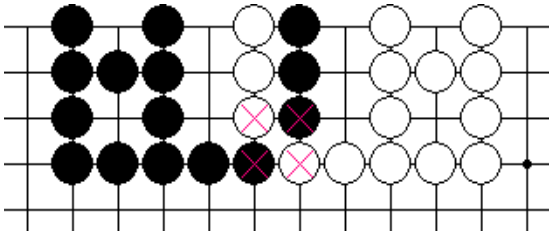
Chapter 5　Capturing Race

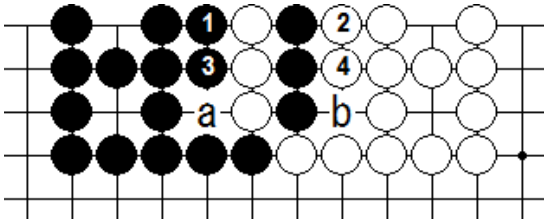
4000　Capturing Race

Look at the chart below.

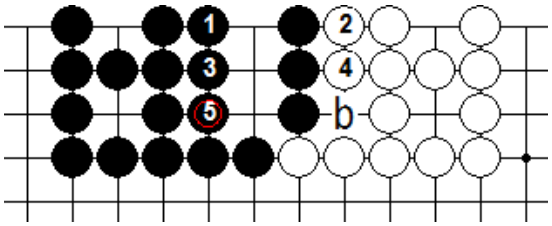


As you can see, at the points of four stones marked with X, black is cut into two groups of stones and the white is also cut into two groups.　The black group on the extreme left is living with two separate eyes.　Similarly, the white group on the extreme right is also living with two separate eyes.　But the group of three black stones in the middle right is so small that it is impossible to form two eyes.　Similarly, it is impossible for the white to form two eyes with group of three white stones in the middle left.　These two groups are under an uncertain situation.　This means that black will be able to survive if the black player succeeds in killing the unstable white group by capturing.　Similarly, white will be able to survive if the white player can kill the unstable black group by capturing.　The question is which is faster to capture the opponent's group of stones.　This situation is called "a capturing race".

If a situation shown in the above chart occurs, black can capture white if he plays first.　The sequence of possible moves will be shown in the following chart.



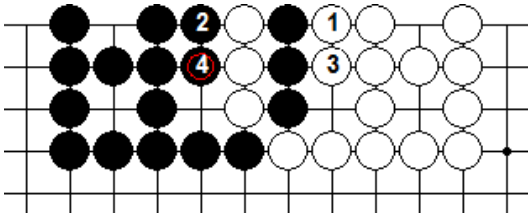
Black can capture white stones by "a".



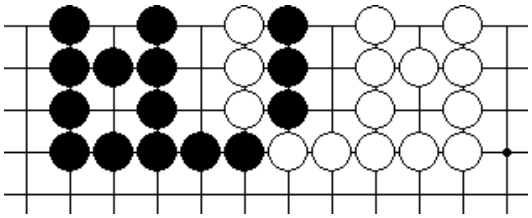
White's move at "b" cannot capture black stones.

The moves started by black's (1) to the white's move (4) are an example of a typical capturing race.　And as white plays (4) in the left hand chart, you will see that black can capture three white stones by a move at "a" for (5).　It is possible for the white to make a move at "b" after it, but, since three white stones are removed from the board at the time black plays "a", the move of the white at "b" cannot capture black stones as you will see in the chart on the right.

In this case, black started the capturing race first, but what will happen if white starts the capturing race?



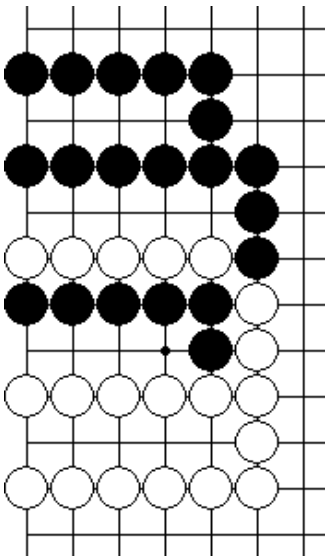
The above chart shows the case white started the capturing race. You will see that white will succeed in capturing black stones first by white's move at (5).



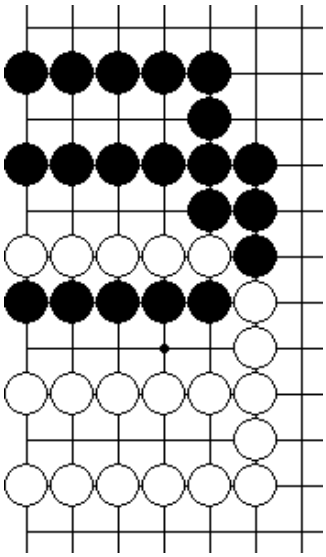
Let us look at this chart showing the original situation. You will be able to count the number of breathing points or liberties of the middle groups of uncertain stones of the black and white. Black group has three liberties and white group also has three liberties. In this situation where the number of liberties is exactly the same, the result of the capturing race will depend on who plays there first.

4010 Capturing Race when there are no liberties inside the uncertain groups.

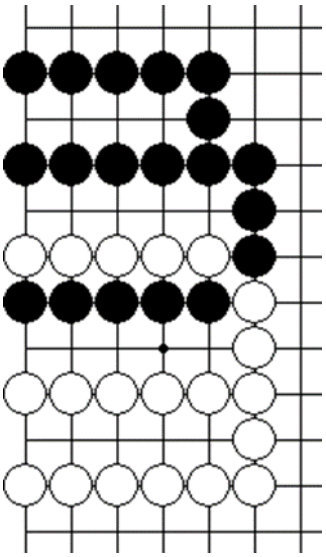
At this point, we will give you a quiz with three charts. Please check the groups of stones on the board of these charts and confirm the status of each chart.



White will win the race.



Black will win the race.



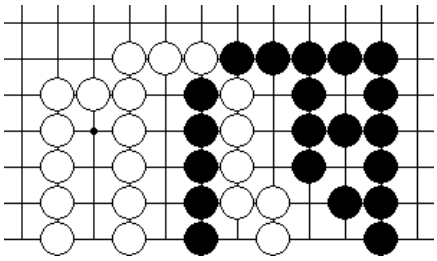
The first player will win.

In the left hand chart, the inner black group has four liberties while the inner white black group has five liberties. In this case, white will win the capturing race even in case the black plays first.

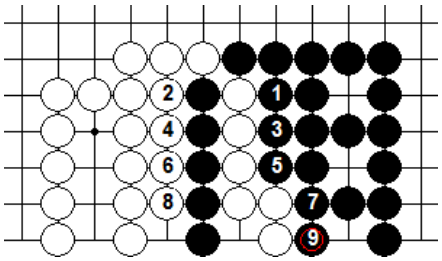
In the middle chart, the inner black group has three liberties while the inner white group has four liberties. In this case, black will win the capturing race even in case the white plays first.
In the right hand chart, the numbers of liberties of the inner black group and white group are exactly the same. In this case, the first player will win the capturing race.

4020 Capturing Race where there is one common liberty for the black and white groups

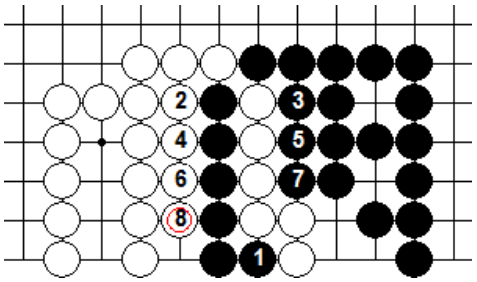
Look at the chart below.



This is a case in which there is one liberty between the black group and the white group which we will be able to call as “common liberty.
As you can see, black group has 5 outside liberty and one common liberty. White also has 5 out side liberties and one common liberty. In this case, the calculation of liberties to determine which player will win the capturing race works exactly the same as the case where there is no common liberties. However, it is very important to remember that you must make moves on independeent outside liberties first and then on common liberties. This order of moves is very important. Since the number of nodes left is exactly the same for black and white in this case, the player making the first move will win the capturing race. You will be able to cofirm this fact with the following chart.



The black’s order of moves is good and after both players play from (1) to (9), you will be able to confirm that black has succeeded in capturing 6 white stones. White could not prevent it.
Next chart shows what will happen if the order of moves is bad.

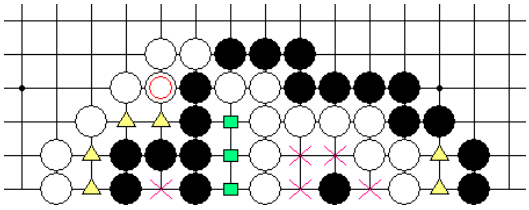


In this case, black started moves from (1). The move (1) is a poor move. If this bad move is made, it will go on as shown from (1) to (8) and you will notice that black failed in the capturing race and white won the race.

You may wonder why this happens. The explanation is simple. The move at the common liberty at (1) will reduce the opponent's node for one, but it is reducing your node for one at the same time. Thus the move (1) is inferior to a move which reduces the opponent's liberty independently.

4025 Classification of liberties in a Capturing Race

At this point, it would be a good idea to understand that there are three different kinds of liberties in a capturing race. We will demonstrate the difference in this chart.



This is a very complicated capturing race, but by the end of this chapter, you will learn how to confirm which will win the capturing race by calculation. Here with this chart, we will learn the distinction of three kinds of liberties.

In this pattern, you will see that seven black stones on the left and the eleven white stones on the right are unable to survive independently with two separate eyes. That is a typical pattern of capturing race with which the black stones can survive if the black succeeds in capturing the white stones. Similarly, the white stones can survive if the white succeeds in capturing the black stones. In such a capturing race, the number of liberties will be very important but three different kinds of liberties function differently which you will learn later in this chapter. At this point, we will only learn which liberties are which!

Liberties marked with triangles are called "outside liberties" or "independent liberties". In this case the black has four such liberties and the white has only two such liberties.

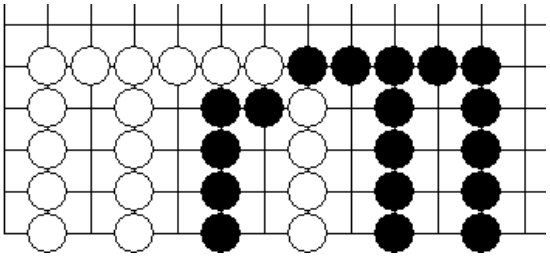
Then you will see that there are liberties marked with a square. They are called "inside liberties" or "common liberties. As you will see, there are three such liberties in this pattern. These liberties are standing just between the black and white unstable

groups of stones and they are liberties of both players in common.

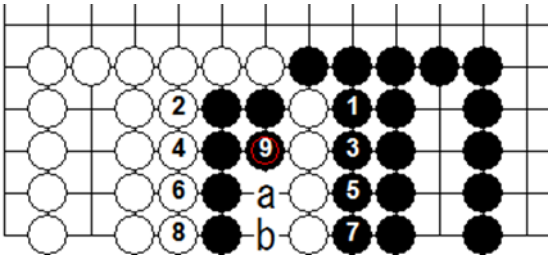
Then there are liberties marked with a cross. The black has only one such liberty but the white has four such liberties. They are called “liberties within an eye”. It is inside the stones forming the eye but do not confuse them with “inside liberties” or “common liberties.” The complicated characteristics of “liberties within an eye” is the fact that the number of liberties and the number of moves needed to fill in such liberties may not always be the same. For more detailed information, please study the sections which follow.

4030 Moratorium

When there are two or more common liberties between the black and white uncertain groups, a strange result may be reached. Here is an example.



In this case, each player should first start making moves to reduce the outside liberties of the opponent’s group. When all outside liberties are filled, you may start filling the common liberties, but……. .



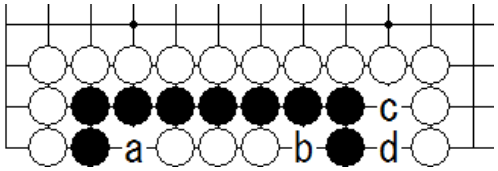
Here is the result of moves from black’s (1) to (9). From black’s (1) to white’s (8), each player is filling outside liberties of the opponent’s group. The black’s move (9) is the first move to try to fill the inside liberties which are common to both players. As you will see, the move (9) is harmless locally. However look at the result carefully. What is the best move of (10) for the white? You will be able to confirm that the white’s move at “a” or “b” will be a terrible move. If white should make a move at “a” for example, black will make a move at “b” to win the capturing race. For this reason, white’s move at “a” is suicidal.

Let us examine what will happen if black plays here. If black should play at “a”, for example, white can make the next move at “b” to win the capturing race! This means that black’s move at “a” is also a suicidal move. Then, what is the best move

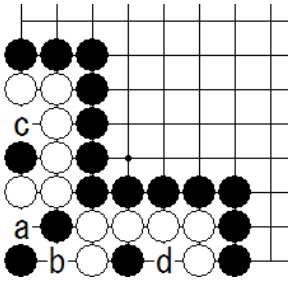
for the white after black's (9)? The answer is "pass" locally. Then, when white passes locally and make a move elswhere, what is the best move for the black? The answer is also "pass" locally. Thus the situation reached in the above chart is regarded as "moratorium" of battles and either black or white has no move of positive value there.

In actual games, this local situation is left touched until the end of the game. And the points "a" and "b" will not be counted as territories of either player.

At this point, let us look at a few other patterns which are regarded "moratorium"



In this pattern, either player may make a move at "c" or "d" which are useless but harmless. However, moves at "a" or "b" will be suicidal for either player. This situation is regarded as moratorium and "a" and "b" left until the end of the game shall not be counted as territories of either player.



What is this pattern?? A little complicated, yes, but if this situation is reached, black has no valid move to play here locally. For the black, "c" and "d" are suicide moves which are not allowed by rule. And for him, the move at "a" or "b" will be suicidal in the sense that black stones incide this area will be captured if you should make that move. It is a suicidal move although it is not a suicide move like "c" or "d" in the strict sense of the word.

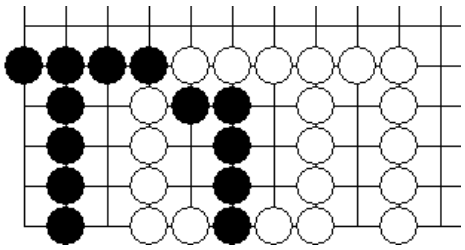
For the white, "a" and "b" are also suicidal. Interestingly, white can play at "c" to capture one black stone and he can also play at "d" to capture another black stone. In either Japanese rules or Chinese rules, white should make moves at "c" and "d" before the end of the game. In Japanese rules, the two captured stones shall be counted as dead stones. In Chinese rules, the stones remaining after such moves will add value to your score.

Thus white's moves at "c" and "d" are valuable. Moreover , after the capture of two stones, the respective vacant points which look like true eyes shall be counted as

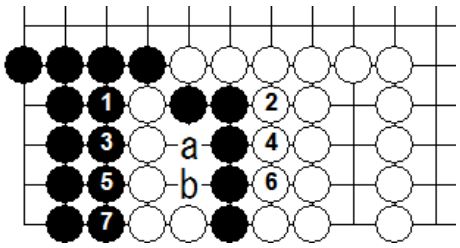
white's territory in Chinese rules, although Japanese rules state that these single eyes shall not be counted as territories of the white.

4040 Capturing Race in case there are two or more common liberties

In the last section, you saw a pattern in which the result was moratorium. However, it is not the only result possible of a capturing race in case there are two or more common liberties. Let us examine it with the following chart.

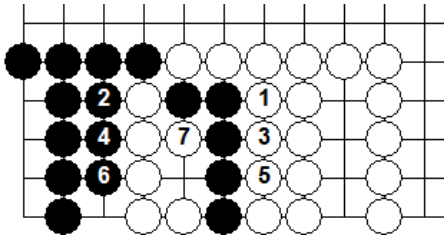


In this case, if black starts moves here the result will be the pattern shown in the next chart.



From black's (1) to white's (6), the moves are to fill outiside liberties. Black's move to fill the outside liberty at (7) is important. If the black neglects to make the move of (7), white can make a move at either "a" or "b" to win this capturing race. However, if black can make a move of (7), the result is moratorium and neither player can win the capturing race, since a move at "a" or "b" is suicidal for either player.

Let us check what happens if white plays first.



In this case, the moves from white's (1) to black's (6) are the moves to fill outside liberties. But in this case, white can make a move of (7) to fill the inside common liberty. And this move is leading the white to win this capturing race.

As a conclusion, we will see that in case there are two or more common nodes, there can be these different cases shown below.

1. Black will win the capturing race no matter which plays first.
2. Black will win the race if black plays first, but the result would be moratorium if

white plays first.

3. The result will be moratorium no matter which plays first.

4. White will win the race if white plays first, but the result would be moratorium if black plays first.

5. White will win the race no matter which plays first.

There is a mathematical formula to determine which of the five applies by observing a pattern on the board. The only numbers that count are those of black's outside liberties (Bo) and white's outiside liberties (Wo) and inside common liberties (C).

To determine which of the five categories applies to a given pattern, let us define the difference of Bo and Wo as △o. It is apparent that if △o is great enogh, the player with larger outside liberties will win the capturing race. However, if △o is zero or small enough, the result of the race will be moratorium.

Here is the formula to check the destinction.

If △o+1 > C

The player with greater number of outside liberties will win the capturing race.

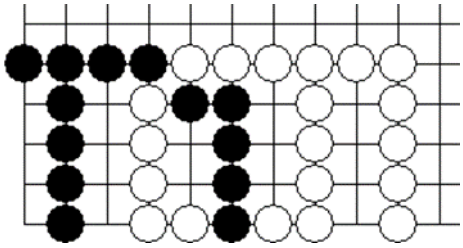
If △o+1 = C

The player with greater number of outside liberties will win the race if he plays first

But the result of the capturig race would be moratorium if the other player plays first.

If △o+1 < C

The result of the capturing race will end as moratorium.



You will be interested in applying the formula to the chart shown above. The number of the black's outside liberties is 3 and the number of the white's outiside liberties is 4. Therefore △o＝1 and △o+1 = 2. C=2, and thus △o+1=C.

The formula says if white plays, first he will win the capturing race, but, if black plays first, the result would be moratorium. This fact was already confirmed in the charts shown above.

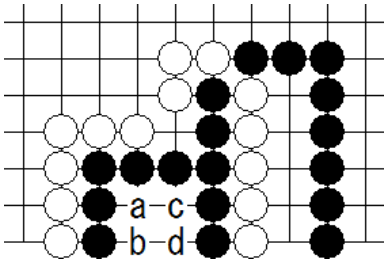
4050 Capturing Race in case one uncertain group has an eye.

So far, we have discussed the capturing races between two uncertain groups of stones of the black and the white which have no eyes.

We have studied the distinction of outside independent liberties and inside common liberties. In this section, we shall learn the importance of the liberties of the third

category, “the liberties within an eye”.

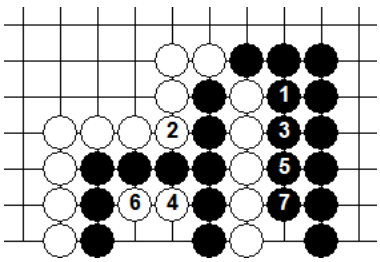
Let us check the pattern shown here.



In this case, there is no inside common liberties. White’s uncertain group has five outside liberties. Black’s uncertain group has one outiside liberty. Now, you will see that the black group has one eye. If the black can form the second eye, black can survive and the white shall automatically die. But in this pattern the black cannot form two eyes so easily. For the white, if he tries to fill the liberties inside the black’s eye, there are four points a, b, c and d, which must be filled to capture the black. We must distinguish the liberties inside such an eye shape from outside liberties and inside common liberties.

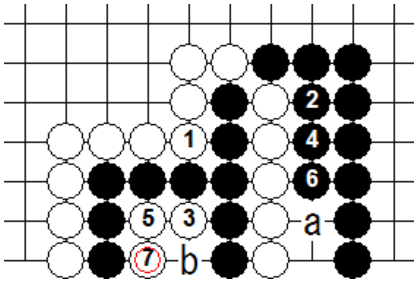
For the pattern shown above, as there is no inside common liberty, the result of the capturing race can be determined by counting the number of liberties of each player. As you can see, it is easy to count white’s outside liberties as 5. To count the number of nodes of the black group, the calculaton is not that simple. You may count the black’s outside liberty as 1 which is correct. If the number of liberties inside the eye is 4, the total number of liberties of the black group is 1 + 4 = 5 and you may conclude that either player will win the capturing race if he can play first as the number of total liberties matches as 5 vrs. 5.

. However, the number of nodes inside the eye counted as 4 is not correct! Let us confirm this fact with the following chart.

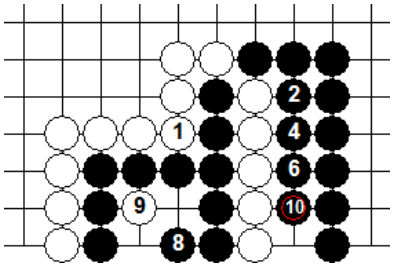


If the black starts the capturing race, this is what will happen. The moves from black’s (1) to (7) are to fill the outisde liberties of the white. White can start filling the black’s outside liberties by (2) followed by moves to fill the nodes inside the eye from (4) to (6). But, as black’s (7) is played, you will see that white has no means to prevent the black’s next move to capture the white group. So far the calculation of liberties is OK.

However, if white starts the capturing race, the calculation is not exactly the same.



From white's (1) to (7) the order of moves filling black's liberties is correct. Black's moves from (2) to (6) are also fine. Now at the point white's (7) is played, if black fill the white's outiside liberty at "a", that is too late. White can capture the black group by the move at "b" before black can capture the white. However, black's move at "a" is not correct. When white plays (7), black must play at "b" rather than at "a". The result will be the pattern shown below.



The black's correct move is (8) to capture three white stones. Then, you will see that white needs a move at (9) to prevent black's survival. Then the black can make a move at (10). Now white needs two moves to capture the black while the black can capture the white with one move. This means that this capturing race results in black's winning! Why was it so?

The following is the answer to that question. The number of moves you need to fill inside the eye is not always the same as the number of vacant liberties in the eye. Here is an interesting mathematical formula.

The number of vacant points inside the eye	The number of moves needed
x	y
1	1
2	2
3	3
4	5
5	8
6	12
7	17

It is an interesting formula. It is best to remember this chart at least upto x=6

If you forget that chart, you can reproduce it in your mind if you recall the following

mathematical formula.

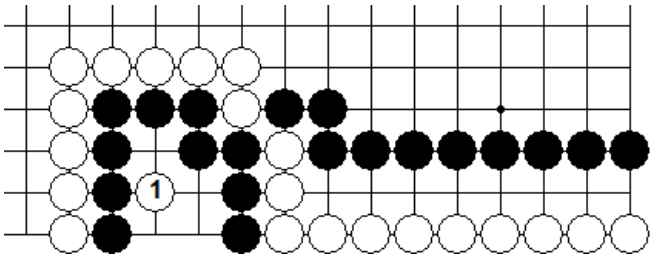
Deduct 2 from x to get z

Add from 1 to z to get v

Add 2 to v to get y

This may sound too complicated but it is not. For example, if you wish to get the number for 6, you deduct 2 from 6 to get 4, you add from 1 to 4 just like 1+2+3+4=10, and finally add 2 to 10 to get 12. 12 is the right answer.

Please confirm the correctness of the calculation by trying the following chart



In this case, white can capture the black. White group has 8 nodes. Black's vacant points inside the eye was 5 which needs 8 moves to fill in, but as white (1) was played white only needs seven moves to win the race. This means even if black can start with (2) filling the outside nodes, black cannot win the race.

4060 Capturing Race between a group with one eye and a group without an eye

When a group without an eye and a group with an eye are in a capturing race, the group with an eye has some advantage. This recognition is correct but let us clarify how.

First of all, please remember that if there is no inside common eye, the group without an eye has no disadvatage at all. In this situation, only the number of moves needed to capture the opponentt's group counts. The example we studied in the last section is a typical case.

Now, if there is one or more common liberties between the two uncertain groups and one group has an eye and the other has no eye, the advantage of the group with an eye is clear.

In such a situation, the number of the inside common liberties is only valid for the group with an eye. Thus you only need to compare the following numbers.

Total number of moves to capture group A with an eye expressed as At

shall be equal to

Ao(outside liberties of A) plus

Ac (common liberties) plus

Ae(moves needed to fill in the liberties inside the eye)

Thus At=Ao+Ac+Ae

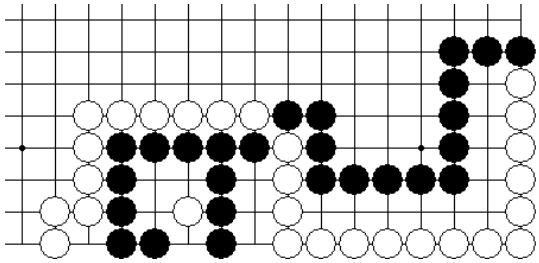
Total number of moves to capture group B without an eye expressed as Bt shall be equal to

Bo (outside liberties of B)

Thus Bt=Bo

You have only to compare At and Bt. If one is greater, that player will win the captruing race. If they are equal, the first player will win the race. Remember that there will be no possibilty of resulting in moratorium under this situation.

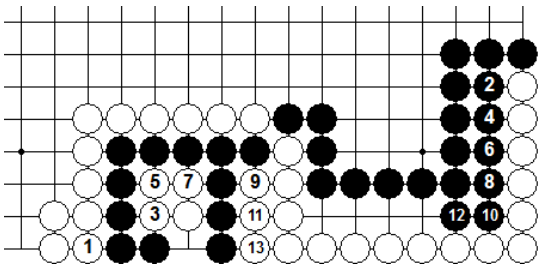
Here we shall show you one example.

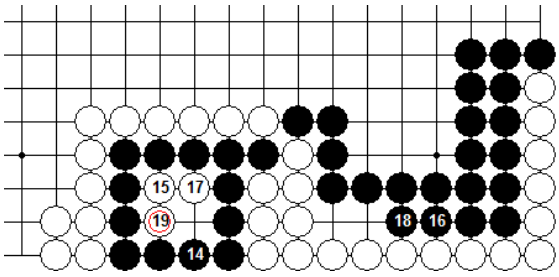


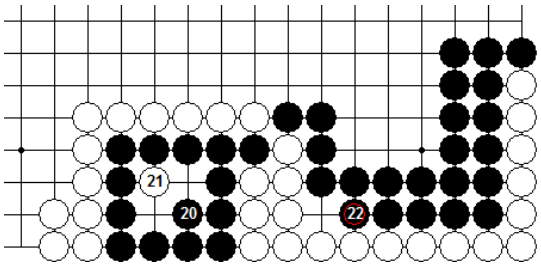
This pattern is pretty complicated but you can calculate the result very easity.

At=Ao+Ac+Ae=1+3+(8－1)=11 Bt=Bo=10

The conclusion is that the A (Black) need not play here since the result of the winning of this capturing race is assured by this calculation. Even if white can start the capturing race, the black would win the race. The result of the race will be confirmed by the following charts.



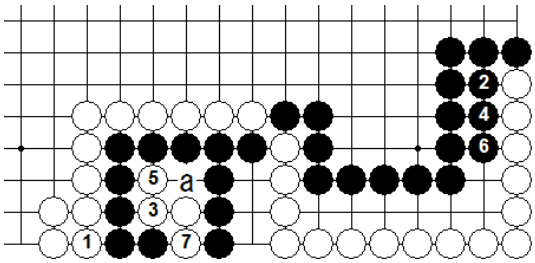




The moves from the white's (1) to the black's (21) are all correct and the result shows that white cannot make a move at (23) to win the race. The white can make a move a point to the right of (21) but black can capture white group before the white can capture the black.

At this point, it is important to realize that the player must be careful in the order of moves to fill the liberties within the eye. If the white makes a mistake in the orer of

moves within the eye, a different result may be reached.



The white's move at (7) in this pattern is an example of a mistake in the order of filling liberties inside the eye. The correct move for (7) is at "a". If the white makes a mistake and play (7), black can respond at "a" to capture the four stones. The result of the capture is a typical bent four survival pattern. When a survival pattern is obtained, the capturing race is over and in this case, the white cannot do anything about the capturing race.

4070 What happens if two groups have one eye each ?

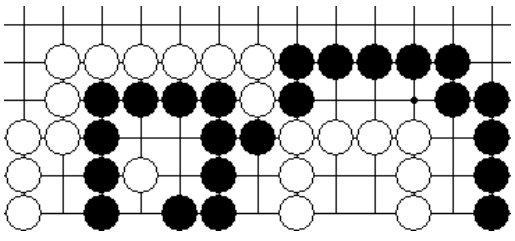
When both groups have one eye each, there are two distinct patterns you should remember. To clarify the distiction, we need know the ranking of an eye.

Ranking	The number of points inside the eye.
A	1,2 and 3,
B	4,
C	5,
D	6
Etc.	

If the rankings of eyes of two groups are different, the formula to be used is exactly the same as "a capturing race between a group with an eye and a group without an eye".

The group with a larger eye is in advantage. This situation is called by the term " Big eye and small eye".

Here is a typical example to see if the formula is correct.



Let us apply the formula.

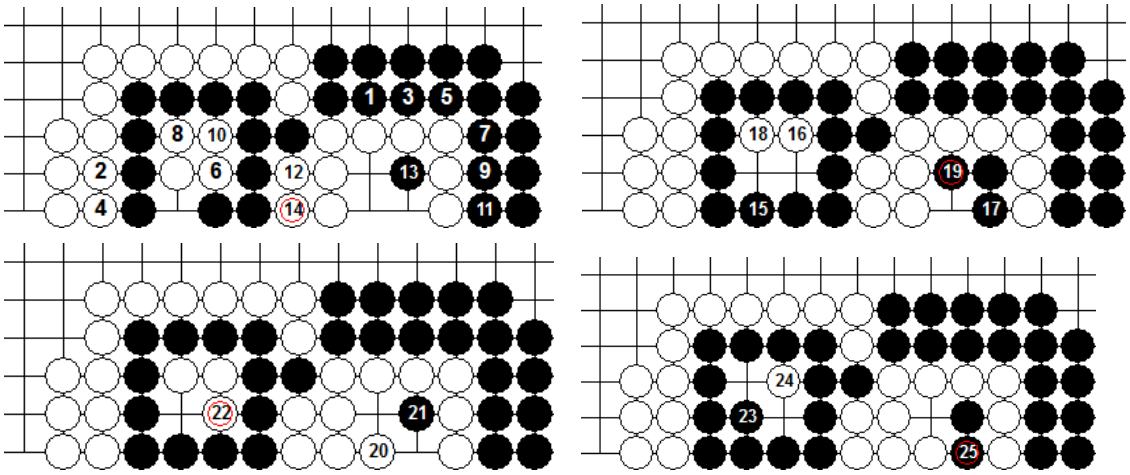
The number of moves to capture the black group will be calculated as

At=Ao+Ac+Ae=2+2+(8－1)=11

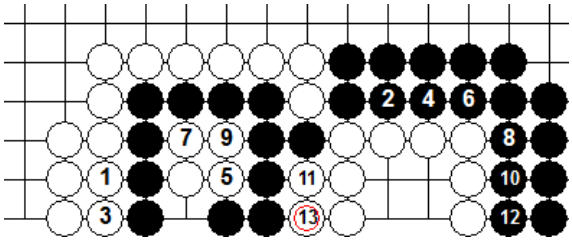
And the number of moves to capture the white group will be calucated as

Bt=Bo+Be=6+5=11

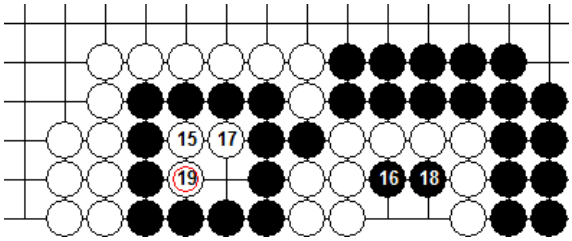
Since the numbers are exactly the same, the first player will win the capturing race. There is no possibility of reaching a situation of moratorium. Let us confirm this with the followin charts.



From the black's (1) to white's (4) and black's (5), both players are filling in the outside Liberties. The black continues the same from (7) to (11) while the white will start filling in the points inside the eye from (6) to (10). Then the white must start filling in the common liberties from (12). When the white plays (14), the black needs a move of (15) to capture four stones. From (16) to (19) , both try to fill in the liberties inside the eye. At (20), white must capture three stones inside the eye. The black's (21) is important to avoid survival of the white. At the black's (23), black must capture three stones and the while must play (24) to avoid the survial of the black. And finally, the black's move (25) shows that the black has won this long capturing race.



This chart shows the case the white played first from the original pattern. As white reaches (13), the black needs a move to capture four white stones. At that point the patterns of the black and the white are exactly the same.



Therefore, from (15), white runs the capturing race with one move ahead of the black. The final result will be the white winning the long capturing race.

4080 The Capturing Race between two groups with eyes of the same ranking

When each of the black and white has an uncertain group with an eye of the same ranking as the opponent's uncetain group with an eye, there is no advantage between the black and the white. This situation resembles the capturing race between two groups with no eye but there are two or more common liberties.

In such a situation, the result of moratorium may occur depending on the situation of the number of liberties. There can be five patterns shown below.

1. Black will win the capturing race no matter which plays first.
2. Black will win the race if black plays first, but the result would be moratorium if white plays first.
3. The result will be moratorium no matter which plays first.
4. White will win the race if white plays first, but the result would be moratorium if black plays first.
5. White will win the race no matter which plays first.

There is a mathematical formula to determine the result by counting the outside liberties, common liberties and moves needed to fill liberties inside the eye.

To analyse and confirm the result, you first check the difference to the total of ouside liberties and liberties inside the eye. Let us define the difference of the total between the two players as △. Now you compare this △ with the number of common liberties C.

Here is the formula to check the destinction.

If △o > C

The player with greater number of outside liberties will win the capturing race.

If △o = C

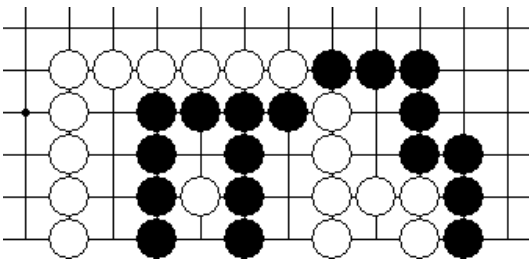
The player with greater number of outside liberties win the race if he plays first

But the result of the capturig race would be moratorium if the other player plays first.

If △o < C

The result of the capturing race will end as moratorium.

You may notice that the formula resembles the formula you saw in section 4040.

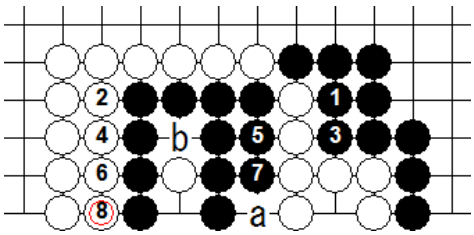


Here is a good example of a capturing race where we can apply the formula. First we confirm that each group has one eye but the rankings of the eye are the same.

Then we count the number of moves to fill in the liberties. As for the black group, Ao=4,

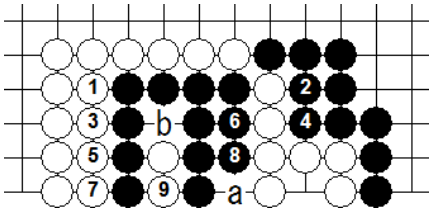
Ae=3－1=2, The total At=Ao+Ae=6. For the white group Bo=2, Be=1, the total Bt=3. The diffence △＝At－Bt＝3. Now, C the number of common nodes is 3. Thus we find that △＝C. The formula says that black will win the capturing race if he plays first, but the result would be moratorium if white plays first.

Let us check if this analysis is correct using the following charts.



From the black's (1) to white's (4), outside liberties are filled in. From black's (5) to (7) black is filling in the common liberties while white plays at (6) and (8) filling the outside liberties. However, at this point, white is finding that (8) was too late. For the move of (9), black can make a move at "a" to capture the white group and white has no means to avoid it.

If white had chance to make another additional move to place another stone at "b", black would not have been able to make a move at "a". That is a moratorium.

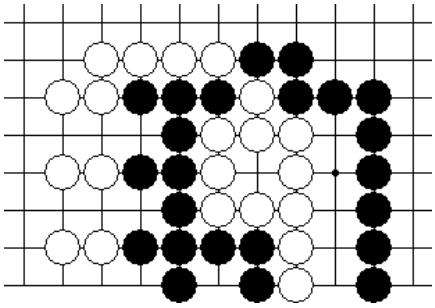


This chart shows the case in which the white played first. From (1) to (7), the white is filling in the outside liberties. Black filled two outside liberties by (2) and (4) but started filling in the common liberties as (6) and (8). At white's move (9), the black will find that he is not able to try to capture the white group by a move of a since that move at "a" is suicidal. Black can capture two white stones by a move at "b", but white can make a move at (9) inside the eye and then the black cannot play "a" after all. However, at the same time, the white cannot make a move at "a", either. Thus the result is moratorium.

4090 Exceptions of counting of number of liberties

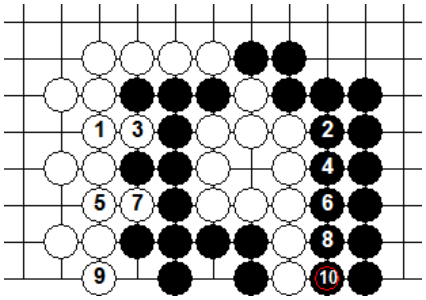
As we have discussed so far, the result of the capturing race has a lot to do with the situation of liberties of groups of stones. However, in actual game patterns, there are cases the number of liberties.

Here is one example easy to understand what we mean by it.



Looking at this pattern you may be able to count that black group has 3 outside liberties and 1 liberty inside the eye. The total is 4. The white group has 5 outside liberties and 1 liberty inside the eye. The total is 6. Just counting them that way, you may judge that white will win the capturing race. But that is not correct. Why because white can not make a move at any of the three outside liberties in this pattern.

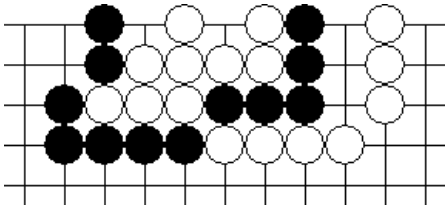
For that reason the result will be just as shown in the chart below even when the capturing race started with the white's move.



As you will notice, the white needs to make a move at (1) before (3). Similarly, he needs (5) before (7). Likewise, white's (9) is needed to make a move to the right of (9).

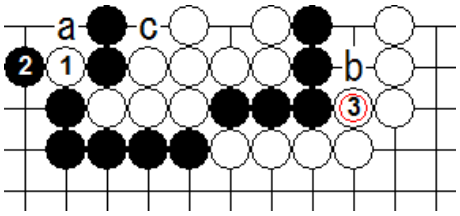
Thus as the black makes a move at (10), you will find that white was too late to capture the black.

There are many other cases where the number of nodes counted is not indicating the number of moves needed to capture a group of stones. We will show you one important example.



In the pattern shown above, if you count the number of liberties, you will find that the inside black group has 3 liberties, while the white has one eye plus one outiside liberty the total of which is 2. This sounds like implying that white cannot win the capturing race here. However that is not true. Actually if black plays here to fill in the white's outside liberty, the white cannot avoid black's capture by the last move

inside the eye. But, if it is white's turn, there is a good move!

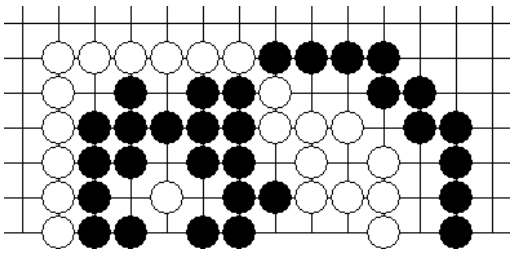


Here is a chart showing the white's best moves. First white make a move at (1). This move cannot capture two black stones near the upper edge. In fact, black will make a move at (2) in response and the white's stone at (1) is captured. However, you will realize that black cannot make a move at "c" as it is suicidal as long as (1) is there. This means that white can play (3) and black cannot make a move at "c" since (1) is still there. Thus the black needs to make another move at "a" to capture (1) completely to remove it from the board. But alas, it is too late. As black plays (4) at "a", white can make a move at "b" proving that he won this capturing race even though the original number of nodes were unfavorable.

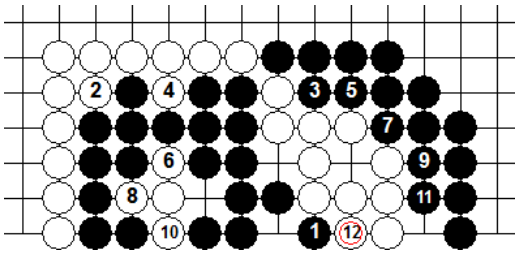
In actual games, a situation similar to this pattern will occur very frequently. Players needs to pay attention to these exceptional cases carefully.

4100 What if one group survives

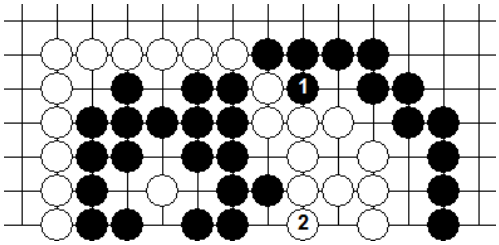
Before closing this chapter discussing capturing race, there are a few important observations.



As you try to analyse this pattern you will be able to count the black' s outside lierties as 2. Black's number of moves in the eye is calcutated as 8－1＝ 7 . As you can see, there are at least 2 common liberties. The total will be 2+7+2=11. Let us count the number of moves needed to capture the white group. The number of outside lierties is 6. There is an eye with 1 point. There seems to be 3 common liberties. The total is 6+1+3=10. Thus it looks like a pattern of the black's winning of the capturing race. The white may pass. The result would be just like this.



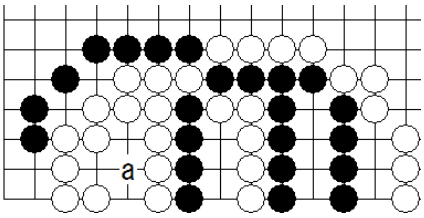
At white's (12) it is getting clear that white cannot win this capturing race.



But the above analysis is not correct. If the black made the first move at (1) in this chart, white should play at (2). What is this result? By white's (2), white has got two eyes which means the white group is perfectly living now. This is not a capturing race at all. The white is living and the black is dead! Let us look at the original pattern. It was wrong for the white to give up this local situation. He would have been able to play that living move at the starting point. This shows that there are two uncertain groups of each player, it is the starting point of a capturing race, but if one group succeeds surviving to form a living pattern, that is the end of the capturing race.

4110 If the outside wall of moratorium fails to survive….

In this part studying a capturing race, we found out that we often end up with a moratorium pattern. As for a moratorium pattern, there would be uncertain groups left unsettled where further attack is not possible. However, it is important to see that the outside stones must be living at the end of the game. If the outside wall is destroyed, the moratorium situation will not last to the end of the game.



Here is one example where the situation is uncertain. Please pay attention to the status of each group of stones carefully. You will recognize that the inside black group of four stones and the inside white group of five stones are in the situation of moratorium. Either player can fill in the common nodes in between these two group of stones. However, it is a different question if the outside groups of stones

are living. In this example, the black outside group on the right has four point territory and living completely. On the other hand, the left hand white group outside the moratorium status is uncertain. If the black makes a move at “a”, the uncertain pattern changes into a distinct death pattern and the white has no means to make the group survive. In this case, the moratoium situation is still there but at the end of the game the dead white stones shall leave the board, and then, the moratorium situation will also be dissolved.