Black's first move should be to b2. This allows White only two options (a2 and b7), both of which give Black access to a corner on his next move.

Puzzle 4 White plays to g1, leaving Black with no safe moves.

Puzzle 5 White plays to h4, simultaneously attacking two corners (a1 and h8). Black has no way to defend this double attack.

Puzzle 6 Black plays to a5, leaving White with no safe moves.

Puzzle 7 White plays to d1, leaving Black with no safe moves.

Puzzle 8 Black plays to g2, leaving White with no safe moves. If White plays to b2, it flips the disc on g2, giving Black access to h1.

Puzzle 9 Black plays to a6, leaving White with only two options (h2 or e7). If White chooses h2, Black captures h1. If White chooses e7, Black plays b7, ending the game.

Puzzle 10 White plays to e8, leaving Black with no safe moves.

Puzzle 11 Black plays to g1, leaving White with no safe moves.

Puzzle 12 Black plays to g2, leaving White with no safe moves.

Puzzle 13 Black plays to a3, attacking the h8 corner. If White responds with b2, this flips the disc on b7, giving Black access to a8.

Puzzle 14 White begins by playing h5. If Black responds with g3 or h4, White plays h7, leaving Black with no safe moves.

Puzzle 15 White's first move is h5. If Black plays to h3, White plays to f7, leaving Black with no safe moves. If Black plays g2, White plays e1, gaining access to h1. If Black plays any other move, White plays h3, gaining access to h1.

Puzzle 16 Black should play to g7. White's only safe move is f7, to which Black responds f8, leaving White with no safe moves.

Puzzle 17 White goes to e1, attacking the h1 corner. Black must defend with d1, after which White plays g2, grabbing the diagonal and leaving Black with no safe moves.

Puzzle 18 White goes to d1, attacking the h1 corner. Black must defend with c1, after which White plays h7, leaving Black with no safe moves.

Puzzle 19 Black plays to h2, which does not give White access to h3. If White replies with e2 or f2, Black plays h3, leaving White with no safe moves.

Puzzle 20 Black goes to g2, leaving h1 as White's only response. Black then plays f8, leaving d8 as White's only response, which gives Black access to a8.

Puzzle 21 Black plays to g8. No matter how White responds, Black follows with e8 and can play a8 on his third move.

Puzzle 22 Black's first move should be to g3. This offers White for possible replies (a2, b2, g2, and h2). If White chooses a2, Black attacks corner a1 by playing at a5. If White chooses b2, Black attacks a1 by playing d8. If White chooses g2 or h2, Black can attack corner h1 by playing h3.

Puzzle 23 White should play a3. If Black responds a2, White plays b2, poisoning Black's move to f2 and leaving Black with no safe moves. If Black does not respond a2, White plays a6 and captures the a8 corner on his third move.

Puzzle 24 White goes to b8, attacking corner h8. If Black defends by going to a8, White counters with a3, thereby gaining access to corner a1. If instead Black defends by going to h8, White responds with h7, thereby gaining access to corner h1.

Puzzle 25 White should play a5. If Black responds a7, White counters with h6. If Black instead plays a7, White counters with h6. In either case Black is left with no safe moves.

Puzzle 26 White plays to h5. If Black replies with g8, White plays to h7, leaving Black with no safe moves. If Black instead tries h3, White counters with c8, gaining access to corner a8.

Puzzle 27 Black should play d2. If White responds with d1 or e1, Black counters with b8; if White instead plays c2, Black counters with c8. In either case, White will have no safe moves.

Puzzle 28 Black goes to f6. White's only safe response is g2. Black then moves to d6, gaining access to corner h1.

Puzzle 29 White should play e3. Black's only safe response is b3. White then moves to a3, leaving Black with no safe moves.

Puzzle 30 White should play g7. If Black replies c2, White plays b2, leaving Black with no safe moves. If Black instead plays a2, White wedges at a5, gaining access to a1.

Puzzle 31 Black's first move should be to g7. White's only safe moves are g6 and g8. In either case Black continues with f8, gaining access to a corner on his next move.

Puzzle 32 Black goes to g6. If White chooses h5, Black replies with h7. If instead White chooses h7, Black replies a4. In either case, White has no safe moves.

Puzzle 33 Black should play d8. If White chooses a2, Black replies f8. If White instead chooses b8 or f8, Black replies g8. In each case, White is left with no safe moves.

Puzzle 34 White goes to d1. Whatever Black's response, White continues with b2, leaving Black with no safe moves.

Puzzle 35 Black plays to h6. If White responds with g7 or h7, Black moves to h4, gaining access to corner h8.

Puzzle 36 White's first move should be to h5. Black's only safe move is h4. White then moves to g7, leaving Black with no safe moves.

Puzzle 37 Black goes to b7. White's only safe response is f2, after which Black plays g2, offering White no safe moves.

Puzzle 38 White should play a5. Black must reply with a1, after which White fills in at b2, leaving Black with no safe moves.

Puzzle 39 Black goes to d1, attacking the h8 corner. White must respond g1. Black then moves to g2, leaving White with no safe response.

Puzzle 40 White should play a4, forcing Black to reply with a3. White then moves to d1, attacking the h1 corner. Black's only defense is c1, but this move flips the disc on b2, giving White access to corner a1.

Puzzle 41 White goes to a4, forcing Black to reply with a3. White then moves to h2, leaving Black with no safe response.

Puzzle 42 White should play b8. No matter where Black responds, White continues with e8, leaving Black with no safe response.

Puzzle 43 Black goes to g7. Whatever White's response, Black plays a6, attacking the a1 corner. If White defends with a7, it flips the disc on b7, giving Black access to a8.

Puzzle 44 White moves to d1. Black's only safe response is c1. White then moves to f8, leaving Black with access only to a2, which gives White the a1 corner.

Puzzle 45 White's first move should be f8, forcing Black to reply e8. White then moves to a2, forcing Black to play g8, offering White the h8 corner.

Puzzle 46 White goes to g4. Whatever Black replies, White moves to g2, leaving Black with no safe response.

Puzzle 47 Black's first move should be to b7. White's only safe response is a8. Black then plays g3; White's only move is g2, giving Black the h1 corner.

Puzzle 48 Black goes to g2. This offers White three safe responses: c2, h1, and h2. If White chooses c2 or h2, Black moves to b7, leaving White with no safe response. If White chooses h1, Black wedges at h2 and takes corner h8 on his next turn.

Puzzle 49 Black plays b8, leaving White with safe responses at c8 and d8. Whichever White chooses, Black plays the other half of the pair, leaving White with no safe moves.

Puzzle 50 White should play a2. If Black chooses a1, White wedges at e1, gaining access to h1. If Black instead chooses h7, then White responds with a6, leaving Black with no safe moves.

Puzzle 51 White goes to c7. If Black responds c8, White plays b2. If instead Black responds b6, White plays b7. In either case Black is left with no safe response. If Black responds b8, White wedges at c8, gaining access to a corner on his third move.

Puzzle 52 Black should play a4. If White chooses b7, then Black replies with c2, breaking the diagonal. If instead White chooses h7, Black replies g2, leaving White with no safe response.

Puzzle 53 White should play g7. If Black replies b8, White employs a Stoner trap by playing f8. If Black instead replies c2, White plays b2, leaving Black with no safe moves.

Puzzle 54 Black's first move should be to a2, forcing White to respond a1. Black then launches a Stoner trap by playing h3.

Puzzle 55 Black should play a7, forcing White to respond with a8. Black can then wedge at g1 and take a1 on his next turn.

Puzzle 56 Black goes to c1, forcing White to respond with g1. Black then moves to h5, leaving White with no safe moves.

Puzzle 57 White should play h7. If Black responds with h6, White moves to d1, leaving Black with no safe moves. If Black does not respond with h6, White moves there himself, gaining access to h1 on his next turn.

Puzzle 58 Black goes to g5, leaving White with five safe moves (b1, f6, f7, g6, and h6). No matter which of these moves White chooses, Black responds with e1, guaranteeing himself corner a8 or h1 on his next turn.

Puzzle 59 Black should play b7, leaving a8 as White's only safe response. Black then wedges at b8, leaving White with no safe moves.

Puzzle 60 Black should play b2. If White responds d8, Black should then launch a Stoner trap by playing a6. If White does not respond with d8, then Black plays c8, guaranteeing capture of corner a8 on his next turn.

Puzzle 61 White goes to c1. Black's only safe move is d8. White then goes to c8, leaving Black with no safe moves.

Puzzle 62 White should play h4. No matter how Black responds, White initiates a Stoner trap with c1.

Puzzle 63 White goes to d8. This leaves Black with safe moves at b1 and d1. Regardless of which move Black chooses, White plays b7, leaving Black with no safe moves.

Puzzle 64 White's first move should be b7, threatening a Stoner trap by playing c8. Black must reply with b3 to prevent the Stoner. White then plays to b4, leaving Black with no safe response.

Puzzle 65 White goes to a2, leaving a1 as Black's only safe response. White then plays to b2, leaving Black with no safe moves.

Puzzle 66 Black should play a2. If White responds c7, Black plays h7, leaving White with no safe moves. If White responds d8, Black wedges at e8 and can take corner h8 on his next turn. If White responds e8 or h1, Black plays c6 and can take corner a8 on his next turn.

Puzzle 67 White goes to h4. If Black responds h8, White should play at b7, leaving Black with no safe moves. If Black instead responds g2 then White can cut the diagonal with d1.

Puzzle 68 White should play to b7. If Black responds a2, White should spring a Stoner trap with a move to a3. Likewise, White can counter a Black response of g8 by playing f8. If Black's initial response is f8, White should reply with g8, leaving Black with no safe moves.

Puzzle 69 Black goes to b2. If White responds a2 or h2, Black should continue with g2, leaving White with no safe moves. If instead White responds g1, then Black should continue with h6, again leaving White with no safe moves.

Puzzle 70 Black should play at e1, threatening corner a1. If White blocks by moving to f1, Black should break the a8-h1 diagonal with g8 and take corner h1 on his next turn. If White Blacks by moving to a1 himself, Black can wedge at a2 and take corner a8 on his next turn.

Puzzle 71 Black should play g7. No matter where White responds, Black should next play at a6, threatening corner a1. White must play at a7, which flips the disc at g7, offering Black corner h8.

Puzzle 72 Black goes to d1. White must play c1, after which Black continues with a4, leaving White with no safe moves.

Puzzle 73 Black should play c8, forcing White to respond with b8. Black then attacks corner h1 by playing d1. If White tries to defend with c1, it flips the disc on b7 and offers Black the a8 corner.

Puzzle 74 Black plays d8, leaving c8 as White's only safe response. Black should then play a2, leaving White with no safe moves.

Puzzle 75 Black should play h5. This leaves White with two safe responses: h4 and h6. Black should respond h3 or h7, respectively, leaving White with no safe moves.

Puzzle 76 Black should move to b7. If White chooses b3, Black play b2, leaving White with no safe response. If White instead chooses h8, Black wedges at g8 and takes corner a8 on his next turn.

Puzzle 77 White goes to g7, leaving h8 as Black's only safe move. White then continues with c2, offering Black no safe response.

Puzzle 78 White should play to b2. If Black chooses a1, White wedges at b1 and takes corner h1 on his next move. If Black instead chooses b1, White plays b8, leaving Black with no safe response.

Puzzle 79 White goes to a2, leaving e2 as Black's only safe response. White continues with f2, leaving Black with no safe moves.

Puzzle 80 Black should play g2. White's only safe move is h7, after which Black launches a Stoner trap by playing h3.

Puzzle 81 Black plays a2, and no matter where White responds, Black follows with a4. This guarantees capture of corner a8 on his third move.

Puzzle 82 White should play b4, attacking corner h8. If Black responds b2, White breaks the diagonal with b3. If Black instead responds b3, White breaks the diagonal with g1.

Puzzle 83 White goes to b2. If Black responds d1, White initiates a Stoner trap with c1. Otherwise, White plays d1 himself, again setting up a Stoner trap.

Puzzle 84 Black moves to c2. If White responds with g1, then Black plays g7 and White has no safe response. If White responds b2, Black cuts the diagonal with b8 and takes a1 on his next turn.

Puzzle 85 Black plays g5. If White responds with a4, Black wedges at a3 and takes corner a1 on his next turn. If White responds h6, Black wedges at h5 and takes corner h8 on his next turn.

Puzzle 86 Black should play b2. White's only safe move is a8, after which Black plays a7, leaving White with no safe moves.

Puzzle 87 Black moves to g7, leaving b5 as White's only safe response. Black then moves to b4, leaving White with no safe moves.

Puzzle 88 Black plays h7. White's only safe move is c7, after which Black plays b2, leaving White with no safe response.

Puzzle 89 Black should play h3, leaving b3 as White's only safe response. Black then plays b7, leaving White with no safe moves.

Puzzle 90 Black moves to g2. If White responds with d8, Black plays h4 and White has no safe moves. If White instead plays g7, Black breaks the diagonal with h4 and takes h8 on his next turn.

Puzzle 91 Black plays g7. If White chooses f6, Black plays h6, leaving White with no safe moves. If White instead chooses h6 or h7, Black plays b7, again leaving White with no safe moves. If White chooses g2, Black cuts the diagonal with g4 and takes h1 on his next turn.

Puzzle 92 Black should play g7. If White responds with g8, Black can play g5 or g6, leaving White with no safe moves. If White responds with g5 Black plays g6, or if White responds g6 Black plays g5; in each case White has no safe moves.

Puzzle 93 Black should play e7. White's only safe response is f8. Black then plays g7, leaving White with no safe moves.

Puzzle 94 White goes to d3. If Black chooses f1, then White plays e1, winning the h1 corner. If Black instead choose e1, White wedges at f1, again winning the h1 corner.

Puzzle 95 White should play d7. Black's only move is d5, after which White plays f3, winning the h1 corner.

Puzzle 96 White goes to h7, and no matter where Black responds, continues with h3, winning the h1 corner.

Puzzle 97 White should play f3. Black must defend with c6. White then plays f2, and Black can not flip the disc on f3.

Puzzle 98 Black should begin with f8, and White must defend at e8. Black then plays b7. No matter how White responds, Black follows with a Stoner attack at c8, guaranteeing a corner on his fourth move.

Puzzle 99 Black goes to b7, and White passes. Black then goes to a2. White's only move is to b2, flipping the disc on b7. Black's third move is to a8, White passes, and Black takes h8 on his fourth move.

Glossary

A-square: Any edge square which is separated from the nearest corner by one other edge square (see Diagram 1-2).

Anchor: One or more edge pieces which cannot easily be eliminated by the opposition, offering protection against a wipe-out.

B-square: Any edge square which is separated from the nearest corner by two other edge squares (see Diagram 1-2).

Balanced edge: An edge occupied by six adjacent discs of the same color, both corners being vacant.

Blackline: The diagonal running from h1 to a8.

Break a diagonal: Establish a disc on a diagonal controlled by the opponent.

C-square: Any edge square which is adjacent to a corner (see Diagram 1-2).

Control the center: Having discs bunched in the center of the board while the opponent's discs are on the outside.

Diagonal control: Having a line of several discs of the same color on a diagonal line while the opponent has no discs on the same line.

Even number theory: When there is a region with an even number of empty squares, it is usually better to have your opponent initiate play in the region.

Extract: Flip an interior disc that was valuable for the opponent.

Feeding the opponent: Intentionally giving the opponent options in a region.

Forced move: A move on which a player has only one legal play.

Free move: A move available to only one player which can be deferred until later in the game and which, when taken, does not create any safe responses for the opponent.

Frontier disc: A disc which borders one or more empty squares.

Gain a tempo: To achieve an advantage of timing by deriving one more viable move than the opposition from play within a limited area of the board and thereby in effect transferring to the opposition the burden of initiating play elsewhere.

Hyper even-number theory: A player can force his opponent to initiate play in an even-numbered region if the player does not have access to any of the squares in the region.

Interior disc: A disc which is completely surrounded by other discs.

Interior sweep: A strategy by which one side creates a large number of stable interior discs, usually sacrificing edge discs in the process.

Internal disc: Same as interior disc.

Loud move: A move which creates many new frontier discs.

Main diagonal: One of the two eight-square diagonals running between two corners (see Diagram 6-16).

Pair: Two empty squares such that if a player moves to one of the squares, his opponent will want to play in the other.

Parity: The ability to get the last move in every or almost every region.

Poison disc: A disc which turns what would otherwise be a quiet move into a loud move.

Poisoned move: A potentially quiet move which is a loud move because of a poison disc.

Quiet move: A move which does not create many new frontier discs.

Run out of moves: A position in which the player to move has no safe moves available.

Safe move: A move which does not concede a corner.

Semi-forced move: A move which is forced not by the rules of the game but rather by tactical considerations.

Stable disc: A disc which cannot be flipped no matter what moves are made throughout the rest of the game.

Stoner trap: A sequence of moves forcing the capture of a corner by first controlling a main diagonal with an X-square move, then attacking a corner so that if the opponent defends the corner, he flips the X-square. See Diagram 9-25.

Swindle: A situation where one player gets both moves in a pair because, following the first move into the pair, the opponent does not have a legal move to the other square in the pair.

Tesuji: A good move or sequence of moves that can be used in certain frequently-occurring positions.

Unbalanced edge: An edge occupied by five adjacent discs of the same color, one C-square and both corners being vacant.

Wall: A connected group of frontier discs of the same color.

Wedge: A disc or line of several discs of the same color on an edge which is abutted on both sides by opposition discs, or playing a move which creates a wedge.

Whiteline: The diagonal running from a1 to h8.

Wing: An unbalanced edge.

Wipe-out: A game which ends with all the discs on the board the same color.

X-square: Any edge square which is diagonally adjacent to a corner (see Diagram 1-2).